

# Denny to Wishaw Network Upgrade

*Environmental Impact Assessment Report*

*Volume 3 Appendices*

*Appendix 8.6 New Build Overhead Line Ornithology  
Baseline*

*May 2026*



Denny to Wishaw Network Upgrade  
Environmental Impact Assessment Report  
Volume 3 Appendix 8.6 New Build Overhead Line  
Ornithology Baseline



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# Appendix 8.6

## 1.1 Introduction

### Background

SP Transmission proposes to develop a new double circuit 275kilovolt (kV) / 400kV overhead line running north-south from Bonnybridge 275kV substation to a point near Glenmavis in North Lanarkshire (hereafter referred to as the 'New Build Overhead Line'). The New Build Overhead Line is part of a wider electricity network reinforcement known as the 'Denny to Wishaw Network Upgrade' which is hereafter referred to as the 'Project'.

A routing study was conducted in 2019/20 to establish the preferred route of the New Build Overhead Line, taking account of environmental sensitivities including landscape, ecology and ornithology. As part of this exercise, and to later inform the Environmental Impact Assessment (EIA) for the Project, SPEN commissioned AECOM to conduct bird surveys across two non-breeding seasons and one breeding season. The non-breeding bird surveys were carried out between September 2019 and February 2020, and between September 2021 and February 2022. An additional non-breeding season was started in September 2024 but these surveys were stopped at the client's request in November 2024 as the previous seasons of survey were deemed sufficient by NatureScot (see consultation section below). The breeding bird surveys were carried out between March and August 2022.

This Report sets out the methods and findings of the bird surveys carried out over the 2019/20, 2021/22 non-breeding seasons, September to November in the 2024/25 non-breeding season and the 2022 breeding season.

The most critical target species in relation to the Project is taiga bean goose *Anser fabalis*<sup>1</sup>. This species is the main qualifying feature of the Slamannan Plateau Special Protection Area (SPA) which overlaps the Project (see Appendix 8.8 for details). There are only two sites in the UK where flocks of taiga bean goose regularly occur, but the Slamannan Plateau flock, typically numbering around 200 birds, is the most significant<sup>2</sup>. Hereafter, 'bean goose' means taiga bean goose unless otherwise stated.

All bird surveys carried out were focussed on the New Build Overhead Line due to the greater magnitude impacts associated with this element, particularly in relation to collision risk. NatureScot confirmed in August 2025 that the survey data gathered for the New Build Overhead Line was sufficient for the purposes of this assessment and that no further bird surveys would be required for the other elements of the Project.

### Description of the Site

For the purposes of this Appendix, the New Build Overhead Line (the WB Route) and the WB overhead line wayleave corridor are hereafter referred to as the 'Site'. The Site is shown in Volume 2, Figure 8.10.

The site at the time of conducting the 2021/22 and 2024/25 surveys was based on a narrow corridor, ranging from approximately 50m to 450m in width, within which the New Build

<sup>1</sup> Two sub-species of bean goose were accepted by the British Ornithologists' Union (BOU) in 2018 as being distinct species: taiga bean goose and tundra bean goose *Anser serrirostris*. The Slamannan flock comprises taiga bean goose.

<sup>2</sup> The Yare Valley flock in Norfolk is dwindling and there were no confirmed records in 2022/23, though in 2023/24, two birds were recorded - Calbrade, N.A., Birtles, G.A., Woodward, I.D., Feather, A., Hiza, B.M., Caulfield, E.B., Balmer, D.E., Peck, K., Wotton, S.R., Shaw, J.M. and Frost, T.M. (2025). Waterbirds in the UK 2023/24. BTO/RSPB/JNCC/NatureScot

Overhead Line was proposed to be positioned. This corridor is hereafter referred to as the 'Proposed Route Corridor' (see Volume 2, Figure 8.10).

The site at the time of conducting the 2019/20 surveys was based on multiple route options and therefore comprised a much wider corridor, ranging from 800m to 8.5km in width. This corridor is hereafter referred to as the 'Strategic Corridor' (see Volume 2, Figure 8.10).

The Site and surrounding area includes a variety of habitats including arable / grazed farmland, rough grassland, plantation woodland, semi-natural woodland and, locally, peat bog.

The route of the New Build Overhead Line has purposely been chosen to pass west of the Slamannan Plateau SPA and therefore closer to the town of Cumbernauld, to minimise possible impacts on bean geese.

### **Purpose of this document**

This Appendix provides the methods for all of the desk study and field survey, and the results obtained, to establish the baseline conditions within the likely zone of influence (Zol) of the New Build Overhead Line with respect to breeding and non-breeding bird species.

Throughout this Appendix, species are given their common and scientific names when first referred to and their common names only thereafter. All distances are cited as the shortest distance 'as the crow flies', unless otherwise specified.

### **Quality assurance**

The field survey for breeding and non-breeding birds was carried out by trained and experienced ornithologists within AECOM and approved sub-consultants working under direction of AECOM. Where required, AECOM ornithologists worked under, and in accordance with the conditions of, Schedule 1 survey licence number 177803, issued by NatureScot.

### **Survey and assessment guidance**

The scope and methods used for bird surveys for the New Build Overhead Line was guided by the following good practice guidance documents published by NatureScot:

- Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds<sup>3</sup>;
- Recommended bird survey methods to inform impact assessment of onshore wind farms<sup>4</sup>;
- Assessing Significance of Impacts from Onshore Windfarms on Birds out with Designated Areas<sup>5</sup>; and

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<sup>3</sup> NatureScot (2025). Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds.

<https://www.nature.scot/doc/guidance-assessment-and-mitigation-impacts-power-lines-and-guyed-meteorological-masts-birds>

<sup>4</sup> NatureScot (2025). Recommended bird survey methods to inform impact assessment of onshore wind farms.

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

<sup>5</sup> SNH (2018). Assessing Significance of Impacts from Onshore Windfarms on Birds out with Designated Areas. Version 2 – February 2018. <https://www.nature.scot/doc/guidance-assessing-significance-impacts-bird-populations-onshore-wind-farms-do-not-affect-protected>

- Assessing Connectivity with Special Protection Areas (SPAs)<sup>6</sup>.

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<sup>6</sup> SNH (2016). Assessing Connectivity with Special Protection Areas (SPAs). Version 3 – June 2016.  
<https://www.nature.scot/doc/assessing-connectivity-special-protection-areas>

## 1.2 Methodology

### Protected and notable species

For the purposes of the desk study and field surveys described below, protected and notable species comprised:

- the qualifying ornithological features of SPAs or Wetlands of International Importance (Ramsar sites) within 10km of the New Build Overhead Line, this being extended to 20km for geese species which can range up to this distance when foraging<sup>6</sup>;
- the notified ornithological features of SSSIs within 2km of the New Build Overhead Line;
- all species listed on Annex I of the Birds Directive;
- all species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (hereafter abbreviated to the 'WCA');
- all species listed on the Scottish Biodiversity List (SBL);
- all species on the Red List of Birds of Conservation Concern (BoCC)<sup>7</sup>;
- all species listed as Priority Species on the Falkirk Local Biodiversity Action Plan (FLBAP) and / or North Lanarkshire Local Biodiversity Action Plan (NLBAP); and
- invasive non-native bird species listed on Schedule 9 of the WCA (although this Schedule no longer legally applies in Scotland) and those considered to be of EU concern under the Invasive Alien Species Regulation.

Other species, that may be rare, scarce or otherwise notable, were included where deemed appropriate through available information and / or professional judgement.

### Consultation

AECOM consulted with NatureScot (then Scottish Natural Heritage) in September 2019 to seek advice on the scope of ornithological survey required for the New Build Overhead Line. NatureScot confirmed that the scope of work proposed was acceptable, in particular that surveys were carried out over the course of two non-breeding seasons and a single breeding season. Furthermore, NatureScot confirmed that a 3km viewshed from vantage point locations was reasonable given that the primary species of concern were geese, which are large and likely to be visible at this range.

NatureScot also provided data on use of fields in and around the Slamannan Plateau SPA by bean geese.

The 2024/25 season of non-breeding bird surveys commenced in September 2024 until correspondence with NatureScot in October 2024 confirmed that an additional season of non-breeding bird surveys was not required, leading to the termination of the 2024/25 season surveys in November 2024.

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<sup>7</sup> 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, pp 723-747.

## Desk study

To supplement the field survey, a bird-related desk study was carried out. The sources in Table 1 below were used to identify records of protected / notable bird species within a minimum 1km of the Site.

**Table 1. Desk study data sources**

| Data source                                       | Accessed               | Data obtained                                                                                                                                                                                                                                                                           |
|---------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| North Lanarkshire LBAP <sup>8</sup>               | 07 October 2022        | Information on locally important ecosystems, habitats and species.                                                                                                                                                                                                                      |
| Falkirk Council Rangers                           | 12 September 2022      | Information on the presence and use of barn owl <i>Tyto alba</i> boxes in vicinity of the New Build Overhead Line. Additionally, while carrying out inspections of buildings for barn owl, the owners were consulted, where possible, for knowledge they had on occupancy of barn owls. |
| OS 1:25,000 maps and aerial photography           | 28 September 2022      | Habitats and connectivity relevant to interpretation of planning policy and potential protected / notable species constraints.                                                                                                                                                          |
| The Wildlife Information Centre (TWIC)            | 15 August 2022         | Protected / notable species records within 1km of the Site in the last twenty years.<br>Local non-statutory nature conservation designations.                                                                                                                                           |
| Glasgow Museums Biological Records Centre (GMBRC) | 31 August 2022         | Protected / notable species records within 1km of the Site in the last twenty years.<br>Local non-statutory nature conservation designations.                                                                                                                                           |
| Bean Goose Action Group (BGAG)                    | 19 September 2025      | Bean goose count and GPS data (detailed in Volume 3, Appendix 8.7)                                                                                                                                                                                                                      |
| Royal Society for the Protection of Birds (RSPB)  | 26 November 2025       | Protected / notable species records within 1km of the Site in the last twenty years.                                                                                                                                                                                                    |
| Central Scotland Raptor Study Group               | Contacted 14 July 2025 | Raptor records within 2km of the Site in the last five years.<br>No data returned yet.                                                                                                                                                                                                  |

## Field survey

### Survey area

The survey area used for different target ornithological features varied to account for a range of factors including published best practice guidelines, the ecology of relevant species and

<sup>8</sup> <https://www.northlanarkshire.gov.uk/your-council/council-strategies-and-plans/council-strategies/environment-strategy/biodiversity>

their potential sensitivity to the New Build Overhead Line. The following survey areas were therefore adopted:

- 2019/20 survey for foraging and roosting geese species – within the Strategic Corridor;
- 2021/22 and 2024/25 survey for foraging and roosting geese species – the Proposed Route Corridor plus a minimum 500m buffer;
- survey for general moorland breeding birds – the Proposed Route Corridor plus a 500m buffer;
- survey for general breeding birds in other habitats – the Proposed Route Corridor plus a 125m buffer;
- searches of features suitable for use for nesting by barn owls – the Proposed Route Corridor plus a 200m buffer; and
- black grouse *Lyrurus tetrix* lek surveys – the Proposed Route Corridor plus a 1km buffer.

The bird survey areas are shown on Volume 2, Figure 8.10.

#### Vantage point surveys

As agreed with NatureScot, six hours of vantage point (VP) survey were conducted (as far as possible) at each VP each month. This typically comprised two watches of three hours, not exceeding three hours per watch with a minimum 30-minute interval between watches. This quota was increased to twelve hours per VP in October (2019, 2021 and 2024) and February (2020 and 2022) because these months are during the peak migratory period for bean geese.

The VP surveys were spread throughout each month. A range of VP watches included dusk and dawn periods, extending up to around one hour before sunrise and 1.5 hours after sunset. A range of weather conditions were covered. Surveyors used binoculars and telescopes as appropriate to cover a 3km viewing arc from each VP.

Surveyors recorded target species and secondary species. Target species included Annex 1 / Schedule 1 species, raptors (excluding buzzard *Buteo buteo*, sparrowhawk *Accipiter nisus* and kestrel *Falco tinnunculus*), owls, divers, grebes, herons, skuas, swans, geese, ducks, terns, waders and black grouse. The recording of target species comprised mapping an estimated flight path of the bird and included details of their behaviour, flight height and flight duration. Secondary species comprised sparrowhawk, kestrel, buzzard, gulls and raven *Corvus corax*. Flight lines were not recorded for these species, but height category was recorded along with any general observations of their location / behaviour.

Flight heights were later split into categories with any flights between 10m and 70m classed as being at potential collision height (PCH) with the New Build Overhead Line. Those at PCH were also then categorised into whether they would be at risk of colliding with the New Build Overhead Line based on location. Any flights at PCH which also cross within 100m of the New Build Overhead Line are at potential risk of collision (PRC).

A total of twelve VPs (VP 2-13) were used in the 2019/20 non-breeding season and a total of ten VPs (VP 4-14, excluding VP 9) were used in the 2021/22, 2024/25 non-breeding and 2022 breeding season. VP 1 was initially included but due to access constraints was never used so is not included in this report or in any figures. Due to the narrowing of the route corridor VP 2 and VP 3 were not used in the 2021/22, 2024/25 non-breeding and 2022 breeding season

surveys but an additional VP location, VP 14, was added in order to cover the very south end of the Proposed Route Corridor.

The full hours were achieved at all VPs, except where access was restricted (i.e. VP 9 and 14). Due to access constraints in winter 2019/20 and then complete blocking of access in winter 2021/22 and summer 2022, no surveys were carried out from VP 9 from December 2019 onwards. Due to initial difficulties gaining access to VP 14, surveys only commenced here at the end of October 2021. These access limitations are discussed further in the limitations section below. In December 2019 and May 2022, the full quota of survey hours was not completed during the intended month, but missing hours were completed as soon as possible in the following month, in addition to the full hours for that month (see Table 2, 3 and 4 for details).

In winter 2024/25 only the full hours for September were achieved. The hours for October and November were reduced due to access restrictions and the decision to stop surveys.

A summary of the number of hours completed from each VP location for each month is presented in Tables 2 to 5 below. All VP locations are shown on Volume 2, Figure 8.11.

**Table 2. Summary of VP survey effort in the 2019/20 non-breeding season**

| Month           | Number of hours of survey (h:m) |                   |                   |       |       |       |                   |                   |       |       |                   |       | Total  |
|-----------------|---------------------------------|-------------------|-------------------|-------|-------|-------|-------------------|-------------------|-------|-------|-------------------|-------|--------|
|                 | VP 2                            | VP 3              | VP 4              | VP 5  | VP 6  | VP 7  | VP 8              | VP 9              | VP 10 | VP 11 | VP 12             | VP 13 |        |
| <b>Sep 2019</b> | 9:00                            | 9:00              | 9:00              | 6:00  | 6:00  | 6:00  | 6:00              | 6:00              | 6:00  | 6:00  | 6:00              | 6:00  | 81:00  |
| <b>Oct 2019</b> | 9:00 <sup>1</sup>               | 9:00 <sup>1</sup> | 9:00 <sup>1</sup> | 12:00 | 12:00 | 12:00 | 12:00             | 9:00              | 12:00 | 12:00 | 9:00              | 12:00 | 129:00 |
| <b>Nov 2019</b> | 6:00                            | 6:00              | 6:00              | 3:00  | 6:00  | 6:00  | 6:00              | 3:00 <sup>2</sup> | 6:00  | 6:00  | 9:00              | 6:00  | 69:00  |
| <b>Dec 2019</b> | 5:00 <sup>3</sup>               | 6:00              | 3:20 <sup>3</sup> | 6:00  | 6:00  | 6:00  | 3:00 <sup>3</sup> | 0:00 <sup>2</sup> | 6:00  | 6:00  | 3:00 <sup>3</sup> | 6:00  | 56:20  |
| <b>Jan 2020</b> | 7:00                            | 6:00              | 8:40              | 6:00  | 6:00  | 6:00  | 12:00             | 0:00 <sup>2</sup> | 6:00  | 6:00  | 9:00              | 6:00  | 78:40  |
| <b>Feb 2020</b> | 12:00                           | 12:00             | 12:00             | 12:00 | 12:00 | 12:00 | 9:00 <sup>4</sup> | 0:00 <sup>2</sup> | 12:00 | 12:00 | 12:00             | 12:00 | 129:00 |

<sup>1</sup> For VP 2, VP 3 and VP 4, one watch (3 hours) of the 12-hour October 2019 quota was carried out on 30 September 2019.

<sup>2</sup> Land access issues resulted in VP 9 surveys being curtailed in November 2019 and discontinued from December 2019 onwards.

<sup>3</sup> 1 hour of VP 2, 2hrs 40mins of VP 4, 3 hours of VP 8 and 3 hours of VP 12 were carried out on 09 and 10 January 2020.

<sup>4</sup> For VP 8 only, one watch (3 hours) of the 12-hour February 2019 requirement was carried out on 22 January 2020.

**Table 3. Summary of VP survey effort in the 2021/22 non-breeding season**

| Month                 | Number of hours of survey (h:m) |       |       |       |       |       |       |       |       |                   | Total  |
|-----------------------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------|--------|
|                       | VP 4                            | VP 5  | VP 6  | VP 7  | VP 8  | VP 10 | VP 11 | VP 12 | VP 13 | VP 14             |        |
| <b>September 2021</b> | 6:00                            | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 0:00 <sup>1</sup> | 54:00  |
| <b>October 2021</b>   | 12:00                           | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 | 3:00 <sup>1</sup> | 111:00 |
| <b>November 2021</b>  | 6:00                            | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00              | 60:00  |
| <b>December 2021</b>  | 6:00                            | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00              | 60:00  |
| <b>January 2022</b>   | 6:00                            | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00              | 60:00  |

|                      |       |       |       |       |       |       |       |       |       |                   |                   |        |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------|-------------------|--------|
| <b>February 2022</b> | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 | 9:00 <sup>2</sup> | 9:00 <sup>2</sup> | 114:00 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------|-------------------|--------|

<sup>1</sup> Due to land access issues, no survey was carried out at VP 14 in September 2021 and only 3 hours were completed in October 2021.

<sup>2</sup>For VP 13 and VP 14, one watch (3 hours) of the 12-hour February 2022 quota was instead carried out in March 2022.

**Table 4. Summary of VP survey effort in the 2022 breeding season**

| Month              | Number of hours of survey (h:m) |      |      |      |      |       |       |       |                   |       | Total |
|--------------------|---------------------------------|------|------|------|------|-------|-------|-------|-------------------|-------|-------|
|                    | VP 4                            | VP 5 | VP 6 | VP 7 | VP 8 | VP 10 | VP 11 | VP 12 | VP 13             | VP 14 |       |
| <b>March 2022</b>  | 6:00                            | 6:00 | 6:00 | 6:00 | 6:00 | 6:00  | 6:00  | 6:00  | 9:00              | 9:00  | 66:00 |
| <b>April 2022</b>  | 6:00                            | 6:00 | 6:00 | 6:00 | 6:00 | 6:00  | 6:00  | 6:00  | 6:00              | 6:00  | 60:00 |
| <b>May 2022</b>    | 3:00 <sup>1</sup>               | 6:00 | 6:00 | 6:00 | 6:00 | 6:00  | 6:00  | 6:00  | 3:00 <sup>1</sup> | 6:00  | 54:00 |
| <b>June 2022</b>   | 9:00                            | 6:00 | 6:00 | 6:00 | 6:00 | 6:00  | 6:00  | 6:00  | 9:00              | 6:00  | 66:00 |
| <b>July 2022</b>   | 6:00                            | 6:00 | 6:00 | 6:00 | 6:00 | 6:00  | 6:00  | 6:00  | 6:00              | 6:00  | 60:00 |
| <b>August 2022</b> | 6:00                            | 6:00 | 6:00 | 6:00 | 6:00 | 6:00  | 6:00  | 6:00  | 6:00              | 6:00  | 60:00 |

<sup>1</sup> For VP 4 and VP 13, one watch (3 hours) of the 6-hour May 2022 quota was instead carried out on 09 June 2022.

**Table 5. Summary of VP survey effort in the 2024/25 non-breeding season**

| Month                 | Number of hours of survey (h:m) |      |       |      |       |       |       |       |       |       | Total |
|-----------------------|---------------------------------|------|-------|------|-------|-------|-------|-------|-------|-------|-------|
|                       | VP 4                            | VP 5 | VP 6  | VP 7 | VP 8  | VP 10 | VP 11 | VP 12 | VP 13 | VP 14 |       |
| <b>September 2024</b> | 6:00                            | 6:00 | 6:00  | 6:00 | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 6:00  | 60:00 |
| <b>October 2024</b>   | 12:00                           | 0:00 | 12:00 | 9:00 | 12:00 | 12:00 | 6:00  | 6:00  | 2:00  | 9:00  | 80:00 |

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|                      |      |      |      |      |      |      |      |      |      |      |       |
|----------------------|------|------|------|------|------|------|------|------|------|------|-------|
| <b>November 2024</b> | 6:00 | 0:00 | 0:00 | 3:00 | 6:00 | 0:00 | 0:00 | 3:00 | 0:00 | 0:00 | 18:00 |
|----------------------|------|------|------|------|------|------|------|------|------|------|-------|

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The survey conditions/details for all VP surveys are presented in Tables A.1 to A.4 in Annex A. Several of the VPs from the 2019/20 surveys were changed slightly in position, however, in most cases access permission was later withdrawn, and those VPs were then returned to the previous location. The location changes of the VPs were slight and will have a negligible effect on the results, therefore only the original positions are shown on Volume 2, Figure 8.11.

#### Goose foraging and roosting survey

Fortnightly goose foraging / roosting surveys took place from the end of September and thereafter twice per month from October to February, inclusive, in all three non-breeding survey seasons (although only until November in the 2024/25 season).

The foraging surveys took place during the day, they covered the Proposed Route Corridor plus a minimum 500m buffer in 2021/22 and 2024/25 and covered the entire Strategic Corridor in 2019/20. The survey area was therefore much larger in 2019/20, as shown in Volume 2, Figure 8.10. Areas where grassland was particularly tall and dense, and therefore unlikely to be utilised by foraging geese, were mapped during the early foraging surveys in order to concentrate survey effort on more suitable habitat. Geese favour shorter improved grassland, and sometimes cropped arable fields. Any observed geese (or other notable species) were recorded, including any incidentally-recorded flights.

Goose roosting surveys were often carried out in the evenings, taking advantage of goose observations during foraging surveys in the day. This provides several benefits: a) geese located during foraging surveys in the day could be watched in the evening, to verify direction flown to roost (and also, to determine whether birds appeared to remain in the foraging field to roost); b) placement of surveyors for roosting surveys could be informed by the locations of foraging geese, anticipating likely flight directions; and, c) the numbers of foraging birds counted during the day could inform roost counts (conditions are often quite dark when geese fly into roost sites, such that counts at roosts can be very difficult and known numbers of foraging flocks are often more accurate).

The roosting surveys included Fannyside Lochs / Fannyside Muir, which are traditional roost sites of bean goose but frequently not utilised in favour of other locations, notably Darnrig Moss. Darnrig Moss is not publicly-accessible and is also outside the survey area to the east, and was therefore not directly surveyed. In the 2019/20 non-breeding season, the area around St Helen's Loch and a substantial waterbody within the former coal mining site near Greengairs were included in roosting surveys.

In 2019/20 the above method of anticipating which roost foraging geese would fly to was utilised and therefore there was not a systematic approach in terms of specific numbers of roost surveys undertaken at the possible roost locations each month. Whereas, in 2021/22 and 2024/25 fortnightly surveys were entirely focussed on the Fannyside Lochs / Fannyside Muir roosts due to the narrowing of the corridor for the New Build Overhead Line.

#### General breeding bird surveys

In areas of mixed or broadleaved woodland, semi-improved grassland or scrub, a modified version of the Common Bird Census (CBC)<sup>9</sup> was used to survey the breeding bird assemblage within the Proposed Route Corridor plus a 125m buffer. In areas of blanket bog / heath within the Proposed Route Corridor plus a 500m buffer, a modified version of the Brown and Shepherd<sup>10</sup> methodology for surveying upland waders was followed. During the survey for moorland breeding birds, all bird species including passerines, were recorded, not just upland waders.

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<sup>9</sup> Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S. (2000). *Bird Census Techniques* (2nd Edition). Academic Press, London.

<sup>10</sup> Brown, A. F. and Shepherd, K.B. (1993). A method for censusing upland breeding waders. *Bird Study* 40, pp 189 – 195.

Five general breeding bird survey visits were made between April and July 2022, inclusive, as detailed in Table 6, below. Five visits was considered an adequate survey effort, and is common practice, rather than the ten visits prescribed by CBC methodology, to provide a reasonable indication of the numbers of breeding birds in the survey area, to determine the breeding bird assemblage and to identify species which may potentially be affected by the New Build Overhead Line. All surveys were carried out during favourable weather conditions with mostly light and occasionally moderate winds (all below Beaufort force 5), with no heavy precipitation and mostly good visibility. Surveys were carried out in the morning, avoiding the period immediately after sunrise.

The survey involved walking to within 50m of all parts of the survey area where there was dense woodland or scrub (as far as safe access was possible), and to within 100m of more open areas of habitat to record the birds present and their behaviour. A pre-determined transect route was walked by experienced ornithologists which allowed all parts of the survey area to be approached to within 50-100m, depending upon the habitat and degree of openness. Due to the length of the Proposed Route Corridor, the survey area was split into four transects. All four transects were walked once per visit. The transect routes are shown on Volume 2, Figure 8.12.

Binoculars were used to scan all parts of the survey area and surveyors included regular stops to listen for singing or calling birds.

All of the birds observed, either by sight or sound, their locations and activity / behaviour were recorded on 1:10,000 scale OS field maps using standard British Trust for Ornithology (BTO) species codes and behaviour notation<sup>11</sup>.

**Table 6. General breeding bird survey details**

| Survey visit | Survey date   | Transect number | Time of sunrise | Start time | End time | Weather conditions                                                                                           |
|--------------|---------------|-----------------|-----------------|------------|----------|--------------------------------------------------------------------------------------------------------------|
| 1            | 20 April 2022 | 1               | 06:00           | 06:45      | 11:30    | Force 2 easterly wind, 1/8 cloud, no precipitation, 2-13°C, excellent visibility                             |
|              | 21 April 2022 | 3               | 05:57           | 06:55      | 10:20    | Force 4 easterly wind, 8/8 cloud, no precipitation, 5-10°C, excellent visibility                             |
|              | 21 April 2022 | 4               | 05:57           | 07:25      | 10:35    | Force 3-4 north-easterly wind, 8/8 cloud, no precipitation, 5-10°C, excellent visibility                     |
|              | 22 April 2022 | 2               | 05:55           | 07:00      | 10:45    | Force 2-4 north-easterly wind, 0-1/8 cloud, bright and sunny, no precipitation, 7-11°C, excellent visibility |
| 2            | 17 May 2022   | 1               | 04:59           | 06:00      | 11:15    | Force 1-2 south-easterly wind, 8/8 cloud, recent rain                                                        |

<sup>11</sup> Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods: a manual of techniques for key UK species. The Royal Society for the Protection of Birds, Sandy.

|   |              |   |       |       |       |                                                                                                         |
|---|--------------|---|-------|-------|-------|---------------------------------------------------------------------------------------------------------|
| 3 |              |   |       |       |       | but no precipitation, 9-15 °C, foggy and poor visibility at start but gradually cleared and good at end |
|   | 18 May 2022  | 3 | 05:00 | 06:00 | 13:00 | Force 3-4 south-westerly wind, 2-8/8 cloud, no precipitation, 11-15 °C, good visibility                 |
|   | 19 May 2022  | 2 | 04:56 | 06:00 | 11:00 | Force 4-1 south-westerly wind, 7-2/8 cloud, no precipitation, 11-14 °C excellent visibility             |
|   | 27 May 2022  | 4 | 04:45 | 05:50 | 11:30 | Force 2-4 westerly wind, 7-5/8 cloud, no precipitation, 9-13 °C, good visibility                        |
|   | 30 May 2022  | 1 | 04:40 | 05:45 | 11:50 | Force 1 westerly wind, 8-7/8 cloud, no precipitation, 8-12 °C, good visibility                          |
|   | 01 June 2022 | 2 | 04:39 | 05:45 | 10:50 | Force 1-3 north easterly wind, 8-2/8 cloud, no precipitation, 8-13 °C, good visibility                  |
|   | 06 June 2022 | 3 | 04:34 | 05:35 | 12:00 | Force 1-2 easterly wind, 8-7/8 cloud, no precipitation, 8-14 °C, visibility started poor then cleared   |
| 4 | 07 June 2022 | 4 | 04:33 | 05:35 | 11:55 | Force 1-3 easterly wind, 7-8/8 cloud, no precipitation, 8-15 °C, good visibility                        |
|   | 14 June 2022 | 1 | 04:30 | 06:00 | 09:30 | Force 3 south-westerly wind, 8/8 cloud, no precipitation, 13 °C, good visibility                        |
|   | 14 June 2022 | 2 | 04:30 | 06:10 | 10:00 | Force 2 south-westerly wind, 8/8 cloud, no precipitation, 11-14 °C, good visibility                     |
|   | 15 June 2022 | 3 | 04:30 | 05:45 | 09:20 | Force 1-2 south-westerly wind, 4-1/8 cloud, no precipitation, 12-13 °C, good visibility                 |
|   | 15 June 2022 | 4 | 04:30 | 06:00 | 10:10 | Force 1-2 southerly wind, 6-2/8 cloud, no precipitation, 11-15 °C, good visibility                      |
| 5 | 04 July 2022 | 1 | 04:36 | 06:25 | 10:35 | Force 4-6 south-westerly wind, 7-2/8 cloud, no                                                          |

|                 |   |  |       |       |       |                                                                                                                |
|-----------------|---|--|-------|-------|-------|----------------------------------------------------------------------------------------------------------------|
|                 |   |  |       |       |       | precipitation, sunny spells,<br>11-15 °C, good visibility                                                      |
| 05 July<br>2022 | 2 |  | 04:37 | 06:30 | 11:00 | Force 1-4 westerly wind, 8-<br>2/8 cloud, no precipitation,<br>sunny spells, 11-16 °C, good<br>visibility      |
| 07 July<br>2022 | 3 |  | 04:40 | 06:30 | 11:40 | Force 2-4 westerly wind, 6-<br>1/8 cloud, no precipitation,<br>sunny, 13-18 °C, good<br>visibility             |
| 11 July<br>2022 | 4 |  | 04:45 | 06:45 | 11:33 | Force 1-2 south-westerly<br>wind, 8-5/8 cloud, no<br>precipitation, sunny spells,<br>13-21 °C, good visibility |

#### Barn owl building inspections

Survey for barn owl followed best practice methodology<sup>12</sup>.

Due to the length of the Proposed Route Corridor, no specific walkover was carried out to search for trees or buildings with barn owl suitability. However, during the general breeding bird surveys, and supplemented by a variety of other ecological surveys, the Proposed Route Corridor was thoroughly covered and any trees with potential suitability to be used by barn owls for nesting would have been recorded (only very mature trees with extensive damage resulting in large cavities have the potential for use as barn owl breeding sites). Furthermore, the majority of woodland within the Proposed Route Corridor plus surrounding 200m survey buffer is unsuitable for barn owl, comprising dense conifer plantation or young broadleaved plantation.

A combination of searching aerial imagery and notes made by surveyors during the general breeding bird surveys was used to identify all buildings with suitability for barn owl. An internal inspection of all suitable buildings within the survey area was carried out on 25 August 2022. The internal inspection comprised a visual search of the buildings externally and internally from ground level, except where access restrictions applied (see limitations section). Surveyors searched for pellets, droppings (white 'splashes'), feathers and any suitable lofts or ledges.

#### Black grouse lek surveys

Survey for lekking (displaying) black grouse followed the methods described for this species in Bird Monitoring Methods<sup>13</sup>. Survey was carried out within approximately one hour of dawn to identify and locate the number and distribution of leks within the Proposed Route Corridor plus a 1km buffer.

The usual survey quota requires at least two visits in April / May but, as discussed further in Section 1.3, there were no black grouse records within 1km of the Proposed Route Corridor

<sup>12</sup> Shawyer, C. (2011). Barn Owl *Tyto alba* Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting. IEEM, Winchester.

<sup>13</sup> Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods: a manual of techniques for key UK species. The Royal Society for the Protection of Birds, Sandy.

and during the initial black grouse survey and general breeding bird surveys it became apparent that there was little suitable habitat for breeding black grouse within the survey area. Therefore, only one black grouse lekking survey was carried out, the details of this survey are shown in Table 7.

**Table 7. Black grouse lek survey details**

| Date          | Time of sunrise | Start time | End time | Weather conditions                                         |
|---------------|-----------------|------------|----------|------------------------------------------------------------|
| 08 April 2022 | 06:27           | 05:30      | 07:30    | Force 0-2 westerly wind, 2/8 cloud, no precipitation, -1°C |

The survey was conducted in suitable weather conditions and involved the surveyor driving around the survey area to areas with potentially suitable habitat, listening for lekking black grouse and scanning from suitable vantage point locations with binoculars.

#### Territory analysis

The results of the general breeding bird surveys were used to determine breeding activity and to estimate territorial locations of protected and notable species. Species not considered to be notable (e.g. those on the Amber or Green Lists of BoCC and not meeting any of the other criteria for notable species) were not included in the territory analysis.

Esri ArcGIS software was used to digitise and collate all observations made during the general breeding bird survey visits. One or more records of territorial behaviour (e.g. singing, displaying or alarming, or the finding of nests or dependent young) were assumed to indicate a possible, probable or confirmed breeding territory, in accordance with BTO evidence codes, as shown in Table 8 below. Obvious clusters of records were used to help identify breeding territories, taking into consideration the relevant ecologies of the species in question and using professional judgement.

**Table 8. Breeding evidence, adapted from BTO Bird Atlas survey<sup>14</sup>**

| Non-breeding                                                                                                           | Possible breeding                                                                                                                     | Probable breeding                                                                                                                                                                                                                                                                                                       | Confirmed breeding                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flying over. Species observed but suspected to be still on migration. Species observed but suspected to be a summering | Species observed in breeding season in suitable nesting habitat. Singing male present (or breeding calls heard) in breeding season in | Pair observed in suitable nesting habitat in breeding season. Registration of territorial behaviour (e.g. song) on at least two different days, a week or more apart at the same place, or many individuals on one day. Courtship and display (judged to be in or near potential habitat). Visiting probable nest site. | Distraction display or injury feigning. Used nest or eggshells (occupied or laid within period of survey). Recently fledged young or downy young. Adults entering or leaving nest in circumstances |

<sup>14</sup> <https://www.bto.org/get-involved/volunteer/resources/guidance-for-volunteer-fieldworkers#essentials>

|              |                   |                                                                                                                                                                                                                   |                                                                                                                                                                 |
|--------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| non-breeder. | suitable habitat. | Agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby.<br>Brood patch on adult examined in hand, suggesting incubation.<br>Nest building or excavating nest hole. | indicating occupied nest, or adults seen incubating.<br>Adult carrying faecal sac or food for young.<br>Nest containing eggs.<br>Nest with young seen or heard. |
|--------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Limitations

No specific raptor walkover surveys were carried out due to the difficulty of walking the entire Proposed Route Corridor, particularly in areas of dense woodland. This is not considered a significant limitation as the other surveys, in particular the breeding season VP surveys and general breeding bird surveys, are highly likely to have detected any raptor species using the Proposed Route Corridor and surrounding area (in this respect, note that only a very small number of flights by specially-protected and/or notable raptors were recorded during the course of all VP surveys, and no specially-protected or notable raptors were observed during the general breeding bird surveys). With regard to owls, the Proposed Route Corridor was also walked at night during the breeding season for bat activity transect surveys and incidental observations of owl were recorded during those surveys.

One raptor species in particular, goshawk *Accipiter gentilis*, is difficult to survey due to their preferred breeding habitat of dense conifer plantation. However, the VP surveys recorded goshawk display flights over certain areas of plantation, allowing an estimation of potential breeding territories within the Proposed Route Corridor and surrounding area.

During the 2019/20 non-breeding survey period, VP 9 surveys took place from a known core path intended to provide the public reasonable land access. In 2019, access constraints limited surveys in October and November 2019 and surveys were discontinued from December 2019 onwards. As of the 2021/22 non-breeding survey season, the road was blocked by a padlocked gate, so VP 9 was not accessible to surveyors. The absence of VP 9 in the second non-breeding season and the 2022 breeding season means that flight activity within the area covered by its viewshed could not be surveyed. In the limited survey effort of 2019, only one flight and one ground observation were noted from VP9: 94 bean geese leaving Fannyside Loch East and 28 bean geese noted close to VP 9. Therefore, whilst some additional bean goose observations might have been made from VP 9 during the 2021/22 non-breeding and breeding seasons had this location been accessible, Fannyside Lochs are much better covered by other nearer VPs, over 97.5% of bean goose flights recorded in 2019 were from other VPs (particularly VP 4 and VP 5, accounting for 85% of flights), and the numerous ground observations of bean geese in 2019 were concentrated by far in the Jawcraig / Slamannan and Fannyside Lochs areas. This is consistent with previous knowledge of bean geese activity in the area being centred around these locations. Consequently, although additional bean goose flights may have been recorded had VP 9 been accessible for survey, those flights would likely have been a very small proportion of the total flights recorded from all VP locations. Notwithstanding possible continued but likely rare occurrence of bean geese near VP9, it is therefore concluded that the omission of VP9 does not significantly detract from the reliability of the results of the bird surveys.

Due to a lack of access permission, it was not possible to complete the full complement of survey hours from VP14 in the early part of the 2021/22 non-breeding season. No survey hours were completed at this VP in September 2021. Access was granted to VP 14 at the end of October, but due to poor weather conditions, only three hours were able to be completed in October instead of the intended twelve. Nevertheless, over two thirds of the hours (33 of 48) were completed for VP 14 over the course of the 2021/22 non-breeding season. Given the completion of these hours for VP14 combined with the full complement of hours for other VPs (noting in particular that VP13 is relatively near and faces VP14), and, regarding bean goose, that VP14 is beyond the western limit of typical bean goose activity, this is not considered to significantly limit the overall findings of the bird surveys carried out for the New Build Overhead Line.

In the 2024/25 non-breeding season the first visit of surveys at VP 5 was complete but following this, access was denied by the landowner so no further surveys at VP 5 were completed. All hours of survey were completed for the first month (September) but the hours were then reduced in October and terminated in November (as detailed in the consultation section above).

Not all goose flights are identifiable to species, and separation of bean goose and pink-footed goose *Anser brachyrhynchus* cannot always be achieved, even by capable observers with prior experience of bean goose. The reliability of field criteria depends on flight angle, lighting, and distance. Vocalisations of pink-footed goose are often higher-pitched than bean goose, but lower-pitched bean geese calls can resemble those of greylag goose *Anser anser*. Upper-wing colouration, darker in bean goose, is a useful feature but not always discernible. Bill and leg colouration differences are discernible, with a scope, at ranges of up to 2km in excellent lighting. However, this can be impossible to distinguish even at very close range in poor light. The bill and neck of bean goose are typically longer than in pink-footed goose, but evaluating proportions can be adversely affected by viewing angle. Where confident separation of bean goose and pink-footed goose was not possible owing to these factors, but identification as one of these was certain, they were recorded as 'bean goose / pink-footed goose'. Where identity was less certain, they were recorded as 'possible bean goose'. Where identification was least certain, for example through long-distance viewing with no audible calls, the official BTO code of 'UO' (unidentified goose) was employed.

The experience of BGAG is that bean geese tend to fly at lower heights than pink-footed geese. This is because bean geese are typically commuting short distances between foraging and roosting areas, whilst pink-footed geese are more often commuting (or migrating) longer distances, thus geese flying well above PCH are more likely to be the latter. The recorded flights of bean geese and pink-footed geese in the 2019/20 and 2021/22 non-breeding season tended to concur with this, with the vast majority of bean goose flights being recorded below 50m, whereas a much greater proportion of pink-footed goose flights were entirely over 50m. Consequently, there is a high probability that any low-flying geese recorded as 'bean goose / pink-footed goose' within the limited known bean goose range at Slamannan were bean goose.

Identification of gulls was also made difficult by conditions such as low light. In these circumstances, birds were on occasion recorded as 'large gulls'. In the results, those

recorded as 'large gulls' were divided evenly between the most likely large gull species (e.g. herring gull *Larus argentatus* and lesser black-backed gull *Larus fuscus*).

Large numbers of birds (e.g. flocks) were estimated in the field, with records rounded off to the nearest ten or 100.

Weather conditions during VP surveys may have on occasion been sub-optimal (e.g. heavy rain showers), but this was not a significant survey constraint.

During the barn owl building inspections, one farm could not be surveyed due to a lack of access. The outbuildings at Arns Farmhouse, (B4, shown on Volume 2, Figure 8.10) were originally surveyed with binoculars from a distance and externally appeared suitable for barn owl. During the barn owl survey on 25 August 2022 surveyors knocked on the door of this property but there was no answer. A letter was then sent to this address but the post office returned the letter with the reasoning "addressee gone away". AECOM was not provided with any further contact details for this address. These buildings are over 170m from the Site and as such will not be directly affected. The wider of presence of barn owls using suitable habitats within the Site has been assessed. As such the lack of access to these building is not considered to a constraint to the impact assessment.

## 1.3 Results

### Desk study

#### Notable species records

TWIC and GMBRC returned a large number of records of birds within 1km of the Site. These included 47 species considered to be notable (as defined in Section 1.2). The majority were also recorded during field survey and are discussed under the field survey results, but six were not and these are discussed below. RSPB returned no records within 1km of the Site.

Records of twite *Linaria flavirostris*, grey partridge *Perdix perdix*, fieldfare *Turdus pilaris* and redwing *Turdus iliacus* were all from the non-breeding season. Although these species may all occur in the vicinity of the New Build Overhead Line during the non-breeding season, these species tend to move over wide areas when not breeding with no likely special dependency on the Site in winter, and moreover none are considered sensitive to impacts from the New Build Overhead Line when not breeding.

Several records of kingfisher *Alcedo atthis* were returned by TWIC in the vicinity of River Carron which lies over 500m north of the Site and is likely to have suitability for this species to breed. No suitable habitat for kingfisher was noted within the Site and this species was not recorded during the five breeding bird survey visits carried out in the 2022 breeding season, kingfisher is therefore not currently considered to breed within the Site.

A single record of spotted flycatcher *Muscicapa striata* was returned from May 2019. The provided grid reference was only to a resolution of 1km and as such the desk study record may well have been from beyond the Site. Regardless, this species was not recorded during the five breeding bird survey visits carried out in the 2022 breeding season, and they are not therefore currently considered to breed in the Site.

### Field survey

#### Vantage point surveys – non-breeding season

The results of VP surveys carried out in the 2019/20, 2021/22 and 2024/25 non-breeding seasons are set out under the species headings below. Across all non-breeding seasons, most recorded flights were of geese.

Volume 2, Figures 8.15 and 8.18 show goose flights from the 2019/20 season, Volume 2, Figure 8.19 shows non-goose flights from the 2019/20 season, Volume 2, Figures 8.16 and 8.20 show goose flights from the 2021/22 season, Volume 2, Figure 8.21 shows non-goose flights from the 2021/22 season, Volume 2, Figure 8.17 and 8.22 show goose flights from the 2024/25 season and Volume 2, Figure 8.23 shows non-goose flights from the 2024/25 season. An overview of the areas of bean goose activity across all non-breeding seasons is shown on Volume 2, Figure 8.13.

Table 9 provides a summary of target species flights across all VPs for both non-breeding seasons. Geese, as the principal concern, are listed first, and then other target species are listed thereafter. Across all VPs in 2019/20, a total of 345 flights were recorded involving 21

species and 18,591 ‘individuals’<sup>15</sup>, in 2021/22, a total of 542 flights were recorded involving 31 species and 20,329 individuals, in 2024/25 a total of 71 flights were recorded involving 15 species and 2,001 individuals. Across all VPs in 2019/20, 272 flights by goose species were recorded, involving a total of 17, 982 individuals, in 2021/22, 329 flights by goose species were recorded, involving a total of 18,259 individuals and in 2024/25, 49 flights by goose species were recording involving a total of 1,866 individuals.

**Table 9. Summarised flights of target species across all VPs for the 2019/20, 2021/22 and 2024/25 non-breeding seasons**

| Species                                   | Non-breeding season | No. flights | Min. flock size | Max. flock size | Total no. individuals in all flights | No. of flights at PCH | No. of flights at PRC |
|-------------------------------------------|---------------------|-------------|-----------------|-----------------|--------------------------------------|-----------------------|-----------------------|
| Bean goose                                | 2019/20             | 42          | 1               | 240             | 1,341                                | 27                    | 0                     |
|                                           | 2021/22             | 49          | 1               | 80              | 1,260                                | 39                    | 0                     |
|                                           | 2024/25             | 6           | 1               | 50              | 110                                  | 5                     | 1                     |
| Pink-footed goose / bean goose            | 2019/20             | 23          | 1               | 150             | 721                                  | 13                    | 1                     |
|                                           | 2021/22             | 9           | 1               | 250             | 362                                  | 9                     | 1                     |
| Possible bean goose                       | 2021/22             | 3           | 10              | 40              | 85                                   | 2                     | 0                     |
| Unidentified goose                        | 2019/20             | 30          | 1               | 200             | 1,373                                | 12                    | 0                     |
|                                           | 2021/22             | 29          | 2               | 1,000           | 2,289                                | 24                    | 6                     |
|                                           | 2024/25             | 5           | 10              | 50              | 145                                  | 5                     | 1                     |
| Pink-footed goose                         | 2019/20             | 143         | 1               | 1,000           | 13,857                               | 68                    | 20                    |
|                                           | 2021/22             | 194         | 1               | 900             | 13,491                               | 124                   | 43                    |
|                                           | 2024/25             | 23          | 7               | 150             | 1,337                                | 19                    | 9                     |
| Barnacle goose<br><i>Branta leucopsis</i> | 2021/22             | 11          | 1               | 75              | 337                                  | 3                     | 0                     |
| Greylag goose / pink-footed goose         | 2019/20             | 1           | 100             | 100             | 100                                  | 0                     | 0                     |
| Greylag goose                             | 2019/20             | 8           | 3               | 65              | 232                                  | 5                     | 1                     |
|                                           | 2021/22             | 23          | 1               | 105             | 402                                  | 15                    | 8                     |
|                                           | 2024/25             | 3           | 22              | 100             | 145                                  | 3                     | 0                     |
|                                           | 2019/20             | 26          | 2               | 54              | 386                                  | 15                    | 5                     |

<sup>15</sup> The term ‘individual’ is used to provide an indication of the level of flight activity by a particular species. However, the term ‘individual’ when used in this capacity does not necessarily mean different birds. Rather, ‘individual’ is used to illustrate the number of birds recorded in a single flight observation. For example, a flight by two birds would represent one flight, involving two individuals. The same two birds recorded together later in the same survey would represent another one flight, involving two individuals. The total for that survey would therefore be two flights, involving four individuals, even though only two different birds were present. In summary, the number of ‘individuals’ is not necessarily the number of different birds (often it will be greater) but is an indication of the level of flight activity by a species.

|                                             |         |    |    |    |     |    |    |
|---------------------------------------------|---------|----|----|----|-----|----|----|
| Canada goose<br><i>Branta canadensis</i>    | 2021/22 | 32 | 1  | 50 | 429 | 22 | 5  |
|                                             | 2024/25 | 12 | 2  | 25 | 129 | 6  | 0  |
| Possible Canada goose                       | 2021/22 | 1  | 6  | 6  | 6   | 1  | 1  |
| Whooper swan<br><i>Cygnus cygnus</i>        | 2019/20 | 5  | 3  | 21 | 38  | 5  | 0  |
|                                             | 2021/22 | 6  | 3  | 9  | 32  | 5  | 1  |
|                                             | 2024/25 | 1  | 4  | 4  | 4   | 1  | 0  |
| Swan species                                | 2021/22 | 1  | 2  | 2  | 2   | 1  | 1  |
| Mute swan<br><i>Cygnus olor</i>             | 2021/22 | 1  | 3  | 3  | 3   | 1  | 0  |
| Mallard <i>Anas platyrhynchos</i>           | 2019/20 | 26 | 1  | 9  | 67  | 20 | 2  |
|                                             | 2021/22 | 42 | 1  | 40 | 169 | 31 | 12 |
|                                             | 2024/25 | 4  | 1  | 2  | 7   | 3  | 1  |
| Teal <i>Anas crecca</i>                     | 2019/20 | 1  | 1  | 1  | 1   | 0  | 0  |
|                                             | 2021/22 | 1  | 45 | 45 | 45  | 1  | 1  |
|                                             | 2024/25 | 1  | 1  | 1  | 1   | 0  | 0  |
| Goosander<br><i>Mergus merganser</i>        | 2019/20 | 4  | 1  | 2  | 5   | 4  | 1  |
|                                             | 2021/22 | 3  | 2  | 2  | 6   | 3  | 2  |
| Duck species                                | 2021/22 | 2  | 2  | 7  | 9   | 0  | 0  |
| Goldeneye<br><i>Bucephala clangula</i>      | 2021/22 | 1  | 3  | 3  | 3   | 0  | 0  |
| Wigeon <i>Anas penelope</i>                 | 2021/22 | 1  | 1  | 1  | 1   | 1  | 0  |
| Grey heron <i>Ardea cinerea</i>             | 2021/22 | 16 | 1  | 6  | 24  | 10 | 1  |
|                                             | 2024/25 | 4  | 1  | 1  | 4   | 3  | 1  |
| Lapwing <i>Vanellus vanellus</i>            | 2019/20 | 10 | 6  | 70 | 324 | 9  | 1  |
|                                             | 2021/22 | 19 | 1  | 90 | 785 | 16 | 1  |
| Golden plover<br><i>Pluvialis apricaria</i> | 2019/20 | 3  | 1  | 70 | 116 | 1  | 0  |
|                                             | 2021/22 | 15 | 1  | 65 | 478 | 9  | 0  |
|                                             | 2024/25 | 3  | 8  | 85 | 108 | 1  | 0  |
| Snipe <i>Gallinago gallinago</i>            | 2019/20 | 6  | 1  | 12 | 38  | 5  | 0  |
|                                             | 2021/22 | 20 | 1  | 9  | 46  | 13 | 1  |
|                                             | 2024/25 | 2  | 1  | 1  | 2   | 0  | 0  |
| Curlew <i>Numenius arquata</i>              | 2019/20 | 7  | 1  | 2  | 9   | 5  | 0  |
|                                             | 2021/22 | 1  | 1  | 1  | 1   | 1  | 0  |

|                                                   |         |    |   |   |    |    |   |
|---------------------------------------------------|---------|----|---|---|----|----|---|
| Woodcock<br><i>Scolopax rusticola</i>             | 2021/22 | 8  | 1 | 2 | 10 | 0  | 0 |
| Hen harrier <i>Circus cyaneus</i>                 | 2019/20 | 1  | 1 | 1 | 1  | 0  | 0 |
|                                                   | 2021/22 | 26 | 1 | 2 | 27 | 12 | 1 |
|                                                   | 2024/25 | 2  | 1 | 1 | 2  | 1  | 0 |
| Peregrine <i>Falco peregrinus</i>                 | 2019/20 | 3  | 1 | 1 | 3  | 3  | 2 |
|                                                   | 2021/22 | 14 | 1 | 2 | 15 | 11 | 4 |
| Goshawk                                           | 2021/22 | 8  | 1 | 1 | 8  | 8  | 1 |
| Goshawk /<br>sparrowhawk                          | 2019/20 | 2  | 1 | 1 | 2  | 2  | 1 |
| Red kite <i>Milvus milvus</i>                     | 2024/25 | 2  | 1 | 3 | 4  | 2  | 0 |
| Merlin <i>Falco columbarius</i>                   | 2019/20 | 3  | 1 | 1 | 3  | 1  | 0 |
|                                                   | 2021/22 | 1  | 1 | 1 | 1  | 0  | 0 |
|                                                   | 2024/25 | 2  | 1 | 1 | 2  | 0  | 0 |
| Osprey <i>Pandion haliaetus</i>                   | 2024/25 | 1  | 1 | 1 | 1  | 1  | 0 |
| White-tailed eagle<br><i>Haliaeetus albicilla</i> | 2019/20 | 1  | 1 | 1 | 1  | 0  | 0 |
| Barn owl                                          | 2021/22 | 1  | 1 | 1 | 1  | 0  | 0 |
| Cormorant<br><i>Phalacrocorax carbo</i>           | 2019/20 | 1  | 1 | 1 | 1  | 0  | 0 |
| Gannet <i>Morus bassanus</i>                      | 2021/22 | 1  | 1 | 1 | 1  | 1  | 0 |

### Bean goose

In 2019/20, bean goose flights were predominantly at heights below 70m with none of the 42 flights recorded entirely above 70m and fifteen flights entirely below 10m. Therefore, 27 of the 42 flights were at PCH but none of the flights were at PRC due to their location. However, one flight of a flock of eight possible bean geese (identified as being either pink-footed geese or bean geese) at PRC was recorded, flying from Fannyside Loch at dawn and crossing the New Build Overhead Line. The largest recorded flock of bean geese during these surveys was seen 1km north of Slammanan, 4km east of the New Build Overhead Line on 28 November 2019, estimated at 240 birds. Their identification was inferred - mainly from the fact that they flew towards a regular roosting location at Darnrig Moss at low altitude, seven minutes after sunset, although it is possible that some of these birds were pink-footed geese. Out of the 41 VP bean goose flights, only six were seen around Garbethill Muir and Fannyside Lochs. Over the entire season, the largest proportion of bean goose activity was recorded in fields to the north-west of Slamannan in which bean geese often forage and at Jawcraig where birds can be seen flying over to the Darnrig Moss roost. All flightlines were recorded to the south-east of

the New Build Overhead Line except one which was a flock of 28 birds flushed just south of Castlecary High Wood, 500m north-west of the New Build Overhead Line. All 2019/20 bean goose flights are shown on Volume 2, Figure 8.15.

In 2021/22 bean goose flights were mostly recorded around Fannyside Lochs, Jawcraig, and north of Slamannan village. None of the 49 flights of bean geese were entirely above 70m and ten were entirely below 10m. All other bean goose flights were recorded to fly at PCH. As with the 2019/20 results, no bean geese were recorded flying at PRC and all flights were to the southeast of the New Build Overhead Line. One flight of a single possible bean goose (identified as being either pink-footed goose or bean goose) at PRC was recorded, flying over Greengairs and then crossing the New Build Overhead Line, it was however noted that it sounded more like pink-footed goose. Bean geese were recorded throughout the survey period, however, in September 2021 and February 2022, at either end of the survey period, only one flight of bean goose was recorded indicating that the bean geese were only just starting to arrive (September 2021) or had mostly left (February 2022). Bean goose flocks observed in flight ranged from around 80 individuals down to single birds. Of all flights, 24% comprised 40 individuals or more. All bean goose flights in the 2021/22 non-breeding season are shown on Volume 2, Figure 8.16.

In 2024/25 five of the six flights were at PCH, one of which was at PRC. The flight at PRC passed just east of the waterbodies at Loch Green, parallel to the New Build Overhead Line but never crossing it, partially within the 100m corridor. All other 2024/25 flights were recorded at Fannyside and Jawcraig. All bean goose flights in the 2024/25 non-breeding season are shown on Volume 2, Figure 8.17.

The vast majority of all bean goose flights across all non-breeding survey seasons were recorded around Fannyside Lochs and Jawcraig / Darnrig Moss, with a smaller number of flights over Garbethill Muir. One anomaly to this pattern was a flight over Castlecary High Woods. This flight was to the north-west of the New Build Overhead Line and all other confirmed bean goose flights were to the south-east. An overview of the main bean goose activity area across all non-breeding seasons, around Jawcraig and Fannyside Lochs, is shown on Volume 2, Figure 8.13.

### **Pink-footed goose**

In 2019/20, a total of 143 pink-footed goose flights were recorded, involving a total of 13,857 individuals. The majority of the flights were in the north and southeast parts of the surveyed area for pink-footed geese, near High Bonnybridge in the north-west and around Fannyside Muir, to the southeast of the New Build Overhead Line. A total of 68 of the 143 recorded flights (i.e. less than half) were at PCH with only 20 at PRC. All pink-footed goose flights in the 2019/20 non-breeding season are shown on Volume 2, Figures 8.18.

In 2021/22, pink-footed goose was the most commonly recorded target species by VP surveys with a total of 194 flights, involving a total of 13,491 individuals. Pink-footed goose flights were mostly recorded to the south of Bonnybridge and west of Slammanan village, with many flights around Jawcraig and to Fannyside Lochs. There was also a cluster of flights to the east of Cumbernauld. A total of 124 of the 194 recorded flights were at PCH but only 43 were at PRC. All pink-footed goose flights in the 2021/22 non-breeding season are shown on Volume 2, Figure 8.20.

In 2024/2025, 23 pink-footed goose flights were recorded, involving a total of 1,337 individuals. Nineteen flights were at PCH and only nine of those at PRC. As in previous years, the majority of these flights were around High Bonnybridge and Fannyside Muir. All pink-footed goose flights in the 2024/25 non-breeding season are shown on Volume 2, Figure 8.22.

Across all non-breeding seasons, pink-footed goose was the most common target species with flights throughout the season and recorded from all VPs. All survey seasons included a significant number of flights throughout the surveyed area, with several flights across the New Build Overhead Line, particularly those in the north around High Bonnybridge.

### Other goose species

In 2019/20, Canada geese were seen occasionally throughout the surveyed area, with 26 flights totalling 386 individuals and only five of the flights at PRC. There were eight flights of greylag goose, totalling 232 individuals and only one was at PRC. All 2019/20 non-breeding season goose flights (excluding bean goose) are shown on Volume 2, Figure 8.18.

In 2021/22, Canada geese were recorded making a total of 32 flights involving a total of 429 individuals with five of the flights at PRC. Greylag geese were recorded in flight 23 times, totalling 402 individuals (eight at PRC). Barnacle geese were mostly recorded around Fannyside Lochs with 11 flights totalling 337 individuals, none of which were at PRC. All 2021/22 non-breeding season goose flights (excluding bean goose) are shown on Volume 2, Figure 8.20.

In 2024/25, Canada geese were recorded in flight twelve times, totalling 129 individuals, none of which were at PRC. There were three flights of greylag geese totalling 145 individuals, none at PRC. All 2024/25 non-breeding season goose flights (excluding bean goose) are shown on Volume 2, Figure 8.22.

In all non-breeding seasons, greylag and Canada geese were mostly recorded around Fannyside Lochs and High Bonnybridge.

### Swans

Whooper swan was recorded only five times in 2019/20, with three of these records within 1km of Fannyside Lochs. All flights were at PCH but none were at PRC. All swan flights from the 2019/20 non-breeding season are shown on Volume 2, Figure 8.19.

Across all VPs in 2021/22 there were eight flights of swan recorded, comprising a total of 37 individuals. All flights, with the exception of two, were of whooper swan, with a record each for unidentified swan species and mute swan. The unidentified swan species flight was at PRC, it crossed the New Build Overhead Line where it passes over the woodland at the Wheel Caravan Park. One of the whooper swan flights was also at PRC, which crossed the New Build Overhead Line at Loch Green. All swan flights from the 2021/22 non-breeding season are shown on Volume 2, Figure 8.21.

### Ducks

Mallard was the most commonly recorded duck species across all non-breeding survey seasons with 26 flights comprising a total of 67 individuals in 2019/20, 42 flights comprising a total of 169 individuals in 2021/22 and four flights comprising a total of seven individuals in 2024/25.

Other ducks were recorded less frequently, including teal (one flight of a single bird in 2019/20 and 2024/25 and one flight involving 45 individuals in 2021/22), goosander (four flights involving a total of five individuals in 2019/20 and three flights involving a total of six individuals in 2021/22), goldeneye (one flight of three individuals in 2021/22) and wigeon (one flight of a single bird in 2021/22). Unidentified duck species was also recorded in 2021/22 and comprised two flights involving a total of nine individuals.

All duck species were generally recorded around the waterbodies west of Drum Farm, Fannyside Lochs and Slamannan (i.e. Culloch Burn).

All duck flights from the 2019/20 non-breeding season are shown on Volume 2, Figure 8.19, 2021/22 on Volume 2, Figure 8.21 and 2024/25 on Volume 2, Figure 8.23.

### Waders

Lapwing was the most frequently recorded wader across the 2019/20 and 2021/22 non-breeding survey seasons, often in fairly large flocks with a maximum flock size of 90 individuals. In 2019/20 lapwing were recorded making a total of 10 flights involving a total of 324 individuals, and in 2021/22 there were 19 flights recorded involving a total of 785 individuals. Only one lapwing flight in 2019/20 and one in 2021/22 were at PRC. Golden plover were recorded making three flights involving a total of 116 individuals in 2019/20, fifteen flights involving 478 individuals in 2021/22 and three flights totalling 108 individuals in 2024/25. None of the golden plover flights were at PRC. Lapwing and golden plover were predominantly recorded around Jawcraig, with other flights mostly around the Fannyside Lochs area.

Snipe were recorded mostly west of Slamannan village and near Fannyside Lochs with a total of six flights involving 38 individuals in 2019/20, twenty flights involving 46 individuals in 2021/22 and two flights totalling two individuals in 2024/25. Only one flight from all survey seasons was recorded at PRC (in 2021/22). Snipe are crepuscular and often heard but not seen, and this happened on many occasions, particularly from VPs 10 and 11 near Fannyside Lochs. Flight activity by this species recorded by VP surveys is therefore an under-estimate of the true level.

Curlew were only recorded in flight on seven occasions in 2019/20 and once in 2021/22. None of the flights recorded were at PRC. All flights were of one or two birds near Fannyside Lochs and Slamannan.

Woodcock were only recorded in 2021/22 with eight flights recorded involving a total of ten individuals, none at PRC. The majority were recorded during a single watch (of three hours) from VP 7 at dusk leaving their daytime roost in Drum Wood, to the east of New Build Overhead Line. One flight of a single bird was also recorded near Loch Drum farm, to the west of the New Build Overhead Line.

No other wader species were recorded during the VP surveys.

All wader flights from the 2019/20 non-breeding season are shown on Volume 2, Figure 8.19, 2021/22 on Volume 2, Figure 8.21 and 2024/25 on Volume 2, Figure 8.23.

### Raptors

Hen harrier was only recorded once in the 2019/20 non-breeding season, twice in the 2024/25 non-breeding season but was the most frequently recorded raptor in the 2021/22

non-breeding season with a total of 26 flights involving 27 birds. Only one flight, which involved two males, comprised more than one individual. Hen harrier were mostly recorded around Fannyside Lochs, with further flights at Jawcraig, Oakersdykes and west of Drum Wood. In 2021/22, 23 out of the 26 flights recorded were partially under 10 m with 14 flights (i.e. over half) entirely under 10m. This accords with the behaviour of this species to hunt by 'quartering' (flying low over the ground (below 10m)), and quartering birds below 10m are below collision risk height for overhead lines. Whilst some birds were quartering partially above 10m, only one flight was recorded at PRC and the generally slow speed at which the birds quarter does reduce the likelihood of collision.

Peregrine was recorded making a total of fourteen flights in the 2021/22 non-breeding season, and three times in 2019/20. All flights were of a single individual, except one flight which involved two individuals. Two flights in 2019/20 and four flights in 2024/25 were at PRC. Most records were south of Bonnybridge, east of Cumbernauld and at Jawcraig.

Goshawk was recorded making a total of eight flights, all of single individuals, in the 2021/22 non-breeding season comprising multiple flights over Castlecary High Wood and around the woods north-west of Slamannan and one additional flight over Fannyside Muir. In the 2019/20 non-breeding season two possible goshawk sightings were recorded, one near Castlecary High Wood and one near Drum Wood. One of the possible sightings in 2019/20 and one of the records in 2021/22 were at PRC.

A single observation of an immature white-tailed eagle was made on 29 October 2019, flying from Greengairs towards Abrohill entirely over 70m and therefore not at PRC.

Merlin was recorded three times in 2019/20, once in 2021/22 and twice in 2024/25. The majority of flights were entirely below 10m and none of them were at PRC.

Osprey was recorded once in the 2024/25 non-breeding season at Fannyside Lochs at PCH but only at the lochs and to the south so never at PRC.

Barn owl was recorded in flight once in the 2021/22 non-breeding season near Fannyside Lochs at dusk, flying entirely below 10m and therefore not at PRC.

All raptor flights from the 2019/20 non-breeding season are shown on Volume 2, Figure 8.19, those from the 2021/22 non-breeding season are shown on Volume 2, Figure 8.21 and those from the 2024/25 breeding season are shown on Volume 2, Figure 8.23.

### Other target species

Across all VPs there were sixteen flights of grey heron in 2021/22 and four flights in 2024/25 with only one flight per season at PRC. There was also one gannet flight in 2021/22 of a juvenile flying north to the east of Fannyside Lochs at 50 m height. Gannets are not associated with inland sites, and this bird may have been attempting to cross between the east and west coasts (the distance being shortest in this part of Scotland). These flights are all shown on Volume 2, Figure 8.21 and Volume 2, Figure 8.23.

### Gulls

Gulls were recorded as secondary species (and thus no flightlines recorded) and are therefore not included in Table 9 or any of the figures.

Across all seasons, gulls were generally recorded in greatest abundance within or adjacent to Fannyside Lochs and the Slamannan Plateau SPA. Large numbers of gulls were often recorded leaving from / arriving to roost on east Fannyside Loch. It was frequently observed that a steady passage of gulls, mainly herring gull, would fly to and from the Greengairs direction and gulls were frequently recorded around the landfill site just south of Greengairs. Darnrig Moss also provides suitable roosting habitat for common and black-headed gulls and this explains the large proportion of total records for these species recorded around this location. A waterbody near High Bonnybridge also appeared to attract common gull. Great black-backed gull was identified in small numbers throughout the surveyed area.

### Other non-target species

Buzzard was recorded at all VPs. Kestrel, sparrowhawk and raven were recorded at most VPs throughout the surveyed area in all non-breeding seasons.

These species were all recorded as secondary species (and thus no flightlines recorded) and are therefore not included in the Table 9 or any of the figures.

#### Vantage point surveys – breeding season

The results of the 2022 breeding season VP surveys are set out under the species headings below. Volume 2, Figure 8.25 shows all goose flights and Volume 2, Figure 8.26 shows all non-geese flights from the 2022 breeding season VP surveys.

Across all VPs in the 2022 breeding season, a total of 348 flights were recorded involving 26 species and 2,849 individuals. Throughout the season, the species with the highest total number of individuals across all flights was pink-footed goose, although this was from relatively few flights (compared to the non-breeding season) with flights only recorded in March and April of the breeding season, from which they were mainly absent. The species with the highest number of actual flights was mallard, followed by curlew and lapwing. Overall, there were fewer flights recorded in total than in the non-breeding season seasons (as would be expected from the lower frequency or absence of pink-footed and bean geese in the breeding season) and flights tended to be lower and shorter indicating more local flights. Table 10 provides a summary of target species flights across all VPs for the 2022 breeding survey season. Species are listed in order of abundance.

**Table 10. Summarised flights of target species across all VPs for the 2022 breeding season**

| Species            | No. flights | Min. flock size | Max. flock size | Total no. individuals in all flights | No. of flights at PCH | No. of flights at PRC |
|--------------------|-------------|-----------------|-----------------|--------------------------------------|-----------------------|-----------------------|
| Pink-footed goose  | 21          | 1               | 400             | 1,589                                | 17                    | 4                     |
| Unidentified goose | 16          | 1               | 80              | 375                                  | 14                    | 2                     |
| Lapwing            | 44          | 1               | 28              | 200                                  | 38                    | 3                     |
| Curlew             | 61          | 1               | 24              | 147                                  | 36                    | 4                     |
| Mallard            | 72          | 1               | 7               | 144                                  | 41                    | 6                     |
| Greylag goose      | 28          | 1               | 18              | 125                                  | 16                    | 3                     |
| Golden plover      | 6           | 2               | 20              | 53                                   | 6                     | 0                     |

|                                    |    |    |    |    |    |   |
|------------------------------------|----|----|----|----|----|---|
| Canada goose                       | 13 | 1  | 12 | 52 | 12 | 1 |
| Oystercatcher                      | 12 | 1  | 9  | 25 | 12 | 4 |
| Redshank <i>Tringa totanus</i>     | 20 | 1  | 2  | 23 | 4  | 0 |
| Unidentified swan species          | 2  | 2  | 20 | 22 | 2  | 0 |
| Grey heron                         | 15 | 1  | 3  | 19 | 14 | 2 |
| Whooper swan                       | 1  | 16 | 16 | 16 | 1  | 0 |
| Snipe                              | 8  | 1  | 7  | 14 | 7  | 0 |
| Cormorant                          | 4  | 1  | 6  | 10 | 3  | 1 |
| Shelduck <i>Tadorna tadorna</i>    | 4  | 2  | 2  | 8  | 2  | 0 |
| Goshawk                            | 5  | 1  | 1  | 5  | 5  | 1 |
| Mute swan                          | 1  | 5  | 5  | 5  | 1  | 0 |
| Hen Harrier                        | 4  | 1  | 1  | 4  | 2  | 0 |
| Teal                               | 2  | 1  | 2  | 3  | 0  | 0 |
| Osprey                             | 2  | 1  | 1  | 2  | 2  | 1 |
| Peregrine                          | 2  | 1  | 1  | 2  | 1  | 0 |
| Greenshank <i>Tringa nebularia</i> | 1  | 1  | 1  | 1  | 1  | 0 |
| Merlin                             | 1  | 1  | 1  | 1  | 0  | 0 |
| Unidentified wader species         | 1  | 1  | 1  | 1  | 1  | 1 |
| Whimbrel <i>Numenius phaeopus</i>  | 1  | 1  | 1  | 1  | 0  | 0 |

## Goose species

As mentioned above, pink-footed goose was the species which was most numerous in total number of individuals, followed by unidentified goose species. Greylag goose was recorded in flight more frequently than pink-footed goose with a total of 28 flights recorded, as would be expected since some greylag geese are resident in the area.

Pink-footed goose was recorded most frequently and in highest numbers around Slamannan, south of High Bonnybridge and near Greengairs, with a couple of flights also recorded at Jawcraig and Fannyside Lochs. Only four of the 21 pink-footed goose flights were at PRC. As noted above, the number of pink-footed goose flights was relatively low (compared to the non-breeding season) and only in the early part of the breeding season (March and April), from which they were mainly absent.

Greylag goose was recorded in small numbers at all VPs but most frequently around Fannyside Lochs. Most flights of greylag goose comprised three or less birds, with a maximum flock size of eighteen. Three of the 28 greylag goose flights were at PRC.

Canada goose was also recorded in small flocks with a maximum flock size of twelve birds, mostly near or at Fannyside Lochs and Jawcraig. Only one of the 13 Canada goose flights was at PRC. All goose flights from the 2022 breeding season are shown on Volume 2, Figure 8.25.

### Swans

Two of the four swan flights were of unidentified swan species, both in March and comprising flocks of ten individuals (north of Slammanan) and two individuals (near Fannyside Lochs).

Only one confirmed flock of whooper swan was recorded, with sixteen birds recorded flying to the north-east of Slamannan on 08 April 2022. Whooper swan does not breed in central Scotland hence there was only one flight recorded early in the breeding season.

Mute swan was also only recorded in flight once, with a flock of five birds flying towards Fannyside Loch, on 26 April 2022.

None of the swan flights were at PRC. All swan flights from the 2022 breeding season are shown on Volume 2, Figure 8.26.

### Ducks

Only three species of duck were recorded during the 2022 breeding season. Fannyside Lochs was the most frequently used area by all ducks, in particular the small pools surrounding east Fannyside Loch.

Mallard was the species most frequently recorded, with 72 flights involving a total of 144 individuals. Mallard was recorded from all VPs but most often around Fannyside Lochs. Of the 72 flights recorded only six were at PRC.

A total of four shelduck flights were recorded, none of which were at PRC. A pair was recorded making two flights (into and out of a field) just north-west of Slamannan on 08 April and two flights (between the pools at Fannyside Lochs) on 10 June 2022.

Teal was recorded in flight twice, both flights below 10m and therefore not at PCH. This comprised a pair seen flying out of one of the pools near Fannyside Lochs on 29 March 2022 and a female seen landing in one of the pools on 19 May 2022.

All duck flights from the 2022 breeding season are shown on Volume 2, Figure 8.26.

### Waders

Across all VPs there were 154 flights of wader recorded, involving eight species and a total of 465 individuals.

Although lapwing was the most abundant wader overall, curlew was recorded in flight more frequently. Across all VPs there were 44 lapwing flights (total of 200 individuals), 61 curlew flights (total of 147 individuals), six golden plover flights (total of 53 individuals), twelve oystercatcher flights (total of 25 individuals), twenty redshank flights (total of 23 individuals) and eight snipe flights (total of fourteen individuals). Greenshank, whimbrel and an unidentified wader (thought to possibly be redshank) were all recorded once in flight and all were a single bird.

Four curlew flights, four oystercatcher flights, three lapwing flights and the unidentified wader flight were at PRC. All other wader flights were either above / below risk height or did not pass within 100m of the New Build Overhead Line.

Wader activity was mostly focussed around Jawcraig and Fannyside Lochs, with some flights in the fields to the south-east of High Bonnybridge and north of Slammanan. All wader flights from the 2022 breeding season are shown on Volume 2, Figure 8.26.

### Raptors

Across all VPs a total of fourteen flights were recorded of target raptor species. Goshawk was recorded most frequently, with five flights, closely followed by hen harrier, with four. Osprey and peregrine were both recorded twice and merlin once.

Only one of the five goshawk flights was recorded at PRC. All goshawk records were of displaying birds observed over the plantation just north of Greengairs in March 2022 and over the plantation north of Fannyside Muir in May 2022. The occurrence of display flights indicates that goshawk may breed in these plantations (see breeding raptors section below).

None of the four hen harrier flights recorded were at PRC. Two were of an adult female at Jawcraig on 07 April 2022, the other two were both of a female / juvenile near Fannyside Muir in March 2022. Since no flights were recorded later in the breeding season, this is suggestive that they were not breeding in the surveyed area.

Both osprey records were of birds fishing at Fannyside Lochs, one of which was at PRC. Peregrine was recorded once very high over the plantation north-west of Fannyside Muir and once being mobbed by a crow over the fields to the south of Palacerigg Country Park, neither flight was at PRC. The merlin sighting was a very brief view of a low flying bird (below 10m) from near Lochgreen which was not at PRC. The rarity of sightings of these three species is suggestive that they were not breeding in or close to the Site.

No owls were recorded during the 2022 breeding season VP surveys.

All raptor flights from the 2022 breeding season are shown on Volume 2, Figure 8.26.

### Other target species

Grey heron was recorded in flight from all VPs except VP 11. The majority of flights were of single birds, as is typical for this species, and all flights except one were at least partially at PCH, although only two were at PRC. Cormorant was recorded flying over on four occasions (once at PRC), twice to the south of High Bonnybridge and twice near Fannyside Lochs. The flight lines of these species are also shown on Volume 2, Figure 8.26.

### Gulls

Gulls were recorded as secondary species (and thus no flightlines recorded) and are therefore not included in Table 10 or any of the figures.

Overall gulls were recorded less often and in fewer numbers than in the non-breeding season, as would be expected since many gulls will be at breeding sites in the breeding season. Similar to the non-breeding season, gulls (mostly herring gull and lesser black-backed gull) were generally recorded most often and in greatest number on and around Fannyside Loch and the landfill site at Greengairs. Large numbers of gulls were also often recorded commuting from / to Darnrig Moss and frequently landing in the fields to the north-west of Slamannan to forage. Lesser black-backed gull and herring gull were recorded from all VPs. Common gull, black-headed gull and great black-backed gull were recorded across most VPs.

and throughout the surveyed area but less frequently and in fewer numbers than herring gull and lesser black-backed gull.

### Other non-target species

Buzzard and kestrel were recorded from all VPs. Raven was recorded from all VPs except VP 4, 7 and 8. Sparrowhawk was recorded from VP 4, 7, 8 and 14. These species are all likely to have bred within the surveyed area in 2022.

These species were all recorded as secondary species (and thus no flightlines recorded) and are therefore not included in the Table 10 or any of the figures.

### Goose foraging and roosting surveys

An overview of the results of the foraging and roosting surveys from the 2019/20, 2021/22 and 2024/25 non-breeding seasons is provided under species headings below, with further details presented in Table B.1 to B.3 in Annex B.

Volume 2, Figures 8.14, 8.16 and 8.17 show the results of the foraging and roosting observations for bean goose and Volume 2, Figure 8.24 shows the results of the foraging and roosting observations for all other goose species. Volume 2, Figure 8.10 shows the area surveyed.

### Bean geese

Table 11 comprises a summary of the maximum numbers of bean geese recorded foraging per survey visit and Table 12 comprises a summary of the maximum numbers of bean geese recorded flying into / leaving roost per survey visit, surveys where bean geese were not recorded are not included. Full details of all surveys and all species recorded are presented in Table B.1 to B.3 in Annex B.

**Table 11. Summary of Bean Goose Foraging Results**

| Year    | Month of visit | Foraging location                          | Max. bean goose count |
|---------|----------------|--------------------------------------------|-----------------------|
| 2019/20 | October        | Field north of Slamannan                   | 187                   |
|         | October        | Field north of Slamannan                   | 101                   |
|         | October        | Luckenburn Farm                            | 36                    |
|         | October        | Luckenburn Farm                            | 140                   |
|         | November       | Field north of Slamannan                   | 74                    |
|         | November       | Field north of Slamannan                   | 73                    |
|         | November       | Fields north of Slamannan                  | 129                   |
|         | November       | Fields north of Slamannan                  | 149                   |
|         | December       | Field between Threaprig and Parkhead Farms | 160                   |
|         | December       | Field north of Oakersdykes Farm            | 208                   |
|         | December       | Jawcraig                                   | 10                    |
|         | January        | Just north of Parkhead Farm                | 72                    |
|         | January        | Parkhead Farm                              | 71                    |

|                |          |                                      |     |
|----------------|----------|--------------------------------------|-----|
| <b>2021/22</b> | January  | near Parkhead Farm                   | 184 |
|                | October  | south-east of Allandale              | 20  |
|                | November | Fields north of Slamannan            | 40  |
|                | December | Fields north of Slamannan            | 3   |
|                | December | Field south of Garbethill Muir       | 7   |
|                | January  | Fields north of Slamannan            | 88  |
|                | January  | Fields north of Slamannan            | 30  |
| <b>2024/25</b> | November | Field at St. Helen's Loch (possible) | 120 |

**Table 12. Summary of Bean Goose Roosting Results**

| Year           | Month of visit | Roost location                       | Estimated max. bean goose count |
|----------------|----------------|--------------------------------------|---------------------------------|
| <b>2019/20</b> | October        | Fannyside Loch East                  | 140                             |
|                | December       | Darnrig Moss                         | 120                             |
|                | December       | Darnrig Moss                         | 216                             |
|                | January        | Darnrig Moss                         | 71                              |
|                | January        | Darnrig Moss                         | 78                              |
| <b>2021/22</b> | October        | Fannyside Loch East / Fannyside Muir | 35                              |
| <b>2024/25</b> | October        | Fannyside Loch East / Fannyside Muir | 100                             |

The largest count of birds recorded during all foraging surveys was 208 birds, seen on 18 December 2019, near Oakersdykes Farm (3.3km southeast of the Site, near Jawcraig). Observations in October 2019 showed bean geese often using fields at Luckenburn Farm (over 3.5 km southeast of the Site) to forage. The largest flock recorded in the Luckenburn Farm area comprised 140 bean geese on 23 October 2019.

#### 2019/20

In the 2019/20 non-breeding season, the largest bean goose count at roost was of several consecutive flocks amounting to 216 birds apparently heading to Darnrig Moss on 15 January 2020. Bean geese were observed apparently flying to or from the roost site at Darnrig Moss on many occasions and typically did so around an hour before sunrise and 40-60 minutes after sunset in low light conditions. From November 2019 onwards, observations from Fannyside Loch at dusk found no certain confirmation of bean geese using this roost site, and it is assumed that they were no longer using it or using it infrequently.

#### 2021/22

In the 2021/22 non-breeding season, the roosting and foraging surveys took place over a smaller area (as the route corridor was narrowed) than those carried out in 2019/20. As expected, this resulted in fewer bean goose records in 2021/22.

In the 2021/22 non-breeding season, bean geese were very occasionally found to be roosting at Fannyside Lochs. During the two roost surveys in October 2021, a flock of 25 and a flock of 34 bean geese were recorded to fly away from Fannyside Muir to the northeast, possibly

towards Darnrig Moss. In December, one small flock of bean geese was heard landing on east Fannyside Loch 35 minutes after sunset. No bean geese were recorded during the Fannyside Loch roost watches after December 2021.

Several incidental records of birds flying to / from roost during the 2019/20 VP surveys corroborated the use of the Darnrig Moss roost and identified no additional roost sites.

During the foraging surveys in the 2021/22 non-breeding season, several flocks of bean geese were recorded outwith the survey area in November and December 2021 and in January 2022. Flocks of between three and 40 birds were recorded foraging in the fields north-east of Slamannan. Seven birds were recorded foraging in a field south of Garbethill Muir and approximately 80 at Jawcraig. No positively identified bean geese were recorded foraging within the survey area (i.e. within the Proposed Route Corridor plus a 500m buffer).

Although only small flocks of bean geese were recorded during the surveys carried out for the New Build Overhead Line in the 2021/22 non-breeding season, the BGAG posted on their blog<sup>16</sup> that a total of approximately 231 birds were recorded in the Slamannan area on 18 October 2021.

#### 2024/25

During the 2024/25 surveys, approximately 100 bean geese were recorded to land on a small waterbody on Fannyside Muir, just north of Fannyside Loch East during the first roost watch on 09 October 2024. No bean geese were recorded in the following roost surveys. The only foraging survey to record bean geese was the fifth visit on 21 November 2024 with approximately 120 possible bean geese recorded foraging in the field adjacent to St Helen's Loch, approximately 1km east of the Site and 26 bean geese foraging in a field north of Slamannan.

Based on observations made in all non-breeding seasons, it appears that bean geese only use Fannyside Lochs / Muir roosts on occasion and typically at the beginning of the season, favouring Darnrig Moss as a roost location. This accords to some extent with the known preference, for unknown reasons, of the bean geese to forage at Luckenburn Farm only earlier in the non-breeding season.

#### Pink-footed goose

In the 2019/20 non-breeding season, the overwhelming majority of foraging pink-footed geese were found within the original Strategic Corridor at the far south-west, and at the far north close to High Bonnybridge. The birds in the latter area roosted at an unknown location well outside the Strategic Corridor, judging by flight directions, believed to be at least 4km west, possibly at or towards Carron Valley. The geese in the south-west frequently gathered to roost in very large quantity between Wester Myvot, North Myvot and Hallbrae farms. This roost site, termed the 'Myvot/Hallbrae' roost, lies over 2km from the Site.

In the 2021/22 non-breeding season, pink-footed geese were recorded foraging within the survey area. They were found mostly near Bonnybridge and near New Monkland and also at Wester Lochdrum, with a total of seventeen flocks of up to 500 individuals. These were found in November, December, January, and February. There were no observed roost sites within the survey area.

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<sup>16</sup> <https://beangoose.blogspot.com/>

No pink-footed geese were recorded roosting or foraging within the survey area during the 2024/25 surveys.

### Other goose species

During all survey seasons, greylag geese were recorded foraging around High Bonnybridge, Fannyside Lochs and St. Helen's Loch, with a maximum flock size of 275 birds in 2019/20, 100 in 2021/22 and 10 in 2024/25. Canada geese were recorded at Fannyside Lochs (including flying in to roost at sunset in 2021/22), near Bonnybridge and at St. Helen's Loch, with a maximum flock of 130 in 2019/20, 170 birds in 2021/22 and 150 in 2024/25.

In the 2019/20 non-breeding season, brent goose and barnacle goose, both most typically associated with coastal areas, were recorded in very low numbers (a single brent goose and a maximum of four barnacle geese) within other flocks of geese. These were recorded at Fannyside Lochs and St. Helen's Loch. These species were not recorded in 2021/22 or 2024/25.

### Other bird species

In the 2021/22 and 2024/25 non-breeding season, other notable species that were incidentally recorded (roosting sites not confirmed) included mallard, grey heron, teal, mute swan, goosander, shoveler *Anas clypeata*, oystercatcher, golden plover and hen harrier. The ducks and waterfowl were mostly recorded on St Helen's Loch, near Bonnybridge, with further records of mallard around Fannyside Lochs.

### General breeding bird surveys

A total of 63 species were recorded by the general breeding bird survey. Of those, 28 are considered to be notable, and therefore of conservation concern. The full list of species recorded by the general breeding bird surveys is given in Table C.1 in Annex C which also identifies those considered to be notable.

A total of 23 notable species are considered to have held territories within the survey area (i.e. within 125m or 500m of the Proposed Route Corridor, depending on habitat) during the 2022 breeding season (see Table 17). The estimated centres of the breeding territories of these species are shown on Volume 2, Figure 8.27.

Five notable species – black-headed gull, herring gull, lapwing, osprey and swift – were recorded during surveys but showed no indication of breeding.

Of the 23 species considered to hold territories within the survey area, there were 19 passerines, three waders and one raptor. The only raptor species recorded to be breeding within the survey area during the breeding bird surveys was kestrel, but several other raptor species were recorded during other surveys as discussed in the breeding raptors section. Curlew, snipe and oystercatcher were the only wader species thought to hold territories within the survey area, with curlew the most frequent, holding a total of five possible / probable territories.

**Table 13. Results of territory analysis for notable species**

| Species (BTO code)       | Scientific name          | Conservation designation(s)      | Number of territories |          |          | Comment                                                                                                                                                                                                                                                              |
|--------------------------|--------------------------|----------------------------------|-----------------------|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                          |                                  | Confirmed             | Probable | Possible |                                                                                                                                                                                                                                                                      |
| Bullfinch (BF)           | <i>Pyrrhula pyrrhula</i> | SBL; FLBAP                       | 0                     | 1        | 18       | One probable territory with 1-2 birds calling in suitable habitat on three visits. Several possible territories identified by at least one bird, often a pair, calling / perched in suitable habitat on single visit.                                                |
| Cuckoo (CK)              | <i>Cuculus canorus</i>   | Red List BoCC; SBL; FLBAP        | 0                     | 6        | 6        | Six probable territories of a bird singing on 2-3 visits near suitable habitat, also birds chased by meadow pipit and female calling on same visit as singing bird. All possible territories with one bird singing or perched near suitable habitat on single visit. |
| Curlew (CU)              | <i>Numenius arquata</i>  | Red List BoCC; SBL; FLBAP; NLBAP | 0                     | 1        | 4        | One probable territory of a pair alarm calling / flying in and out, behaving like they have chicks. Four possible territories represented by one bird singing / calling in suitable habitat on one visit.                                                            |
| Grasshopper warbler (GH) | <i>Locustella naevia</i> | Red List BoCC; SBL; FLBAP        | 0                     | 6        | 8        | All probable territories represented by one bird singing in suitable habitat on 2-3 visits. All possible territories represented by one bird singing in suitable habitat on one visit.                                                                               |
| Greenfinch (GR)          | <i>Chloris chloris</i>   | Red List BoCC                    | 0                     | 4        | 10       | All probable territories represented by one bird singing in suitable habitat on 2-3 visits. All possible territories represented by one bird singing / calling / perched in suitable habitat on one visit.                                                           |
| House martin (HM)*       | <i>Delichon urbicum</i>  | Red List BoCC                    | 0                     | 0        | 2        | Two buildings which may have nests in them, birds seen foraging nearby and seen entering buildings.                                                                                                                                                                  |

|                     |                              |                           |   |    |    |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|------------------------------|---------------------------|---|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| House sparrow (HS)  | <i>Passer domesticus</i>     | Red List BoCC; SBL; FLBAP | 0 | 3  | 3  | Probable territories with birds calling in suitable habitat on two visits. Possible territories of 2-6 birds calling in suitable habitat on one visit.                                                                                                                                                                                                                                                                            |
| Kestrel (K.)        | <i>Falco tinnunculus</i>     | SBL; FLBAP; NLBAP         | 2 | 0  | 0  | Two kestrel boxes with at least two chicks seen inside / next to boxes, plus frequent activity of at least one adult nearby on several visits.                                                                                                                                                                                                                                                                                    |
| Linnet (LI)         | <i>Linaria cannabina</i>     | Red List BoCC; SBL; FLBAP | 0 | 2  | 5  | Two probable territories of 1-2 birds seen flying into / out of or perched / calling / singing in suitable habitat on multiple visits and one bird with nest material. Five possible territories represented by birds demonstrating these behaviours on a single visit.                                                                                                                                                           |
| Lesser redpoll (LR) | <i>Carduelis cabaret</i>     | Red List BoCC; FLBAP      | 1 | 0  | 15 | One confirmed territory of a single juvenile calling and flying out of suitable habitat. Several possible territories represented by 1-3 birds calling / singing / perched in suitable habitat on one visit.                                                                                                                                                                                                                      |
| Mistle thrush (M.)  | <i>Turdus viscivorus</i>     | Red List BoCC             | 0 | 0  | 6  | All possible territories represented by 1-2 birds calling or singing in suitable habitat on one visit.                                                                                                                                                                                                                                                                                                                            |
| Oystercatcher (OC)  | <i>Haematopus ostralegus</i> | -                         | 0 | 1  | 0  | One probable territory with a single bird then a pair alarming in same area on two visits.                                                                                                                                                                                                                                                                                                                                        |
| Reed bunting (RB)   | <i>Emberiza schoeniclus</i>  | SBL; FLBAP                | 2 | 8  | 5  | One confirmed territory with a calling male and juvenile on one visit and a male seen nearby on three other visits. Another confirmed territory with a juvenile calling in suitable habitat on one visit. Several probable territories with birds singing / calling / alarming in suitable habitat on multiple visits and several possible territories of 1-3 birds calling / singing / perched in suitable habitat on one visit. |
| Skylark (S.)        | <i>Alauda arvensis</i>       | Red List BoCC; SBL; FLBAP | 0 | 18 | 15 | Several probable territories represented by a bird singing on 2-5 visits, also aggressive behaviour and alarming on                                                                                                                                                                                                                                                                                                               |

|                    |                                   |                           |   |    |    |                                                                                                                                                                                                                                                                                          |
|--------------------|-----------------------------------|---------------------------|---|----|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                   |                           |   |    |    | occasion. Several possible territories represented by a bird singing on a single visit.                                                                                                                                                                                                  |
| Starling (SG)      | <i>Sturnus vulgaris</i>           | Red List BoCC; SBL; FLBAP | 1 | 1  | 6  | One confirmed territory with a bird carrying food into building and four birds seen with juveniles on another visit. One probable territory with birds in suitable habitat on two visits. Six possible territories represented by birds calling in suitable habitat.                     |
| Sedge warbler (SW) | <i>Acrocephalus schoenobaenus</i> | FLBAP                     | 0 | 2  | 3  | Two probable territories represented by a bird singing on 1-2 visits and alarming / calling on another visit. Three possible territories represented by a bird singing in suitable habitat on one visit.                                                                                 |
| Siskin (SK)        | <i>Carduelis spinus</i>           | SBL                       | 0 | 1  | 10 | One probable territory with a bird singing in suitable habitat on one visit and calling in suitable habitat on three visits. Ten possible territories with 1-3 birds calling / singing on a single visit.                                                                                |
| Snipe (SN)         | <i>Gallinago gallinago</i>        | FLBAP; NLBAP              | 0 | 0  | 2  | Two possible territories represented by 1-2 birds flushed from suitable habitat on a single visit.                                                                                                                                                                                       |
| Song thrush (ST)   | <i>Turdus philomelos</i>          | Red List BoCC; SBL; FLBAP | 2 | 25 | 25 | Two confirmed territories, both with three fledglings flushed on one visit and one with adult carrying food on an additional visit. Total of 25 probable territories with birds singing on multiple visits. Also 25 possible territories represented by birds singing on a single visit. |
| Swallow (SL) *     | <i>Hirundo rustica</i>            | FLBAP                     | 3 | 0  | 1  | Three confirmed 'territories' with at least one, often multiple, active nests. One possible 'territory' with birds seen flying in and out of farm buildings.                                                                                                                             |
| Tree pipit (TP)    | <i>Anthus trivialis</i>           | Red List BoCC; SBL; FLBAP | 0 | 2  | 2  | Two probable territories with birds singing in suitable habitat on 2-3 visits. Two possible territories represented by birds singing in suitable habitat on one visit.                                                                                                                   |

|                   |                            |                           |   |   |   |                                                                                                                                                                                       |
|-------------------|----------------------------|---------------------------|---|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tree sparrow (TS) | <i>Passer montanus</i>     | Red List BoCC; SBL; FLBAP | 0 | 0 | 1 | One possible territory with bird calling in suitable habitat on one visit.                                                                                                            |
| Yellowhammer (Y.) | <i>Emberiza citrinella</i> | Red List BoCC; SBL; FLBAP | 0 | 9 | 0 | Nine probable territories represented by birds singing in suitable habitat on 2-5 visits. Birds also seen carrying food / calling / perched in suitable habitat on additional visits. |

\* House martin and swallow nest colonially and do not hold breeding territories. However, these species are included in this table where buildings / bridges were confirmed or considered likely to contain nests.

### Breeding raptors

As discussed in Section 1.2, no breeding raptor walkover surveys were carried out but an estimation of raptor territories has been made from observations during VPs and incidental observations during other surveys. All raptor territories (except barn owl) are shown on Volume 2, Figure 8.28, this figure is not confidential as these are estimated territories, not confirmed nest sites.

### **Goshawk**

Goshawk was recorded displaying over the plantation around Greengairs in March 2022 and over the plantation north of Fannyside Muir in May 2022. The species was also recorded displaying in February of the 2021/22 non-breeding season over the plantation north of Fannyside Muir and around the woods north-west of Slamannan. In the 2019/20 non-breeding season, two possible goshawk sightings were recorded, one near Castlecary High Wood and one near Drum Wood.

Due to multiple records of displaying birds at the plantation north of Fannyside Muir and the woods north-west of Slamannan, along with the suitability of the habitat over which the birds were seen displaying, it is possible that a pair breeds within both of these areas of woodland. However, the territory to the north-west of Slamannan is over 4.4km from the Site and is therefore not shown on Volume 2, Figure 8.28. Three further possible territories could be present at Castlecary High Wood, Drum Wood and the plantation woodland around Greengairs but there is less evidence for these.

### **Kestrel**

Two kestrel territories were confirmed during the general breeding bird surveys due to the presence of young in artificial boxes, as detailed in Table 13. An additional nest was identified within a tree at Jawcraig, with two adults seen to be frequently returning to the tree with food during the 2022 breeding season VP surveys, however this was over 3.2km from the Site and is therefore not shown on Volume 2, Figure 8.28.

### **Buzzard**

At least one buzzard territory was confirmed during the general breeding bird surveys with juveniles seen around a nest site within a thin strip of woodland to the west of Loanhead. It is highly likely that multiple pairs of buzzard bred within the Site and immediately surrounding area in 2022.

### **Owls**

Several owl territories were identified during bat activity transects which took place around dusk when owls tend to be more active. This comprised three territories with tawny owl *Strix aluco* chicks and one territory with long-eared owl *Asio otus* chicks. In all the tawny owl cases, at least two chicks appeared to be present, and the long-eared owl observation also appeared to comprise two chicks. Chicks were identified from their calls and, at two of the tawny owl territories, also seen perched in trees. At one of the tawny owl territories, an adult tawny owl was also seen, supporting identification of the species from the chick calls and appearance.

The three tawny owl territories were all located within woodland, one to the west of Wester Glentore Farm, one within Palacerigg Country Park and one in Drum Wood. The long-eared owl territory was in a complex area west of Drum Wood (that lies partly within a non-statutory site) comprising a mosaic of marshy grassland, grazed unimproved or semi-improved grassland, wet heath, broadleaved woodland, willow and other scrub, ponds and other localised habitats.

Locations of these owl territories (based on the locations of the calling chicks) are shown on Volume 2, Figure 8.28.

#### Barn owl building inspections

The results of the building inspections are detailed in Table D1 in Confidential Annex D. Locations of all buildings inspected are shown on Volume 2, Figure 8.10. Barn owl nest locations are shown in Confidential Figure 8.29.

#### Black grouse lek survey

No black grouse or evidence of black grouse were recorded during the lek survey, nor during any other bird survey (including the general breeding bird survey and VPs), nor during any other ecological survey.

There is little suitable nesting habitat within the survey area. The most suitable habitat lies south of High Bonnybridge and west of Drum Wood, in an area partly within a non-statutory site, that includes localised birch *Betula* sp. woodland amongst an area of marshy and dry grasslands, wet heath, scrub, ponds and other habitats. However, this area appears sub-optimal owing to a) often moderately heavy cattle grazing (which probably restricts suitability for nesting), b) the relatively small extent of typical habitat which may render it insufficient to support a viable population, and c) isolation from good habitat for black grouse, with surrounding intensive agricultural land, conifer plantation and, to the north, urban areas. This area was well-covered by both the general breeding bird survey and other ecological surveys (including bat surveys, amphibian surveys and habitat surveys) and at no point were any black grouse encountered.

Given the lack of records or field observations of black grouse including in the most suitable area described in the previous paragraph, and the absence of optimal habitat for this species elsewhere, black grouse is likely absent from the Site and surrounding area up to at least 1km. It is concluded that there are unlikely to be any leks within the survey area and therefore unlikely to be any nesting black grouse within 1km of the Site.

## 1.4 Conclusion

In all three non-breeding seasons (the only season in which bean geese occur), VP survey results showed that the majority of bean goose flights were centred around Jawcraig, Slamannan and Fannyside Lochs with occasional flights over Garbethill Muir. In both survey seasons, the foraging survey results showed a similar pattern with birds recorded foraging in the fields at Jawcraig and north-east of Slamannan and occasionally, at the start of the season, at Luckenburn Farm (these areas are all outwith the official 2021/22 survey area but birds were incidentally recorded foraging here). Across all seasons, no positively identified bean geese were recorded foraging within the survey area (i.e. within the Proposed Route Corridor plus a 500m buffer) with the exception of one record near VP 9 in the 2019/20 season (430m outside the Site). Bean geese could occur near VP 9 although, as shown by the results, the majority of activity appears to be outside the survey area. Bean geese were occasionally recorded roosting on Fannyside Loch East / Fannyside Muir in October of all years, but more often, particularly later in the season, appeared to favour roosting at Darnrig Moss.

Across all non-breeding seasons pink-footed geese were recorded in flight and foraging throughout the survey area but were not found to roost within or near the Site. A significant amount of the pink-footed goose activity was recorded in the north end of the surveyed area, to the south of Bonnybridge and also outside the survey area at Jawcraig and to the north-east of Slamannan. Small numbers of pink-footed geese were seen in the breeding season but only very early in the season in relatively small quantity, prior to leaving for breeding grounds, and are not a concern.

Other goose species occurred in small numbers but are either non-native, not of conservation concern in this location or occur very rarely and unpredictably in very small numbers, and none of these are notable.

Whooper swan and mute swan were both recorded infrequently across all VP survey seasons and the majority of flights recorded were at Fannyside Lochs and Slamannan. Various ducks were recorded, all common species, and all infrequently apart from mallard, which was recorded throughout the surveyed area but again most often at Fannyside Lochs.

Lapwing, snipe and golden plover were the wader species recorded in flight most frequently, followed by curlew and woodcock in the non-breeding seasons. In the 2022 breeding season lapwing and curlew were most frequently recorded in flight followed by redshank, oystercatcher, snipe and golden plover. Greenshank and whimbrel were also recorded once in flight. All wader flights across all seasons were concentrated around Jawcraig and Fannyside Lochs with some flights in the fields to the southeast of High Bonnybridge and northwest of Slamannan.

Observations of several raptor species were made. Hen harrier was recorded occasionally in the 2022 breeding, 2019/20 and 2024/25 non-breeding seasons but frequently throughout the 2021/22 non-breeding season with a total of 26 flights at Fannyside Lochs, Jawcraig, Oakersdykes Farm and west of Drum Wood. Peregrine was recorded less frequently with 19 flights across all seasons south of Bonnybridge, east of Cumbernauld and at Jawcraig. 15 goshawk flights (including two goshawk / sparrowhawk) were recorded across all seasons, and display flights were observed over woodland. Merlin was recorded six times, osprey twice and white-tailed eagle and barn owl flights once each. However, none of the raptors are considered to have bred in the survey area with the likely exception of goshawk at certain plantations. For owls, there is evidence of breeding tawny owl in three places, and (more notably) of one breeding long-eared owl site west of Drum Wood. There is one known barn owl nest site, but no

evidence elsewhere (although access was not possible at one potential site). Note that goshawk and barn owl are specially-protected Schedule 1 species under the WCA.

No evidence of black grouse was found during the lekking black grouse survey, or during the course of other ornithological or other ecological field work. The species is likely absent from the Site and a distance of at least 1km around it.

The results of the territory analysis estimates that 23 notable bird species bred within 500m of the Proposed Route Corridor in 2022. A number of non-notable bird species that are common and widespread were also recorded during the general breeding bird survey.

Across all breeding and non-breeding VP surveys, gulls were most frequently recorded at Fannyside Lochs (often roosting there), and at the landfill near Greengairs. Most of the gull records were herring gull, lesser-blacked gull and black-headed gull.

## 1.5 Figures

Figure 8.10 - Bird Survey Areas

Figure 8.11 – Vantage Point Survey Locations

Figure 8.12 – General Breeding Bird Survey Transects

Figure 8.13 – Overview of all Bean Goose Results

Figure 8.14 – 2019-20 Bean Goose Foraging and Roosting Activity

Figure 8.15 – 2019-20 Bean Goose Flight Activity

Figure 8.16 – 2021-22 Bean Goose Flight, Foraging and Roosting Activity

Figure 8.17 – 2024-25 Bean Goose Flight, Foraging and Roosting Activity

Figure 8.18 – 2019-20 Non-breeding Season Goose Flights (Excluding Bean Goose)

Figure 8.19 – 2019-20 Non-breeding Season Non-Goose Flights

Figure 8.20 – 2021/22 Non-breeding Season Goose Flights (Excluding Bean Goose)

Figure 8.21 - 2021/22 Non-breeding Season Non-Goose Flights

Figure 8.22 - 2024-25 Non-breeding Season Goose Flights (excluding bean goose)

Figure 8.23 - 2024-25 Non-breeding Season Non-Goose Flights

Figure 8.24 – 2019-20, 2021-22 and 2024-25 Non-breeding Goose Foraging and Roosting Results (Excluding Bean Goose)

Figure 8.25 - 2022 Breeding Season Goose Flights

Figure 8.26 - 2022 Breeding Season Non-Goose Flights

Figure 8.27 – Territory Analysis Results

Figure 8.28 – Raptor and Owl Territories

Figure 8.29 – Barn Owl Territories - CONFIDENTIAL

## Annex A – VP survey details

Table A.1. comprises the details of all 2019/20 non-breeding VP surveys, Table A.2. comprises the details of all 2021/22 non-breeding VP surveys, Table A.3. comprises the details of all 2022 breeding season VP surveys and Table A.4. comprises the details of all 2024/25 non-breeding VP surveys.

**Table A.1. VP survey details in the 2019/20 non-breeding season**

| VP | Date     | Start | End   | Duration | S <sup>1</sup> | Sunrise | Sunset | Twilight <sup>2</sup> | Wind Direc | Wind Speed <sup>3</sup> | Cloud cover <sup>4</sup> | Cloud height <sup>5</sup> | Vis <sup>6</sup> | Precip <sup>7</sup> | Temp (oC) |
|----|----------|-------|-------|----------|----------------|---------|--------|-----------------------|------------|-------------------------|--------------------------|---------------------------|------------------|---------------------|-----------|
| 2  | 10/09/19 | 16:45 | 19:45 | 03:00    | AF             | 06:37   | 19:47  | -                     | SW         | 3 – 4                   | 8                        | 2                         | 2                | LR20                | 11 – 12   |
| 2  | 11/09/19 | 13:05 | 16:05 | 03:00    | AF             | 06:39   | 19:45  | -                     | W          | 3 – 4                   | 8                        | 2                         | 2                | LR13                | 14        |
| 2  | 30/09/19 | 09:53 | 12:53 | 03:00    | AF             | 07:16   | 18:54  | -                     | E          | 0 – 2                   | 6 – 7                    | 2                         | 2                | None                | 16 – 17   |
| 3  | 04/09/19 | 10:15 | 13:15 | 03:00    | AF             | 06:25   | 20:03  | -                     | SW         | 2 – 4                   | 8                        | 2                         | 1 – 2            | MR50                | 14        |
| 3  | 04/09/19 | 13:45 | 16:45 | 03:00    | AF             | 06:25   | 20:03  | -                     | NW         | 2 – 3                   | 8                        | 2                         | 2                | LR3                 | 14        |
| 3  | 30/09/19 | 13:29 | 16:29 | 03:00    | AF             | 07:16   | 18:54  | -                     | NE         | 2                       | 7                        | 2                         | 2                | None                | 14        |
| 4  | 10/09/19 | 09:45 | 12:45 | 03:00    | AF             | 06:37   | 19:47  | -                     | SE         | 0 – 1                   | 7                        | 2                         | 2                | None                | 15 – 16   |
| 4  | 10/09/19 | 13:15 | 16:15 | 03:00    | AF             | 06:37   | 19:47  | -                     | S          | 0 – 3                   | 8                        | 2                         | 2                | None                | 15        |
| 4  | 30/09/19 | 16:59 | 19:59 | 03:00    | AF             | 07:16   | 18:54  | 01:05                 | NE         | 2 – 4                   | 8                        | 2                         | 2                | LR66.7              | 11 – 13   |
| 5  | 11/09/19 | 09:35 | 12:35 | 03:00    | AF             | 06:39   | 19:45  | -                     | W          | 3 – 4                   | 7 – 8                    | 2                         | 2                | None                | 13 – 15   |
| 5  | 11/09/19 | 16:35 | 17:50 | 01:15    | AF             | 06:39   | 19:45  | -                     | W          | 2 – 3                   | 7                        | 2                         | 2                | LR15                | 14        |
| 5  | 11/09/19 | 18:00 | 19:45 | 01:45    | AF             | 06:39   | 19:45  | -                     | W          | 2 – 3                   | 8                        | 2                         | 2                | LR15                | 14 – 13   |
| 6  | 12/09/19 | 17:06 | 20:06 | 03:00    | AF             | 06:41   | 19:42  | -                     | W          | 1                       | 0                        | n/a                       | 2                | None                | 15 – 13   |
| 6  | 17/09/19 | 12:05 | 15:05 | 03:00    | AF             | 06:50   | 19:29  | -                     | NW         | 1 – 2                   | 7                        | 2                         | 2                | None                | 14 – 15   |
| 7  | 12/09/19 | 10:00 | 13:00 | 03:00    | AF             | 06:41   | 19:42  | -                     | SW         | 1 – 2                   | 2                        | 2                         | 1 – 2            | LR20 MR20           | 14        |

Denny to Wishaw Network Upgrade  
Environmental Impact Assessment Report Volume 3 Appendix 8.6 New Build Overhead  
Line Ornithology Baseline



|    |          |       |       |       |    |       |       |       |    |       |       |   |       |                   |         |
|----|----------|-------|-------|-------|----|-------|-------|-------|----|-------|-------|---|-------|-------------------|---------|
| 7  | 12/09/19 | 13:36 | 16:36 | 03:00 | AF | 06:41 | 19:42 | -     | S  | 1 – 2 | 8     | 2 | 2     | LR3.3             | 15      |
| 8  | 09/09/19 | 13:15 | 16:15 | 03:00 | AF | 06:35 | 19:50 | -     | W  | 1 – 2 | 8     | 2 | 1 – 2 | HR17              | 15 – 16 |
| 8  | 09/09/19 | 16:45 | 19:45 | 03:00 | AF | 06:35 | 19:50 | -     | W  | 0 – 1 | 8     | 2 | 2     | None              | 16      |
| 9  | 24/09/19 | 06:50 | 09:50 | 03:00 | ND | 07:04 | 19:10 | 00:14 | *  | 4 – 8 | 5     | 2 | 2     | LR10              | 10 – 12 |
| 9  | 27/09/19 | 12:05 | 15:05 | 03:00 | ND | 07:10 | 19:02 | -     | SE | 2     | 8     | 2 | 2     | LR2               | 15      |
| 10 | 17/09/19 | 15:35 | 18:35 | 03:00 | AF | 06:50 | 19:29 | -     | NW | 1 – 2 | 8     | 2 | 2     | None              | 14 – 15 |
| 10 | 18/09/19 | 14:05 | 17:05 | 03:00 | AF | 06:52 | 19:26 | -     | W  | 1 – 2 | 6 – 8 | 2 | 2     | None              | 16 – 15 |
| 11 | 05/09/19 | 09:28 | 12:28 | 03:00 | AF | 06:27 | 20:00 | -     | SW | 1 – 2 | 8     | 2 | 2     | LR10              | 11      |
| 11 | 05/09/19 | 12:58 | 15:58 | 03:00 | AF | 06:27 | 20:00 | -     | SW | 3 – 4 | 6     | 2 | 3     | None              | 14      |
| 12 | 04/09/19 | 17:25 | 18:25 | 01:00 | AF | 06:25 | 20:03 | -     | NW | 1 – 2 | 6 – 8 | 2 | 2     | LR15              | 14      |
| 12 | 18/09/19 | 10:35 | 13:35 | 03:00 | AF | 06:52 | 19:26 | -     | S  | 1 – 2 | 6 – 8 | 2 | 2     | None              | 12 – 15 |
| 12 | 18/09/19 | 17:35 | 19:35 | 02:00 | AF | 06:52 | 19:26 | 00:09 | W  | 1 – 2 | 7 – 8 | 2 | 2     | None              | 15 – 14 |
| 13 | 03/09/19 | 10:25 | 13:25 | 03:00 | AF | 06:23 | 20:05 | -     | S  | 2 – 3 | 8     | 2 | 1 – 2 | LR40 MR27<br>HR33 | 14      |
| 13 | 03/09/19 | 13:55 | 16:55 | 03:00 | AF | 06:23 | 20:05 | -     | S  | 1 – 2 | 8     | 2 | 1 – 2 | MR100             | 14      |
| 2  | 21/10/19 | 12:50 | 15:50 | 03:00 | TG | 07:58 | 18:01 | -     | W  | 3 – 4 | 6 – 7 | 2 | 2     | None              | 8       |
| 2  | 22/10/19 | 09:40 | 12:40 | 03:00 | AF | 08:00 | 17:59 | -     | SW | 1 – 2 | 8     | 2 | 2     | None              | 9       |
| 2  | 23/10/19 | 13:50 | 16:50 | 03:00 | TG | 08:02 | 17:56 | -     | SW | 4     | 8     | 2 | 2     | None              | 12 – 11 |
| 3  | 10/10/19 | 10:30 | 13:30 | 03:00 | TG | 07:36 | 18:28 | -     | SW | 3     | 6 – 7 | 2 | 2     | None              | 10 – 12 |
| 3  | 11/10/19 | 16:20 | 19:20 | 03:00 | AF | 07:38 | 18:26 | 00:54 | SW | 3     | 2 – 5 | 2 | 2     | LR6.7<br>MR1.7    | 11 – 10 |
| 3  | 22/10/19 | 13:10 | 16:10 | 03:00 | AF | 08:00 | 17:59 | -     | SW | 1 – 2 | 8     | 2 | 2     | None              | 10 – 11 |
| 4  | 11/10/19 | 12:50 | 15:50 | 03:00 | AF | 07:38 | 18:26 | -     | W  | 3 – 5 | 3 – 8 | 2 | 2     | HR6.7 H1.7        | 12      |

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|   |          |       |       |       |    |       |       |       |    |       |       |   |       |            |         |
|---|----------|-------|-------|-------|----|-------|-------|-------|----|-------|-------|---|-------|------------|---------|
| 4 | 17/10/19 | 06:50 | 09:50 | 03:00 | AF | 07:50 | 18:11 | 01:00 | E  | 0 – 1 | 2 – 3 | 2 | 2     | None       | 3 – 4   |
| 4 | 28/10/19 | 09:30 | 12:30 | 03:00 | TG | 07:13 | 16:45 | -     | NW | 0 – 1 | 1 – 2 | 2 | 2     | None       | 2 – 3   |
| 5 | 01/10/19 | 13:55 | 16:55 | 03:00 | AF | 07:18 | 18:52 | -     | W  | 1 – 2 | 5 – 7 | 2 | 2     | None       | 15 – 13 |
| 5 | 15/10/19 | 11:15 | 14:15 | 03:00 | AF | 07:46 | 18:16 | -     | SE | 0 – 2 | 7 – 8 | 2 | 2     | None       | *       |
| 5 | 18/10/19 | 16:00 | 19:00 | 03:00 | CN | 07:52 | 18:08 | 00:52 | SE | 3     | 6 – 8 | 2 | 2     | LR3.3 HR10 | 10 – 12 |
| 5 | 25/10/19 | 12:35 | 15:35 | 03:00 | MS | 08:07 | 17:52 | -     | NE | 4     | 2     | 2 | 2     | None       | 7 – 6   |
| 6 | 01/10/19 | 10:25 | 13:25 | 03:00 | AF | 07:18 | 18:52 | -     | N  | 2 – 3 | 2     | 2 | 2     | None       | 10      |
| 6 | 11/10/19 | 10:00 | 13:00 | 03:00 | TG | 07:38 | 18:26 | -     | SW | 4 – 5 | 3 – 6 | 2 | 2     | None       | 12      |
| 6 | 21/10/19 | 16:01 | 19:01 | 03:00 | AF | 07:58 | 18:01 | 01:00 | SW | 0 – 2 | 8     | 2 | 2     | None       | 9 – 6   |
| 6 | 29/10/19 | 06:05 | 09:05 | 03:00 | AF | 07:15 | 16:42 | 01:10 | N  | 6     | 3 – 6 | 2 | 2     | None       | 1 – 3   |
| 7 | 01/10/19 | 06:36 | 09:36 | 03:00 | AF | 07:18 | 18:52 | 00:42 | NE | 1 – 3 | 3 – 7 | 2 | 2     | None       | 7       |
| 7 | 11/10/19 | 06:20 | 09:20 | 03:00 | TG | 07:38 | 18:26 | 01:18 | SW | 4 – 5 | 2 – 4 | 2 | 2     | None       | 11 – 10 |
| 7 | 21/10/19 | 08:56 | 11:56 | 03:00 | AF | 07:58 | 18:01 | -     | SW | 0 – 1 | 2     | 2 | 2     | None       | 6 – 9   |
| 7 | 21/10/19 | 12:26 | 15:26 | 03:00 | AF | 07:58 | 18:01 | -     | SW | 1 – 3 | 6 – 8 | 2 | 2     | None       | 9       |
| 8 | 14/10/19 | 12:57 | 14:15 | 01:18 | AF | 07:44 | 18:18 | -     | S  | 0 – 1 | 6     | 2 | 2     | None       | 12      |
| 8 | 14/10/19 | 14:45 | 15:57 | 01:12 | AF | 07:44 | 18:18 | -     | S  | 0 – 1 | 4 – 6 | 2 | 2     | None       | 12      |
| 8 | 14/10/19 | 16:27 | 19:27 | 03:00 | AF | 07:44 | 18:18 | 01:09 | NE | 1 – 2 | 4     | 2 | 2     | None       | 12 – 9  |
| 8 | 15/10/19 | 06:41 | 09:41 | 03:00 | AF | 07:46 | 18:16 | 00:55 | N  | 0 – 1 | 8     | 0 | 1 – 2 | None       | 10      |
| 8 | 17/10/19 | 10:48 | 12:48 | 02:00 | AF | 07:50 | 18:11 | -     | SE | 1 – 2 | 2     | 2 | 2     | None       | 12      |
| 8 | 18/10/19 | 11:00 | 12:30 | 01:30 | AF | 07:52 | 18:08 | -     | O  | 0     | 8     | 2 | 2     | None       | 11      |
| 9 | 03/10/19 | 12:47 | 15:47 | 03:00 | AF | 07:22 | 18:46 | -     | E  | 2 – 3 | 8     | 2 | 2     | None       | 11 – 10 |
| 9 | 12/10/19 | 17:05 | 20:05 | 03:00 | TG | 07:40 | 18:23 | 01:42 | SW | 3     | 1     | 2 | 2 – 0 | None       | 12 – 10 |
| 9 | 29/10/19 | 09:48 | 12:48 | 03:00 | AF | 07:15 | 16:42 | -     | N  | 1     | 4 – 6 | 2 | 2     | None       | 5 – 7   |

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|    |          |       |       |       |    |       |       |       |      |       |       |       |       |       |         |
|----|----------|-------|-------|-------|----|-------|-------|-------|------|-------|-------|-------|-------|-------|---------|
| 10 | 02/10/19 | 06:17 | 09:17 | 03:00 | AF | 07:20 | 18:49 | 01:03 | E    | 0 – 1 | 0     | 2     | 2     | None  | 4 – 8   |
| 10 | 20/10/19 | 16:30 | 19:30 | 03:00 | TG | 07:56 | 18:03 | 01:27 | N    | 2     | 7     | 2     | 2     | None  | 12 – 10 |
| 10 | 24/10/19 | 06:30 | 09:30 | 03:00 | TG | 08:05 | 17:54 | 01:35 | W    | 3     | 3 – 6 | 2     | 0 – 2 | None  | 11 – 10 |
| 10 | 31/10/19 | 14:32 | 17:32 | 03:00 | AF | 07:19 | 16:38 | 00:54 | SW/E | 0 – 1 | 6 – 7 | 2     | 2     | None  | 8 – 6   |
| 11 | 02/10/19 | 09:47 | 12:47 | 03:00 | AF | 07:20 | 18:49 | -     | W    | 0 – 1 | 0     | 2     | 2     | None  | 12      |
| 11 | 12/10/19 | 13:30 | 16:30 | 03:00 | TG | 07:40 | 18:23 | -     | W    | 3     | 2 – 4 | 2     | 2     | None  | 13 – 14 |
| 11 | 25/10/19 | 16:05 | 19:05 | 03:00 | MS | 08:07 | 17:52 | 01:13 | NE   | 3 – 4 | 5     | 3     | 2     | None  | 6-5     |
| 11 | 28/10/19 | 05:50 | 08:50 | 03:00 | TG | 07:13 | 16:45 | 01:23 | O    | 0     | 0 – 1 | 2     | 0 – 2 | None  | -3      |
| 12 | 10/10/19 | 06:15 | 09:15 | 03:00 | TG | 07:36 | 18:28 | 01:21 | W    | 3 – 2 | 6 – 7 | 2     | 0,2,2 | None  | 12 – 13 |
| 12 | 18/10/19 | 06:55 | 09:55 | 03:00 | AF | 07:52 | 18:08 | 00:57 | W    | 1     | 8     | 2 – 1 | 2,1,1 | None  | 7 – 8   |
| 12 | 29/10/19 | 15:20 | 18:20 | 03:00 | TG | 07:15 | 16:42 | 01:38 | S    | 1 – 0 | 3 – 6 | 2     | 2,1,0 | None  | 8 – 5   |
| 13 | 03/10/19 | 16:44 | 19:44 | 03:00 | AF | 07:22 | 18:46 | 01:02 | E    | 2 – 3 | 8     | 2     | 2     | None  | 10      |
| 13 | 18/10/19 | 12:00 | 15:00 | 03:00 | CN | 07:52 | 18:08 | -     | SE   | 2 – 3 | 2 – 5 | 2     | 2     | None  | 12 – 13 |
| 13 | 24/10/19 | 10:30 | 13:30 | 03:00 | TG | 08:05 | 17:54 | -     | W    | 3     | 6 – 7 | 2     | 2     | LR100 | 10 – 11 |
| 13 | 29/10/19 | 11:15 | 14:15 | 03:00 | TG | 07:15 | 16:42 | -     | E    | 1     | 3 – 6 | 2     | 2     | None  | 7 – 8   |
| 12 | 06/11/19 | 13:18 | 16:18 | 03:00 | AF | 07:32 | 16:25 | -     | N    | 1 – 2 | 8     | 2     | 2     | None  | 7 – 5   |
| 2  | 15/11/19 | 09:54 | 12:54 | 03:00 | AF | 07:51 | 16:08 | -     | NW   | 1 – 3 | 4 – 8 | 2     | 2     | None  | 8 – 10  |
| 2  | 29/11/19 | 10:52 | 13:52 | 03:00 | AF | 08:18 | 15:49 | -     | none | n/a   | 0     | n/a   | 2     | None  | 3 – 5   |
| 3  | 15/11/19 | 06:24 | 09:24 | 03:00 | AF | 07:51 | 16:08 | 01:27 | NW   | 1     | 4 – 6 | 2     | 2     | None  | 2 – 4   |
| 3  | 27/11/19 | 10:07 | 13:07 | 03:00 | AF | 08:14 | 15:51 | -     | NE   | 0 – 2 | 6 – 8 | 0 – 2 | 0 – 2 | None  | 8       |
| 4  | 12/11/19 | 13:36 | 16:36 | 03:00 | AF | 07:45 | 16:14 | 00:22 | NW   | 0 – 2 | 6 – 8 | 2     | 2     | None  | 10      |
| 4  | 28/11/19 | 14:03 | 17:03 | 03:00 | AF | 08:16 | 15:50 | 01:13 | NW   | 0 – 1 | 6     | 2     | 2     | None  | 6 – 7   |
| 5  | 18/11/19 | 06:31 | 09:31 | 03:00 | AF | 07:57 | 16:03 | 01:26 | S    | 0 – 1 | 0     | n/a   | 2     | None  | -2 – -3 |

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|    |          |       |       |       |    |       |       |       |      |       |       |       |       |                |         |
|----|----------|-------|-------|-------|----|-------|-------|-------|------|-------|-------|-------|-------|----------------|---------|
| 5  | 26/11/19 | 14:17 | 17:17 | 03:00 | AF | 08:13 | 15:52 | 01:25 | E    | 1 – 2 | 8     | 2     | 1 – 2 | LR60<br>MR3.33 | 8       |
| 6  | 14/11/19 | 10:33 | 13:33 | 03:00 | AF | 07:49 | 16:10 | -     | N    | 1 – 2 | 0     | n/a   | 2     | None           | 4       |
| 6  | 20/11/19 | 14:23 | 17:23 | 03:00 | AF | 08:01 | 16:00 | 01:23 | none | n/a   | 7     | 2     | 2     | None           | 5 – 6   |
| 7  | 14/11/19 | 07:30 | 09:30 | 02:00 | AF | 07:49 | 16:10 | 00:19 | none | n/a   | 0     | n/a   | 2     | None           | 2       |
| 7  | 19/11/19 | 10:25 | 13:25 | 03:00 | AF | 07:59 | 16:02 | -     | none | n/a   | 6 – 8 | 2     | 2     | None           | 1 – 2   |
| 7  | 27/11/19 | 14:00 | 15:00 | 01:00 | AF | 08:14 | 15:51 | -     | none | n/a   | 6     | 0 – 1 | 2     | None           | 10      |
| 8  | 18/11/19 | 13:07 | 16:07 | 03:00 | AF | 07:57 | 16:03 | 00:04 | W    | 0 – 1 | 2     | 2     | 2     | None           | 0 – 5   |
| 8  | 20/11/19 | 10:45 | 13:45 | 03:00 | AF | 08:01 | 16:00 | -     | E    | 1     | 8     | 1     | 2     | None           | 4 – 5   |
| 9  | 13/11/19 | 11:19 | 14:19 | 03:00 | AF | 07:47 | 16:12 | -     | E/NE | 0 – 2 | 8     | 0 – 2 | 0 – 2 | None           | 1 – 3   |
| 10 | 19/11/19 | 06:40 | 09:40 | 03:00 | AF | 07:59 | 16:02 | 01:19 | E    | 0 – 1 | 2     | 2     | 2     | None           | -3 – -4 |
| 10 | 28/11/19 | 10:33 | 13:33 | 03:00 | AF | 08:16 | 15:50 | -     | NW   | 0 – 1 | 3 – 5 | 2     | 2     | LR5            | 4 – 5   |
| 11 | 19/11/19 | 13:55 | 16:55 | 03:00 | AF | 07:59 | 16:02 | 00:53 | none | n/a   | 8     | 2     | 2     | None           | 3 – 5   |
| 11 | 26/11/19 | 10:47 | 13:47 | 03:00 | AF | 08:13 | 15:52 | -     | NW   | 2     | 8     | 1     | 2     | None           | 8       |
| 12 | 20/11/19 | 06:50 | 09:50 | 03:00 | AF | 08:01 | 16:00 | 01:11 | NW   | 0 – 1 | 8     | 2     | 2     | None           | 2 – 4   |
| 12 | 29/11/19 | 07:07 | 10:07 | 03:00 | AF | 08:18 | 15:49 | 01:11 | none | n/a   | 0     | n/a   | 2     | None           | 0 – 1   |
| 13 | 13/11/19 | 15:08 | 17:08 | 02:00 | AF | 07:47 | 16:12 | 00:56 | NE   | 0 – 1 | 8     | 1 – 2 | 2     | None           | 2 – 3   |
| 13 | 18/11/19 | 10:06 | 12:06 | 02:00 | AF | 07:57 | 16:03 | -     | S    | 0 – 1 | 0     | n/a   | 0 – 2 | None           | 2 – 5   |
| 13 | 25/11/19 | 14:18 | 16:18 | 02:00 | AF | 08:11 | 15:53 | 00:25 | N    | 0 – 1 | 8     | 1     | 1     | None           | 9       |
| 2  | 12/12/19 | 07:46 | 10:46 | 03:00 | AF | 08:37 | 15:41 | 00:51 | S    | 1 – 2 | 2 – 7 | 2     | 2     | None           | 4       |
| 2  | 19/12/19 | 13:27 | 15:27 | 02:00 | AF | 08:43 | 15:41 | -     | SE   | 1 – 2 | 8     | 2     | 2     | LR7.5          | 7       |
| 2  | 10/01/20 | 13:56 | 14:56 | 01:00 | AF | 08:42 | 16:04 | -     | SW   | 1 – 3 | 8     | 2     | 2     | None           | 5       |
| 3  | 09/12/19 | 11:10 | 13:10 | 02:00 | AF | 08:33 | 15:42 | -     | W    | 2     | 0     | n/a   | 2     | None           | 6       |

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|    |          |       |       |       |    |       |       |       |      |       |       |     |       |             |       |
|----|----------|-------|-------|-------|----|-------|-------|-------|------|-------|-------|-----|-------|-------------|-------|
| 3  | 20/12/19 | 10:01 | 13:01 | 03:00 | AF | 08:44 | 15:42 | -     | SW   | 1 – 2 | 6 – 8 | 2   | 2     | LR3.3       | 8     |
| 3  | 20/12/19 | 13:31 | 14:31 | 01:00 | AF | 08:44 | 15:42 | -     | SW   | 1 – 2 | 8     | 2   | 2     | None        | 9     |
| 4  | 09/12/19 | 13:40 | 16:20 | 02:40 | AF | 08:33 | 15:42 | 00:38 | SW   | 0 – 1 | 0     | n/a | 2     | None        | 4 – 3 |
| 4  | 11/12/19 | 15:10 | 15:50 | 00:40 | AF | 08:36 | 15:41 | 00:09 | SW   | 2 – 4 | 8     | 1-2 | 2     | LR30 MR20   | 9     |
| 4  | 09/01/20 | 15:55 | 16:55 | 01:00 | AF | 08:43 | 16:03 | 00:52 | SE   | 1     | 2     | 2   | 2     | None        | 3 – 2 |
| 4  | 10/01/20 | 15:26 | 17:06 | 01:40 | AF | 08:42 | 16:04 | 01:02 | SW   | 1     | 8     | 2   | 2     | None        | 6     |
| 5  | 16/12/19 | 10:19 | 13:19 | 03:00 | AF | 08:41 | 15:41 | -     | SW   | 2 – 3 | 8     | 2   | 2     | LR50 MR5    | 6     |
| 5  | 16/12/19 | 13:49 | 14:36 | 00:47 | AF | 08:41 | 15:41 | -     | SW   | 1 – 2 | 8     | 2   | 2     | None        | 6     |
| 5  | 20/12/19 | 07:15 | 09:28 | 02:13 | AF | 08:44 | 15:42 | 01:29 | SE   | 2 – 3 | 6     | 2   | 2     | None        | 5     |
| 6  | 10/12/19 | 07:55 | 10:55 | 03:00 | AF | 08:35 | 15:41 | 00:40 | S    | 2 – 4 | 8     | 1   | 2     | LR60 MR16.7 | 9     |
| 6  | 13/12/19 | 13:18 | 16:18 | 03:00 | AF | 08:38 | 15:41 | 00:37 | SW   | 1 – 3 | 7     | 2   | 2     | None        | 6     |
| 7  | 06/12/19 | 11:53 | 14:53 | 03:00 | AF | 08:29 | 15:43 | -     | W/SW | 2     | 8     | 1-2 | 2     | None        | 9     |
| 7  | 10/12/19 | 11:25 | 13:25 | 02:00 | AF | 08:35 | 15:41 | -     | SW   | 1 – 3 | 8     | 2   | 1 – 2 | LR30 MR11.7 | 8     |
| 7  | 16/12/19 | 15:11 | 16:11 | 01:00 | AF | 08:41 | 15:41 | 00:30 | SW   | 1 – 2 | 8     | 2   | 2     | None        | 8     |
| 8  | 13/12/19 | 09:45 | 12:45 | 03:00 | AF | 08:38 | 15:41 | -     | SW   | 1 – 2 | 3 – 7 | 2   | 2     | None        | 8     |
| 8  | 09/01/20 | 12:26 | 15:26 | 03:00 | AF | 08:43 | 16:03 | -     | SE   | 0 – 1 | 3 – 4 | 2   | 2     | None        | 6 – 4 |
| 10 | 11/12/19 | 11:55 | 14:55 | 03:00 | AF | 08:36 | 15:41 | -     | SW   | 1 – 4 | 2 – 6 | 2   | 2     | LR1.7 SL8.3 | 5 – 4 |
| 10 | 17/12/19 | 09:31 | 12:31 | 03:00 | AF | 08:42 | 15:41 | -     | SW   | 1 – 2 | 2 – 4 | 2   | 2     | None        | 6     |
| 11 | 04/12/19 | 13:27 | 16:27 | 03:00 | AF | 08:26 | 15:45 | 00:42 | S/SW | 1 – 2 | 1 – 8 | 2   | 2     | LR8.3       | 7 – 8 |
| 11 | 17/12/19 | 13:01 | 16:01 | 03:00 | AF | 08:42 | 15:41 | 00:20 | SW   | 0 – 2 | 4     | 2   | 2     | None        | 7 – 6 |

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|           |          |       |       |       |    |       |       |       |      |       |       |       |       |                 |       |
|-----------|----------|-------|-------|-------|----|-------|-------|-------|------|-------|-------|-------|-------|-----------------|-------|
| <b>12</b> | 04/12/19 | 09:57 | 12:57 | 03:00 | AF | 08:26 | 15:45 | -     | S/SW | 2 – 3 | 8     | 0 – 2 | 1–2   | LR72.6<br>MR3.3 | 8     |
| <b>12</b> | 10/01/20 | 10:21 | 13:21 | 03:00 | AF | 08:42 | 16:04 | -     | SW   | 0 – 2 | 1 – 8 | 2     | 2     | None            | 4 – 6 |
| <b>13</b> | 04/12/19 | 07:27 | 09:27 | 02:00 | AF | 08:26 | 15:45 | 00:59 | SW   | 1 – 3 | 8     | 2     | 2     | None            | 8     |
| <b>13</b> | 18/12/19 | 13:18 | 15:18 | 02:00 | AF | 08:43 | 15:41 | -     | E    | 0 – 1 | 8     | 1     | 2     | LR20            | 4     |
| <b>13</b> | 19/12/19 | 10:50 | 12:50 | 02:00 | AF | 08:43 | 15:41 | -     | SE/E | 0 – 1 |       | 2     | 2     | None            | 9     |
| <b>2</b>  | 24/01/20 | 14:40 | 17:40 | 03:00 | ND | 08:25 | 16:31 | 01:09 | W    | 1-2   | 8     | 1     | 1 – 3 | LR41.6          | 7     |
| <b>2</b>  | 31/01/20 | 10:50 | 13:50 | 03:00 | ND | 08:13 | 16:45 | -     | SW   | 2-3   | 8     | 1     | 1 – 2 | LR1             | 11    |
| <b>3</b>  | 13/01/20 | 08:42 | 11:42 | 03:00 | AF | 08:39 | 16:09 | -     | W    | 3-5   | 8     | 2     | 2     | LR5             | 6     |
| <b>3</b>  | 13/01/20 | 12:12 | 15:12 | 03:00 | AF | 08:39 | 16:09 | -     | W    | 2 – 4 | 8     | 2     | 2     | None            | 6     |
| <b>4</b>  | 20/01/20 | 14:28 | 17:28 | 03:00 | AF | 08:31 | 16:22 | 01:06 | SW   | 1 – 2 | 8     | 1     | 2     | None            | 7 – 6 |
| <b>4</b>  | 28/01/20 | 14:48 | 17:48 | 03:00 | AF | 08:18 | 16:39 | 01:09 | S    | 0 – 1 | 8     | 1     | 2     | LR2.3<br>MR6.7  | 4 – 2 |
| <b>5</b>  | 15/01/20 | 07:37 | 10:37 | 03:00 | AF | 08:37 | 16:13 | 01:00 | SW   | 2 – 4 | 8     | 2     | 2     | LR7             | 5 – 6 |
| <b>5</b>  | 27/01/20 | 07:28 | 10:28 | 03:00 | AF | 08:20 | 16:37 | 00:52 | SE   | 2 – 3 | 6 – 8 | 2     | 2     | SN16.6          | 3 – 4 |
| <b>6</b>  | 16/01/20 | 07:24 | 10:24 | 03:00 | AF | 08:36 | 16:15 | 01:12 | S    | 1 – 3 | 7     | 2     | 2     | None            | 8     |
| <b>6</b>  | 28/01/20 | 11:15 | 14:15 | 03:00 | AF | 08:18 | 16:39 | -     | S    | 0 – 2 | 8     | 2     | 2     | LR20            | 4     |
| <b>7</b>  | 17/01/20 | 13:56 | 16:56 | 03:00 | AF | 08:35 | 16:17 | 00:39 | S    | 1 – 2 | 8 – 1 | 2     | 2     | None            | 6 – 5 |
| <b>7</b>  | 28/01/20 | 07:45 | 10:45 | 03:00 | AF | 08:18 | 16:39 | 00:33 | S    | 1 – 2 | 1 – 8 | 2     | 2     | LR5             | 2 – 3 |
| <b>8</b>  | 15/01/20 | 11:07 | 14:07 | 03:00 | AF | 08:37 | 16:13 | -     | SW   | 3 – 5 | 7 – 8 | 2     | 2     | None            | 6     |
| <b>8</b>  | 22/01/20 | 07:41 | 10:41 | 03:00 | AF | 08:28 | 16:26 | 00:47 | SW   | 1 – 2 | 8 – 6 | 1     | 2     | None            | 9     |
| <b>10</b> | 16/01/20 | 11:25 | 14:25 | 03:00 | AF | 08:36 | 16:15 | -     | S/E  | 1 – 4 | 8     | 2     | 2     | LR11            | 8     |
| <b>10</b> | 27/01/20 | 14:28 | 17:28 | 03:00 | AF | 08:20 | 16:37 | 00:51 | S    | 1 – 2 | 7 – 8 | 2     | 2     | None            | 5 – 4 |

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|    |          |       |       |       |    |       |       |       |    |       |       |       |       |                         |       |
|----|----------|-------|-------|-------|----|-------|-------|-------|----|-------|-------|-------|-------|-------------------------|-------|
| 11 | 20/01/20 | 10:58 | 13:58 | 03:00 | AF | 08:31 | 16:22 | -     | SW | 1 – 4 | 8     | 2     | 2     | None                    | 7     |
| 11 | 27/01/20 | 10:58 | 13:58 | 03:00 | AF | 08:20 | 16:37 | -     | S  | 1 – 2 | 5 – 8 | 2     | 2     | LR3.3<br>SL13.3         | 4 – 6 |
| 12 | 21/01/20 | 07:42 | 10:42 | 03:00 | AF | 08:29 | 16:24 | 00:47 | S  | 0 – 2 | 8     | 1 – 0 | 1     | LR8.3                   | 8     |
| 12 | 31/01/20 | 12:06 | 15:06 | 03:00 | AF | 08:13 | 16:45 | -     | S  | 1     | 8     | 2     | 2     | None                    | 12    |
| 13 | 17/01/20 | 10:26 | 13:26 | 03:00 | AF | 08:35 | 16:17 | -     | S  | 1 – 2 | 8     | 2     | 2     | None                    | 8     |
| 13 | 21/01/20 | 11:12 | 14:12 | 03:00 | AF | 08:29 | 16:24 | -     | S  | 0 – 1 | 8     | 1     | 2 – 1 | LR15                    | 9     |
| 2  | 08/02/20 | 07:20 | 10:20 | 03:00 | MS | 07:57 | 17:03 | 00:37 | W  | 4 – 6 | 6 – 8 | 2     | 2     | LR8                     | 4     |
| 2  | 20/02/20 | 11:20 | 14:20 | 03:00 | TG | 07:30 | 17:29 | -     | W  | 4 – 5 | 5 – 6 | 2     | 2     | SN22                    | 3 – 4 |
| 2  | 26/02/20 | 12:00 | 15:00 | 03:00 | TG | 07:16 | 17:42 | -     | W  | 4     | 3 – 4 | 2     | 2     | None                    | 3 – 4 |
| 2  | 28/02/20 | 15:30 | 18:30 | 03:00 | TG | 07:11 | 17:46 | 00:44 | E  | 1     | 8     | 0     | 2 – 1 | LR33                    | 2     |
| 3  | 03/02/20 | 07:20 | 10:20 | 03:00 | AF | 08:07 | 16:52 | 00:47 | SW | 2 – 5 | 4 – 8 | 2     | 1 – 2 | LR8.3<br>MR8.3<br>SL1.6 | 8     |
| 3  | 03/02/20 | 10:50 | 13:50 | 03:00 | AF | 08:07 | 16:52 | -     | SW | 3 – 5 | 3 – 7 | 2     | 2     | LR9 SL2<br>SN2          | 5 – 4 |
| 3  | 18/02/20 | 12:07 | 15:07 | 03:00 | AF | 07:35 | 17:25 | -     | SW | 2 – 5 | 4 – 8 | 2     | 2     | LR20                    | 4 – 5 |
| 3  | 18/02/20 | 15:37 | 18:37 | 03:00 | AF | 07:35 | 17:25 | 01:12 | SW | 2 – 4 | 4 – 8 | 2     | 2,1,2 | LR5 SN1                 | 4 – 3 |
| 4  | 03/02/20 | 14:50 | 17:50 | 03:00 | AF | 08:07 | 16:52 | 00:56 | SW | 2 – 8 | 4 – 8 | 2     | 2     | None                    | 7 – 5 |
| 4  | 05/02/20 | 14:52 | 17:52 | 03:00 | AF | 08:03 | 16:56 | 00:56 | SW | 0 – 1 | 7 – 8 | 2     | 2     | None                    | 8 – 7 |
| 4  | 06/02/20 | 11:25 | 14:25 | 03:00 | AF | 08:01 | 16:58 | -     | S  | 0 – 2 | 7 – 8 | 2     | 2     | None                    | 8-9   |
| 4  | 17/02/20 | 15:25 | 18:25 | 03:00 | AF | 07:37 | 17:23 | 01:02 | SW | 2 – 4 | 6 – 8 | 2     | 2     | LR16.6<br>MR6.6         | 6 – 5 |
| 5  | 04/02/20 | 07:14 | 10:14 | 03:00 | AF | 08:05 | 16:54 | 00:51 | SW | 0 – 2 | 5 – 7 | 2     | 2     | LR2                     | 5 – 6 |

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|    |          |       |       |       |        |       |       |       |      |     |     |     |       |             |       |
|----|----------|-------|-------|-------|--------|-------|-------|-------|------|-----|-----|-----|-------|-------------|-------|
| 5  | 12/02/20 | 09:19 | 12:19 | 03:00 | AF     | 07:49 | 17:12 | –     | SW   | 2–4 | 3–8 | 2   | 2     | SN36        | 3     |
| 5  | 12/02/20 | 12:49 | 15:49 | 03:00 | AF     | 07:49 | 17:12 | –     | SW   | 1–3 | 3   | 2   | 2     | None        | 4–5   |
| 5  | 17/02/20 | 11:55 | 14:55 | 03:00 | AF     | 07:37 | 17:23 | –     | SW   | 2–5 | 7–8 | 2   | 2     | None        | 7–6   |
| 6  | 04/02/20 | 11:25 | 14:25 | 03:00 | AF     | 08:05 | 16:54 | –     | SW/N | 0–2 | 3   | 2   | 2     | None        | 8     |
| 6  | 04/02/20 | 14:55 | 17:55 | 03:00 | AF     | 08:05 | 16:54 | 01:01 | N/SW | 0–1 | 2–3 | 2   | 2     | None        | 6–5   |
| 6  | 13/02/20 | 10:50 | 13:50 | 03:00 | AF     | 07:46 | 17:14 | –     | N/NW | 1–2 | 8   | 2   | 2     | LR60        | 8     |
| 6  | 14/02/20 | 14:40 | 17:40 | 03:00 | AF     | 07:44 | 17:16 | 00:24 | SW   | 2–4 | 7–8 | 2   | 2     | None        | 9–8   |
| 7  | 05/02/20 | 06:58 | 09:58 | 03:00 | AF     | 08:03 | 16:56 | 01:05 | SW   | 0–1 | 8   | 1   | 2,1,2 | LR2         | 5–6   |
| 7  | 05/02/20 | 11:22 | 14:22 | 03:00 | AF     | 08:03 | 16:56 | –     | SW   | 0–1 | 8   | 2   | 2     | None        | 8     |
| 7  | 06/02/20 | 14:56 | 17:56 | 03:00 | AF     | 08:01 | 16:58 | 00:58 | S    | 0–1 | 4–6 | 2   | 2     | None        | 9–6   |
| 7  | 13/02/20 | 15:00 | 18:00 | 03:00 | AF     | 07:46 | 17:14 | –     | N    | 0–2 | 7   | 2   | 2     | None        | 7     |
| 8  | 22/01/20 | 11:11 | 14:11 | 03:00 | AF     | 08:28 | 16:26 | –     | SW   | 1   | 4–8 | 1   | 2     | None        | 9–10  |
| 8  | 14/02/20 | 07:27 | 10:27 | 03:00 | AF     | 07:44 | 17:16 | 00:17 | S    | 2–5 | 8   | 2   | 2,1,2 | LR33.3      | 5–7   |
| 8  | 14/02/20 | 10:57 | 13:57 | 03:00 | AF     | 07:44 | 17:16 | –     | SW   | 2–3 | 8   | 2   | 2     | LR50        | 7–8   |
| 8  | 26/02/20 | 13:30 | 16:30 | 03:00 | AF     | 07:16 | 17:42 | –     | W    | 2–4 | 2–4 | 2   | 2     | None        | 7–6   |
| 10 | 07/02/20 | 07:00 | 10:00 | 03:00 | TG+RPG | 07:59 | 17:01 | 00:59 | SE   | 0–1 | 1–6 | 2–1 | 2–1   | None        | -3    |
| 10 | 14/02/20 | 15:40 | 18:40 | 03:00 | RPG    | 07:44 | 17:16 | 01:24 | W    | 4–5 | 5   | 2   | 2     | SL11        | 4–2   |
| 10 | 25/02/20 | 10:30 | 13:30 | 03:00 | TG     | 07:18 | 17:40 | –     | W    | 2–3 | 6–7 | 2   | 2     | LR22        | 3     |
| 10 | 28/02/20 | 12:00 | 15:00 | 03:00 | TG     | 07:11 | 17:46 | –     | SE   | 3   | 8   | 2–1 | 2–1   | LR33 SN33   | 2–0   |
| 11 | 07/02/20 | 11:15 | 14:15 | 03:00 | TG+RPG | 07:59 | 17:01 | –     | E    | 2   | 5–7 | 2   | 2     | None        | 1–6   |
| 11 | 24/02/20 | 15:45 | 18:45 | 03:00 | TG     | 07:21 | 17:38 | 01:07 | NW   | 3   | 8   | 1–2 | 1–2   | LR22 SN11   | 3     |
| 11 | 26/02/20 | 06:25 | 09:25 | 03:00 | TG     | 07:16 | 17:42 | 00:51 | W    | 1–2 | 3–6 | 1–2 | 0,2,2 | LR11 SN11   | -2–-1 |
| 11 | 27/02/20 | 12:45 | 15:45 | 03:00 | RPG    | 07:13 | 17:44 | –     | W    | 4–5 | 2–7 | 0   | 2     | SL0.5 SN0.5 | 4–5   |

|           |          |       |       |       |        |       |       |       |    |       |       |       |   |       |       |
|-----------|----------|-------|-------|-------|--------|-------|-------|-------|----|-------|-------|-------|---|-------|-------|
| <b>12</b> | 19/02/20 | 06:30 | 09:30 | 03:00 | TG     | 07:33 | 17:27 | 01:03 | SW | 0 – 2 | 2 – 7 | 2     | 2 | LR11  | 1 – 3 |
| <b>12</b> | 19/02/20 | 10:15 | 13:15 | 03:00 | TG     | 07:33 | 17:27 | –     | SW | 3     | 8     | 2     | 2 | LR22  | 5     |
| <b>12</b> | 25/02/20 | 14:00 | 17:00 | 03:00 | TG     | 07:18 | 17:40 | –     | W  | 1 – 2 | 6 – 7 | 2     | 2 | LR11  | 3 – 4 |
| <b>12</b> | 27/02/20 | 15:45 | 18:45 | 03:00 | TG     | 07:13 | 17:44 | 01:01 | W  | 1 – 3 | 1 – 3 | 2     | 2 | None  | 5 – 3 |
| <b>13</b> | 08/02/20 | 11:10 | 14:10 | 03:00 | MS     | 07:57 | 17:03 | –     | W  | 2 – 3 | 1     | 2     | 2 | None  | 3 – 4 |
| <b>13</b> | 13/02/20 | 06:50 | 09:50 | 03:00 | TG+RPG | 07:46 | 17:14 | 00:56 | NE | 3     | 8     | 2     | 2 | LR100 | 1 – 2 |
| <b>13</b> | 23/02/20 | 15:35 | 18:35 | 03:00 | RPG    | 07:23 | 17:36 | 00:59 | W  | 5 – 4 | 2 – 8 | 1 – 2 | 2 | None  | 6 – 3 |
| <b>13</b> | 27/02/20 | 09:00 | 12:00 | 03:00 | RPG    | 07:13 | 17:44 | –     | W  | 4     | 1 – 6 | 0     | 2 | None  | 1 – 3 |

<sup>1</sup> S = Surveyor initials

<sup>2</sup> Twilight = amount of survey time (where applicable) that took place before sunrise or after sunset

<sup>3</sup> Wind speed = Beaufort scale

<sup>4</sup> Cloud cover (approximate) = eighths of sky

<sup>5</sup> Cloud height (approximate): 0 = <150 m, 1 = 150-900 m, 2 = >900 m

<sup>6</sup> Visibility (approximate): 0 = <1 km, 1 = 1-3 km, 2 = >3 km

<sup>7</sup> Precipitation gives approximate percentages for the types that occurred: LR = light rain/drizzle, MR = moderate rain, HR = heavy rain, SL = sleet, SN = snow, H = hail, None = no precipitation.

\* Data not recorded by surveyor

**Table A.2. VP survey details in the 2021/22 non-breeding season**

| VP       | Date     | Start | End   | Dura-<br>tion | S1 | Sunrise | Sunset | Twilight <sup>2</sup> | Wind<br>Direc | Wind<br>Speed <sup>3</sup> | Cloud<br>cover <sup>4</sup> | Cloud<br>height <sup>5</sup> | Vis <sup>6</sup> | Precipitation <sup>7</sup> | Temp<br>(°C) |
|----------|----------|-------|-------|---------------|----|---------|--------|-----------------------|---------------|----------------------------|-----------------------------|------------------------------|------------------|----------------------------|--------------|
| <b>4</b> | 16/09/21 | 06:25 | 09:25 | 03:00         | TG | 06:49   | 19:30  | 00:24                 | SW            | 0-1                        | 2                           | 2                            | 2                | None                       | 8-9          |
| <b>4</b> | 21/09/21 | 13:35 | 16:35 | 03:00         | TG | 06:59   | 19:17  | -                     | SW            | 4                          | 4                           | 2                            | 3                | None                       | 15-16        |
| <b>5</b> | 17/09/21 | 06:25 | 09:25 | 03:00         | SJ | 06:51   | 19:27  | 00:26                 | S             | 3 – 4                      | 5 - 8                       | 1                            | 2                | None                       | 14-15        |
| <b>5</b> | 17/09/21 | 09:57 | 12:57 | 03:00         | SJ | 06:51   | 19:27  | -                     | S             | 3-4                        | 8-7                         | 1                            | 2                | None                       | 16           |
| <b>6</b> | 16/09/21 | 10:22 | 13:22 | 03:00         | SJ | 06:49   | 19:30  | -                     | W             | 3                          | 3                           | 1                            | 2                | None                       | 14-17        |

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|    |          |       |       |       |    |       |       |       |      |     |     |     |     |                |       |
|----|----------|-------|-------|-------|----|-------|-------|-------|------|-----|-----|-----|-----|----------------|-------|
| 6  | 16/09/21 | 14:00 | 17:00 | 03:00 | SJ | 06:49 | 19:30 | -     | SW   | 1-2 | 2-8 | 1   | 2   | None           | 18    |
| 7  | 21/09/21 | 13:30 | 16:30 | 03:00 | SR | 06:59 | 19:17 | -     | SW   | 4   | 3-4 | 1   | 2   | None           | 19-18 |
| 7  | 28/09/21 | 06:35 | 09:35 | 03:00 | TG | 07:13 | 18:58 | 00:38 | S    | 2   | 1   | 2   | 3   | None           | 6-7   |
| 8  | 15/09/21 | 10:38 | 13:38 | 03:00 | SJ | 06:47 | 19:33 | -     | SW   | 1-2 | 5-8 | 0-1 | 1   | None           | 15-17 |
| 8  | 15/09/21 | 14:18 | 17:18 | 03:00 | SJ | 06:47 | 19:33 | -     | W    | 3-4 | 3-6 | 1   | 1   | None           | 17    |
| 10 | 21/09/21 | 17:25 | 20:25 | 03:00 | SR | 06:59 | 19:17 | 01:08 | W    | 4-2 | 2-6 | 1   | 2   | None           | 16-12 |
| 10 | 28/09/21 | 10:05 | 13:05 | 03:00 | TG | 07:13 | 18:58 | -     | S    | 3-4 | 3-7 | 2   | 2   | None           | 9-11  |
| 11 | 21/09/21 | 17:30 | 20:30 | 03:00 | TG | 06:59 | 19:17 | 01:13 | W    | 4-3 | 4-7 | 2   | 2-1 | None           | 16-12 |
| 11 | 29/09/21 | 13:45 | 16:45 | 03:00 | TG | 07:15 | 18:56 | -     | W    | 3-4 | 6-3 | 2   | 2   | LR 1.7         | 12    |
| 12 | 16/09/21 | 10:00 | 13:00 | 03:00 | TG | 06:49 | 19:30 | -     | W    | 1   | 3-5 | 2   | 2   | None           | 11-16 |
| 12 | 29/09/21 | 17:15 | 20:15 | 03:00 | TG | 07:15 | 18:56 | 01:19 | W    | 2-0 | 3-2 | 2   | 2-1 | None           | 12-10 |
| 13 | 20/09/21 | 15:00 | 18:00 | 03:00 | SJ | 06:57 | 19:19 | -     | SW   | 5-4 | 8   | 0-1 | 1-2 | D 13.3 LR 6.7  | 16-15 |
| 13 | 23/09/21 | 09:25 | 12:25 | 03:00 | SJ | 07:03 | 19:11 | -     | W    | 5-4 | 7-8 | 1-0 | 2   | D 1.7          | 14-15 |
| 4  | 08/10/21 | 07:10 | 10:10 | 03:00 | JM | 07:33 | 18:32 | 00:23 | S    | 3   | 8   | 1-2 | 1-2 | D 70 LR 6.7    | 15    |
| 4  | 08/10/21 | 10:48 | 13:48 | 03:00 | JM | 07:33 | 18:32 | -     | S    | 3   | 8   | 1-2 | 1-2 | D 56.7 LR 10   | 15    |
| 5  | 06/10/21 | 07:23 | 10:23 | 03:00 | JM | 07:29 | 18:37 | 00:06 | SW   | 0-1 | 1   | 2   | 2   | None           | 4-7   |
| 5  | 06/10/21 | 11:08 | 14:08 | 03:00 | JM | 07:29 | 18:37 | -     | SW/S | 1-2 | 0-3 | 2   | 2   | None           | 10-13 |
| 6  | 05/10/21 | 09:13 | 12:13 | 03:00 | JM | 07:27 | 18:40 | -     | NW   | 3   | 4-8 | 2   | 2   | None           | 9-10  |
| 6  | 05/10/21 | 12:47 | 15:54 | 03:00 | JM | 07:27 | 18:40 | -     | N    | 3-4 | 8   | 2   | 2   | None           | 11    |
| 7  | 07/10/21 | 10:30 | 13:30 | 03:00 | JM | 07:31 | 18:35 | -     | SW   | 3   | 8   | 1-2 | 1-2 | D 25 LR 6.7    | 16-18 |
| 7  | 07/10/21 | 14:07 | 17:07 | 03:00 | JM | 07:31 | 18:35 | -     | SW   | 4-5 | 8   | 1-2 | 0-2 | D 26.7 LR 28.3 | 18-16 |
| 8  | 18/10/21 | 07:35 | 10:35 | 03:00 | SJ | 07:53 | 18:07 | 00:18 | SE   | 1-2 | 8   | 1   | 0-1 | D 26.7 LR 6.7  | 12-13 |

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|           |          |       |       |       |    |       |       |       |      |     |     |     |     |                        |       |
|-----------|----------|-------|-------|-------|----|-------|-------|-------|------|-----|-----|-----|-----|------------------------|-------|
| <b>8</b>  | 18/10/21 | 11:05 | 14:05 | 03:00 | SJ | 07:53 | 18:07 | -     | SE   | 1   | 8   | 0-2 | 1-2 | D 6.7 LR 16.7 HR 16.7  | 13    |
| <b>13</b> | 04/10/21 | 13:08 | 16:08 | 03:00 | JM | 07:25 | 18:42 | -     | SW   | 3   | 7-6 | 2   | 2   | None                   | 12    |
| <b>13</b> | 04/10/21 | 16:38 | 19:38 | 03:00 | JM | 07:25 | 18:42 | 00:56 | SW   | 3-0 | 5-3 | 2   | 2-0 | None                   | 9-12  |
| <b>4</b>  | 26/10/21 | 10:31 | 13:31 | 03:00 | JM | 08:10 | 17:48 | -     | SW   | 3   | 8   | 2   | 2   | D 11.7                 | 11-12 |
| <b>4</b>  | 26/10/21 | 14:24 | 17:24 | 03:00 | JM | 08:10 | 17:48 | -     | SW   | 3-4 | 8   | 2   | 2   | D 46.7                 | 12-11 |
| <b>5</b>  | 28/10/21 | 07:54 | 10:54 | 03:00 | JM | 08:14 | 17:43 | 00:20 | SW/S | 1-2 | 8   | 2   | 1-2 | D 36.7                 | 11-12 |
| <b>5</b>  | 28/10/21 | 11:29 | 14:29 | 03:00 | JM | 08:14 | 17:43 | -     | S    | 2   | 8   | 1-2 | 1-2 | D 25 LR 75             | 13    |
| <b>6</b>  | 27/10/21 | 09:02 | 12:02 | 03:00 | JM | 08:12 | 17:46 | -     | SW   | 4   | 7-8 | 2   | 2   | LR 25 HR 8.3           | 15    |
| <b>6</b>  | 27/10/21 | 12:34 | 15:34 | 03:00 | JM | 08:12 | 17:46 | -     | SW   | 4-3 | 8   | 2-1 | 2-1 | D 35 LR 58.3           | 15-14 |
| <b>7</b>  | 29/10/21 | 07:54 | 10:54 | 03:00 | JM | 08:16 | 17:41 | 00:22 | SW   | 0-1 | 8   | 0-1 | 0-1 | D 45 LR 55             | 11-12 |
| <b>7</b>  | 29/10/21 | 11:24 | 14:24 | 03:00 | JM | 08:16 | 17:41 | -     | W    | 2-3 | 8   | 1-2 | 1-2 | LR 68.3 D 18.3         | 12-13 |
| <b>8</b>  | 26/10/21 | 12:30 | 15:30 | 03:00 | SJ | 08:10 | 17:48 | -     | SW   | 4-2 | 8   | 2-1 | 2-1 | D 30 LR 13.3           | 13-14 |
| <b>8</b>  | 28/10/21 | 14:50 | 17:50 | 03:00 | SJ | 08:14 | 17:43 | 00:07 | S    | 1   | 8-1 | 0-2 | 1-2 | None                   | 12-11 |
| <b>10</b> | 11/10/21 | 16:40 | 19:40 | 03:00 | TG | 07:39 | 18:24 | 01:16 | W    | 3-2 | 8   | 2   | 2-1 | None                   | 12-10 |
| <b>10</b> | 13/10/21 | 10:15 | 13:15 | 03:00 | TG | 07:43 | 18:19 | -     | W    | 3   | 7-8 | 2   | 2   | None                   | 12-13 |
| <b>10</b> | 20/10/21 | 10:30 | 13:30 | 03:00 | TG | 07:57 | 18:02 | -     | W    | 3-4 | 4-7 | 2   | 2   | None                   | 9-11  |
| <b>10</b> | 26/10/21 | 16:05 | 19:05 | 03:00 | TG | 08:10 | 17:48 | 01:17 | W    | 5   | 8   | 2   | 2-1 | None                   | 13-12 |
| <b>11</b> | 11/10/21 | 13:10 | 16:10 | 03:00 | TG | 07:39 | 18:24 | -     | W    | 3   | 8   | 2   | 2   | None, one light shower | 13-12 |
| <b>11</b> | 16/10/21 | 06:50 | 09:50 | 03:00 | TG | 07:49 | 18:12 | 00:59 | -    | 0   | 8-5 | 2   | 2   | None                   | 3-5   |
| <b>11</b> | 26/10/21 | 16:05 | 19:05 | 03:00 | SR | 08:10 | 17:48 | 01:17 | SW   | 4-5 | 8   | 1   | 2-0 | None                   | 12-10 |
| <b>11</b> | 29/10/21 | 14:15 | 17:15 | 03:00 | TG | 08:16 | 17:41 | -     | W    | 3-2 | 8-7 | 2   | 2   | LR 53.3                | 7-6   |

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|           |          |       |       |       |    |       |       |       |      |     |     |   |     |                        |       |
|-----------|----------|-------|-------|-------|----|-------|-------|-------|------|-----|-----|---|-----|------------------------|-------|
| <b>12</b> | 13/10/21 | 06:45 | 09:45 | 03:00 | TG | 07:43 | 18:19 | 00:58 | W    | 1-2 | 8   | 2 | 1-2 | None                   | 10-12 |
| <b>12</b> | 16/10/21 | 10:20 | 13:20 | 03:00 | TG | 07:49 | 18:12 | -     | -    | 0   | 8-7 | 2 | 2   | None                   | 6-8   |
| <b>12</b> | 20/10/21 | 07:00 | 10:00 | 03:00 | TG | 07:57 | 18:02 | 00:57 | W    | 3   | 7   | 2 | 1-2 | None, one brief shower | 8-10  |
| <b>12</b> | 29/10/21 | 14:10 | 17:10 | 03:00 | SR | 08:16 | 17:41 | -     | W    | 1-2 | 8-7 | 1 | 2   | LR 58.3                | 9-6   |
| <b>13</b> | 25/10/21 | 12:20 | 15:20 | 03:00 | JM | 08:08 | 17:50 | -     | SW   | 4   | 7-6 | 2 | 2   | LR 8.3                 | 11    |
| <b>13</b> | 25/10/21 | 15:52 | 18:52 | 03:00 | JM | 08:08 | 17:50 | 01:02 | SW   | 4   | 7-6 | 2 | 2-0 | LR 3.3                 | 8-7   |
| <b>14</b> | 28/10/21 | 11:15 | 14:15 | 03:00 | SJ | 08:14 | 17:43 | -     | S    | 3-1 | 8   | 2 | 2   | D 16.7 LR 83.3         | 12-13 |
| <b>4</b>  | 03/11/21 | 11:00 | 14:00 | 03:00 | TG | 07:27 | 16:30 | -     | N    | 2-3 | 3-4 | 2 | 2   | None                   | 7-8   |
| <b>4</b>  | 17/11/21 | 07:10 | 10:10 | 03:00 | TG | 07:56 | 16:04 | 00:46 | W    | 1   | 7   | 2 | 2   | None                   | 4-5   |
| <b>5</b>  | 10/11/21 | 06:40 | 09:40 | 03:00 | SR | 07:42 | 16:16 | 01:02 | SW   | 1   | 1-6 | 2 | 2   | None                   | 5-6   |
| <b>5</b>  | 04/11/21 | 11:00 | 14:15 | 03:15 | SR | 07:29 | 16:28 | -     | W    | 1-2 | 1-2 | 2 | 2   | None                   | 7-8   |
| <b>6</b>  | 17/11/21 | 07:00 | 10:00 | 03:00 | SR | 07:56 | 16:04 | 00:56 | W/SW | 1-3 | 2-6 | 2 | 2   | None                   | 5-6   |
| <b>6</b>  | 03/11/21 | 10:45 | 13:45 | 03:00 | SR | 07:27 | 16:30 | -     | NW   | 2-3 | 3-7 | 2 | 2   | None                   | 8     |
| <b>7</b>  | 04/11/21 | 11:15 | 14:15 | 03:00 | TG | 07:29 | 16:28 | -     | NW   | 2-3 | 3-4 | 2 | 2   | None                   | 5-7   |
| <b>7</b>  | 10/11/21 | 07:00 | 10:00 | 03:00 | TG | 07:42 | 16:16 | 00:42 | SW   | 1   | 2   | 2 | 2   | None                   | 2-5   |
| <b>8</b>  | 24/11/21 | 14:15 | 17:15 | 03:00 | SR | 08:10 | 15:54 | 01:21 | W    | 1   | 2-3 | 2 | 2   | None                   | 3-5   |
| <b>8</b>  | 10/11/21 | 10:45 | 13:45 | 03:00 | SR | 07:42 | 16:16 | -     | SW   | 1-2 | 7   | 2 | 2   | None                   | 7-9   |
| <b>10</b> | 04/11/21 | 14:45 | 17:45 | 03:00 | TG | 07:29 | 16:28 | 01:17 | NW   | 1   | 4-6 | 2 | 2   | None                   | 3-6   |
| <b>10</b> | 24/11/21 | 10:40 | 13:40 | 03:00 | SR | 08:10 | 15:54 | -     | W    | 1-3 | 4-5 | 2 | 2   | None                   | 7-5   |
| <b>11</b> | 04/11/21 | 14:45 | 17:45 | 03:00 | SR | 07:29 | 16:28 | 01:17 | W    | 1   | 4-5 | 2 | 2   | None                   | 8-7   |
| <b>11</b> | 24/11/21 | 10:35 | 13:35 | 03:00 | TG | 08:10 | 15:54 | -     | W    | 2-3 | 4-6 | 2 | 2   | None                   | 5-7   |
| <b>12</b> | 03/11/21 | 14:45 | 17:45 | 03:00 | TG | 07:27 | 16:30 | 01:15 | N    | 1-3 | 3-5 | 2 | 1-2 | None                   | 6-8   |

Denny to Wishaw Network Upgrade  
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Line Ornithology Baseline



|           |          |       |       |       |    |       |       |       |      |     |     |      |     |                            |      |
|-----------|----------|-------|-------|-------|----|-------|-------|-------|------|-----|-----|------|-----|----------------------------|------|
| <b>12</b> | 17/11/21 | 11:05 | 14:05 | 03:00 | TG | 07:56 | 16:04 | -     | W    | 2   | 7   | 2    | 2   | None                       | 6-8  |
| <b>13</b> | 10/11/21 | 11:00 | 14:00 | 03:00 | TG | 07:42 | 16:16 | -     | SW   | 1   | 5-6 | 2    | 2   | None                       | 6-8  |
| <b>13</b> | 24/11/21 | 14:15 | 17:15 | 03:00 | TG | 08:10 | 15:54 | 01:21 | W    | 2   | 2-3 | 2    | 2   | None                       | 6-2  |
| <b>14</b> | 03/11/21 | 14:45 | 17:45 | 03:00 | SR | 07:27 | 16:30 | 01:15 | NW   | 1-0 | 5-2 | 2    | 2   | None                       | 9-8  |
| <b>14</b> | 17/11/21 | 11:00 | 14:00 | 03:00 | SR | 07:56 | 16:04 | -     | NW   | 2-4 | 6-8 | 1-2  | 2   | Showers 30. R 25. D to 14. | 7-8  |
| <b>4</b>  | 03/12/21 | 12:00 | 15:00 | 03:00 | SJ | 07:27 | 16:30 | -     | W    | 2-3 | 1-5 | 2    | 2   | None                       | 7    |
| <b>4</b>  | 09/12/21 | 14:10 | 17:10 | 03:00 | TG | 07:40 | 16:18 | 00:52 | SW   | 1   | 6-8 | 2    | 2-1 | LR 30.                     | 5-3  |
| <b>5</b>  | 03/12/21 | 08:00 | 11:00 | 03:00 | SJ | 07:27 | 16:30 | -     | W    | 4-3 | 5-8 | 1    | 2   | None                       | 5-6  |
| <b>5</b>  | 09/12/21 | 10:15 | 13:15 | 03:00 | SR | 07:40 | 16:18 | -     | SW   | 2-3 | 7-8 | 2    | 2   | Showers 44.                | 5    |
| <b>6</b>  | 01/12/21 | 14:00 | 17:00 | 03:00 | CS | 07:23 | 16:35 | 00:25 | N    | 4-2 | 1-2 | 2    | 2   | None                       | 3    |
| <b>6</b>  | 15/12/21 | 11:05 | 14:05 | 03:00 | CS | 07:52 | 16:07 | -     | SW   | 3   | 7-8 | 2    | 2   | D 100                      | 10   |
| <b>7</b>  | 01/12/21 | 10:15 | 13:15 | 03:00 | CS | 07:23 | 16:35 | -     | N    | 2-5 | 1-6 | 2    | 2   | None                       | 3    |
| <b>7</b>  | 15/12/21 | 07:35 | 10:35 | 03:00 | CS | 07:52 | 16:07 | 00:17 | SW   | 3-4 | 8   | 2    | 2   | D 100                      | 9-10 |
| <b>8</b>  | 09/12/21 | 14:00 | 17:00 | 03:00 | SR | 07:40 | 16:18 | 00:42 | SW   | 1-3 | 7-8 | 2    | 2   | Rain 6                     | 3-2  |
| <b>8</b>  | 10/12/21 | 13:30 | 16:30 | 03:00 | SJ | 07:42 | 16:16 | 00:14 | SW   | 3-2 | 1-3 | None | 0   | 0                          | 4-3  |
| <b>10</b> | 01/12/21 | 14:05 | 17:05 | 03:00 | TG | 07:23 | 16:35 | 00:30 | N    | 4-2 | 1-3 | 2    | 2   | None                       | 5-1  |
| <b>10</b> | 15/12/21 | 11:15 | 14:15 | 03:00 | SR | 07:52 | 16:07 | -     | SW   | 1-4 | 8   | 2    | 1-2 | D/LR 111                   |      |
| <b>11</b> | 01/12/21 | 10:30 | 13:30 | 03:00 | SR | 07:23 | 16:35 | -     | N/NW | 2-4 | 7-2 | 2    | 2   | None                       | 5-3  |
| <b>11</b> | 15/12/21 | 07:40 | 10:40 | 03:00 | SR | 07:52 | 16:07 | 00:12 | SW   | 2-5 | 8   | 2    | 1-2 | D 21.6 LR 28.3             | 8    |
| <b>12</b> | 01/12/21 | 10:35 | 13:35 | 03:00 | TG | 07:23 | 16:35 | -     | N    | 2-4 | 6-3 | 2    | 2   | None                       | 3-5  |
| <b>12</b> | 15/12/21 | 07:50 | 10:50 | 03:00 | TG | 07:52 | 16:07 | 00:02 | SW   | 3   | 8   | 2    | 1   | D 33.3                     | 7-8  |
| <b>13</b> | 09/12/21 | 10:35 | 13:35 | 03:00 | TG | 07:40 | 16:18 | -     | SW   | 1   | 7-6 | 2    | 2   | None                       | 3-5  |

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|           |          |       |       |       |    |       |       |       |    |     |     |     |     |        |     |
|-----------|----------|-------|-------|-------|----|-------|-------|-------|----|-----|-----|-----|-----|--------|-----|
| <b>13</b> | 10/12/21 | 10:00 | 13:00 | 03:00 | SJ | 07:42 | 16:16 | -     | W  | 1-3 | 5-2 | 2   | 2   | None   | 3-4 |
| <b>14</b> | 01/12/21 | 14:00 | 17:00 | 03:00 | SR | 07:23 | 16:35 | 00:25 | NW | 2-4 | 3-7 | 2   | 2   | None   | 3-2 |
| <b>14</b> | 15/12/21 | 11:20 | 14:20 | 03:00 | TG | 07:52 | 16:07 | -     | SW | 4-5 | 3   | 2   | 1   | D 33.3 | 8-7 |
| <b>4</b>  | 11/01/22 | 09:50 | 12:50 | 03:00 | TG | 08:40 | 16:07 | -     | SW | 1   | 7-6 | 2   | 2   | None   | 3-5 |
| <b>4</b>  | 25/01/22 | 07:20 | 10:20 | 03:00 | TG | 08:22 | 16:34 | 01:02 | SW | 1   | 8   | 2   | 1   | D 33.3 | 4   |
| <b>5</b>  | 12/01/22 | 14:00 | 17:00 | 03:00 | SJ | 08:40 | 16:08 | 00:52 | SW | 4-5 | 8   | 2   | 1-2 | D 83.3 | 8-9 |
| <b>5</b>  | 13/01/22 | 11:30 | 14:30 | 03:00 | TG | 08:39 | 16:10 | -     | SW | 4   | 7   | 2   | 2   | None   | 6-7 |
| <b>6</b>  | 17/01/22 | 10:50 | 13:50 | 03:00 | CS | 08:34 | 16:18 | -     | SW | 3-2 | 1-2 | 2   | 2   | None   | 7   |
| <b>6</b>  | 25/01/22 | 07:05 | 10:05 | 03:00 | CS | 08:22 | 16:34 | 01:17 | SW | 2   | 8   | 1   | 2   | D 1.7  | 4-5 |
| <b>7</b>  | 17/01/22 | 14:30 | 17:30 | 03:00 | CS | 08:34 | 16:18 | 01:12 | SW | 2-3 | 4-8 | 2   | 2   | None   | 7   |
| <b>7</b>  | 25/01/22 | 10:35 | 13:35 | 03:00 | CS | 08:22 | 16:34 | -     | SW | 1   | 8   | 1   | 2   | None   | 5   |
| <b>8</b>  | 12/01/22 | 10:25 | 13:25 | 03:00 | SJ | 08:40 | 16:08 | -     | SW | 3-6 | 8   | 2   | 1-2 | D 16.7 | 9   |
| <b>8</b>  | 13/01/22 | 07:40 | 10:40 | 03:00 | TG | 08:39 | 16:10 | 00:59 | SW | 4   | 8   | 2   | 2   | D 16.7 | 6-7 |
| <b>10</b> | 28/01/22 | 10:15 | 13:15 | 03:00 | SJ | 08:17 | 16:40 | -     | SW | 2-5 | 8   | 1-2 | 1-2 | D 16.7 | 6-7 |
| <b>10</b> | 19/01/22 | 07:30 | 10:30 | 03:00 | TG | 08:31 | 16:21 | 01:01 | W  | 4   | 1   | 2   | 1   | None   | 4-5 |
| <b>11</b> | 19/01/22 | 07:30 | 10:30 | 03:00 | CS | 08:31 | 16:21 | 01:01 | W  | 4-2 | 1   | 2   | 1-2 | None   | 5-4 |
| <b>11</b> | 17/01/22 | 11:05 | 14:05 | 03:00 | TG | 08:34 | 16:18 | -     | SW | 4   | 7   | 2   | 2   | None   | 5-6 |
| <b>12</b> | 19/01/22 | 11:00 | 14:00 | 03:00 | CS | 08:31 | 16:21 | -     | SW | 1   | 1-3 | 2   | 2   | None   | 9   |
| <b>12</b> | 17/01/22 | 14:35 | 17:35 | 03:00 | TG | 08:34 | 16:18 | 01:17 | SW | 2   | 7   | 2   | 2   | None   | 6   |
| <b>13</b> | 11/01/22 | 14:05 | 17:05 | 03:00 | TG | 08:40 | 16:07 | 00:58 | SW | 3-2 | 6-7 | 2   | 2   | LR 3.3 | 6-5 |
| <b>13</b> | 25/01/22 | 10:50 | 13:50 | 03:00 | TG | 08:22 | 16:34 | -     | SW | 2-3 | 2   | 2   | 2   | D 3.3  | 4-5 |
| <b>14</b> | 27/01/22 | 07:20 | 10:20 | 03:00 | SJ | 08:19 | 16:38 | 00:59 | W  | 2-5 | 2-7 | 1-2 | 1-2 | D 16.7 | 5-7 |
| <b>14</b> | 19/01/22 | 11:00 | 14:00 | 03:00 | TG | 08:31 | 16:21 | -     | W  | 3   | 2   | 2   | 2   | None   | 5-6 |

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|    |          |       |       |       |    |       |       |       |      |     |     |     |     |               |         |
|----|----------|-------|-------|-------|----|-------|-------|-------|------|-----|-----|-----|-----|---------------|---------|
| 4  | 11/02/22 | 07:05 | 10:05 | 03:00 | SJ | 07:50 | 17:11 | 00:45 | S    | 1   | 1-5 | 2   | 2   | None          | -3 to 0 |
| 4  | 22/02/22 | 12:08 | 15:08 | 03:00 | SJ | 07:24 | 17:35 | -     | W    | 3-5 | 2-7 | 2   | 2   | D 1.7 LR 10.7 | 7       |
| 4  | 08/02/22 | 15:10 | 18:10 | 03:00 | TG | 07:56 | 17:04 | 01:06 | SW   | 3-4 | 5-6 | 2   | 2   | Shower 1.7    | 6-5     |
| 4  | 15/02/22 | 10:25 | 13:25 | 03:00 | TG | 07:41 | 17:19 | -     | W    | 3   | 4-6 | 2   | 2   | Shower 3.3    | 3-2     |
| 5  | 17/02/22 | 12:05 | 15:05 | 03:00 | SJ | 07:36 | 17:24 | -     | W    | 3-6 | 2-8 | 1-2 | 1-2 | D 6.7 H 3.3   | 5-6     |
| 5  | 22/02/22 | 15:38 | 18:38 | 03:00 | SJ | 07:24 | 17:35 | 01:03 | W    | 3-6 | 1-8 | 1-2 | 1-2 | HR 10 D 16.7  | 5-6     |
| 5  | 02/02/22 | 07:00 | 10:00 | 03:00 | TG | 08:08 | 16:51 | 01:08 | W    | 2-3 | 8   | 2   | 0-1 | D 6.7         | 6       |
| 5  | 11/02/22 | 15:15 | 18:15 | 03:00 | TG | 07:50 | 17:11 | 01:04 | SW   | 1-3 | 5-6 | 2   | 2   | None          | 3-4     |
| 6  | 08/02/22 | 07:05 | 10:05 | 03:00 | SJ | 07:56 | 17:04 | 00:51 | SW   | 2-3 | 2-8 | 1-2 | 1-2 | D20           | 6       |
| 6  | 14/02/22 | 10:35 | 13:35 | 03:00 | SJ | 07:43 | 17:17 | -     | NW   | 2-3 | 1-6 | 2   | 2   | None          | 7       |
| 6  | 15/02/22 | 10:20 | 13:20 | 03:00 | CS | 07:41 | 17:19 | -     | W    | 2-3 | 2-3 | 2   | 2   | LR 1.7        | 4       |
| 6  | 25/02/22 | 12:10 | 15:10 | 03:00 | TG | 07:17 | 17:41 | -     | W    | 3   | 3-7 | 2   | 2   | None          | 6-7     |
| 7  | 07/02/22 | 10:50 | 13:50 | 03:00 | SJ | 07:58 | 17:02 | -     | SW   | 3-5 | 8   | 1   | 1   | D 90          | 5-6     |
| 7  | 17/02/22 | 15:35 | 18:35 | 03:00 | SJ | 07:36 | 17:24 | 01:11 | W    | 2-4 | 4-7 | 1-2 | 1-2 | D 20          | 4-5     |
| 7  | 11/02/22 | 11:45 | 14:45 | 03:00 | TG | 07:50 | 17:11 | -     | SW   | 1-3 | 5-6 | 2   | 2   | None          | 1-2     |
| 7  | 15/02/22 | 06:40 | 09:40 | 03:00 | CS | 07:41 | 17:19 | 01:01 | NW/W | 2-3 | 7-2 | 2   | 2   | Showers 6.7   | 4       |
| 8  | 07/02/22 | 07:20 | 10:20 | 03:00 | SJ | 07:58 | 17:02 | 00:38 | S    | 1-3 | 3-8 | 2   | 2   | D 10 HR 1     | 2-4     |
| 8  | 08/02/22 | 10:40 | 13:40 | 03:00 | SJ | 07:56 | 17:04 | -     | SW   | 3-6 | 4-8 | 2   | 2   | LR 10         | 6-7     |
| 8  | 02/02/22 | 10:30 | 13:30 | 03:00 | TG | 08:08 | 16:51 | -     | W    | 3   | 7   | 2   | 2   | None          | 8-9     |
| 8  | 25/02/22 | 15:40 | 18:40 | 03:00 | TG | 07:17 | 17:41 | 00:59 | SW   | 2-3 | 7-8 | 2   | 2   | Shower 5      | 6-5     |
| 10 | 28/02/22 | 12:35 | 15:35 | 03:00 | SJ | 07:10 | 17:47 | -     | SW   | 3   | 8   | 2   | 2   | LR 4          | 9       |
| 10 | 21/02/22 | 15:40 | 18:40 | 03:00 | SJ | 07:27 | 17:32 | 01:08 | NW/W | 2   | 1-7 | 2   | 2   | None          | 4-6     |
| 10 | 03/02/22 | 07:00 | 10:00 | 03:00 | CS | 08:06 | 16:53 | 01:06 | SW   | 3-4 | 8   | 2   | 2   | None          | 7-8     |

|    |          |       |       |       |    |       |       |       |      |     |     |     |     |              |         |
|----|----------|-------|-------|-------|----|-------|-------|-------|------|-----|-----|-----|-----|--------------|---------|
| 10 | 14/02/22 | 11:45 | 14:45 | 03:00 | CS | 07:43 | 17:17 | -     | NW   | 2-3 | 5   | 2   | 2   | None         | 7       |
| 11 | 15/02/22 | 12:00 | 15:00 | 03:00 | SJ | 07:41 | 17:19 | -     | SW   | 2-5 | 4-8 | 1-2 | 1-2 | HR 4 D 10    | 5       |
| 11 | 28/02/22 | 16:05 | 19:05 | 03:00 | SJ | 07:10 | 17:47 | 01:18 | SW   | 2-3 | 6-7 | 2   | 2   | D 3          | 7       |
| 11 | 03/02/22 | 07:00 | 10:00 | 03:00 | TG | 08:06 | 16:53 | 01:06 | SW   | 3-4 | 8   | 2   | 1   | None         | 7-8     |
| 11 | 14/02/22 | 11:45 | 14:45 | 03:00 | TG | 07:43 | 17:17 | -     | NW   | 2-3 | 5-6 | 2   | 2   | None         | 6-7     |
| 12 | 11/02/22 | 10:35 | 13:35 | 03:00 | SJ | 07:50 | 17:11 | -     | S    | 2   | 2-3 | 2   | 2   | None         | 2-3     |
| 12 | 14/02/22 | 06:54 | 09:54 | 03:00 | SJ | 07:43 | 17:17 | 00:49 | NW   | 1   | 6-8 | 2   | 2   | None         | 4-5     |
| 12 | 03/02/22 | 10:30 | 13:30 | 03:00 | TG | 08:06 | 16:53 | -     | SW   | 4   | 7   | 2   | 2   | Shower 1.7   | 7-9     |
| 12 | 14/02/22 | 15:20 | 18:20 | 03:00 | TG | 07:43 | 17:17 | 01:03 | NW   | 1-2 | 2-4 | 2   | 2   | None         | 8-4     |
| 13 | 15/02/22 | 15:30 | 18:30 | 03:00 | SJ | 07:41 | 17:19 | 01:11 | SW   | 4   | 5-6 | 2   | 2   | None         | 6-7     |
| 13 | 02/03/22 | 10:20 | 13:20 | 03:00 | SJ | 07:05 | 17:52 | -     | E    | 3-4 | 7-8 | 2   | 2   | None         | 5       |
| 13 | 08/02/22 | 11:40 | 14:40 | 03:00 | TG | 07:56 | 17:04 | -     | SW   | 4   | 6   | 2   | 2   | None         | 6-7     |
| 13 | 15/02/22 | 06:55 | 09:55 | 03:00 | TG | 07:41 | 17:19 | 00:46 | W    | 3-4 | 6-7 | 2   | 1-2 | Showers 13.3 | 3-4     |
| 14 | 02/03/22 | 06:50 | 09:50 | 03:00 | SJ | 07:05 | 17:52 | 00:15 | NE/E | 1-4 | 1-8 | 2   | 2   | None         | -1 to 2 |
| 14 | 21/02/22 | 12:10 | 15:10 | 03:00 | SJ | 07:27 | 17:32 | -     | W/NW | 2-5 | 3-8 | 2   | 2   | D 20 LR 10   | 7-8     |
| 14 | 03/02/22 | 10:30 | 13:30 | 03:00 | CS | 08:06 | 16:53 | -     | SW   | 4   | 7-8 | 2   | 2   | Showers 10   | 7-8     |
| 14 | 14/02/22 | 15:20 | 18:20 | 03:00 | CS | 07:43 | 17:17 | 01:03 | W    | 2-3 | 1   | 2   | 2   | None         | 5-7     |

1 S = Surveyor initials

2 Twilight = amount of survey time (where applicable) that took place before sunrise or after sunset

3 Wind speed = Beaufort scale

4 Cloud cover (approximate) = eighths of sky

5 Cloud height (approximate): 0 = <150 m, 1 = 150-900 m, 2 = >900 m

6 Visibility (approximate): 0 = <1 km, 1 = 1-3 km, 2 = >3 km

**7 Precipitation gives approximate percentages for the types that occurred: LR = light rain/drizzle, MR = moderate rain, HR = heavy rain, SL = sleet, SN = snow, H = hail, None = no precipitation.**

**\* Data not recorded by surveyor**

**Table A.3. VP survey details in the 2022 breeding season**

| VP | Date       | Start | End   | Dura-<br>tion | S <sup>1</sup> | Sunrise | Sunset | Twilight <sup>2</sup> | Wind<br>Direc | Wind<br>Speed <sup>3</sup> | Cloud<br>cover <sup>4</sup> | Cloud<br>height <sup>5</sup> | Vis <sup>6</sup> | Precipitation <sup>7</sup> | Temp<br>(°C) |
|----|------------|-------|-------|---------------|----------------|---------|--------|-----------------------|---------------|----------------------------|-----------------------------|------------------------------|------------------|----------------------------|--------------|
| 4  | 08/03/2022 | 06:20 | 09:20 | 03:00         | SJ             | 06:50   | 18:04  | 00:30                 | SE            | 1                          | 1-2                         | 2                            | 2                | None                       | 1-3          |
| 4  | 18/03/2022 | 09:35 | 12:35 | 03:00         | SJ             | 06:24   | 18:25  | -                     | S             | 1-3                        | 0-2                         | 2                            | 2                | None                       | 5-10         |
| 5  | 15/03/2022 | 09:40 | 12:40 | 03:00         | SJ             | 06:32   | 18:18  | -                     | S             | 3 - 5                      | 6- 8                        | 2                            | 2                | None                       | 6-8          |
| 5  | 28/03/2022 | 17:30 | 20:30 | 03:00         | SJ             | 06:58   | 19:45  | 00:45                 | E             | 1                          | 3-5                         | 2                            | 2                | None                       | 13-8         |
| 6  | 08/03/2022 | 09:50 | 12:50 | 03:00         | SJ             | 06:50   | 18:04  | -                     | SE            | 4-5                        | 1-2                         | 2                            | 2                | None                       | 4-7          |
| 6  | 22/03/2022 | 05:50 | 08:50 | 03:00         | SJ             | 06:13   | 18:32  | -                     | NE            | 1-3                        | 2-4                         | 0-1                          | 1                | None                       | 2-6          |
| 7  | 07/03/2022 | 12:05 | 15:05 | 03:00         | SJ             | 06:53   | 18:02  | -                     | SE            | 1-2                        | 1-2                         | 2-3                          | 2                | None                       | 7            |
| 7  | 18/03/2022 | 06:00 | 09:00 | 03:00         | SJ             | 06:24   | 18:25  | 00:24                 | S             | 1-2                        | 0-4                         | 3                            | 1-2              | None                       | 0-4          |
| 8  | 17/03/2022 | 12:15 | 15:15 | 03:00         | SJ             | 06:27   | 18:22  | -                     | SW            | 4-5                        | 5-8                         | 1-2                          | 2                | None                       | 9            |
| 8  | 21/03/2022 | 16:00 | 19:00 | 03:00         | SJ             | 06:17   | 18:31  | 00:29                 | SE            | 1-3                        | 0-3                         | 3                            | 2                | None                       | 9            |
| 10 | 15/03/2022 | 06:10 | 09:10 | 03:00         | SJ             | 06:32   | 18:19  | 00:22                 | S             | 2-3                        | 7-8                         | 2                            | 2                | None                       | 2-6          |
| 10 | 29/03/2022 | 10:10 | 13:10 | 03:00         | SJ             | 06:56   | 19:47  | -                     | NE            | 3                          | 8                           | 0                            | 1                | None                       | 7-10         |
| 11 | 14/03/2022 | 16:00 | 19:00 | 03:00         | SJ             | 06:35   | 18:17  | 00:43                 | SW            | 2-3                        | 8-7                         | 0-2                          | 1-2              | None                       | 7-6          |
| 11 | 22/03/2022 | 09:20 | 12:20 | 03:00         | SJ             | 06:14   | 18:33  | -                     | E             | 2-3                        | 6-4                         | 2                            | 2                | None                       | 9-11         |
| 12 | 14/03/2022 | 12:30 | 15:30 | 03:00         | SJ             | 06:35   | 18:17  | -                     | S             | 2                          | 8                           | 1-2                          | 1-2              | HR 5 LR 60<br>D 26.67      | 7            |
| 12 | 17/03/2022 | 15:45 | 18:45 | 03:00         | SJ             | 06:27   | 18:22  | 00:23                 | SW            | 3-1                        | 7-1                         | 2                            | 2                | D 10 HR 2 LR 5             | 8-4          |

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|    |            |       |       |       |    |       |       |       |    |     |     |     |     |      |       |
|----|------------|-------|-------|-------|----|-------|-------|-------|----|-----|-----|-----|-----|------|-------|
| 13 | 07/03/2022 | 15:35 | 18:35 | 03:00 | SJ | 06:53 | 18:02 | 00:33 | SE | 3-1 | 1-0 | 2   | 2   | None | 7-4   |
| 13 | 21/03/2022 | 12:30 | 15:30 | 03:00 | SJ | 06:17 | 18:31 | -     | SE | 2-1 | 0-3 | 2   | 2   | None | 9-10  |
| 14 | 28/03/2022 | 14:00 | 17:00 | 03:00 | SJ | 06:55 | 19:47 | -     | NE | 1   | 8   | 0   | 1   | None | 5-7   |
| 14 | 29/03/2022 | 06:25 | 09:25 | 03:00 | SJ | 06:58 | 19:45 | 00:33 | NE | 2-4 | 2-3 | 2   | 2   | None | 14    |
| 4  | 08/04/2022 | 06:15 | 09:15 | 03:00 | TG | 06:30 | -     | 00:15 | W  | 0-1 | 3-1 | 2   | 2   | None | -1-2  |
| 4  | 20/04/2022 | 14:00 | 17:00 | 03:00 | TG | -     | -     | -     | E  | 1-2 | 4-6 | 2   | 2   | None | 15-14 |
| 5  | 07/04/2022 | 17:20 | 20:20 | 03:00 | TG | -     | 20:05 | 00:25 | NW | 3-2 | 6-7 | 2   | 2   | None | 6-5   |
| 5  | 26/04/2022 | 13:26 | 16:26 | 03:00 | SJ | 05:44 | 20:44 | -     | E  | 3-4 | 8   | 2   | 2   | None | 10    |
| 6  | 20/04/2022 | 13:45 | 16:45 | 03:00 | CS | -     | -     | -     | SE | 2-3 | 2-8 | 2   | 2   | None | 15-10 |
| 6  | 25/04/2022 | 06:35 | 09:35 | 03:00 | TG | 05:45 | -     | -     | NE | 1   | 8   | 2   | 2   | None | 6-9   |
| 7  | 20/04/2022 | 17:30 | 20:30 | 03:00 | CS | -     | 20:30 | -     | SE | 2   | 7-8 | 2   | 2   | LR 5 | 9     |
| 7  | 25/04/2022 | 10:05 | 13:05 | 03:00 | TG | -     | -     | -     | NE | 1-2 | 7-8 | 2   | 2   | D 3  | 8-9   |
| 8  | 07/04/2022 | 13:45 | 16:45 | 03:00 | TG | -     | -     | -     | N  | 2-3 | 7-5 | 2   | 2   | None | 8     |
| 8  | 22/04/2022 | 11:35 | 14:35 | 03:00 | SJ | 05:54 | 20:36 | -     | E  | 4   | 1-3 | 2   | 2   | None | 12-13 |
| 10 | 19/04/2022 | 06:00 | 09:00 | 03:00 | CS | 06:01 | -     | 00:01 | SW | 0-1 | 8-7 | 2   | 2   | None | 5-6   |
| 10 | 26/04/2022 | 10:10 | 13:10 | 03:00 | CS | -     | -     | -     | NE | 2   | 7-8 | 2   | 2   | None | 8-9   |
| 11 | 19/04/2022 | 06:00 | 09:00 | 03:00 | TG | 06:01 | -     | 00:01 | SW | 0-1 | 8-6 | 2   | 2   | None | 4-6   |
| 11 | 26/04/2022 | 10:10 | 13:10 | 03:00 | TG | -     | -     | -     | E  | 3-2 | 7-8 | 2   | 2   | None | 8-9   |
| 12 | 19/04/2022 | 09:30 | 12:30 | 03:00 | TG | -     | -     | -     | SW | 1   | 4   | 2   | 2   | None | 6-9   |
| 12 | 26/04/2022 | 06:40 | 09:40 | 03:00 | TG | 05:44 | -     | 00:56 | E  | 1-2 | 3-7 | 2   | 2   | None | 2-6   |
| 13 | 08/04/2022 | 10:00 | 13:00 | 03:00 | TG | -     | -     | -     | N  | 1-2 | 2-3 | 2   | 2   | None | 3-8   |
| 13 | 20/04/2022 | 17:30 | 20:30 | 03:00 | TG | -     | 20:31 | -     | E  | 2-3 | 6-7 | 2-1 | 2-1 | None | 11-10 |
| 14 | 19/04/2022 | 09:30 | 12:30 | 03:00 | CS | -     | -     | -     | SW | 1   | 2-8 | 1   | 2   | None | 8     |

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|    |            |       |       |       |    |       |       |   |    |     |     |     |     |                  |       |
|----|------------|-------|-------|-------|----|-------|-------|---|----|-----|-----|-----|-----|------------------|-------|
| 14 | 26/04/2022 | 06:40 | 09:40 | 03:00 | CS | 05:43 | -     | - | NE | 1-2 | 2-8 | 2   | 2   | D 1              | 5-7   |
| 4  | 13/05/2022 | 17:30 | 20:30 | 03:00 | TG | -     | 21:14 | - | W  | 3-2 | 8   | 2   | 2   | None             | 9-8   |
| 4  | 09/06/2022 | 10:20 | 13:20 | 03:00 | TG | -     | -     | - | SW | 1-2 | 8-6 | 2   | 2   | None             | 13-15 |
| 5  | 27/05/2022 | 08:35 | 11:35 | 03:00 | RC | 04:47 | -     | - | W  | 4-5 | 2-7 | 1   | 2   | None             | 10    |
| 5  | 31/05/2022 | 06:20 | 09:20 | 03:00 | SJ | 04:39 | 21:47 | - | NE | 1-2 | 7-3 | 1-2 | 2   | None             | 8-10  |
| 6  | 13/05/2022 | 17:20 | 20:20 | 03:00 | CS | -     | 21:14 | - | SW | 2   | 8   | 2   | 2   | LR 8.33          | 8     |
| 6  | 27/05/2022 | 14:00 | 17:00 | 03:00 | TG | -     | -     | - | W  | 4   | 6   | 2   | 2   | None             | 14-13 |
| 7  | 13/05/2022 | 13:45 | 16:45 | 03:00 | CS | -     | -     | - | W  | 4   | 8   | 2   | 2   | D 6.67           | 8     |
| 7  | 27/05/2022 | 17:30 | 20:30 | 03:00 | TG | -     | 21:40 | - | W  | 4-3 | 6-4 | 2   | 2   | None             | 12-11 |
| 8  | 27/05/2022 | 16:43 | 19:43 | 03:00 | RC | 04:43 | -     | - | W  | 2   | 5-8 | 1   | 2   | None             | 8-9   |
| 8  | 31/05/2022 | 09:52 | 12:52 | 03:00 | SJ | 04:39 | 21:48 | - | NE | 1-2 | 6-7 | 2   | 2   | None             | 11-12 |
| 10 | 10/05/2022 | 07:45 | 10:45 | 03:00 | CS | -     | -     | - | SW | 3-4 | 6-7 | 2   | 2   | D 6.67           | 7-8   |
| 10 | 19/05/2022 | 11:15 | 14:15 | 03:00 | CS | -     | -     | - | SW | 3   | 2-8 | 1   | 2   | None             | 13    |
| 11 | 10/05/2022 | 07:45 | 10:45 | 03:00 | TG | -     | -     | - | SW | 3-4 | 6-7 | 2   | 2   | One brief shower | 7-8   |
| 11 | 19/05/2022 | 11:15 | 14:15 | 03:00 | TG | -     | -     | - | SW | 3   | 4-2 | 2   | 2   | None             | 12-14 |
| 12 | 10/05/2022 | 11:15 | 14:15 | 03:00 | TG | -     | -     | - | SW | 4   | 7-6 | 2   | 2   | One brief shower | 9-12  |
| 12 | 19/05/2022 | 07:45 | 10:45 | 03:00 | TG | -     | -     | - | SW | 2-3 | 6-5 | 2   | 2   | None             | 9-11  |
| 13 | 13/05/2022 | 14:00 | 17:00 | 03:00 | TG | -     | -     | - | W  | 4-3 | 8-4 | 2   | 2   | LR 20            | 12-11 |
| 13 | 09/06/2022 | 06:25 | 09:25 | 03:00 | TG | 04:30 | -     | - | SW | 2   | 8   | 1   | 1-2 | *                | *     |
| 14 | 10/05/2022 | 11:15 | 14:15 | 03:00 | CS | -     | -     | - | SW | 4   | 6   | 2   | 2   | LR 3.33          | *     |
| 14 | 19/05/2022 | 07:45 | 10:45 | 03:00 | CS | -     | -     | - | SW | 2   | 5-8 | 2   | 2   | None             | 10-12 |
| 4  | 29/06/22   | 10:15 | 13:15 | 03:00 | TG | -     | -     | - | S  | 1-2 | 8-7 | 2   | 2   | LR 3.33          | 12-14 |
| 4  | 30/06/22   | 08:41 | 11:41 | 03:00 | RC | 04:31 | -     | - | SW | 1-3 | 8-3 | 1   | 2   | None             | 12-13 |

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|    |          |       |       |       |    |       |       |       |    |     |     |   |     |                  |       |
|----|----------|-------|-------|-------|----|-------|-------|-------|----|-----|-----|---|-----|------------------|-------|
| 5  | 22/06/22 | 04:29 | 07:29 | 03:00 | RC | 04:29 | -     | -     | SW | 3   | 8-7 | 1 | 1-2 | None             | 12-13 |
| 5  | 29/06/22 | 19:36 | 22:36 | 03:00 | SJ | -     | 22:05 | 00:31 | S  | 3-2 | 6-4 | 1 | 2   | None             | 15-14 |
| 6  | 10/06/22 | 08:11 | 11:11 | 03:00 | RC | 04:31 | 22:01 | -     | SW | 4-6 | 6-2 | 1 | 2   | One brief shower | 12-15 |
| 6  | 22/06/22 | 06:10 | 09:10 | 03:00 | CS | 04:30 | -     | -     | SW | 2   | 8   | 2 | 2   | None             | 10-12 |
| 7  | 10/06/22 | 04:31 | 07:31 | 03:00 | RC | 04:31 | 22:01 | -     | SW | 3-4 | 1-6 | 1 | 2-1 | None             | 11-12 |
| 7  | 22/06/22 | 09:40 | 12:40 | 03:00 | CS | -     | -     | -     | SW | 2-3 | 6-7 | 2 | 2   | None             | 15    |
| 8  | 22/06/22 | 08:50 | 11:50 | 03:00 | RC | 04:31 | -     | -     | W  | 3   | 8-7 | 1 | 2   | None             | 14-18 |
| 8  | 29/06/22 | 16:00 | 19:00 | 03:00 | SJ | 04:32 | 22:05 | -     | SW | 1-4 | 8-5 | 2 | 2   | D 2              | 19-17 |
| 10 | 22/06/22 | 06:30 | 09:30 | 03:00 | TG | 04:30 | -     | -     | W  | 3   | 8   | 2 | 2   | None             | 4-12  |
| 10 | 30/06/22 | 11:55 | 14:55 | 03:00 | TG | -     | -     | -     | SW | 2   | 7-8 | 2 | 2   | LR 20            | 15-16 |
| 11 | 22/06/22 | 10:00 | 13:00 | 03:00 | TG | -     | -     | -     | W  | 3   | 7-6 | 2 | 2   | None             | 12-15 |
| 11 | 30/06/22 | 17:15 | 20:15 | 03:00 | TG | -     | 22:00 | -     | W  | 2-1 | 7-6 | 2 | 2   | One brief shower | 16-15 |
| 12 | 10/06/22 | 06:25 | 09:25 | 03:00 | TG | 04:31 | -     | -     | SW | 3-4 | 1-6 | 2 | 2   | None             | 12    |
| 12 | 15/06/22 | 04:29 | 07:29 | 03:00 | RC | 04:29 | -     | -     | S  | 1   | 7-5 | 2 | 2   | None             | 10-12 |
| 13 | 29/06/22 | 13:45 | 16:45 | 03:00 | TG | -     | -     | -     | S  | 3-1 | 6   | 2 | 2   | None             | 15-16 |
| 13 | 30/06/22 | 04:31 | 07:31 | 03:00 | RC | 04:31 | -     | -     | SW | 1   | 8   | 1 | 1-2 | None             | 11    |
| 14 | 10/06/22 | 10:00 | 13:00 | 03:00 | TG | -     | -     | -     | SW | 4-5 | 6-4 | 2 | 2   | LR 3.33          | 13-14 |
| 14 | 15/06/22 | 08:29 | 11:29 | 03:00 | RC | 04:29 | -     | -     | S  | 2-3 | 1-2 | 2 | 2   | None             | 13-14 |
| 4  | 08/07/22 | 14:30 | 17:30 | 03:00 | RC | 04:40 | 21:57 | -     | SW | 4-6 | 6-8 | 1 | 2   | None             | 15-16 |
| 4  | 22/07/22 | 09:01 | 12:01 | 03:00 | RC | 05:01 | -     | -     | E  | 3-2 | 8   | 1 | 2   | None             | 13-14 |
| 5  | 14/07/22 | 04:50 | 07:50 | 03:00 | RC | 04:50 | -     | -     | W  | 3   | 6-8 | 1 | 2   | None             | 11    |
| 5  | 28/07/22 | 10:00 | 13:00 | 03:00 | SJ | 05:12 | 21:31 | -     | E  | 1-3 | 8   | 1 | 2   | D 16.67          | 14-17 |
| 6  | 12/07/22 | 10:40 | 13:40 | 03:00 | RC | 04:46 | -     | -     | SW | 4   | 8   | 1 | 2   | None             | 15-16 |

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|    |          |       |       |       |    |       |       |       |    |     |     |     |     |                 |       |
|----|----------|-------|-------|-------|----|-------|-------|-------|----|-----|-----|-----|-----|-----------------|-------|
| 6  | 27/07/22 | 14:40 | 17:40 | 03:00 | RC | -     | 21:33 | -     | SE | 3   | 7   | 1   | 2   | None            | 18-19 |
| 7  | 12/07/22 | 13:50 | 16:50 | 03:00 | RC | 04:46 | -     | -     | SW | 4   | 8-1 | 1   | 2   | None            | 17-18 |
| 7  | 27/07/22 | 11:30 | 14:30 | 03:00 | RC | 05:11 | -     | -     | SW | 2   | 4-6 | 1   | 2   | None            | 14-16 |
| 8  | 14/07/22 | 09:05 | 12:05 | 03:00 | RC | 04:49 | -     | -     | W  | 3   | 8-3 | 1   | 2   | None            | 14-15 |
| 8  | 28/07/22 | 13:30 | 16:30 | 03:00 | SJ | 05:11 | 21:32 | -     | SE | 1-3 | 8   | 1   | 2   | D 10            | 17-18 |
| 10 | 12/07/22 | 07:15 | 10:15 | 03:00 | CS | 04:44 | -     | -     | SW | 2-3 | 8   | 2   | 2   | None            | 14-15 |
| 10 | 20/07/22 | 16:00 | 19:00 | 03:00 | CS | -     | -     | -     | W  | 3   | 1   | 2-1 | 2   | None            | 18-20 |
| 11 | 12/07/22 | 07:15 | 10:15 | 03:00 | TG | 04:44 | -     | -     | SW | 3   | 8   | 2   | 2   | None            | 14-15 |
| 11 | 20/07/22 | 16:00 | 19:00 | 03:00 | TG | -     | -     | -     | W  | 3   | 2   | 2   | 2   | None            | 20-18 |
| 12 | 12/07/22 | 10:45 | 13:45 | 03:00 | TG | -     | -     | -     | SW | 1   | 3   | 2   | 2   | None            | 15-16 |
| 12 | 20/07/22 | 19:30 | 22:30 | 03:00 | TG | -     | 21:45 | 00:45 | W  | 3-2 | 1   | 2   | 2   | None            | 17-12 |
| 13 | 08/07/22 | 11:02 | 14:02 | 03:00 | RC | 04:40 | 21:57 | -     | SW | 3   | 8   | 1   | 2   | None            | 14-15 |
| 13 | 22/07/22 | 05:01 | 05:01 | 03:00 | RC | 05:01 | -     | -     | E  | 2   | 8   | 1   | 2   | None            | 13    |
| 14 | 12/07/22 | 10:45 | 13:45 | 03:00 | CS | -     | -     | -     | SW | 2   | 8   | 1-2 | 2   | None            | 15    |
| 14 | 20/07/22 | 19:30 | 22:30 | 03:00 | CS | -     | 21:42 | 00:48 | W  | 3-2 | 1   | 2-1 | 2   | None            | 15-12 |
| 4  | 23/08/22 | 14:20 | 17:20 | 03:00 | SJ | 06:01 | 20:34 | -     | SW | 1-2 | 5-8 | 1   | 2-1 | D 10 LR 20 HR 4 | 19-20 |
| 4  | 26/08/22 | 10:00 | 13:00 | 03:00 | SJ | 06:05 | 20:29 | -     | SW | 1-2 | 8   | 1   | 2   | D 10            | 14-15 |
| 5  | 12/08/22 | 11:58 | 14:58 | 03:00 | SJ | 05:40 | 21:00 | -     | NE | 1-2 | 0   | -   | 2   | None            | 23-24 |
| 5  | 30/08/22 | 09:35 | 12:35 | 03:00 | SJ | 06:15 | 20:16 | -     | E  | 1-2 | 8   | 1   | 2   | None            | 15    |
| 6  | 18/08/22 | 09:45 | 12:45 | 03:00 | RC | 05:31 | -     | -     | S  | 4   | 8   | 1   | 2   | None            | 15    |
| 6  | 24/08/22 | 16:00 | 19:00 | 03:00 | SJ | 06:03 | 20:31 | -     | SW | 4-2 | 4-7 | 1   | 2   | None            | 18-19 |
| 7  | 18/08/22 | 05:53 | 08:53 | 03:00 | RC | 05:53 | -     | -     | S  | 1   | 8   | 1   | 2   | None            | 14    |
| 7  | 24/08/22 | 12:30 | 15:30 | 03:00 | SJ | 06:04 | 20:32 | -     | SW | 3-4 | 6-5 | 1   | 2   | None            | 17-18 |

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|    |          |       |       |       |    |       |       |       |    |     |     |   |       |                 |       |
|----|----------|-------|-------|-------|----|-------|-------|-------|----|-----|-----|---|-------|-----------------|-------|
| 8  | 12/08/22 | 08:25 | 11:25 | 03:00 | SJ | 05:40 | 21:00 | -     | NE | 1-2 | 0   | - | 2     | None            | 16-19 |
| 8  | 30/08/22 | 13:05 | 16:05 | 03:00 | SJ | 06:15 | 20:16 | -     | NE | 2-4 | 8   | 1 | 2     | None            | 15-16 |
| 10 | 16/08/22 | 05:49 | 08:49 | 03:00 | RC | 05:49 | -     | -     | NE | 1   | 8   | 1 | 1     | D 100           | 14    |
| 10 | 24/08/22 | 08:10 | 11:10 | 03:00 | RC | 06:05 | -     | -     | NE | 2-3 | 8   | 1 | 1     | D 50            | 14    |
| 11 | 16/08/22 | 09:31 | 12:31 | 03:00 | RC | 05:49 | -     | -     | NE | 2   | 8   | 1 | 1     | D 76.67         | 16    |
| 11 | 24/08/22 | 12:10 | 15:10 | 03:00 | RC | 06:05 | -     | -     | SW | 4   | 7-6 | 1 | 2     | None            | 15    |
| 12 | 17/08/22 | 05:51 | 08:51 | 03:00 | RC | 05:51 | -     | -     | NE | 3   | 8   | 1 | 2     | None            | 10    |
| 12 | 31/08/22 | 06:18 | 09:18 | 03:00 | RC | 06:18 | -     | -     | NE | 0-1 | 0   | - | 0-2   | None            | 9-12  |
| 13 | 23/08/22 | 17:50 | 20:50 | 03:00 | SJ | 06:02 | 20:34 | 00:16 | SW | 1-2 | 8-4 | 1 | 2     | D 4 LR 1        | 19-17 |
| 13 | 26/08/22 | 13:30 | 16:30 | 03:00 | SJ | 06:08 | 20:27 | -     | NW | 1-2 | 8   | 1 | 2-1-2 | D 5 LR 10 HR 20 | 16    |
| 14 | 17/08/22 | 09:45 | 12:45 | 03:00 | RC | 05:31 | -     | -     | NE | 3   | 3   | 1 | 2     | None            | 11-13 |
| 14 | 31/08/22 | 10:00 | 13:00 | 03:00 | RC | 06:18 | -     | -     | NE | 2   | 2-6 | 1 | 2     | None            | 13-15 |

<sup>1</sup> S = Surveyor initials

<sup>2</sup> Twilight = amount of survey time (where applicable) that took place before sunrise or after sunset

<sup>3</sup> Wind speed = Beaufort scale

<sup>4</sup> Cloud cover (approximate) = eighths of sky

<sup>5</sup> Cloud height (approximate): 0 = <150 m, 1 = 150-900 m, 2 = >900 m

<sup>6</sup> Visibility (approximate): 0 = <1 km, 1 = 1-3 km, 2 = >3 km

<sup>7</sup> Precipitation gives approximate percentages for the types that occurred: LR = light rain/drizzle, MR = moderate rain, HR = heavy rain, SL = sleet, SN = snow, H = hail, None = no precipitation.

\* Data not recorded by surveyor

**Table A.4. VP survey details in the 2024/25 non-breeding season**

| VP | Date | Start | End | Duration | S <sup>1</sup> | Sunrise | Sunset | Twilight <sup>2</sup> | Wind Direc | Wind Speed <sup>3</sup> | Cloud cover <sup>4</sup> | Cloud height <sup>5</sup> | Vis <sup>6</sup> | Precipitation <sup>7</sup> | Temp (°C) |
|----|------|-------|-----|----------|----------------|---------|--------|-----------------------|------------|-------------------------|--------------------------|---------------------------|------------------|----------------------------|-----------|
|----|------|-------|-----|----------|----------------|---------|--------|-----------------------|------------|-------------------------|--------------------------|---------------------------|------------------|----------------------------|-----------|

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|    |            |       |       |       |    |   |       |   |    |     |     |     |     |        |       |
|----|------------|-------|-------|-------|----|---|-------|---|----|-----|-----|-----|-----|--------|-------|
| 4  | 10/09/2024 | 12:35 | 15:35 | 03:00 | SJ | - | -     | - | W  | 6   | 7-4 | 2   | 2   | None   | 12-13 |
| 4  | 18/09/2024 | 12:50 | 15:50 | 03:00 | SJ | - | -     | - | E  | 2-3 | 1   | 2   | 2   | None   | 17-20 |
| 5  | 25/09/2024 | 09:35 | 12:35 | 03:00 | SJ | - | -     | - | S  | 2-3 | 0-4 | 2   | 2   | None   | 7-9   |
| 5  | 25/09/2024 | 13:10 | 16:10 | 03:00 | SJ | - | -     | - | E  | 3   | 5-7 | 2   | 2   | None   | 11    |
| 6  | 12/09/2024 | 09:00 | 12:00 | 03:00 | SJ | - | -     | - | NW | 3   | 2-4 | 2   | 2   | None   | 9-11  |
| 6  | 12/09/2024 | 12:33 | 15:33 | 03:00 | SJ | - | -     | - | NW | 3   | 5-3 | 2   | 2   | None   | 12    |
| 7  | 19/09/2024 | 09:55 | 12:55 | 03:00 | SJ | - | -     | - | E  | 2-3 | 8-3 | 2   | 2   | None   | 11-14 |
| 7  | 19/09/2024 | 13:30 | 16:30 | 03:00 | SJ | - | -     | - | E  | 3   | 0   | 2   | 2   | None   | 17    |
| 8  | 11/09/2024 | 09:40 | 12:40 | 03:00 | SJ | - | -     | - | NW | 4-3 | 1-7 | 2   | 2   | None   | 10-11 |
| 8  | 11/09/2024 | 13:10 | 16:10 | 03:00 | SJ | - | -     | - | NW | 3-4 | 6-3 | 2   | 2   | None   | 13    |
| 10 | 07/09/2024 | 09:00 | 12:00 | 03:00 | SI | - | -     | - | E  | 3   | 8   | 1   | 0-1 | D 40   | 14-15 |
| 10 | 07/09/2024 | 12:37 | 15:37 | 03:00 | SI | - | -     | - | E  | 3   | 8   | 1   | 1   | None   | 16-18 |
| 11 | 07/09/2024 | 09:00 | 12:00 | 03:00 | SJ | - | -     | - | E  | 3   | 8   | 1   | 1   | D 40   | 14-15 |
| 11 | 07/09/2024 | 12:37 | 15:37 | 03:00 | SJ | - | -     | - | E  | 3   | 8-6 | 2   | 2   | None   | 16-18 |
| 11 | 08/10/2024 | 10:30 | 13:30 | 03:00 | RC | - | -     | - | NE | 4   | 8   | 1   | 2-1 | D 20   | 9     |
| 11 | 08/10/2024 | 14:00 | 17:00 | 03:00 | RC | - | -     | - | NE | 4   | 8-4 | 1   | 1-2 | D 20   | 9     |
| 12 | 10/09/2024 | 09:00 | 12:00 | 03:00 | SJ | - | -     | - | W  | 4-3 | 3-0 | 2   | 2   | None   | 10-11 |
| 12 | 18/09/2024 | 16:25 | 19:25 | 03:00 | SJ | - | 19:25 | - | E  | 3   | 0-7 | 2   | 2   | None   | 18-15 |
| 13 | 09/09/2024 | 09:28 | 12:28 | 03:00 | SJ | - | -     | - | W  | 3-4 | 8   | 2   | 2   | None   | 12-13 |
| 13 | 09/09/2024 | 12:58 | 15:58 | 03:00 | SJ | - | -     | - | W  | 4-1 | 7-8 | 2   | 2   | D 6.67 | 14-13 |
| 13 | 09/10/2024 | 14:40 | 16:40 | 02:00 | RC | - | -     | - | NE | 1   | 8   | 1   | 1   | None   | 9     |
| 14 | 06/09/2024 | 09:40 | 12:40 | 03:00 | SJ | - | -     | - | NE | 4   | 8-6 | 1-2 | 0-2 | None   | 16-18 |
| 14 | 06/09/2024 | 13:12 | 16:12 | 03:00 | SJ | - | -     | - | NE | 3-4 | 0-8 | 2   | 2   | None   | 20    |

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|    |            |       |       |       |    |       |   |   |    |     |     |   |   |          |       |
|----|------------|-------|-------|-------|----|-------|---|---|----|-----|-----|---|---|----------|-------|
| 4  | 14/10/2024 | 14:30 | 17:30 | 03:00 | JC | -     | - | - | NE | 1-2 | 1-8 | 2 | 2 | None     | 11    |
| 4  | 15/10/2024 | 08:15 | 11:15 | 03:00 | JC | -     | - | - | NE | 0-1 | 8-4 | 2 | 2 | None     | 5-9   |
| 4  | 28/10/2024 | 12:45 | 15:45 | 03:00 | JC | -     | - | - | NE | 1-5 | 8-2 | 1 | 1 | D 75     | 14-12 |
| 4  | 29/10/2024 | 08:45 | 11:45 | 03:00 | JC | -     | - | - | NE | 1-2 | 8   | 2 | 2 | D 50     | 10-11 |
| 6  | 16/10/2024 | 13:00 | 16:00 | 03:00 | JC | -     | - | - | NE | 0-1 | 8-5 | 2 | 2 | LR 25    | 13-12 |
| 6  | 17/10/2024 | 08:15 | 11:15 | 03:00 | JC | -     | - | - | N  | 3-1 | 4-8 | 2 | 2 | None     | 12    |
| 6  | 29/10/2024 | 12:00 | 15:00 | 03:00 | JC | -     | - | - | N  | 1   | 2   | 2 | 2 | None     | 11    |
| 6  | 31/10/2024 | 08:20 | 11:20 | 03:00 | JC | -     | - | - | N  | 5-4 | 8   | 2 | 2 | D 75     | 11-10 |
| 7  | 17/10/2024 | 12:30 | 15:30 | 03:00 | JC | -     | - | - | E  | 3-1 | 5   | 2 | 2 | None     | 12-13 |
| 7  | 18/10/2024 | 07:53 | 10:53 | 03:00 | JC | 07:53 | - | - | E  | 1   | 2-8 | 2 | 2 | None     | 7     |
| 7  | 01/11/2024 | 07:24 | 10:24 | 03:00 | JC | 07:21 | - | - | E  | 4-2 | 8   | 2 | 2 | D 75     | 11    |
| 7  | 31/10/2024 | 12:03 | 15:03 | 03:00 | JC | -     | - | - | NE | 4-2 | 8-7 | 1 | 1 | D 100    | 10    |
| 8  | 04/10/2024 | 09:00 | 12:00 | 03:00 | SJ | -     | - | - | S  | 3-0 | 8-3 | 2 | 2 | LR 6.67  | 11    |
| 8  | 04/10/2024 | 12:30 | 15:30 | 03:00 | SJ | -     | - | - | S  | 3   | 8-3 | 2 | 2 | None     | 12    |
| 8  | 15/10/2024 | 12:30 | 15:30 | 03:00 | JC | -     | - | - | W  | 1-4 | 8   | 2 | 2 | None     | 9-9   |
| 8  | 16/10/2024 | 09:00 | 12:00 | 03:00 | JC | -     | - | - | W  | 1   | 8-4 | 1 | 1 | LR 66.67 | 12    |
| 10 | 03/10/2024 | 11:40 | 14:40 | 03:00 | SJ | -     | - | - | SE | 3-0 | 3-2 | 2 | 2 | None     | 12-13 |
| 10 | 03/10/2024 | 15:15 | 18:15 | 03:00 | SJ | -     | - | - | SE | 3-2 | 4-6 | 2 | 2 | None     | 13-11 |
| 10 | 29/10/2024 | 12:45 | 15:45 | 03:00 | JC | -     | - | - | NE | 2   | 8   | 2 | 2 | None     | 12-10 |
| 10 | 30/10/2024 | 08:00 | 11:00 | 03:00 | JC | -     | - | - | NE | 1-3 | 8   | 1 | 1 | D 25     | 10-11 |
| 12 | 02/10/2024 | 09:15 | 12:15 | 03:00 | SJ | -     | - | - | E  | 3   | 5-3 | 2 | 2 | None     | 11    |
| 12 | 02/10/2024 | 12:45 | 15:45 | 03:00 | SJ | -     | - | - | E  | 4   | 3-2 | 2 | 2 | None     | 13-11 |
| 14 | 01/10/2024 | 08:45 | 11:45 | 03:00 | SJ | -     | - | - | NE | 4-3 | 4-0 | 2 | 2 | None     | 10    |

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|           |            |       |       |       |    |   |   |   |    |     |     |   |   |         |      |
|-----------|------------|-------|-------|-------|----|---|---|---|----|-----|-----|---|---|---------|------|
| <b>14</b> | 01/10/2024 | 12:25 | 15:25 | 03:00 | SJ | - | - | - | NE | 4-3 | 8-0 | 2 | 2 | LR 6.67 | 11   |
| <b>4</b>  | 19/11/2024 | 09:05 | 12:05 | 03:00 | SJ | - | - | - | NW | 1   | 6   | 2 | 2 | None    | -3-1 |
| <b>4</b>  | 19/11/2024 | 12:35 | 15:35 | 03:00 | SJ | - | - | - | W  | 1   | 3   | 2 | 2 | None    | 0--1 |
| <b>8</b>  | 20/11/2024 | 09:18 | 12:18 | 03:00 | SJ | - | - | - | W  | 2   | 0   | 2 | 2 | None    | -1-1 |
| <b>8</b>  | 20/11/2024 | 12:48 | 15:48 | 03:00 | SJ | - | - | - | W  | 2   | 0   | 2 | 2 | None    | 1    |
| <b>12</b> | 22/11/2024 | 08:25 | 11:25 | 03:00 | SJ | - | - | - | SW | 2   | 6   | 2 | 2 | None    | -2-1 |
| <b>14</b> | 09/10/2024 | 13:50 | 16:50 | 03:00 | SJ | - | - | - | NE | 4-2 | 8-6 | 2 | 2 | None    | 9    |

<sup>1</sup> S = Surveyor initials

<sup>2</sup> Twilight = amount of survey time (where applicable) that took place before sunrise or after sunset

<sup>3</sup> Wind speed = Beaufort scale

<sup>4</sup> Cloud cover (approximate) = eighths of sky

<sup>5</sup> Cloud height (approximate): 0 = <150 m, 1 = 150-900 m, 2 = >900 m

<sup>6</sup> Visibility (approximate): 0 = <1 km, 1 = 1-3 km, 2 = >3 km

<sup>7</sup> Precipitation gives approximate percentages for the types that occurred: LR = light rain/drizzle, MR = moderate rain, HR = heavy rain, SL = sleet, SN = snow, H = hail, None = no precipitation.

\* Data not recorded by surveyor

## Annex B - Goose foraging / roosting survey details

Table B.1. provides times and details of the goose foraging and roosting surveys carried out in the 2019/20 non-breeding season. Table B.2. provides times and details of the goose foraging and roosting surveys carried out in the 2021/22 non-breeding season. Table B.3. provides times and details of the goose foraging and roosting surveys carried out in the 2024/25 non-breeding season.

**Table B.1. Details of goose foraging / roosting surveys during the 2019/20 non-breeding season**

| Visit | Date     | S <sup>1</sup> | Start | End   | Sunrise/<br>sunset | Comments                                                                                                                                                                                                                                                                                                                                                                                                |
|-------|----------|----------------|-------|-------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | 24/09/19 | ND             | 10:00 | 18:10 | 19:11              | No target species recorded. Broad habitat suitability for foraging geese mapped in strategic corridor.                                                                                                                                                                                                                                                                                                  |
| 2     | 25/09/19 | ND             | 06:25 | 13:00 | 07:07              | 110 Canada geese + 1 brent goose at Fannyside at dawn. No other target species seen.                                                                                                                                                                                                                                                                                                                    |
| 3     | 26/09/19 | ND             | 05:35 | 07:15 | 07:10              | 130 Canada geese + 1 brent goose at Fannyside at dawn. No other target species seen.                                                                                                                                                                                                                                                                                                                    |
| 4     | 27/09/19 | ND             | 10:30 | 11:15 | 07:13              | No target species recorded. Completed mapping of broad habitat suitability for foraging geese in remainder of strategic corridor.                                                                                                                                                                                                                                                                       |
| 5     | 07/10/19 | ND             | 10:00 | 19:50 | 18:35              | Bean geese in various fields between Dyke Farm and Threaprig, mainly in field north of Slamannan but not directly seen on the ground, rather as periodic flights, because geese on the ground were located where not visible from adjacent roads and surveyor was not yet aware that this location is most visible from VP4 (see next row).<br>No geese detected landing at Fannyside at or after dusk. |
| 6     | 08/10/19 | ND             | 10:30 | 17:30 | 18:33              | 187 bean geese in field north of Slamannan, counted from VP4 location.                                                                                                                                                                                                                                                                                                                                  |
| 7     | 09/10/19 | ND             | 12:15 | 16:00 | 18:30              | 101 bean geese in field north of Slamannan, counted from VP4 location.<br>600 pink-footed geese on ground just east of north part of strategic corridor, not far from existing substation.                                                                                                                                                                                                              |
| 8     | 21/10/19 | ND             | 12:00 | 16:00 | 18:05              | No target species recorded.                                                                                                                                                                                                                                                                                                                                                                             |

|           |          |          |       |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------|----------|----------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>9</b>  | 22/10/19 | ND<br>AF | 12:00 | 19:15 | 17:58 | <p>36 bean geese in a field at Luckenburn Farm all day from at least 11:00.</p> <p>Bean geese watched at dusk from B803 but not detected leaving, although thought to have left (geese apparently absent on long-exposure photographs of field). No geese detected flying towards Darnrig Moss from VP5, therefore likely to have flown to Fannyside to roost (especially in view of following night's observation) and presumed to have left undetected because of particularly dark conditions and frequent passing commuter traffic on the B803 (the 'main' road in this area to Slamannan from the west).</p>                                                                                                                                          |
| <b>10</b> | 23/10/19 | ND<br>AF | 12:00 | 19:15 | 17:56 | <p>134-140 bean geese in field at Luckenburn Farm all day from at least 11:45.</p> <p>550+ pink-footed geese on ground at and partly within south-west edge of strategic corridor near Wester Myvot.</p> <p>2 greylag geese with 120 Canada geese on ground in north corridor near St Helen's Loch.</p> <p>Bean geese at Luckenburn watched at dusk by one surveyor with another at Fannyside – detected leaving at 18:39 and landing at Fannyside East Loch at 18:41-2.</p>                                                                                                                                                                                                                                                                               |
| <b>11</b> | 04/11/19 | AF       | 14:30 | 17:27 | 16:27 | <p>Covered north part of corridor. No foraging observations.</p> <p>Evening observation of St Helen's Loch found no geese on the loch itself, but 60 Canada geese landed in fields nearby out of sight.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>12</b> | 05/11/19 | ND<br>AF | 09:10 | 17:40 | 16:25 | <p>69 bean geese foraging in fields at Jawcraig in morning.</p> <p>60 and 14 bean geese seen from VP4 in fields north of Slamannan at 14:00. Roosting survey in this area observed 26 bean geese heading from these fields towards Darnrig, but four bean geese flew west from same fields towards Fannyside. Surveyor moved to Fannyside but only found twenty Canada geese roosting on west Fannyside Loch. Total of 220 pink-footed geese seen flying over Fannyside but not roosting, and 50 unidentified geese detected flying nearby at 17:19.</p> <p>Watch carried out for coal site loch from near Avalon – no birds detected except for one brief call of unseen unidentified goose towards end of watch, thought to have been flying nearby.</p> |
| <b>13</b> | 06/11/19 | ND<br>AF | 12:30 | 17:50 | 16:23 | <p>Flocks of 28 and 45 bean geese were seen foraging in fields north of Slamannan.</p> <p>Watch at Fannyside found 19 Canada geese. In addition, 60 pink-footed geese were detected flying past at 17:20, and small numbers of unseen pink-footed geese from 17:30 – 17:33. No geese were detected landing at Fannyside.</p>                                                                                                                                                                                                                                                                                                                                                                                                                               |

|    |          |                |       |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----|----------|----------------|-------|-------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |          |                |       |       |       | 600 pink-footed geese were seen just outside south-west corridor at 16:15 near Wester Myvot. These flew shortly north-east into the strategic corridor between Hallbrae and North Myvot to a marshy cattle field with pools, and all except 50 birds stayed there to roost. Supplemented by 100, 25 and 75 birds arriving at 16:48, 16:55 and 17:07, giving a maximum count of 750 roosting birds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 14 | 18/11/19 | ND             | 15:30 | 17:20 | 16:04 | A single pink-footed goose was seen near Wester Myvot in south-west of corridor at 15:45. Approximately 80 seen at 16:00 north-east of South Myvot, which were not detected leaving. Continued observations were made through the early evening in this area to check for roosting pink-footed geese, which had previously roosted in the vicinity (see previous row). Flight of 80 birds at 16:38 heading east into corridor may have been the same birds if they first flew south very low (would not have been visible) and then rose and turned north-east. Flock of 25 pink-footed geese flew same direction east into corridor but higher at 17:58. Also, flights heading north-east (at moderate height) of 200 and 300 pink-footed geese (minimum) at 17:17 and 17:05.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 15 | 21/11/19 | ND<br>TM<br>JD | 09:30 | 17:15 | 15:59 | <p>On this day, St Helen's Loch was half-frozen and the western half contained 61 Canada geese at 14:30. The Fannyside Lochs were frozen completely all day, and it is likely that the Darnrig pools were also frozen.</p> <p>At least 68 bean geese (intervening rushes may have hidden some birds) were observed at 12:20 north of Slamannan. At 15:10 there were 70 in one of the fields close to the road, and at 15:15 there were 64 in fields slightly further east. Accounting for inter-flock movements around this time, there were at least 129 bean geese in this area at 15:15. All birds moved to the more easterly fields later in the evening, and a roost watch from the B803 had not detected them leaving by 17:15 (1.25 hours after sunset), so it is assumed they roosted in these fields (perhaps because Darnrig pools were likely frozen).</p> <p>Roosting observations from near Avalon to cover the waterbody in the coal site near Greengairs did not detect any geese.</p> <p>Roosting observations at Fannyside detected only a few (unseen) unidentified geese at 17:04 approaching from the north. They were thought to be flying low and it was uncertain whether they landed (note however that the lochs were entirely frozen at this time so they could not have landed in the water, and therefore probably passed on).</p> |

|           |          |          |       |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------|----------|----------|-------|-------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>16</b> | 22/11/19 | ND       | 09:35 | 11:30 | 15:57 | <p>Bean geese were again seen north of Slamannan in field close to the road, with a maximum count of 149 birds at 09:40, which dropped to 109 birds at 11:50.</p> <p>146 pink-footed geese were seen at 11:00 in the south-west part of the corridor between Bellstane Farm and South Myvot Farm. Not previously recorded this far into the strategic corridor.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>17</b> | 05/12/19 | ND<br>AF | 09:30 | 17:00 | 15:44 | <p>Bean geese foraging in a field near Parkhead – 125 or so in the morning and then 102 at 14:25, some of which were briefly put up by the sudden appearance of a low-flying female sparrowhawk, but all such birds returned to the ground in the same field in a matter of seconds. The largest count was of 160 bean geese in late morning in a field between Threaprig and Parkhead Farms.</p> <p>A group of 152 pink-footed geese and 3 greylag geese were seen in fields just south-east of High Bonnybridge.</p> <p>Pink-footed geese were seen in three new locations in the far south-west of the corridor, and also by Wester Myvot as previously. The latter numbered 180 at 11:00 but had left by 15:15. The new foraging fields were east of East Lodge Wood about 2 km inside the strategic corridor (minimum 65 birds, but view impeded by topography), and both north and south of Haggmuir Farm (150 and 170 birds, flock seen moving between foraging locations and probably under-counted the first time).</p> <p>The bean geese seen at Parkhead in the day were watched in the evening – these were seen flying off towards Darnrig at 16:20, approximately 120 birds at that time. Roosting observations from the road corner just east of Fannyside (anticipating birds potentially arriving from the east) recorded no geese.</p> |
| <b>18</b> | 06/12/19 | ND<br>AF | 14:30 | 17:15 | 15:42 | <p>No further locations of pink-footed goose were found, and the flock that had been present in the north of the corridor the day before was absent. Two large pink-footed goose flocks were present in the south-west of the corridor in similar locations to the previous day, near East Lodge Wood and Haggmuir Farm, amounting to 250 and 331 birds respectively.</p> <p>Although a flock of 80 or so pink-footed geese was seen to depart from a field southeast of East Lodge and to fly northwest, the two large pink-footed goose flocks watched in the evening near East Lodge Wood and Haggmuir had not left by 1.25 hours after sunset and both are assumed to have roosted in the fields overnight.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|           |          |          |       |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------|----------|----------|-------|-------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>19</b> | 18/12/19 | ND<br>AF | 10:00 | 16:55 | 15:40 | <p>208 bean geese were observed in a field north of Oakersdykes Farm. 7 greylag geese were noted near Slamannan in a field by the River Avon.</p> <p>A flock of 32 pink-footed geese was observed flying south-west close to VP4 at 35 to 50m height.</p> <p>303 pink-footed geese were present at Haggmuir Farm all day. They were seen leaving at 16:16 heading directly towards the roost site at Myvot/Hallbrae 3 km to the north, and were thought to have landed there to roost.</p> <p>250 pink-footed geese were present just northeast of Wester Myvot throughout the day, with 19 Canada geese. The pink-footed geese (uncertain regarding the Canada geese) were thought to have joined the roost flock at Myvot/Hallbrae in the dark at 16:25. Two small flocks of 30 joined at 1640 and 1652 giving an estimated minimum total of 610 pink-footed geese at the roost site.</p> <p>Roosting observations at Fannyside did not detect any roosting geese, although 25 probable pink-footed geese did fly in and land on the loch earlier in the day, and 90 pink-footed geese dithered around Fannyside but ultimately did not land at 16:30.</p> <p>St Helen's Loch was three-quarters frozen with a flock of 45 Canada geese and 2 greylag geese on adjacent fields.</p> |
| <b>20</b> | 19/12/19 | AF       | 15:00 | 16:45 | 15:38 | <p>Observations from the revised VP5 location (pull-in at road corner east of earlier VP5 location) found 10 bean geese minimum, but this was likely an underestimation owing to intervening disturbed topography in ex-mining field. Continued observation detected firstly 150 or so pink-footed geese heading northeast, and then (between 1628 and 1640) several flocks of low-flying bean geese amounting to 216 birds, heading towards the known roost site at nearby Darnrig Moss.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>21</b> | 14/01/20 | ND<br>AF | 10:15 | 17:10 | 16:12 | <p>241 pink-footed geese and 47 greylag geese were seen in the extreme southwestern corner of the strategic corridor at 10:45.</p> <p>1440 pink-footed geese were seen by Wester Myvot at 11:15, in the field immediately south of the farm as used previously. An additional 45 and 105 were located in fields just northeast of Wester Myvot at this time, the latter joined by a further 400 birds in late afternoon. During the late afternoon/evening various flights occurred of birds moving from larger flock to the smaller ones northeast of Wester Myvot, supplemented by additional birds in a few flights (amounting to an extra 456 birds) arriving from outside the area. At least 500 birds roosted at usual roost site between North Myvot and Hallbrae, and at least 800 in field southeast of North Myvot.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|           |          |          |       |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------|----------|----------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |          |          |       |       |       | <p>However, conditions were very dark at this stage and the 500 between North Myvot and Hallbrae is likely an underestimation. Total number of roosting birds in the area may have been in the order of 2000 birds.</p> <p>A separate flock of 1100 pink-footed geese was present by St Helen's Loch in the day. This was seen leaving and flying northwest at 16:45. A single barnacle goose was seen with this flock.</p> <p>72 bean geese were seen just north of Parkhead Farm at 13:45, but were not relocated to watch in the evening.</p>                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>22</b> | 15/01/20 | ND<br>AF | 13:30 | 17:30 | 16:14 | <p>500 pink-footed geese were present again in the extreme southwest corner of the strategic corridor at 15:00.</p> <p>At Wester Myvot, there were approximately 355 birds south of the farm and 490 north of the farm at 14:45-15:00, the latter with two greylag geese. At St Helen's Loch, there were 1000 pink-footed geese in adjacent fields in the late afternoon.</p> <p>Roost watch near the coal site at road to Avalon detected nothing except two unidentified geese 16:23 (probably Canada geese) in vicinity of the coal site loch heading south. A heron roosted in vegetation between the coal site loch and Avalon at 16:53.</p> <p>71 Bean geese were watched in the evening at Parkhead Farm until they left at 17:02, the darkness making it hard to assess their flight line for any distance but indicating that they headed towards their Darnrig roost site.</p>                                                             |
| <b>23</b> | 30/01/20 | ND<br>AF | 09:55 | 17:30 | 16:43 | <p>184 Bean geese were in fields just northwest of the copse near Parkhead Farm and later Threapgill, relocating just east of Parkhead Farm. It was probably this flock which was seen later to fly west from Threaprigg Farm at around 1400 and 78 of these birds were then relocated to the northeast of the copse near Parkhead farm, including one with a neck collar reading 27, one of the birds tagged in October. These birds were seen to depart in two flocks of unknown number at 17:19 and 17:22 in very low light.in the direction of Darnrigg moss.</p> <p>A flock of 280 pink-footed geese were visible from a railway bridge at Bonnybridge.</p> <p>Flocks of 50 and then 100 pink-footed geese arrived from south of the site boundary to land in fields near Ramoan at 11:55 and 11:57. At about 40 minutes after sunset a flock of 413 pink footed geese were seen in this vicinity flying west towards the Myvot roost site.</p> |

|    |          |          |       |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----|----------|----------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |          |          |       |       |       | Small numbers of wildfowl were seen in the south of the site near Glenboig, with a flock of 23 mallard on a small watercourse and a single mute swan, two coots and 15 mallard on a small pond.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 24 | 31/01/20 | ND<br>AF | 15:30 | 17:30 | 16:45 | 136 Pink-footed geese were just outside of the site boundary south of the railway bridge at High Bonnybridge along with 11 greylag geese, the latter departing at 17:12 flying low and in the direction of St Helen's Loch as though they would roost there. 22 Canada geese were on St Helen's Loch mid-afternoon. The pink-footed geese moved by foot into a flood on the field where they are believed to have roosted. After dark at St Helen's Loch Canada geese and greylag geese could be heard but it was too dark for an accurate count.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 24 | 11/02/20 | ND<br>AF | 10:30 | 18:10 | 17:10 | <p>No bean geese were observed.</p> <p>Only 3 pink-footed geese and 4 greylag by Wester Myvot (to NE) at 11:00. 10 pink-footed geese in an inundated field northeast of Glenboig at 11:30, and 35 landed just east of Glenboig at 16:15 (both new locations for pink-footed goose). Just north of Slamannan, a maximum of 77 pink-footed geese were present at 13:30.</p> <p>However, 1000+ pink-footed geese were present in fields east / southeast of East Lodge Wood (similar location to 06/12/2019) at 12:15. A heavy hail shower reached this location at 16:36 and possibly for this reason all these geese took off. They circled and gained height for several minutes, and were then followed as best as possible by car: although lost for some of the intervening time, the geese apparently split into two after heading north but both (one low, one higher) then veered west and all had landed at the Myvot/Hallbrae roost site by 16:45. Subsequently other pink-footed geese joined at the same roost site: 500 from the south at 17:00, 350 (apparently from south, not seen until nearly at roost) at 17:34, at least 100 at 18:01, at least 200 at 18:04 and about 50 at 18:05; the last three were not detected visually until close to and east of the roost, but could well have also approached originally from the south before heading into the wind to land. Additionally, at 17:07 500 approached Wester Myvot from the south (flying high) before veering east towards the roosting pink-footed geese already present but ultimately landing at the separate field just southeast of North Myvot, joined by a small flock of 13 birds from the south flying over Hallbrae at about the same time. Therefore a total of at least 2700 pink-footed geese roosted at the Myvot/Hallbrae roost site on this night.</p> <p>Just northwest of Caldercruix, there were 32 Canada geese at 13:15.</p> |

|    |          |          |       |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----|----------|----------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |          |          |       |       |       | <p>In fields to the south and east of St Helen's Loch there were flocks whose apparent size fluctuated during the afternoon but with a maximum count of 725 pink-footed geese in a field between the railway and the works at High Bonnybridge and an additional 410 pink-footed geese just south and east of St Helen's Loch along with about 175 greylag geese. These geese left on a wide front between 17:44 and 17:55, heading north and then turning west and were lost at distance but heading towards Carron Valley but it was very hard to evaluate distance in such poor light. Observation of close birds compromise partly by the observer's intention to establish their eventual roost site. It is unlikely that this can be established without a good vantage point maybe 4 or 5 km west or by waiting at potentially suitable water bodies. No geese were evident on St Helen's Loch after this departure.</p>                                                                                                                                                                                                                                         |
| 25 | 12/02/20 | ND<br>AF | 14:00 | 18:10 | 17:12 | <p>No bean geese were observed.</p> <p>183 greylag geese were present at St Helen's Loch at 14:00, and were seen landing, approaching from the southwest. The greylags occupied the east end of the loch, with 126 Canada geese occupying the other half.</p> <p>There were at least 750 pink-footed geese in the fields between High Bonnybridge and Bonnyhill at 13:30.</p> <p>Evening watch at St Helen's Loch/High Bonnybridge found that all the pink-footed geese and greylag geese seen earlier in the day were absent at 16:45. However, from 17:55 to 18:10 several large flocks of pink-footed geese passed over northwards, flying above 70 m but not very high – could not be accurately counted because spread out and dark conditions, but several hundred were present and they may have been the birds seen earlier at 13:30 that had disappeared elsewhere by 16:45. Direction of flight was towards the Firth of Forth, but not known if later veered to the east or west.</p> <p>Evening watch at Fannyside Loch indicated no geese roosting there but a flock of about 70 pink-footed geese flew northeast at 17:47 at around 35 to 50m height.</p> |
| 26 | 25/02/20 | ND<br>AF | 10:00 | 18:40 |       | <p>No geese were seen on the ground in the south-west sector where pink-footed geese had normally been seen on previous visits, neither in the morning nor early/late afternoon. However, roost watch in Myvot area registered approximately 800 pink-footed geese arriving at the usual Myvot/Hallbrae roost site at 18:12-16. Arrival was during conditions of fair darkness and heavy rain with poor visibility and audibility, therefore the geese were not detected until</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|    |          |          |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----|----------|----------|-------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |          |          |       |       | <p>more or less at the roost, although they appeared to have come from the SW before passing the roost site and turning back into the wind to land.</p> <p>Two counts were made of large aggregations of geese in the St Helen's Loch area with peak counts made at between 1530 and 1630 with four separate flocks, the largest of 852 pink-footed geese near the works just 800m east of High Bonnybridge, a flock of 450 just to the south, about 200 and a further 18, just to the east of St Helen's Loch with 277 greylag geese, the largest flock of greylag geese seen on site to date. The greylag geese were the first to depart at about 17:12 and about 190 landed to roost on St Helen's Loch with about another 100 or so heading further northwest. The pink-footed geese south of St Helen's Loch (including the flocks beyond the railway, took off at 17:15 (about 400 birds) and 17:18 (about 600 birds) and headed north/northwest with a smaller subset of 50 additional pink-footed geese breaking off and heading towards Bonnybridge golf club.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 27 | 26/02/20 | ND<br>AF | 15:30 | 18:40 | <p>At 15:45 there were 275 greylag geese and 190 pink-footed geese in the field just northeast of St Helen's Loch.</p> <p>At 16:45 there were approximately 200 pink-footed geese in the field southeast of Wester Myvot, mostly within the strategic corridor. Owing to topographical obscurations, this number was estimated when they flew off at 17:50, shortly after which they landed at the usual Myvot/Hallbrae roost site nearby to the east. For roost observations, an alternative viewing location on the small road just east of Wester Myvot was used – there is no parking in this area, but the viewshed is clearer to the south. At 18:57, approximately 200 pink-footed geese flew in from some height apparently from the south to the field near the main roost just southeast of North Myvot, joined at 18:58 by 4 additional birds flying from the southwest. Finally, at 18:15 a flock of approximately 800 pink-footed geese flew from the southwest at considerable height (higher than expected) and the majority had landed at the Myvot/Hallbrae roost site by 18:19. Together with the two flocks of about 200 birds, this gave a total of at least 1200 pink-footed geese at the roost site. The height at which the flock of 800 came in suggests that they had flown some distance, especially since no geese were seen in or near the strategic corridor in the morning or afternoon in the southwest sector.</p> <p>No geese were observed in the evening watch at Fannyside Lochs.</p> |

<sup>1</sup> S = Surveyor initials

**Table B.2. Details of goose foraging / roosting surveys during the 2021/22 non-breeding season**

| Visit | Survey type     | Date     | S <sup>1</sup> | Start | End   | Sunrise /sunset | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------|-----------------|----------|----------------|-------|-------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Foraging survey | 27/09/21 | SJ             | 12:00 | 17:30 | 19:02           | 37 Canada geese on St Helen's Loch with 13 teal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1     | Roost watch     | 27/09/21 | SJ             | 18:00 | 20:30 | 19:02           | No target species recorded at Fannyside Lochs but c.1000 gulls (vast majority lesser black-backed gull, several black-headed gull and occasional great black-backed gull and herring gull) roosting on loch after sunset.                                                                                                                                                                                                                                                                                                                                                                                                             |
| 2     | Roost watch     | 14/10/21 | SJ             | 06:50 | 08:45 | 07:45           | No geese roosting on Fannyside Lochs however two flocks of bean geese flew past Fannyside Lochs. The first flock was of nine bean geese at 07:55 flying at about 30m flying from southwest to north-east. The second flock was of 25 bean geese at 08.20 at about 40m flying southwest to north.                                                                                                                                                                                                                                                                                                                                      |
| 2     | Foraging survey | 14/10/21 | SJ             | 09:00 | 16:00 | 07:45           | No foraging geese were recorded within 1km of the route corridor. One small (~20) incidental flock of bean/pink-footed geese was recorded just west of the corridor, just southeast of Allandale. 10 teal and a pair of mute swans on St. Helen's Loch.                                                                                                                                                                                                                                                                                                                                                                               |
| 3     | Roost watch     | 27/10/21 | SJ             | 07:20 | 08:50 | 08:11           | At 07:40, one flock of 25 probable bean geese flew from Fannyside Muir east and were joined by c.10 probable bean geese which appeared to fly from east Fannyside Loch, the newly formed flock flew off northeast in the direction of Garbethill Muir. A further two unidentified, possible bean geese appeared south-east of east Fannyside Loch, flew across to west Fannyside Loch and then departed north a few minutes later. A flock of c.10 mallard were also recorded flying from Fannyside Muir south and several black-headed gulls and at least one great black-backed gull were recorded roosting on west Fannyside Loch. |
| 3     | Foraging survey | 27/10/21 | SJ             | 09:00 | 15:00 | 08:11           | During the foraging survey a flock of eight unidentified (possible bean) geese were recording flying from the direction of Castlecary High Woods southeast towards Garbethill Muir. c.50 Canada geese were recorded foraging in the field adjacent to St. Helen's loch along with c.100 common gull. 52 Canada geese, one shoveler and twenty mallard were recorded on St Helen's Loch. One curlew was incidentally recorded flying from fields surrounding Easter Fannyside farm southwest towards Fannyside lochs/muir.                                                                                                             |
| 4     | Foraging survey | 09/11/21 | SJ             | 10:00 | 15:30 | 16:19           | 22 pink-footed geese were recorded foraging in a field just south of Brackenhirst road in the centre of the route corridor and c.90 were recorded in a field west of                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|   |                 |          |    |       |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---|-----------------|----------|----|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                 |          |    |       |       |       | <p>New Monkland, just within the 1 km buffer. 6 Canada geese were recorded foraging in a field east of Acrecroft farm, again just within the 1 km buffer. c.20 pink-footed/bean geese and c.16 Canada geese were recorded foraging outside of the buffer, in the fields south of Garbethill Muir. A further c.40 bean geese, also outwith the buffer, were seen from VP 4 in the fields north of Slamannan. 170 Canada geese, 20 greylag and 6 pink-footed geese were recorded foraging in the field just east of St. Helen's Loch. 6 teal, 2 mallard and 2 goosander were also incidentally recorded on St. Helen's Loch. One flock of c.50-100 unidentified geese were recorded in a field just east of Bonnybridge, these were spotted from a busy country road with nowhere to stop and could not be seen from any other angles.</p> |
| 4 | Roost           | 09/11/21 | SJ | 15:30 | 17:10 | 16:19 | <p>A flock of c.80 unidentified geese flew southwest towards Greengairs at 15:55, no geese were recorded roosting on Fannyside Lochs. A male hen harrier was also incidentally recorded at the beginning of the survey foraging low over Fannyside Muir.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 5 | Foraging survey | 23/11/21 | SJ | 09:30 | 15:15 | 15:57 | <p>c.50 Canada geese recorded foraging in a field just north-east of Glenyards farm, between the two railway lines, about 800 m from the route corridor. 8 Canada geese, c.70 greylag and c.120 pink-footed geese were recorded foraging in the field just east of St. Helen's Loch. 12 mallard, 6 goosander, 3 teal, 2 mute swan and 1 grey heron were also incidentally recorded on St. Helen's Loch</p>                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 5 | Roost watch     | 23/11/21 | SJ | 15:20 | 16:50 | 15:57 | <p>No geese seen or heard, walked down and watched east Fannyside Loch from the bottom of Fannyside Muir – incidentally, two woodcock were recorded leaving roost (from the marshy area just west of the loch) and two goosander were recorded flying off of the loch just after sunset.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 6 | Foraging survey | 06/12/21 | SJ | 09:30 | 15:00 | 15:44 | <p>c.400 pink-footed geese were recorded foraging in a field just north of the A883. 100 greylag geese were recorded in the field adjacent to St. Helen's Loch and 5 goosander, 15 teal, 8 mallard and a grey heron incidentally recorded on the Loch itself. 43 pink-footed geese were recorded foraging in a field just north of Drum Farm in the middle of the route corridor. 22 pink-footed geese, c.40 Canada geese and c.20 greylag geese were recorded foraging outside of the buffer, in the fields south of Garbethill Muir. 3 bean geese, also outwith the buffer, were seen foraging from VP 4 in the fields north of Slamannan. C.80 pink-footed geese were recorded</p>                                                                                                                                                    |

|   |                 |          |    |       |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---|-----------------|----------|----|-------|-------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                 |          |    |       |       |       | foraging in a field just west of New Monkland, opposite the cemetery, just within the 500 m buffer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 6 | Roost watch     | 06/12/21 | SJ | 15:15 | 16:30 | 15:44 | One possible small flock of bean geese were heard but not seen at about 16:20 and on driving down to get a better view of the Loch a few goose silhouettes were made out on east Fannyside Loch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 7 | Roost watch     | 14/12/21 | TM | 07:40 | 09:00 | 08:39 | 12 Canada geese flew from east Fannyside Loch to West Fannyside Loch at 08:23. No other geese present.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 7 | Foraging survey | 14/12/21 | TM | 09:00 | 15:00 | 08:39 | Two flocks of 59 and 60 pink-footed geese in a field south of the A803 in the middle of the route corridor. One mallard in flooded field near St. Helen's Loch. Five flocks of pink-footed geese (total of 770 geese) in the fields south of High Bonnybridge – just north of Drum Farm. 7 bean geese with 14 greylag geese in a field south of Garbethill Muir, well outside the route corridor. Incidentally three lapwing recorded flying south-west over Fannyside Lochs and four golden plover recorded flying south-west just north-west of Greengairs.                                                                                                                                                                                                              |
| 8 | Foraging survey | 13/01/22 | SJ | 09:15 | 14:45 | 08:40 | c.500 pink-footed geese in fields north of Drum Farm (just south of High Bonnybridge). 10 Canada geese with 6 mallard, 4 teal, 1 grey heron and 1 little grebe on St Helen's Loch. 19 pink-footed geese flew into field just north of wester Lochdrum farm. 18 pink-footed/bean geese flew north to south towards Fannyside just east of Abronhill. 19 unidentified geese flew south to north just east of Garbethill and 12 unidentified geese flew northwest to southeast over Garbethill Muir. 11 Canada geese and one greylag goose foraging in fields just south of the quarry near Garbethill Muir. c.350 pink-footed geese in fields southwest of New Monkland. C.200 pink-footed geese and 8 bean geese were also observed from VP 4 plus c.80 foraging near VP 5. |
| 8 | Roost watch     | 13/01/22 | SJ | 07:45 | 09:00 | 08:40 | 12 unidentified geese (possibly greylag or Canada geese based on their call) flew south from Fannyside Muir. Two large brown geese, possibly greylag, landed on west Fannyside loch from the north. Possible hen harrier briefly seen on Fannyside Muir but poor visibility. Goosander on east Fannyside loch. Flock of c.200 pink-footed geese in field just north of the A803.                                                                                                                                                                                                                                                                                                                                                                                           |
| 9 | Foraging survey | 27/01/22 | SJ | 10:30 | 16:00 | 16:38 | c.75 Canada geese, c.80 greylag goose, 2 mallard, 2 tufted duck, 2 mute swan, 1 little grebe, 1 goosander and 1 grey heron on St. Helen's Loch plus c.50 Canada                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|    |                 |          |    |       |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----|-----------------|----------|----|-------|-------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                 |          |    |       |       |       | geese, c.400 pink-footed geese joined by a further c.100 pink-footed geese from the south of the railway line foraging in the fields just east of the loch.<br>c.400 pink-footed/bean geese at Jawcraig, some confirmed to be bean geese but majority pink-footed plus a further c.500 pink-footed geese flew to the east Jawcraig. c.30 bean geese recorded from VP4. C.100 pink-footed/bean geese (sounded more like pink-footed geese) flew over Fannyside lochs from northeast, heading south. C.500 probable pink-footed geese were recorded foraging in the fields west of Glenmavis (over 1km from the site).                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 9  | Roost watch     | 27/01/22 | SJ | 16:20 | 18:00 | 16:38 | 8 Canada geese onto east Fannyside - flew in low from southeast plus 13 unidentified (likely Canada geese) flew into east fannyside loch low - couldn't hear or see clearly. 3 unidentified ducks on east Fannyside Loch. 4 possible teal flew from east fannyside loch into pool near road.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 10 | Foraging survey | 04/02/22 | SJ | 08:45 | 13:30 | 08:05 | 11 pink-footed/bean geese flew east to west over road just south of High Bonnybridge. 6 mallard, 10 teal, 2 mute swan and a grey heron. C.600 pink-footed geese in a field north of New Monkland, in the centre of the route corridor. C.500 pink-footed were recorded from VP 4 with no bean geese identified amongst them.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 10 | Roost watch     | 04/02/22 | SJ | 06:56 | 08:20 | 08:05 | 3 Canada / greylag geese came from Fannyside muir direction and landed on west Fannyside loch then 5 Canada geese from fannyside muir direction - 3 flew over east Fannyside loch and cont. east and 2 landed on west fannyside loch. c.50 unidentified geese from above west fannyside loch flew over east Fannyside loch then north over Fannyside muir (flying @ about 50m high) no audible calls but probably pink-footed geese. 2 Canada geese from west to east Fannyside loch and 2 Canada geese from west fannyside loch across fannyside muir flying northeast (all low flights). 1 unidentified duck flew away north, 3 mallard landed in pools near road, 2 unidentified ducks onto east Fannyside loch from the west 2 goosander from east Fannyside loch flew to west Fannyside loch joined by 2 mallard as they flew over the pools by the road. Peregrine perched on telegraph pole where pools are - flew off northwest. Pair of ravens circling over the pools. 3 possible teal flew from east to west Fannyside lochs |
| 11 | Foraging survey | 10/02/22 | SJ | 12:30 | 16:30 | 17:08 | One Canada goose, 2 goosander, 6 mallard and two oystercatchers on St. Helen's Loch plus c.100 greylag goose and 77 Canada goose in the field to the south of the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                                    |             |          |    |       |       |       |                                                                                                                                 |
|------------------------------------|-------------|----------|----|-------|-------|-------|---------------------------------------------------------------------------------------------------------------------------------|
|                                    |             |          |    |       |       |       | loch. At least 20 grey geese (probably more over brow of the hill) in a field to the west of Glenmavis, over 1km from the site. |
| 11                                 | Roost watch | 10/02/22 | SJ | 16:45 | 18:30 | 17:08 | 6 Canada geese into roost on east Fannyside loch.                                                                               |
| <sup>1</sup> S = Surveyor initials |             |          |    |       |       |       |                                                                                                                                 |

**Table B.3. Details of goose foraging / roosting surveys during the 2024/25 non-breeding season**

| Visit | Survey type     | Date     | S <sup>1</sup> | Start | End   | Sunrise /sunset | Comments                                                                                                                                                                                                                                                                                                                                       |
|-------|-----------------|----------|----------------|-------|-------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Foraging survey | 16/09/24 | SJ             | 10:15 | 13:50 | n/a             | 35 Canada geese, 15 mallard, 2 teal and 2 tufted duck on St Helen's Loch.                                                                                                                                                                                                                                                                      |
| 2     | Foraging survey | 30/09/24 | SJ             | 11:15 | 15:00 | n/a             | Flock of c.35 geese in a field east of Drum Wood. 1 Canada goose, 1 grey heron, 8 tufted duck, 26 teal, 2 gadwall, 1 wigeon, 1 little grebe on St Helen's Loch.                                                                                                                                                                                |
| 1     | Roost watch     | 09/10/24 | SJ & RC        | 17:28 | 19:50 | 18:28           | 20 bean geese flew over east Fannyside Loch, low. C.50 bean geese landed on small pool on Fannyside Muir. Five minutes later, c.50 PG/XF also landed on the small pool on Fannyside Muir. 50 PG over Fannyside Muir, 7 CG probably landed on west Fannyside Loch.                                                                              |
| 3     | Foraging survey | 11/10/24 | SJ             | 10:30 | 14:00 | n/a             | No foraging geese within 1km of the route corridor. 115 Canada geese, 30 teal, 10 mallard, 6 wigeon, 6 tufted duck and 1 shoveler on St. Helen's Loch.                                                                                                                                                                                         |
| 2     | Roost watch     | 30/10/24 | SJ             | 15:45 | 17:50 | 16:38           | No target species seen or heard.                                                                                                                                                                                                                                                                                                               |
| 4     | Foraging survey | 30/10/24 | SJ             | 11:00 | 15:10 | n/a             | 31 Canada geese and three greylag geese in field adjacent to St. Helen's Loch. 40 Canada geese, 20 teal, 18 mallard, 12 tufted duck, 10 wigeon, one shoveler and one little grebe on St Helen's Loch.                                                                                                                                          |
| 3     | Roost watch     | 21/11/24 | SJ             | 15:10 | 17:15 | 15:58           | No geese seen or heard. Lochs frozen (maybe using a different roost site).                                                                                                                                                                                                                                                                     |
| 5     | Foraging survey | 21/11/24 | SJ             | 11:00 | 14:30 | n/a             | 26 bean geese were recorded foraging in a field north of Slamannan. 120 possible bean geese (approx., possibly pink-footed geese or a mix of both) foraging in field adjacent to St Helen's Loch with 10 greylag geese and 100 Canada geese. 40 Canada geese, 8 greylag geese, 28 teal (roosting) and a pair of goosander on St. Helen's Loch. |

<sup>1</sup> S = Surveyor initials



## Annex C - General breeding bird survey species list

Table C.1. presents the full list of species recorded during the general breeding bird survey programme in the 2022 breeding season.

**Table C.1. Species recorded during general breeding bird surveys**

| BTO code | Species                  | Scientific name                   | Conservation designation(s)      | Notable* |
|----------|--------------------------|-----------------------------------|----------------------------------|----------|
| B.       | Blackbird                | <i>Turdus merula</i>              | -                                | X        |
| BC       | Blackcap                 | <i>Sylvia atricapilla</i>         | -                                | X        |
| BH       | Black-headed gull        | <i>Chroicocephalus ridibundus</i> | SBL                              | ✓        |
| BT       | Blue tit                 | <i>Cyanistes caeruleus</i>        | -                                | X        |
| BF       | Bullfinch                | <i>Pyrrhula pyrrhula</i>          | SBL; FLBAP                       | ✓        |
| BZ       | Buzzard                  | <i>Buteo buteo</i>                | -                                | X        |
| CH       | Chaffinch                | <i>Fringilla coelebs</i>          | -                                | X        |
| CC       | Chiffchaff               | <i>Phylloscopus collybita</i>     | -                                | X        |
| CT       | Coal tit                 | <i>Periparus ater</i>             | -                                | X        |
| CD       | Collared dove            | <i>Streptopelia decaocto</i>      | -                                | X        |
| CM       | Common gull              | <i>Larus canus</i>                | -                                | X        |
| CA       | Cormorant                | <i>Phalacrocorax carbo</i>        | -                                | X        |
| CR       | Crossbill                | <i>Loxia curvirostra</i>          | -                                | X        |
| CK       | Cuckoo                   | <i>Cuculus canorus</i>            | Red List BoCC; SBL; FLBAP        | ✓        |
| CU       | Curlew                   | <i>Numenius arquata</i>           | Red List BoCC; SBL; FLBAP; NLBAP | ✓        |
| D.       | Dunnock                  | <i>Prunella modularis</i>         | -                                | X        |
| GW       | Garden warbler           | <i>Sylvia borin</i>               | -                                | X        |
| GC       | Goldcrest                | <i>Regulus regulus</i>            | -                                | X        |
| GO       | Goldfinch                | <i>Carduelis carduelis</i>        | -                                | X        |
| GH       | Grasshopper warbler      | <i>Locustella naevia</i>          | Red List BoCC; SBL; FLBAP        | ✓        |
| GS       | Great spotted woodpecker | <i>Dendrocopos major</i>          | -                                | X        |

|    |                          |                                   |                                     |   |
|----|--------------------------|-----------------------------------|-------------------------------------|---|
| GT | Great tit                | <i>Parus major</i>                | -                                   | X |
| GR | Greenfinch               | <i>Chloris chloris</i>            | Red List BoCC                       | ✓ |
| H. | Grey heron               | <i>Ardea cinerea</i>              | -                                   | X |
| GJ | Greylag goose            | <i>Anser anser</i>                | -                                   | X |
| HG | Herring gull             | <i>Larus argentatus</i>           | Red List BoCC; SBL                  | ✓ |
| HM | House martin             | <i>Delichon urbicum</i>           | Red List BoCC                       | ✓ |
| HS | House sparrow            | <i>Passer domesticus</i>          | Red List BoCC; SBL;<br>FLBAP        | ✓ |
| K. | Kestrel                  | <i>Falco tinnunculus</i>          | SBL; FLBAP; NLBAP                   | ✓ |
| L. | Lapwing                  | <i>Vanellus vanellus</i>          | Red List BoCC; SBL;<br>FLBAP; NLBAP | ✓ |
| LB | Lesser black-backed gull | <i>Larus fuscus</i>               | -                                   | X |
| LR | Lesser redpoll           | <i>Carduelis cabaret</i>          | Red List BoCC; FLBAP                | ✓ |
| LI | Linnet                   | <i>Linaria cannabina</i>          | Red List BoCC; SBL;<br>FLBAP        | ✓ |
| LT | Long-tailed tit          | <i>Aegithalos caudatus</i>        | -                                   | X |
| MA | Mallard                  | <i>Anas platyrhynchos</i>         | -                                   | X |
| MP | Meadow pipit             | <i>Anthus pratensis</i>           | -                                   | X |
| M. | Mistle thrush            | <i>Turdus viscivorus</i>          | Red List BoCC                       | ✓ |
| MH | Moorhen                  | <i>Gallinula chloropus</i>        | -                                   | X |
| MS | Mute swan                | <i>Cygnus olor</i>                | -                                   | X |
| OP | Osprey                   | <i>Pandion haliaetus</i>          | WCA Schedule 1; SBL                 | ✓ |
| OC | Oystercatcher            | <i>Haematopus ostralegus</i>      | -                                   | ✓ |
| PW | Pied wagtail             | <i>Motacilla alba</i>             | -                                   | X |
| RL | Red-legged partridge     | <i>Alectoris rufa</i>             | -                                   | X |
| RB | Reed bunting             | <i>Emberiza schoeniclus</i>       | SBL; FLBAP                          | ✓ |
| R. | Robin                    | <i>Erithacus rubecula</i>         | -                                   | X |
| SW | Sedge warbler            | <i>Acrocephalus schoenobaenus</i> | FLBAP                               | ✓ |
| SK | Siskin                   | <i>Carduelis spinus</i>           | SBL                                 | ✓ |
| S. | Skylark                  | <i>Alauda arvensis</i>            | Red List BoCC; SBL;<br>FLBAP        | ✓ |
| SN | Snipe                    | <i>Gallinago gallinago</i>        | FLBAP; NLBAP                        | ✓ |

|    |                |                                |                                     |   |
|----|----------------|--------------------------------|-------------------------------------|---|
| ST | Song thrush    | <i>Turdus philomelos</i>       | Red List BoCC; SBL;<br>FLBAP        | ✓ |
| SH | Sparrowhawk    | <i>Accipiter nisus</i>         | -                                   | X |
| SG | Starling       | <i>Sturnus vulgaris</i>        | Red List BoCC; SBL;<br>FLBAP        | ✓ |
| SC | Stonechat      | <i>Saxicola torquate</i>       | -                                   | X |
| SL | Swallow        | <i>Hirundo rustica</i>         | FLBAP                               | ✓ |
| SI | Swift          | <i>Apus apus</i>               | Red List BoCC; SBL;<br>FLBAP; NLBAP | ✓ |
| TC | Treecreeper    | <i>Certhia familiaris</i>      | -                                   | X |
| TP | Tree pipit     | <i>Anthus trivialis</i>        | Red List BoCC; SBL;<br>FLBAP        | ✓ |
| TS | Tree sparrow   | <i>Passer montanus</i>         | Red List BoCC; SBL;<br>FLBAP        | ✓ |
| W. | Wheatear       | <i>Oenanthe oenanthe</i>       | -                                   | X |
| WH | Whitethroat    | <i>Sylvia communis</i>         | -                                   | X |
| WW | Willow warbler | <i>Phylloscopus trochilus</i>  | -                                   | X |
| WR | Wren           | <i>Troglodytes troglodytes</i> | -                                   | X |
| Y. | Yellowhammer   | <i>Emberiza citrinella</i>     | Red List BoCC; SBL;<br>FLBAP        | ✓ |

\*Considered to be notable in this Report.

# Confidential Annex D Barn Owl Results

This annex forming part of this appendix has been removed from this copy as this information is confidential and only available to authorised recipients.