

Ballinlee Green Energy Ltd

Ballinlee Wind Farm

Baseline Ornithology Report – Appendix 7B

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Woodrow Ref: P00011133

Date: September 2025

COMMERCIAL IN CONFIDENCE

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Project reference: P00011133
Date of issue: September 2025

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Revision and Amendment Register

Version Number	Date	Section(s)	Page(s)	Summary of Changes	Approved by
1	15/01/2025	All	All	D1	MMW
2	24/03/2025	All	All	D2	MMW
3	30/04/2025	All	All	D3	MR
4	16/09/2025	All	All	Client comments	AS
5	25/09/2025	All	All	Final	MMW

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1. INTRODUCTION

All surveyors and authors of this report are suitably qualified ecologists. See Chapter 7 (Appendix 7A – Statement of Competency) for qualifications and experience of each. As required by CIEEM, all APEM Group Woodrow staff are required to abide by a strict code of professional conduct in all aspects of their work.

1.1. Background

APEM Group Woodrow was commissioned by Ballinlee Green Energy Ltd., to conduct ornithological surveys of the proposed Development at Ballinlee, Co. Limerick, (the Development).

This report outlines the methodology used for ornithological surveys, presents survey results on habitats and bird species within the proposed Development, and discusses key findings. It provides baseline ornithological data to support the ornithological impact assessment included in the Environmental Impact Assessment Report (EIAR) Ornithological chapter.

1.2. Site and Development overview

The Development is located in a predominantly rural and agricultural landscape approximately 18 km southeast of Limerick City, spanning multiple townlands near Bruff, Co. Limerick. The site includes a mix of intensively and less intensively managed farmland, bordered and intersected by hedgerows, drainage ditches, and occasional small conifer plantations. These landscape features, along with minor forestry patches and scattered residential dwellings, provide potential habitat for a range of bird species, including farmland specialists, woodland-edge species, and water-dependent birds associated with drainage ditches.

The development includes the installation of 17 wind turbines, internal access tracks (including watercourse crossings), underground cabling, an on-site substation, as well as deposition areas and borrow pits. Collectively, these features could result in direct and indirect habitat loss, fragmentation, and disturbance, all of which are relevant considerations in ornithological impact assessments. Deposition areas and borrow pits in particular may cause further ground disturbance, vegetation removal, and localised hydrological modification, potentially reducing the availability of suitable habitat for foraging and breeding birds.

Additionally, the Turbine Delivery Route (TDR) and Grid Connection Route (GCR) extend the footprint of potential impacts beyond the immediate Development. The TDR passes through a largely pastoral landscape, and the GCR spans 27.6 km from the Killonan substation, following the existing road network. Both routes may involve works in or adjacent to habitats of ornithological value, such as hedgerows and wet ditches, and could present risks of disturbance or displacement to birds during construction.

1.3. Purpose of this report

The purpose of this baseline report is to describe the methods and results of ornithological surveys undertaken within the Development and the wider landscape. Details of the surveys carried out are

provided in Section 3. The data gathered will inform the ecological impact assessment which is contained within Chapter 7 Ornithology of the Environmental Impact Assessment Report (EIAR).

2. DESK STUDY

An initial desk-based review was undertaken to collate existing ornithological information relevant to the Development and its surrounding landscape. In line with best practice (e.g. NatureScot (2016)) a 10 km radius was applied as the baseline search area for designated sites. However, in recognition that wider foraging ranges and functional linkages may extend beyond this distance, additional consideration was given to designated sites up to 20 km where hydro-ecological connections or potential species movements could create pathways of effect. This approach ensured that sites such as the River Shannon and Fergus Estuaries SPA (c.18 km away) and Kilcolman Bog SPA (c.21 km away) were captured in the assessment, in addition to those within the 10 km radius. The desk study therefore provides a precautionary but proportionate baseline for identifying sensitive bird populations, determining survey requirements, and informing the subsequent impact assessment.

2.1. Data sources

Preliminary assessment of avian habitat suitability and availability was undertaken using:

- Ortho-imagery and 6-inch mapping, viewed via Bing Maps, Google EarthPro, Google Maps, and Ordnance Survey Ireland GeoHive.

NPWS Designations Viewer¹ was used to:

- Identify nearby Special Protection Areas (SPAs) and their Special Conservation Interests (SCIs).
- Identify nationally important biodiversity sites, including Natural Heritage Areas (NHAs) and proposed NHAs (pNHAs), and to assess ornithological features.

Environmental Protection Agency's (EPA) Maps² was used to:

- Investigate hydrological connectivity to SPAs.

Scottish Natural Heritage (2016) guidance was followed on:

- Assess SPA connectivity by examining the core ranges of SCI species.
- Core ranges up to 20 km for geese species (e.g., greylag goose *Anser anser*, pink-footed goose *Anser brachyrhynchus*) were considered.
- SPAs within 20 km, or with potential source-pathway-receptor connections, are listed in Table 1 and shown in Figure 2.

Bird Sensitivity Mapping for Wind Energy Development (Mc Guinness *et al.*, 2015) was reviewed via:

- NBDC Biodiversity Maps, as shown in Figure 3.

Ornithological records were collated from:

- The National Biodiversity Data Centre (NBDC) database³ for the 10 km Irish national grid squares [R53 and R63], encompassing the Development and Study Areas (see Figure 1).

¹ <https://www.npws.ie/protected-sites>

² <https://gis.epa.ie/EPAMaps/>

³ <https://maps.biodiversityireland.ie/>

- Records generated by the Bird Atlas 2007-2011 (Balmer *et al.*, 2013) are listed in Appendix I – BTO Species codes, Table A3.1.

Target species include:

- Red- and Amber-listed Birds of Conservation Concern in Ireland (BoCCI) (Gilbert *et al.*, 2021).
- Red-listed species: highest conservation concern (rapid declines, historic declines without recovery, or global threat).
- Amber-listed species: unfavourable European status, internationally important numbers, moderate declines or very small populations.

The Irish Wetland Bird Survey (I-WeBS) site⁴ identified three locations within 15 km, selected to capture wetlands potentially functionally linked to the Development and to account for the foraging ranges and commuting behaviour of waterbirds:

- Lough Gur (0I002) approximately 4.5 km to the northeast
- Charleville Lagoons (0L003) approximately 9.2 km to the southwest
- Lyonstown Stud Farm (0J004) approximately 9 km to the northeast
- Annual peak count data for Lough Gur and Charleville Lagoons were reviewed and are detailed in Appendix II – Protected species records, Table A3.2 and A3.3 respectively. No data for annual peak counts of waterbirds is available for Lyonstown Stud Farm.

Hen harrier *Circus cyaneus* breeding distribution was investigated using:

- National survey data from 1998-2000, 2005, 2010, 2015 and 2022 (Norris *et al.*, 2002; Barton *et al.*, 2006; Ruddock *et al.*, 2012; Ruddock *et al.*, 2016; Ruddock *et al.*, 2024).
- Distribution of known hen harrier roosts based on NPWS (2022) mapping.

Scientific Nomenclature

- Bird species referenced in this baseline report follow binomial nomenclature at the first mention of each species' common name, with the scientific name written in full and italicised. Subsequent references use only the common name. Irish (English language) common and scientific names of bird species referred to in this report follow those used by the British Ornithologists' Union (BOU)⁵. Where appropriate, geographic prefixes such as "common," "European," or "Eurasian" are not included.
- British Trust for Ornithology (BTO) species codes referred to throughout this report are provided in Appendix I – BTO Species codes, for reference.

⁴ <https://bwi.maps.arcgis.com/apps/View/index.html?appid=1043ba01fcb74c78bc75e306eda48d3a>

⁵ Bird nomenclature follows the British Ornithologists' Union (BOU) and the International Ornithological Congress (IOC) World Bird List, with English and scientific names aligned to the most recent BOU taxonomic recommendations (BOU, 2013; updated online).

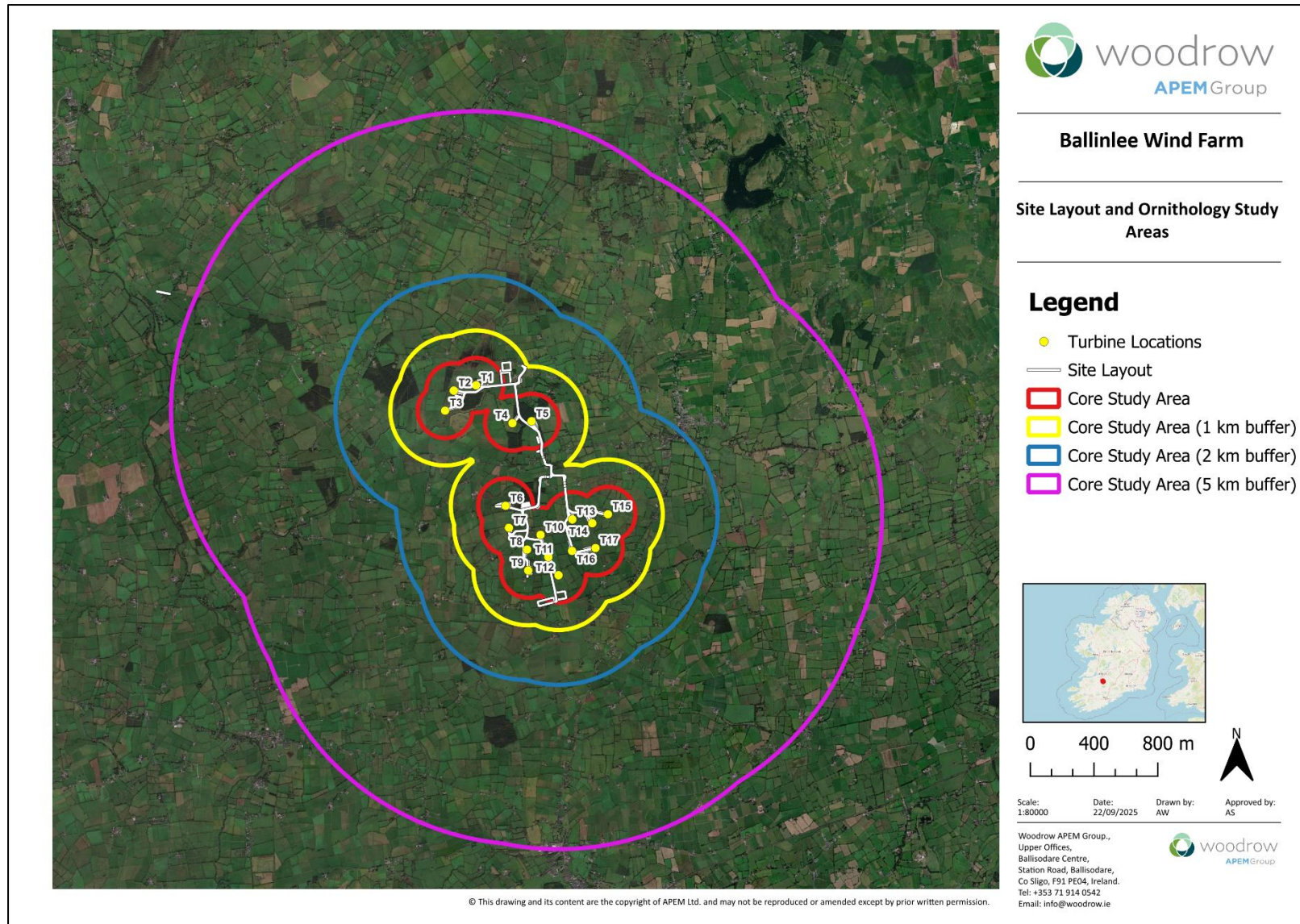


Figure 1: Overview of Development Boundary and 500m, 2 km and 5km Ornithological Study Areas

2.2. Desk study findings

2.2.1. European and national designated sites

The nearest SPA, the River Shannon and River Fergus Estuaries SPA, is approximately 18.16 km northwest of the Development. These estuaries are designated for a diverse range of waterbird species, listed in Table 1. Among the SCI species for this SPA, the Whooper swan *Cygnus cygnus* has the largest recorded core foraging range in winter, which is typically less than 5 km (SNH, 2016). Consequently, the Development and its surrounding area lies outside of any reported core or maximum foraging ranges for the SCI species of the River Shannon and River Fergus Estuaries SPA (SNH, 2016).

While the Development is outside known foraging ranges, a hydrological connection exists via the Morningstar River and River Maigue, which link local waterbodies to the SPA. This has been considered to ensure that any potential indirect effects, such as displacement, disturbance, or habitat modification along connected waterways, are appropriately assessed, consistent with best practice guidance for wind energy developments.

Kilcolman Bog SPA lies approximately 21.2 km south of the Development. Although this is beyond the core foraging range of those species listed as SCI for this SPA, details have been included within Table 1 for context, in particular relating to Whooper swans.

The only nationally important site in the vicinity of the Development with an ornithological interest is Lough Gur pNHA, approximately 5 km to the northeast. This designation includes two associated wetlands: Lake Bog, situated to the east between Loughgur cross and Knockadoon Hill, and Red Bog to the south. The pNHA encompasses both wetlands and is also recognised as a Wildfowl Sanctuary. Its primary ecological interest pertains to its floristic communities associated with wetland habitats and the variety of waterbirds that use the lake.

The Development itself is not hydrologically connected to the Lough Gur catchment. However, a section of the Grid Route crosses a tributary that flows into Lough Gur, and this hydrological link has been noted at desk-study stage.

Although Lough Gur is not an SAC or SPA, its ecological significance is recognized at the national level, and it contributes to Ireland's network of protected natural sites.

Table 1: European and national designated sites within the vicinity of the Development, including sites up to 20 km where hydro-ecological linkages or potential functional connectivity could occur.

Site name	Distance to Development	Special Conservation Interests (SCI)
River Shannon and River Fergus Estuaries SPA Site code: 004077	Approximately 18 km northwest	Cormorant (<i>Phalacrocorax carbo</i>) [A017] Whooper swan (<i>Cygnus cygnus</i>) [A038] Light-bellied Brent goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Mareca penelope</i>) [A050]

Site name	Distance to Development	Special Conservation Interests (SCI)
		Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Spatula clypeata</i>) [A056] Scaup (<i>Aythya marila</i>) [A062] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Greenshank (<i>Tringa nebularis</i>) [A164] Black-headed gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999]
Kilcolman Bog SPA Site code: 004095	Approximately 21.2 km south	Whooper swan (<i>Cygnus cygnus</i>) [A038] Teal (<i>Anas crecca</i>) [A052] Shoveler (<i>Spatula clypeata</i>) [A056] Wetland and Waterbirds [A999]
Lough Gur pNHA Site Code: 000437	Approximately 5 km northeast (Grid Route crosses a tributary of the catchment)	No listed SCI; nationally important site with recognised wildfowl interest (pNHA/Wildfowl Sanctuary).

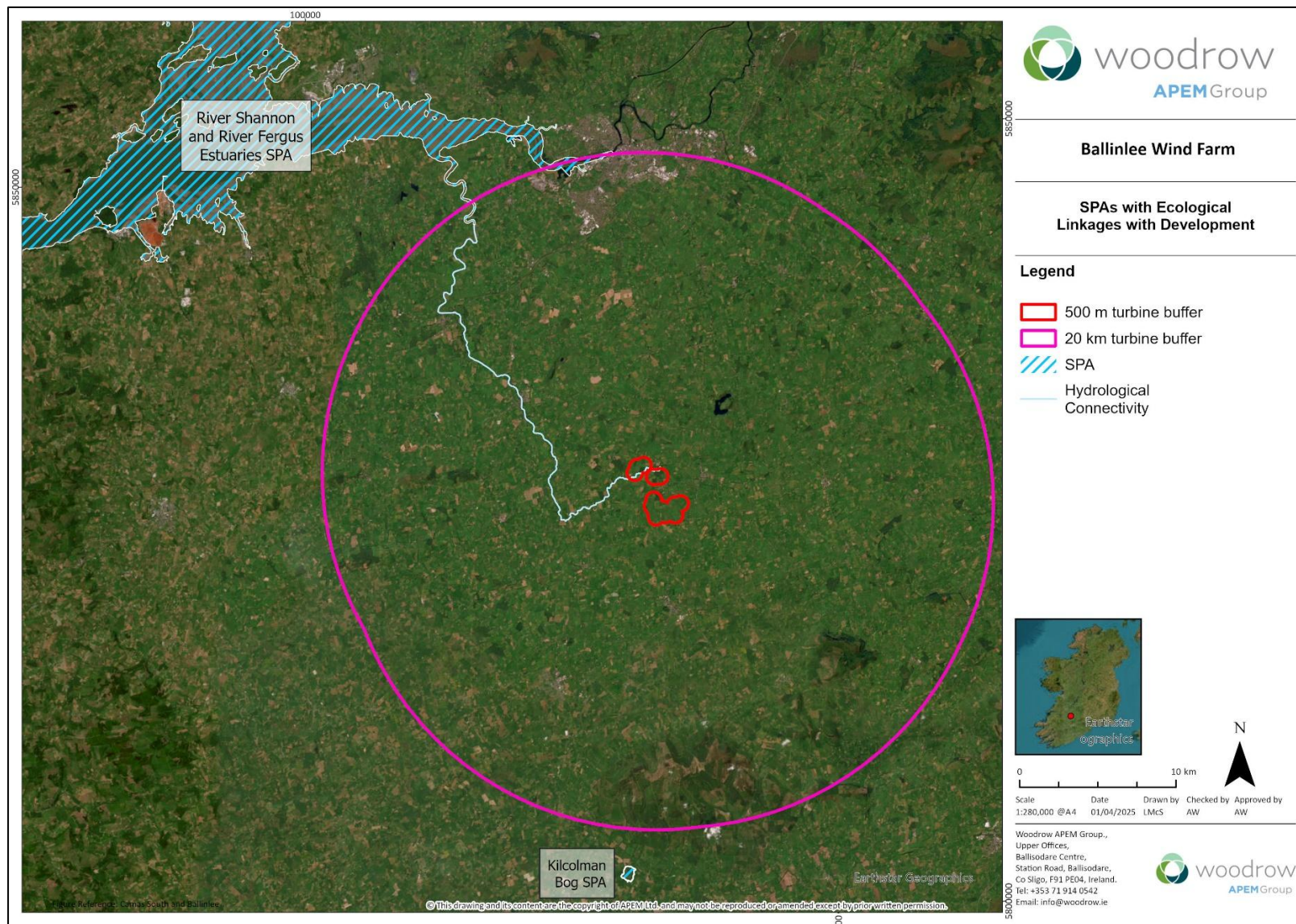


Figure 2: Special Protection Areas (SPAs) with Ecological Linkage with the Development

2.2.2. Sensitivity mapping for wind farms

Of the 22 species assessed in Mc Guinness *et al.* (2015), the Development and its 2 km buffer were classified as having a low sensitivity to wind farm development (see Figure 3). Species assessed by McGuinness and recorded during these surveys included four species of wader, as well as greylag goose, whooper swan, black-headed gull *Chroicocephalus ridibundus*, barn owl *Tyto alba* and hen harrier.

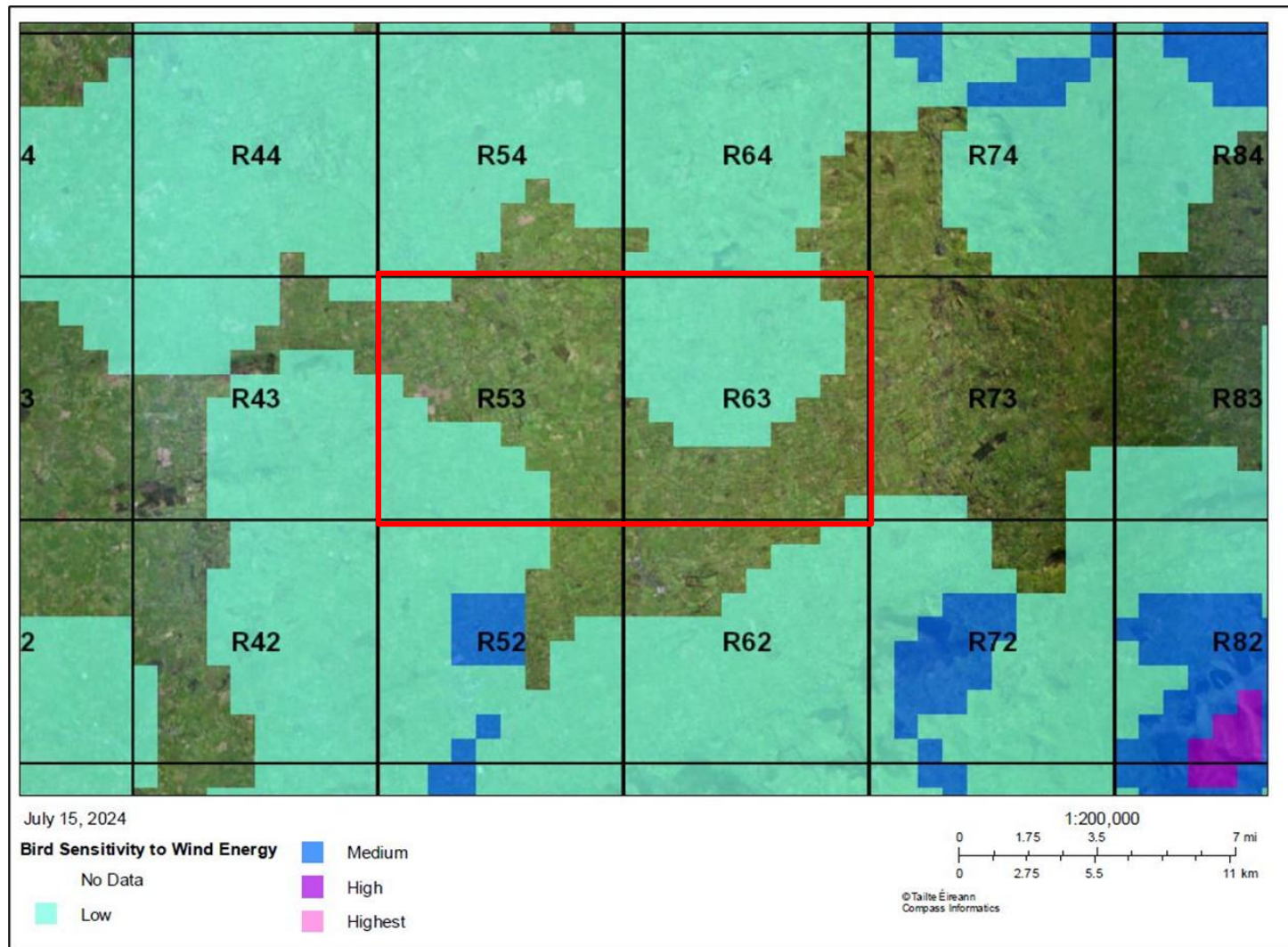


Figure 3: Bird sensitivity to wind energy⁶

⁶ Mc Guinness et al. (2015), as displayed on Biodiversity Maps: <https://maps.biodiversityireland.ie/Map>

2.2.3. Non-breeding waterbirds

2.2.3.1.1. I-WeBS sites

Full details of peak count data is provided for Lough Gur (OI002) and Charleville Lagoons (OL003) in Appendix II – Protected species records (Table A3.2 and Table A3.3, respectively). No peak count data is available for Lyonstown Stud Farm (OJ004).

Table 2: Selected peak numbers of swans, ducks and waders recorded during Lough Gur I-WeBS counts between 2011-12 to 2022-23

Species	Peak Count	Notes
Whooper swan	73	
Greylag goose	41	
Gadwall	32	
Shoveler	47	
Wigeon	384	
Mallard	149	
Teal	381	
Tufted Duck	346	Exceeds 1% of national population (270 birds)
Curlew	65	
Lapwing	160	

According to the 2020 swan census (Burke *et al.*, 2021), the whooper swan flock associated with the Lough Gur area is one of the few flocks in this region of Co. Limerick.

The Development and the surrounding 5 km buffer is also considered to lie within core foraging ranges for greylag goose (up to 20 km), given the species use of nearby Lough Gur. This species favours low-lying agricultural land (Balmer *et al.*, 2013) therefore there is suitable habitat within the 5 km buffer.

Based on SNH (2017) guidelines, migratory populations of wintering geese and swans are considered as species notably sensitive to wind farm developments.

2.2.3.2. Non-breeding waders

Based on I-WeBS count data for Lough Gur, the wader species regularly occurring in the area include (with highest peak count since winter 2011-12) lapwing *Vanellus vanellus* (160), golden plover *Pluvialis apricaria* (1), curlew *Numenius arquata* (65) and snipe *Gallinago gallinago* (3), see Appendix II – Protected species records. These species are recorded infrequently, with lapwing observed in most winters, although numbers fluctuate and remain well below the 1% national threshold (850 birds). In contrast, golden plover and curlew were not always recorded during I-WeBS count.

2.2.3.3. Non-breeding gulls

In terms of overall numbers of non-breeding waterbirds, gull species often contribute significantly to counts for I-WeBS sites. Count data from Lough Gur I-WeBS site shows that black-headed gull was the most regularly occurring gull species, with common gull *Larus canus* and lesser black-backed gull *Larus fuscus* being occasionally recorded and typically only as single birds. The maximum count for black-headed gull was 62 birds and for common gull was seven birds. In some winters, no or very few gulls were counted. While it is noted that under I-WeBS methodology counting of gulls is optional and may not have been undertaken in some years, the count data is suggestive of a relatively mobile and sporadically occurring populations of wintering gulls in the region.

2.2.4. Breeding waders

The land identified for the Development is predominantly heavily managed agricultural grasslands. Snipe were recorded as possibly breeding within the Study Area (Balmer *et al.*, 2013), while lapwing and curlew historically bred within the 10 km square covering the Development (Sharrock, 1976; Gibbons *et al.*, 1993). However, curlew is no longer recorded breeding within this area, with the nearest known sites over 20 km to the north (O'Donoghue *et al.*, 2019; Colhoun *et al.*, 2022).

Habitat for upland breeding waders, including golden plover and dunlin *Calidris alpina*, is absent in this part of Co. Limerick, as supported by breeding distribution maps (Sharrock, 1976; Gibbons *et al.*, 1993; Balmer *et al.*, 2013). There are no historical or recent records of breeding golden plover in the 5 km buffer or its surroundings (Balmer *et al.*, 2013; Sharrock, 1976). The Morningstar River lacks suitable sand/shingle banks for common sandpiper *Actitis hypoleucos* and ringed plover *Charadrius hiaticula*.

Although historical records suggest that woodcock *Scolopax rusticola* were recorded as 'probably breeding' (Sharrock, 1976), recent range contractions have led to the species being red-listed (Gilbert *et al.*, 2021), with remaining breeding populations largely in the midlands and east (Balmer *et al.*, 2013). Targeted surveys were conducted to confirm presence.

Based on Lauder & Lauder (2020) which identifies breeding wader hotspots using species distribution data and ecological scoring criteria, the nearest hotspots are over 20 km to the northwest, associated with the River Shannon. The 10 km grid squares encompassing the Development [R53 and R63] and nearby squares [R54 and R64] scored low in this analysis.

2.2.5. Raptors

Although suitable habitat exists for several breeding raptor species, confirmed breeding records within the Study Areas were limited to buzzard *Buteo buteo*, sparrowhawk *Accipiter nisus*, and kestrel *Falco tinnunculus*. There were no confirmed records for other raptor species, and no statutory designated sites for breeding raptors lie within 20 km of the Development.

The lowland character of the area (elevation < 100 m AOD⁷) and the predominance of improved agricultural grassland and cultivated land, make it unsuitable for upland raptor species. Further assessment of species of conservation concern and with recognised sensitivities to wind farm developments, is provided in the following section.

⁷ Above Ordnance Datum

2.2.5.1. Hen harrier

The Development lies outside known core hen harrier breeding and wintering ranges. The most recent National Hen Harrier Survey (2022) found no breeding records within the relevant 10 km national grid squares [R53 and R63] (Ruddock et al., 2024) with the closest confirmed breeding location in grid square [R75], approximately 16.8 km to the northeast. National Parks and Wildlife Service (NPWS, 2022) mapping of winter distribution and known roosts confirms no records within the relevant grid squares [R53 and R63]; the nearest known winter roost is in [R75], beyond the 2 km buffer.

2.2.5.2. Merlin

There are no historic records of probable breeding merlin *Falco columbarius* within the 10 km Irish national grid squares [R53 and R63] (Balmer et al., 2013). Adjacent grid squares [R43, R52, and R62] contain records of breeding activity; however, no suitable breeding habitat has been identified within the Development or its immediate surroundings. The Development's location is well beyond the merlin's typical foraging and breeding ranges (2–5 km) confirm the site is of negligible importance for this species.

2.2.5.3. Peregrine

An occupied peregrine *Falco peregrinus* nest site was recorded during the 2017 National Peregrine Survey within the 10 km national grid squares R53 and R63 with the nearest confirmed breeding site approximately 4 km northeast of the Development. The Development lies within the potential foraging range (up to 18 km) of local breeding birds.

2.2.5.4. Kestrel

Kestrel is BoCCI red-listed due to documented declines in both population size and distribution (Gilbert et al., 2021). Despite these declines, it remains Ireland's most widespread raptor, with an estimated national population of approximately 13,500 individuals (range: 9,918–17,393; NPWS., 2019; Lewis et al., 2019). Kestrels are typically associated with open habitats, including grasslands and farmland, where they hunt small mammals and invertebrates. Records confirm their presence within the 2 km buffer, indicating ongoing use of the local landscape for foraging.

2.2.5.5. Barn owl

The study areas surrounding the Development support features suitable for barn owl, including woodland, rough/unimproved areas, treelines, hedgerows, and derelict buildings. Breeding has been confirmed within 5.5 km southwest of the core study area, with a successful nest recorded in 2020⁸.

Although the Development lies within potential foraging range (typically 4-6 km), no active nests or roosts were identified within the Development or the immediate 1 km buffer.

⁸ NBDC database

3. METHODOLOGY

The survey methodologies used for ornithological surveys are outlined in the following sections and adhere to the prevailing NatureScot (formerly SNH) (2017) guidance.

Study areas were defined according to SNH guidelines which also recommends two years of ornithological surveys are undertaken, unless a single year of data can be demonstrated to be sufficiently robust for assessing potential impacts. In this case, three years of data have been collected across the following seasons:

- Year 1, non-breeding season 2021-2022 and breeding season 2022;
- Year 2, non-breeding season 2022-2023 and breeding season 2023;
- Year 3, non-breeding season 2023-2024 and breeding season 2024.

Surveys undertaken included vantage point watches, breeding bird, dusk and raptor surveys, non-breeding winter walkovers, bioacoustics and targeted species surveys, particularly for waterfowl including whooper swan.

3.1. Vantage Point (VP) watches

The VP study area was defined as a 500m buffer of the turbine layout (the core study area) in line with SNH (2017) guidance. VP watches recorded flight activity within the defined area (Figure 1) to provide data on selected target species for assessing avian collision risk. Target species are those identified as being at risk from displacement effects caused by wind farm developments or from collision with turbines. Target species for which flight-line data was captured included the following species groups:

- All waterbird species (including swans, geese, ducks, waders, herons and gulls);
- All raptors;
- Species listed as SCIs of any SPAs considered to be within the potential zone of influence of proposed turbine locations;
- Any species listed on Annex I of the Birds Directive;
- Any species listed as red-listed on the BoCCI 2020-26 (Gilbert *et al.*, 2021).

As geese and swans are species which take regular commuting flights between roosting areas and feeding areas, care was taken during vantage point watches to identify whether the Development lies within an important area for geese and swans.

A total of six VP locations were used to cover the 500 m buffer during Year 1 surveys (non-breeding season 2021–22 and breeding season 2022). To address a minor coverage gap caused by a spruce plantation on the eastern side of the site, a seventh VP location was added for Year 2. Seven VP locations were subsequently used for both Year 2 (non-breeding season 2022–23 and breeding season 2023) and Year 3 (non-breeding season 2023–24 and breeding season 2024) surveys.

Three VPs were used to cover the northern section of the Development and four VPs were used to cover the southern section, the locations of which are shown in Figure 4. The seven VP locations

provided 100% coverage of the 500 m buffer. The VPs selected to cover the 500 m buffer are compliant with the SNH (2017) guidelines.

Where VP surveys with overlapping viewsheds were undertaken simultaneously, surveyors were in contact to ensure there was no double counting of birds. The surveyors communicated with one another if a bird was observed to fly to/from another viewshed and in essence passed the bird onto the next surveyors.

VP watches involved the surveyor observing birds from a stationary position using binoculars and a telescope. In accordance with SNH (2017), the viewshed of the VP is scanned until a target species is detected and then followed until it ceases flying or is lost from view. The surveyor estimates the height of the bird and its usage of the area by drawing its flight path on a map and noting its behaviour. Flight heights were estimated visually using known heights of features within the viewsheds, such as telegraph poles, plantations and contours as a reference. Other data collected includes the number of birds, time of detection and duration of flight, as well as sex and age class if relevant. To limit observer fatigue, surveyors did not typically undertake VP watches of more than three hours in duration without a break unless inclement periods of weather meant watches were paused for short durations until conditions improved.

For each season, defined as the breeding season (mid-March to September) and non-breeding season (October to mid-March), a minimum of 36 hours of VP watches were carried out from each VP. Watch hours were distributed to ensure representative coverage across the entire season.

A summary of VP survey dates and the duration of surveys completed at each VP location is provided for Year 1 in Table 3 and Table 4, for Year 2 in Table 6 and Table 6, and for Year 3 in Table 7 and Table 8.

Full details of survey effort and weather conditions are provided in Appendix IV – Survey effort & weather conditions (Table A5.1 and A5.2).

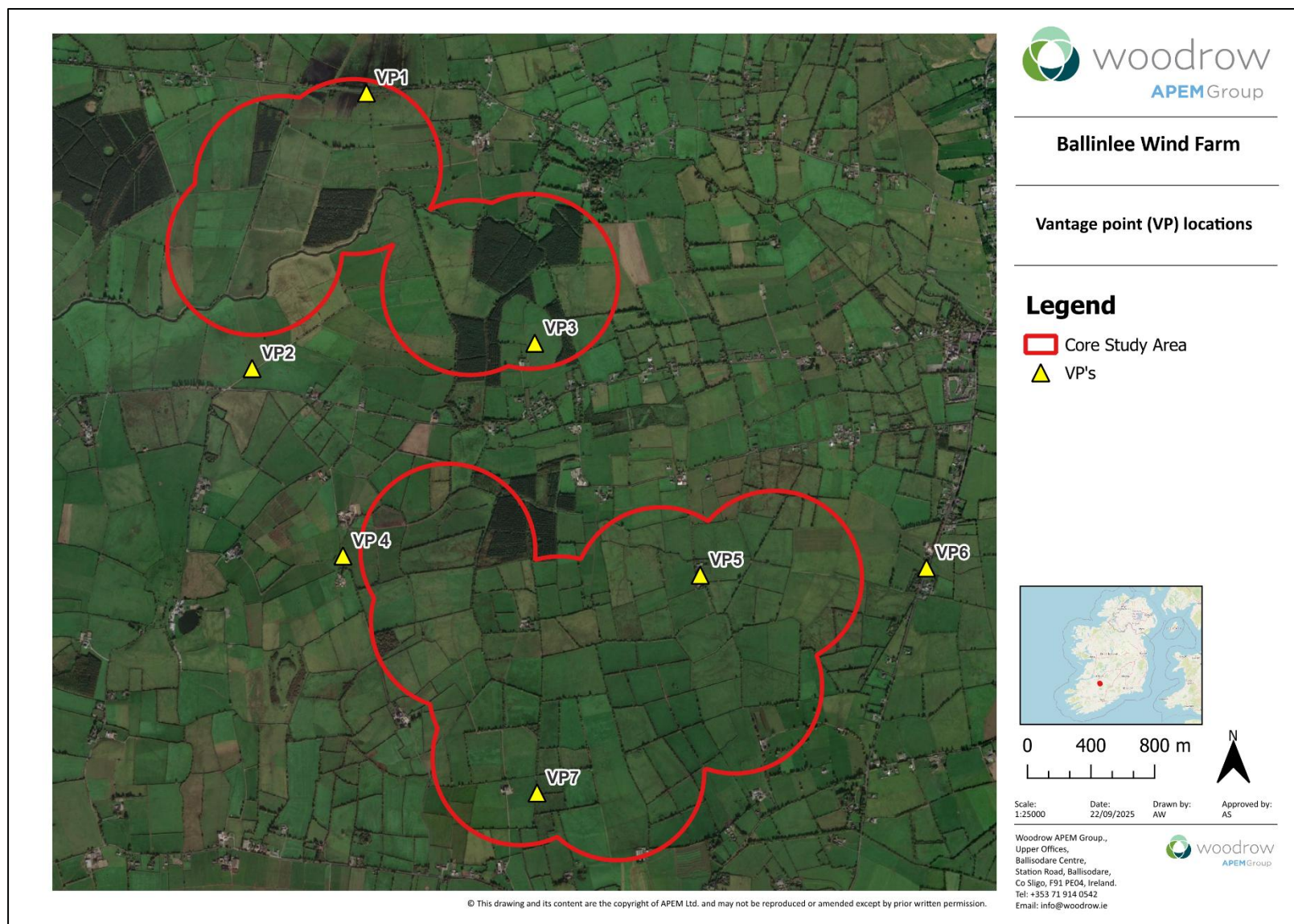


Figure 4: Vantage Point (VP) locations and 500 m turbine buffer

Table 3: Dates and duration (hours) for Year 1 non-breeding season VP watches

Non-breeding season 2021-2022						
Date	VP1	VP2	VP4	VP5	VP6	VP7
October 2021	6	6	6	6	6	6
November 2021	6	6	6	6	6	6
December 2021	6	6	6	6	6	6
January 2022	6	6	6	6	6	6
February 2022	6	6	6	6	6	6
March 2022	6	6	6	6	6	6
Total	36	36	36	36	36	36

Table 4: Dates and duration (hours) for Year 1 breeding season VP watches

Breeding season 2022						
Date	VP1	VP2	VP4	VP5	VP6	VP7
April 2022	6	6	6	6	6	6
May 2022	6	6	6	6	6	6
June 2022	6	6	6	6	6	6
July 2022	6	6	6	6	6	6
August 2022	6	6	6	6	6	6
Total	30	30	30	30	30	30

Table 5: Dates and duration (hours) for Year 2 non-breeding season VP watches

Non-breeding season 2022-2023							
Date	VP1	VP2	VP3	VP4	VP5	VP6	VP7
October 2022	6	6	6	6	6	6	6
November 2022	6	6	6	6	6	6	6
December 2022	6	6	6	6	6	6	6
January 2023	6	6	6	6	6	6	6
February 2023	6	6	6	6	6	6	6
March 2023	6	6	6	6	6	6	6

Non-breeding season 2022-2023							
Date	VP1	VP2	VP3	VP4	VP5	VP6	VP7
Total	36	36	36	36	36	36	36

Table 6: Dates and duration (hours) for Year 2 breeding season VP watches

Breeding season 2023							
Date	VP1	VP2	VP3	VP4	VP5	VP6	VP7
April 2023	6	6	6	6	6	6	6
May 2023	6	6	6	6	6	6	6
June 2023	6	6	6	6	6	6	6
July 2023	6	6	6	6	6	6	6
August 2023	6	6	6	6	6	6	6
September 2023	6	6	6	6	6	6	6
Total	36	36	36	36	36	36	36

Table 7: Dates and duration (hours) for Year 3 non-breeding season VP watches

Non-breeding season 2023-2024							
Date	VP1	VP2	VP3	VP4	VP5	VP6	VP7
October 2023	6	6	6	6	6	6	6
November 2023	6	6	6	6	6	7.75	6
December 2023	6	6	6	6	6	6	6
January 2024	6	6	6	6	6	6	6
February 2024	6	6	6	6	6	6	6
March 2024	6	6	6	6	6	6	6
Total	36	36	36	36	36	37.75	36

Table 8: Dates and duration (hours) for Year 3 breeding season VP watches

Breeding season 2024							
Date	VP1	VP2	VP3	VP4	VP5	VP6	VP7
March 2024	3	6	6		3	3	3
April 2024	3			6	3	3	3

Breeding season 2024							
Date	VP1	VP2	VP3	VP4	VP5	VP6	VP7
May 2024	6	6	6	6	6	6	6
June 2024	6	6	6	6	6	3	6
July 2024	6	6	6	6	6	6	6
August 2024	6	6	6	6	6	6	6
September 2024	6	6	6	6	6	9	6
Total	36	36	36	36	36	36	36

3.2. Breeding bird surveys

3.2.1. Breeding bird surveys

The breeding bird study area was defined as a 500m buffer around the turbine layout (see Figure 1), with surveys conducted across the breeding season of Year 1 (April to August 2022), Year 2 (April to September 2023) and Year 3 (March to July 2024) in accordance with SNH (2017) guidelines. Breeding bird surveys provide a broad overview of bird activity, with transects selected to sample all key habitat types, including woodland, agricultural grassland, and treelines/hedgerows, identifying potential ecological constraints such as breeding waders or raptors.

Survey methodology combined O'Brien and Smith (1992), developed for mapping lowland wader territories and other ground-nesting species of conservation concern, and the Common Bird Census (CBC) approach outlined in Gilbert et al. (1998).

Surveyors recorded all birds observed or heard, typically within 100 m, though topography sometimes allowed for detection at greater distances. Data collection was conducted using site maps or Survey123, with routes tracked via the Outdoor Active application.

In Year 1, a single transect route was established and used throughout the season until August 2022, providing representative coverage of all habitat types, including scrub and agricultural land. In Year 2, six fixed routes were introduced to encompass different habitats within the 500 m buffer, where access allowed. These surveys followed methodologies adapted from the Countryside Bird Survey (CBS) (Birdwatch Ireland, 2012), aiming to locate target species. In Year 3, additional coverage was introduced beyond previous routes, including sections of the Morningstar River and associated wetland habitats within the floodplain. The routes surveyed in Years 1, 2 and 3 are detailed in Appendix VII – Survey routes (Figures A8.1, A8.2 and A8.3, respectively).

To ensure bird activity was not suppressed and optimal detection conditions maintained, surveys were only conducted when wind speeds were below Beaufort Scale F5 and visibility was moderate or good.

Survey dates are provided in Table 9, 10 and 11, with further details, including weather conditions and survey effort, available in Appendix IV – Survey effort & weather conditions (Tables A5.3, A5.4 and A5.5).

Table 9: Survey dates for Year 1 breeding bird surveys

Breeding season 2022		
Date	Survey type	Surveyor
19/04/2022	Breeding bird	JK ⁹
27/05/2022	Breeding bird	JK
17/06/2022	Breeding bird	JK
25/07/2022	Breeding bird	JK
26/08/2022	Breeding bird	JK

Table 10: Survey dates for Year 2 breeding bird surveys

Breeding season 2023		
Date	Survey type	Surveyor
09/05/2023	Breeding bird	SD ¹⁰
22/05/2023	Breeding bird	TR ¹¹
17/07/2023	Breeding bird	SD
04/09/2023	Breeding bird	PC ¹²
05/09/2023	Breeding bird	SD

Table 11: Survey dates for Year 3 breeding bird surveys

Breeding season 2024		
Date	Survey type	Surveyor
15/03/2024	Breeding bird	EM
02/04/2024	Breeding bird	PDEV ¹³
09/04/2024	Breeding bird	PDEV
15/04/2024	Breeding bird	PDEV

⁹ Joe Kelly

¹⁰ Seán Doyle

¹¹ Tom Ryan

¹² Padraig Cullinan

¹³ Patrick Devereaux

Breeding season 2024		
Date	Survey type	Surveyor
06/05/2024	Breeding bird	PDEV
08/05/2024	Breeding bird	PDEV
09/05/2024	Breeding bird	PDEV
17/05/2024	Breeding bird	PDEV
17/07/2024	Breeding bird	PDEV
29/07/24	Breeding bird	PDEV

3.2.2. Crepuscular/Dusk surveys

Dusk surveys targeting woodland areas within the 500 m buffer (see Figure 1) were conducted during the breeding season in Year 2 (April to August 2023) and Year 3 (June to August 2024) on calm, dry nights to identify ‘roding’ woodcock (territorial males) and long-eared owl *Asio otus*, following methods outlined in Gilbert *et al.*, (1998) and Hardey *et al.*, (2013). These surveys also recorded other crepuscular and nocturnal species, such as ‘drumming’ or ‘chipping’ snipe (O’Brien & Smith, (1992). Incidental records of crepuscular/nocturnal species were noted during bat surveys by APEM Group Woodrow, this included internal inspection of buildings and veteran trees within the Development.

Woodcock surveys took place from May to June, beginning 15 minutes before sunset and concluding 60 minutes after sunset, as recommended by Gilbert *et al.*, (1998). Surveyors focused on woodland edges and associated scrub/forestry rides.

Long-eared owl surveys were carried out during peak vocal activity periods, early in the season (late March to May) when adults are most vocal and late in the season (late June to August) when young can be detected loudly calling to their parents for food (“begging”).

Survey dates are listed in Table 12 and Table 13, with further details on weather conditions and survey effort provided in Appendix IV – Survey effort & weather conditions (Tables A5.6 and A5.7).

Table 12: Survey dates for Year 2 breeding season dusk surveys

Breeding season 2023		
Date	Survey type	Surveyor
05/04/2023	Dusk	TR
17/04/2023	Dusk	TR
16/05/2023	Dusk	MO’C ¹⁴

¹⁴ Michael O’Clery

Breeding season 2023		
Date	Survey type	Surveyor
24/05/2023	Dusk	MO'C
06/08/2023	Dusk	MO'C

Table 13: Survey dates for Year 3 breeding season dusk surveys

Breeding season 2024		
Date	Survey type	Surveyor
20/06/2024	Dusk	GO ¹⁵
22/06/2024	Dusk	GO
27/06/2024	Dusk	GO
28/06/2024	Dusk	GO
15/07/2024	Dusk	GO
16/07/2024	Dusk	GO
24/07/2024	Dusk	GO
30/07/2024	Dusk	GO
23/08/2024	Dusk	GO
29/08/2024	Dusk	GO

3.3. Breeding raptor surveys

The breeding raptor study area was defined as a 2 km buffer of the turbine layout (see Figure 5), in accordance with SNH (2017) guidance.

A combination of 'mini-VPs', together with driven and walked routes, was employed to observe displaying behaviour, identifying territories, and assess suitable nesting habitat for raptors within the 2 km buffer during the breeding season in Year 1 (2022), Year 2 (2023) and Year 3 (2024). Across the three seasons, surveys followed the recommended methodologies outlined in Hardey *et al.* (2013).

Raptor observations recorded during VP watches and breeding bird surveys were examined together with observations from breeding raptor surveys to identify breeding territories, which are shown in Figure 12, 13 and 14.

¹⁵ Geoff Oliver

The dates of the breeding raptor surveys are shown in Table 14, 15 and 16, with further details on weather and survey effort provided in Appendix IV – Survey effort & weather conditions (Tables A5.8, A5.9 and A5.10).

Table 14: Survey dates for Year 1 breeding season raptor surveys

Breeding season 2022		
Date	Survey	Surveyor
20/04/2022	Raptor	MO'C

Table 15: Survey dates for Year 2 breeding season raptor surveys

Breeding season 2023		
Date	Survey	Surveyor
04/04/2023	Raptor	JM ¹⁶
18/05/2023	Raptor	JM
08/06/2023	Raptor	JH ¹⁷
12/06/2023	Raptor	SN ¹⁸
16/06/2023	Raptor	JH
12/07/2023	Raptor	JH

Table 16: Survey dates for Year 3 breeding season raptor surveys

Breeding season 2024		
Date	Survey	Surveyor
13/05/2024	Raptor	PDEV
27/05/2024	Raptor	PDEV
28/05/2024	Raptor	PDEV
02/06/2024	Raptor	GO
21/06/2024	Raptor	GO
28/06/2024	Raptor	GO
30/06/2024	Raptor	GO
14/07/2024	Raptor	GO

¹⁶ John Murphy

¹⁷ John Hehir

¹⁸ Stan Nugent

Breeding season 2024		
15/07/2024	Raptor	GO
16/07/2024	Raptor	GO
30/07/2024	Raptor	GO
31/07/2024	Raptor	GO
04/08/2024	Raptor	GO
05/08/2024	Raptor	GO

3.3.1. Barn owl

For barn owl surveys the study area was defined as a 1 km buffer of the turbine layout (see Figure 5), in accordance with SNH (2017) guidelines. Searches targeted old buildings and veteran trees suitable for breeding barn owls. Surveys were undertaken during the breeding season in Year 1 (June to August 2022) and Year 2 (May to August 2023). Methods used adhered to Transport Infrastructure Ireland (TII) guidelines on Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects (TII, 2021) and Hardey *et al.* (2013).

Licensed surveys consisted of a combination of daytime inspections to assess site suitability and presence of barn owl (moulted feathers, pellets, whitewash, prey item, 'snoring' vocalisations) and nocturnal watches to confirm occupancy of features identified during daytime inspections as suitable for barn owl nesting.

Observations of barn owls during VP watches and breeding bird surveys were examined together with observations from barn owl surveys to identify breeding territories which are shown in Figure 15.

Survey dates are provided in Table 17 and Table 18, with further details, including weather conditions and survey effort available in Appendix IV – Survey effort & weather conditions (Tables A5.11 and A5.12).

Table 17: Survey dates for Year 1 breeding season barn owl surveys

Breeding season 2022		
Date	Survey	Surveyor
26/06/2022	Barn owl	MO'C
20/08/2022	Barn owl	MO'C

Table 18: Survey dates for Year 2 breeding season barn owl surveys

Breeding season 2023		
Date	Survey	Surveyor
16/05/2023	Barn owl	MO'C
24/05/2023	Barn owl	MO'C
06/08/2023	Barn owl	MO'C

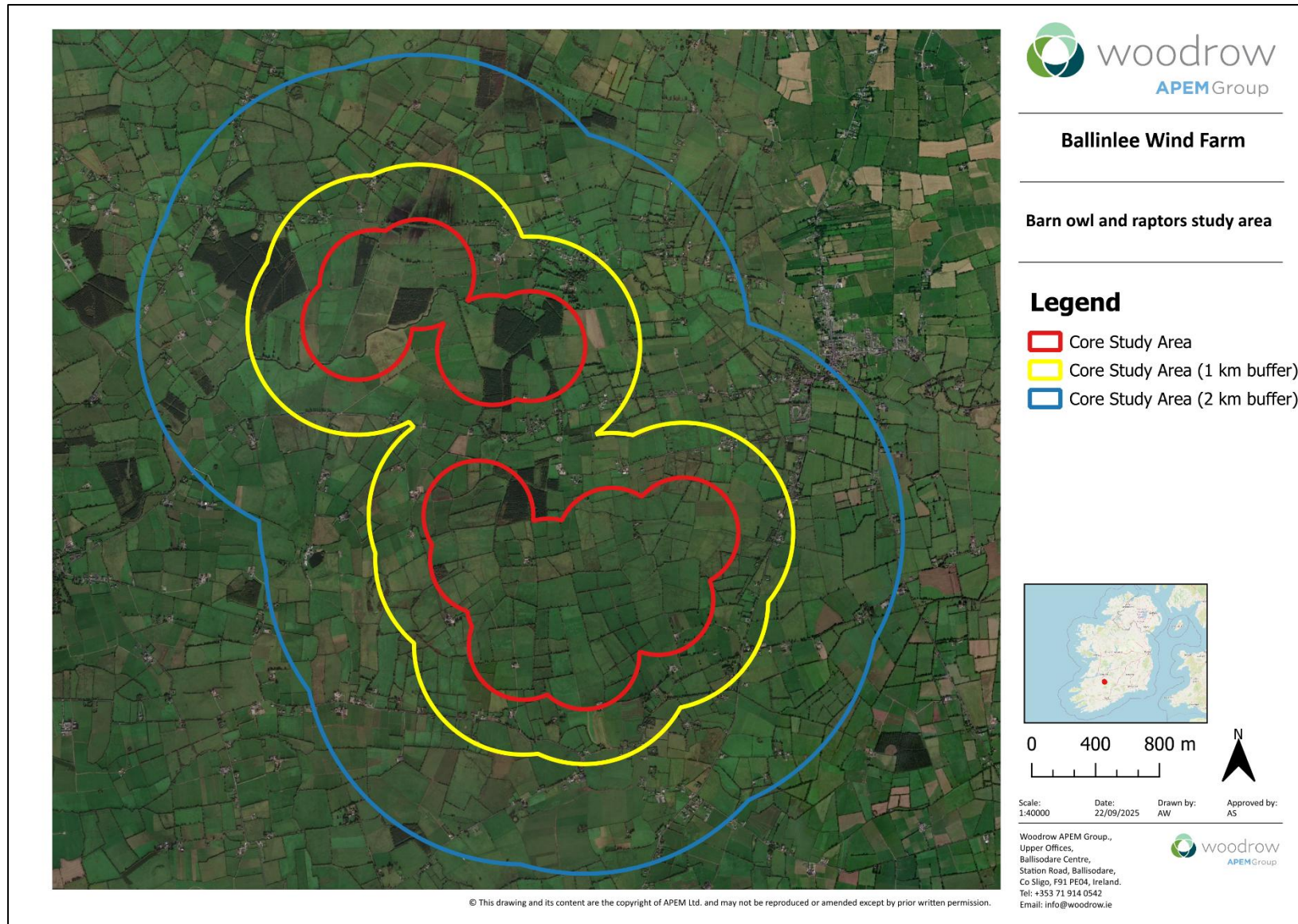


Figure 5: Barn owl (1 km buffer) and raptor (2 km buffer) survey areas

3.4. Winter walkover surveys

The winter walkover study area was defined as a 500m buffer of the turbine layout (see Figure 1) in accordance with SNH (2017) guidance. Winter walkover surveys were conducted during the non-breeding seasons in Year 1 (October 2021 to March 2022), Year 2 (November 2022 to March 2023) and Year 3 (October 2023 to March 2024). All winter walkover surveys were conducted under optimal weather conditions for surveying.

Surveyors walked the 500 m buffer recording all species encountered, ensuring to cover a sample of all types of habitats present. Winter walkover surveys recorded a range of species across the 500m buffer, with particular focus on waders and wildfowl. These surveys provided additional information on species distribution, habitat use, and numbers, supplementing VP watches.

During Year 1 surveys, the same walkover route was used as for breeding bird surveys and provided representative coverage of all habitats occurring within the site e.g. scrub, agricultural land, etc. In Year 2, six fixed routes were established to encompass different habitats within the 500 m buffer, where access allowed. Survey methods followed the 'look-see' method as outlined in Bibby *et al.*, (2000) and aimed to record all species. In Year 3, additional coverage beyond previous routes was undertaken, including surveyors covering all suitable wader habitats, including the Morningstar River floodplain, as well as other key habitats such as woodland and pasture with treelines/hedgerows.

Survey dates are provided in Table 19, 20 and 21, with further details, including weather conditions and survey effort, available in Appendix IV – Survey effort & weather conditions (Tables A5.13, A5.14 and A5.15).

Table 19: Survey dates for Year 1 non-breeding season winter walkover surveys

Non-breeding season 2021-22		
Date	Survey	Surveyor
14/10/2021	Winter walkover	JK
19/11/2021	Winter walkover	JK
23/12/2021	Winter walkover	JK
21/01/2022	Winter walkover	JK
21/02/2022	Winter walkover	JK
16/03/2022	Winter walkover	JK

Table 20: Survey dates for Year 2 non-breeding season winter walkover surveys

Non-breeding season 2022-23		
Date	Survey	Surveyor
09/11/2022	Winter walkover	TR
11/11/2022	Winter walkover	TR

Non-breeding season 2022-23		
Date	Survey	Surveyor
11/01/2023	Winter walkover	TR
12/01/2023	Winter walkover	TR
06/03/2023	Winter walkover	TR
21/03/2023	Winter walkover	PC

Table 21: Survey dates for Year 3 non-breeding season winter walkover surveys

Non-breeding season 2023-24		
Date	Survey	Surveyor
03/01/2024	Winter walkover	AR ¹⁹
04/01/2024	Winter walkover	AR
15/03/2024	Winter walkover	EM

3.5. Wintering waterbird surveys

The wintering waterbird study area was defined as a 5 km buffer of the turbine layout (see Figure 1), in accordance with SNH (2017) guidance. Wintering waterbird surveys were conducted during the non-breeding seasons in Year 2 (October 2022 to March 2023) and Year 3 (November 2023 to March 2024). The surveys provide contextual data on waterbird numbers in the wider landscape relative to the Development.

Following NatureScot guidelines, monitoring focused on wildfowl foraging and roosting locations within 1 km of the Development. Surveys followed an adapted I-WeBS methodology, with modifications for recording locations and behaviours of birds based on Lewis & Tierney (2014) and involved monthly survey visits.

Although structured wintering waterbird surveys were not conducted during Year 1, in Year 2 surveys focused on Lough Gur, while in Year 3 coverage was expanded to include all suitable wetland and foraging or roosting habitats within the 5 km buffer.

Surveyors recorded the location of waterbirds and associated behaviour using either field maps or Survey123, with survey routes/coverage tracked using the Outdoor Active application. While waterbirds were the focus of this survey, other species are recorded, in particular raptors which often start displaying in late winter/early spring. Waterbird activity along the Morningstar River was recorded during surveys that focused on the 500 m buffer and not during winter waterbird surveys which focused on the wider area.

¹⁹ Andre Robinson

Survey dates are provided in Table 22 and Table 23, with further details, including weather conditions and survey effort available in Appendix IV – Survey effort & weather conditions (Tables A5.16 and A5.17).

Table 22: Survey dates during Year 2 wintering waterbird surveys

Non-breeding season 2022-23		
Date	Survey	Surveyor
10/10/2022	Wintering waterbird	JH
28/10/2022	Wintering waterbird	TT ²⁰
16/11/2022	Wintering waterbird	TT
15/12/2022	Wintering waterbird	TT
11/01/2023	Wintering waterbird	TT
14/02/2023	Wintering waterbird	TT
15/02/2023	Wintering waterbird	TR
19/03/2023	Wintering waterbird	TT

Table 23: Survey dates during Year 3 wintering waterbird surveys

Non-breeding season 2023-24		
Date	Survey	Surveyor
02/11/2023	Wintering waterbird	PDEV
03/11/2023	Wintering waterbird	PDEV
22/12/2023	Wintering waterbird	JH & GM ²¹
18/01/2024	Wintering waterbird	JH
23/02/2024	Wintering waterbird	JH & GM
20/03/2024	Wintering waterbird	GM
21/03/2024	Wintering waterbird	JH & GM

3.5.1. Whooper swan surveys

The whooper swan study area was defined as a 500m buffer of the turbine layout (see Figure 1), in accordance with SNH (2017) guidance. Whooper swan surveys were carried out during non-breeding seasons in Year 1 (October 2021 to March 2022), Year 2 (October 2022 to April 2023) and Year 3

²⁰ Tom Tarpey

²¹ Gerry Murphy

(October 2023 to March 2024). Surveys used the vantage point (VP) watch methodology outlined in Section 3.1, with VP locations selected to provide comprehensive coverage of key foraging areas at two primary sites: the northern section of 500 m buffer and the floodplains of the Camoge River at Ballycullane, approximately 5.2 km north of the core study area (Figure 7). Additionally, surveys were carried out at Lough Gur, an established annual roosting site for the local whooper swan flock, to assess site usage and flock size.

During each survey, VP field sheets were used to record both target species flight lines and incidental observations of other bird species. This data also complements separate VP surveys conducted in the northern section of the 500 m buffer.

Survey dates are provided in Table 24, 25 and 26 with further details, including weather conditions and survey effort available in Appendix IV – Survey effort & weather conditions (Tables A5.19, A5.20 and A5.21).

Table 24: Survey dates for Year 1 non-breeding season whooper swan surveys

Non-breeding season 2021-22		
Date	Survey	Surveyor
27/10/2021	Whooper swan	JK
15/11/2021	Whooper swan	JK
17/11/2021	Whooper swan	JK
26/11/2021	Whooper swan	JK
30/11/2021	Whooper swan	JK
14/12/2021	Whooper swan	JK
17/12/2021	Whooper swan	JK
28/12/2021	Whooper swan	JK
30/12/2021	Whooper swan	JK
27/01/2022	Whooper swan	GM
28/01/2022	Whooper swan	GM
08/02/2022	Whooper swan	GM
25/02/2022	Whooper swan	GM
28/02/2022	Whooper swan	GM
27/03/2022	Whooper swan	GM

Table 25: Survey dates for Year 2 non-breeding season whooper swan surveys

Non-breeding season 2022-23		
Date	Survey	Surveyor
27/10/2022	Whooper swan	JH
23/11/2022	Whooper swan	GM
14/12/2022	Whooper swan	JH
13/01/2023	Whooper swan	GM
15/02/2023	Whooper swan	JH
15/03/2023	Whooper swan	JH
24/03/2023	Whooper swan	GM
06/04/2023	Whooper swan	GM
18/04/2023	Whooper swan	JH

Table 26: Survey dates for Year 3 non-breeding season whooper swan surveys

Non-breeding season 2023-24		
Date	Survey	Surveyor
26/10/2023	Whooper swan	GM
22/11/2023	Whooper swan	JH
21/12/2023	Whooper swan	GM
17/01/2024	Whooper swan	GM
22/02/2024	Whooper swan	GM
20/03/2024	Whooper swan	JH

Figure 6 provides a visual representation of the results summarised in Table 24, 25, and 26, allowing for an integrated comparison of the data across the three datasets. The graph illustrates the key trends and patterns, highlighting variations and relationships that are less immediately apparent in the tabular format. By combining the information into a single visualisation. Figure 6 facilitates a clearer interpretation of the results, supporting more intuitive assessment of differences and similarities across the measured parameters.

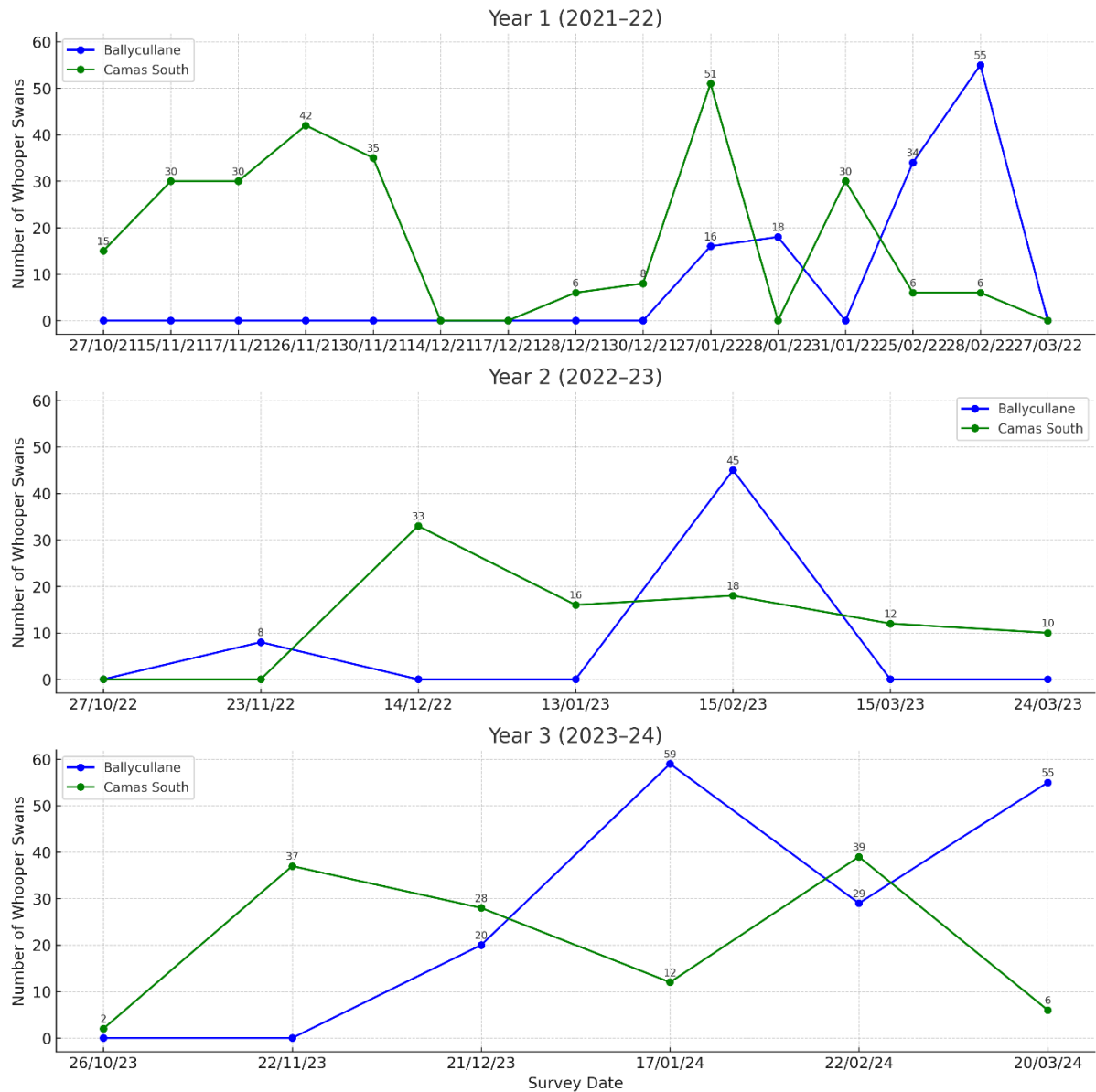


Figure 6: Whooper swan counts at Ballycullane and Camas South during Non-Breeding seasons (Years 1–3)

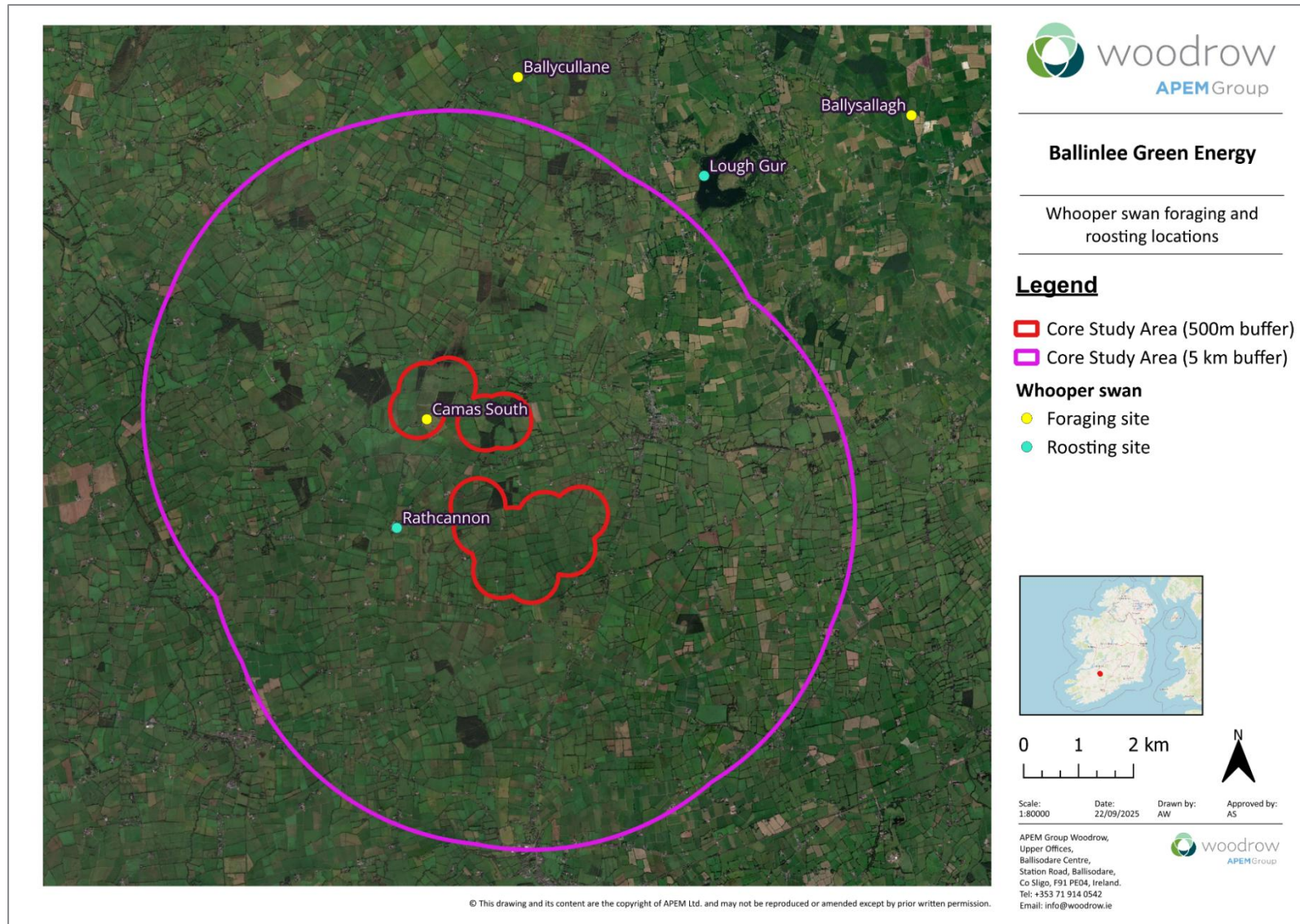


Figure 7: Whooper swan foraging locations and roost site 8

3.5.2. Whooper swan roost surveys

The whooper swan roost study area was defined as a 5 km buffer of the turbine layout (see Figure 1), in accordance with SNH (2017) guidance. Whooper swan roost surveys were conducted during non-breeding season Year 3 (November 2023 to March 2024) to assess the time taken for swans to travel between their roosting site at Lough Gur and their primary foraging areas at the northern section of the 500 m buffer and at Ballycullane. The surveys involved co-ordinated observations by teams of two or more surveyors positioned simultaneously at the roosting and foraging sites.

Surveyors were in position well before dawn to ensure all early morning movements were recorded. When swans departed the roosting site at Lough Gur, the surveyor recorded the departure time, flock size, and flight direction. This information was immediately relayed to the corresponding surveyor at the foraging location, who then recorded the arrival time of the same flock. These coordinated observations enabled accurate calculation of flight duration and provided insight into flight patterns and habitat connectivity between the roosting and foraging areas.

Survey dates are provided in Table 27 with further details, including weather conditions and survey effort available in Appendix IV – Survey effort & weather conditions (Table A5.22).

Table 27: Survey dates for Year 3 non-breeding season flight speed surveys

Non-breeding season 2023-24		
Date	Survey	Surveyor
22/11/2023	Whooper swan roost	JH
28/11/2023	Whooper swan roost	JH & GM
22/12/2023	Whooper swan roost	JH & GM
18/01/2024	Whooper swan roost	JH
23/02/2024	Whooper swan roost	GM
21/03/2024	Whooper swan roost	JH & GM

3.6. Hen harrier roost surveys

The initial desk review indicated limited habitat suitability for a winter hen harrier roost within the 2 km buffer, therefore the hen harrier roost study area was defined as a 5 km buffer of the turbine layout (see Figure 1), in accordance with SNH (2017) guidance. Surveys focused on potentially suitable roosting habitat to confirm the absence of roosts, with dedicated hen harrier roost watches conducted during the non-breeding season in Year 3 (November 2023 to February 2024).

A total of five monthly surveys were carried out, beginning at least 40 minutes before sunset and continuing until dark, following best practice outlined by O'Donoghue (2019), which recommends a

minimum of three surveys per winter, with at least one survey conducted during either December or January.

Survey dates are provided in Table 28, with further details, including weather conditions and survey effort available in Appendix IV – Survey effort & weather conditions (Table A5.18).

Table 28: Survey dates for Year 3 non-breeding season hen harrier roost surveys

Non-breeding season 2023-24		
Date	Survey	Surveyor
03/11/2023	HH	PDEV
17/12/2023	HH	GO
02/01/2024	HH	GO
04/01/2024	HH	GO
11/02/2024	HH	GO

3.7. Bioacoustics surveys

Bioacoustics monitoring was carried out at Camas South to record nocturnal activity of whooper swans across two consecutive non-breeding seasons: 2022–23 and 2023–24. This method was employed to supplement traditional daytime vantage point and walkover surveys, allowing for the detection of nocturnal flight activity, particularly during periods when visual surveys are ineffective due to darkness.

There were key differences in the recording effort between the two years:

In Year 2 (2022–23), recorders operated for approximately six hours per day — three hours before and after both sunset and sunrise.

In contrast, in Year 3 (2023–24), recorders were active 24/7, providing continuous coverage across the diurnal and nocturnal periods.

Additionally, an extra detector was deployed in the 2023–24 season, increasing spatial coverage and improving the detection probability of swan activity within the study area. The locations and detector numbers are shown in Figure 9.

Table 29: Survey days and hours by detector for bioacoustics surveys during non-breeding season Year 2

Detector	Non-breeding season 2022-23							
	December		January		February		March	
	Days	Hours	Days	Hours	Days	Hours	Days	Hours
WSS042	27	439.73	22	409.65	25	352.25	14	188.84

Detector	Non-breeding season 2022-23							
	December		January		February		March	
	Days	Hours	Days	Hours	Days	Hours	Days	Hours
WSS045	27	439.73	25	395.34				
WSS046	16	261.26	19	302.90			17	211.61
WSS048	31	503.85	25	455.65	25	352.25	24	306.11
WSS049	31	503.85	25	395.34				
WSS050	17	277.57	19	302.90			25	304.33
WSS066	12	195.90	25	455.65	27	380.45	21	265.89
WSS068	31	503.85	25	455.65	27	380.45	25	317.46

Table 30: Survey days and hours by detector for bioacoustics surveys during non-breeding season Year 3

Detector	Non-breeding season 2023-24									
	November		December		January		February		March	
	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours
WSS041	3	47.68	10	161.09	9	144.86	13	176.19		
WSS045			13	210.81	4	64.87	12	163.84		
WSS047	3	47.68	11	177.33	10	160.79	9	122.58		
WSS065			5	80.64	6	96.85	7	93.46	1	13.08
WSS066			6	96.85	8	127.57	7	93.46	5	64.73

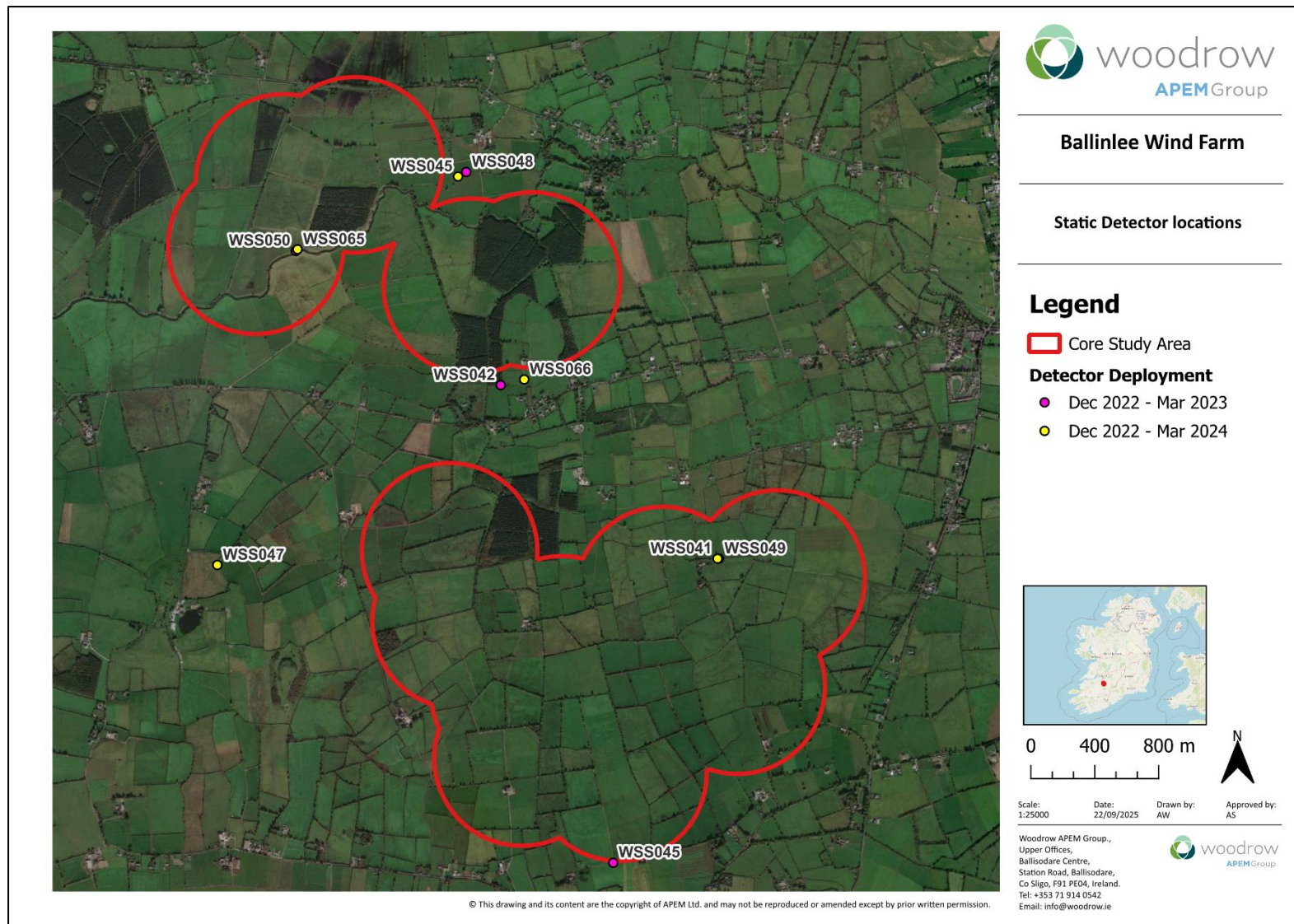


Figure 9: Static Detector locations within the Study Area

3.8. Survey limitations

The surveys completed allowed for the identification of all sensitive ornithological receptors and are considered robust to inform the ornithological impact assessment.

Regarding walkover surveys, although different routes were used between years, it is considered that coverage was representative of the habitats present within the Development and surrounding 2 km and 5 km buffers. Surveys were therefore undertaken from accessible land, public roads, and rights of way, with routes and vantage points selected to provide representative coverage of key habitat types. Indirect observations from accessible areas were used to infer bird use of less accessible locations. A very small number of discrete locations (<0.1% of the core study area), where infrastructure such as access tracks and cable routes are proposed, were not directly surveyed in all seasons; these comprised habitat types (improved agricultural grassland and small conifer patches) that were otherwise well represented elsewhere.

For VP watches, an additional VP location was added after Year 1 to negate a minor gap in coverage along the eastern boundary, ensuring that coverage of the 500 m buffer around the proposed wind turbine locations was 100%.

Across Years 1, 2 and 3, 36 hours of VP watches per season were achieved at each location, except during the Year 1 (breeding season 2022), when 30 hours were completed. Despite this minor discrepancy, three full years of VP data were collected, which is in excess of the two years typically required under guidance, and are considered sufficient to identify any potential ornithological constraints related to collision risk.

It is acknowledged that differences in bioacoustics survey effort between years may affect comparability. In 2022–23, monitoring was limited to six hours daily around dusk and dawn, whereas in 2023–24 continuous 24/7 recording and an additional detector were deployed. While Year 2 may therefore underestimate nocturnal activity, the use of a direct comparison restricted to the standard ± 3 -hour survey windows demonstrates that increases in detections in 2023–24 are genuine and not solely a consequence of extended monitoring. The enhanced effort in 2023–24 provides a more comprehensive dataset, reducing overall uncertainty.

Although inclement weather conditions can limit the ornithological data collected, this was mitigated by conducting surveys in favourable weather conditions, with wind speeds below Beaufort scale F5 and in either moderate or good visibility. Additionally, weather conditions were monitored throughout each survey, and observations were paused if poor weather was encountered, resuming once conditions improved.

Overall, in consideration of the minor limitations identified, it is concluded that sufficient data was collected over the study period to identify any ornithological constraints that may arise from the Development and inform the ornithological impact assessment. With three years of survey data available, any gaps in survey effort or changes in survey methodology for walkover surveys or wider area surveys are considered negligible.

4. RESULTS

4.1. Vantage Point (VP) watches

A total of 24 target species were recorded during VP watches conducted over three years of surveys between October 2021 and September 2024. Flight times for these target species recorded within the 500 m buffer are presented separately for the non-breeding and breeding seasons in the following tables: Table 31 and Table 32 (Year 1), Table 33 and Table 34 (Year 2) and Table 35 and Table 36 (Year 3).

To examine seasonal and/or annual variation in the occurrence of target species, flight time data have been divided into six seasons covered by Year 1 (non-breeding season 2021-22 and breeding season 2022), Year 2 (non-breeding season 2022-23 and breeding season 2023) and Year 3 (non-breeding season 2023-24 and breeding season 2024). These flight times represent raw data collected within the 500 m buffer. Flightline maps are provided in Appendix V – VP flightline results table, where individual flightlines can be cross-referenced via identification numbers to data on flight behaviour within the accompanying flightline tables.

Flight time is split into different height bands in order to better understand the extent to which target species fly within the Collision Risk Zone (CRZ). The flight height range of the CRZ was defined as 24 to 160 m, representing the minimum rotor swept height and the highest tip height for turbine specifications being assessed.

Species names are presented with colour-coding corresponding to their conservation status as defined by *Birds of Conservation Concern in Ireland 2020–2026* (Gilbert *et al.*, 2021):

- Red-list (high conservation concern),
- Amber-list (medium conservation concern),
- Green-list (low conservation concern).

Table 31: Aggregated flight seconds for target species recorded during Year 1 non-breeding season VP watches

Target Species ^{*22}	Non-breeding season 2021-22								
	No. of birds			Aggregated flight time in seconds					
	Individual observations	Min	Max	0-20 m	20-50 m	50-100 m	100-180 m	> 180 m	Seasonal Total
Black-headed gull	8	1	25	1785	2249				4034
Buzzard	28	1	4	42	366	22078	1200	3240	26926
Common gull	1	2	2	10					10
Cormorant	4	1	2	69		72			141

²² * Denotes species listed as Annex I of the EU Birds Directive

Target Species ^{*22}	Non-breeding season 2021-22								
	No. of birds			Aggregated flight time in seconds					
	Individual observations	Min	Max	0-20 m	20-50 m	50-100 m	100-180 m	> 180 m	Seasonal Total
Golden plover *	1	65	65				650		650
Grey heron	4	1	1	15	141				156
Kestrel	41	1	2	8389	506	120			9015
Lapwing	3	1	70		75	30000		6650	36725
Lesser black-backed gull	2	2	2		56	150			206
Little egret *	7	1	2	41	203				244
Mallard	5	2	6	16	830				846
Mute swan	2	2	2			160			160
Peregrine *	4	1	1	10	43		300		353
Snipe	5	1	6	5	305				310
Sparrowhawk	5	1	1	22	18	225		240	505
Whooper swan	2	10	14			1152			1152

Table 32: Aggregated flight seconds for target species recorded during Year 1 breeding season VP watches

Target Species ^{*23}	Breeding season 2022								
	No. of birds			Aggregated flight time in seconds					
	Individual observations	Min	Max	0-20 m	20-50 m	50-100 m	100-180 m	> 180 m	Seasonal Total
Buzzard	31	1	4	2157	330	428	360	540	3815
Cormorant	8	1	3	113	135	50			298
Grey heron	7	1	1	101	40				141
Kestrel	27	1	2	464	1204	280			1948
Lesser black-backed gull	12	1	7	330	471	275	150		1226

²³ * Denotes species listed as Annex I of the EU Birds Directive

Target Species *23	Breeding season 2022								
	No. of birds			Aggregated flight time in seconds					
	Individual observations	Min	Max	0-20 m	20-50 m	50- 100 m	100 -180 m	> 180 m	Seasonal Total
Little egret *	3	1	1	63					63
Mallard	2	1	2		15	20			35
Peregrine *	2	1	1		30				30
Snipe	2	1	1	18					18
Sparrowhawk	5	1	1	78					78

Table 33: Aggregated flight seconds for target species recorded during Year 2 non-breeding season VP watches

Target Species *24	Non-breeding season 2022-23								
	No. of birds			Aggregated flight time in seconds					
	Individual observations	Min	Max	0-20 m	20-50 m	50- 100 m	100 - 180 m	> 180 m	Seasonal Total
Black-headed gull	11	1	51	3917	4825	6420			15162
Buzzard	57	1	5	7433	8199	3199	2721	100	21652
Cormorant	18	1	1	304	149	173	20		646
Dunlin *	1	2	2		50				50
Golden plover *	11	2	80	53520	15416	21000			89936
Great black-backed gull	1	1	1			10			10
Grey heron	7	1	1	89	45	10			144
Greylag Goose	1	8	8			80			80
Jack snipe	1	1	1	10					10
Kestrel	95	1	2	6560	3591	480	508		11139
Lapwing	18	1	190	34330	15793	12341	7220		69684

²⁴ * Denotes species listed as Annex I of the EU Birds Directive

Target Species * ²⁴	Non-breeding season 2022-23								
	No. of birds			Aggregated flight time in seconds					
	Individual observations	Min	Max	0-20 m	20-50 m	50-100 m	100 - 180 m	> 180 m	Seasonal Total
Lesser black-backed gull	26	1	23	611	397	454	1186		2648
Little egret *	4	1	2	38		243			281
Mallard	9	1	8	3576	469				4045
Merlin	2	1	1	15	12				27
Mute swan	4	1	2	344					344
Peregrine *	8	1	1	163	48		450		661
Snipe	24	1	23	1271	142	129	96		1638
Sparrowhawk	14	1	1	197	172	490	575		1434
Teal	1	3	3	15					15
Whooper swan *	18	3	25	3597	6499				10096

Table 34: Aggregated flight seconds for target species recorded during Year 2 breeding season VP watches

Target Species * ²⁵	Breeding season 2023								
	No. of birds			Aggregated flight time in seconds					
	Individual observations	Min	Max	0-20 m	20-50 m	50- 100 m	100 -180 m	> 180 m	Seasonal Total
Black-headed gull	1	1	1	30					30
Buzzard	57	1	3	2335	4366	3157	250		10108
Cormorant	20	1	2	940	179	30			1149
Curlew	3	1	1	35	111				146
Golden plover *	5	9	130		2610		43500	58500	104610
Grey heron	18	1	2	648					648

²⁵ * Denotes species listed as Annex I of the EU Birds Directive

Target Species *25	Breeding season 2023								
	No. of birds			Aggregated flight time in seconds					
	Individual observations	Min	Max	0-20 m	20-50 m	50- 100 m	100 -180 m	> 180 m	Seasonal Total
Kestrel	53	1	2	3550	1541				5091
Lesser black-backed gull	31	1	345	77430	2323	309			80062
Little egret *	6	1	1	73	17				90
Mallard	21	1	4	1106	666				1772
Mute swan	6	1	7	255	48				303
Peregrine *	1	1	1	868	20	30	171		1089
Snipe	7	1	9	376	331	300			1007
Sparrowhawk	8	1	2	158	381	168			707

Table 35: Aggregated flight seconds for target species recorded during Year 3 non-breeding VP watches

Target Species *26	Non-breeding season 2023-24						
	Individual observations	No. of birds		Aggregated flight time in seconds			Seasonal Total
		Min	Max	Band A	Band B	Band C	
				<24 m	24-160 m	>160 m	
Buzzard	5	1	1	35	105		140
Cormorant	4	1	1	33	55		88
Golden plover *	3	26	100		1170	3500	4670
Grey heron	2	1	1	15	70		85
Kestrel	4	1	1	15	518		533
Lapwing	4	20	138		4250	27340	31590
Little Egret *	1	1	1		10		10
Mute swan	1	1	1	10			10

*26 * Denotes species listed as Annex I of the EU Birds Directive

Target Species * ²⁶	Non-breeding season 2023-24						
	Individual observations	No. of birds		Aggregated flight time in seconds			Seasonal Total
		Min	Max	Band A	Band B	Band C	
				<24 m	24-160 m	>160 m	
Peregrine *	1	1	1	25			25
Snipe	6	1	2		141		141
Sparrowhawk	5	1	1	66	21		87
Whooper swan *	3	4	7		445		445
Woodcock	1	1	1	5			5

Table 36: Aggregated flight seconds for target species recorded during Year 3 breeding season VP watches

Target Species	Breeding season 2024						
	Individual observations	No. of birds		Aggregated flight time in seconds			Seasonal Total
		Min	Max	Band A	Band B	Band C	
				<24 m	24-160 m	>160 m	
Black-headed gull	1	5	5	85			85
Buzzard	43	1	3	20	9006	30	9056
Cormorant	19	1	2	100	732		832
Grey heron	12	1	2	106	313		419
Kestrel	8	1	2		734		734
Mallard	7	1	3	288	1042		1330
Mute swan	1	6	6	120			120
Sparrowhawk	6	1	2	15	471	45	531

4.2. Breeding bird surveys

4.2.1. Breeding bird surveys

A total of 63 bird species were recorded during breeding bird surveys undertaken within the 500 m buffer across Year 1 (breeding season 2022), Year 2 (breeding season 2023), and Year 3 (breeding season 2024), including six red-listed and 18 amber-listed species. In Year 1, two red-listed and 11 amber-listed species were recorded; in Year 2, five red-listed and 11 amber-listed species were

observed; and in Year 3, three red-listed and 15 amber-listed species were documented. Table 37 summarises the red and amber-listed species recorded in each respective season. While there were some year-to-year differences in species presence, overall population distribution and species ranges were broadly consistent across all three survey years. Consequently, the locations of species shown in Figure 10 and Figure 11 are considered broadly indicative of those recorded during the Year 1 and Year 2 breeding bird surveys.

The species composition in Years 1 and 2 was largely comparable, although lapwing, swift *Apus apus*, and woodcock (red-listed) were added to the list in Year 2, along with goldcrest *Regulus regulus* and house sparrow *Passer domesticus* (amber-listed). In Year 3, six additional amber-listed species, herring gull *Larus argentatus*, lesser black-backed gull, merlin, mute swan *Cygnus olor*, teal *Anas crecca*, and whooper swan, were recorded. Of these, only mute swan was confirmed as breeding within the core study area.

Figure 10 and Figure 11 present the mapped locations of red and amber-listed breeding bird survey records during the 2023–24 season in relation to the 500 m turbine buffer.

A summary of findings for both red and amber-listed species is shown in Table 37 with a full list of species recorded, including green-listed species, provided in Appendix VI – All survey results.

Table 37: Summary results for red and amber-listed species recorded during breeding bird surveys in Years 1, 2 and 3

Species ^{*27}	BTO code	Breeding status in 2022	Breeding status in 2023	Breeding status in 2024
BoCCI (2020-2026) Red-listed species				
Kestrel	K.	No birds were recorded during breeding bird surveys. No breeding activity was detected within the breeding raptor 2 km buffer, although two birds, including a male and female, were recorded regularly hunting and commuting through the 500 m buffer during VP watches suggesting that breeding may occur in the wider area.	One bird observed in May during breeding bird surveys. No breeding activity was detected within the breeding raptor 2 km buffer, although a single bird was regularly recorded during VP watches with two individuals in August, suggesting that breeding may occur in the wider area.	One to two birds were recorded hunting and commuting through the 500 m buffer during breeding bird surveys, with additional regular observations during raptor surveys covering the 2 km buffer. No breeding activity was detected within the 2 km buffer, although the presence of up to two individuals would suggest possible breeding.
Meadow pipit	MP	Confirmed breeding within the 500 m buffer, with records of birds mostly associated with less heavily managed grassland in the northern section of the Development.	Recorded during breeding bird surveys with a maximum count of five. Considered probably breeding within the 500 m buffer, with records of birds mostly associated with less heavily managed grassland in the northern section of the 500 m buffer.	Many pairs recorded scattered throughout, with confirmed breeding recorded, in the 500 m buffer during breeding bird surveys. Mostly associated with agricultural lands bordering the Morningstar River.
Snipe	SN	Not recorded during breeding bird surveys.	Not recorded during breeding bird surveys.	One to three birds flushed on 12 occasions during March

²⁷ * Denotes species listed as Annex I of the EU Birds Directive

Species *27	BTO code	Breeding status in 2022	Breeding status in 2023	Breeding status in 2024
				and April breeding bird surveys. However, there were no further records during any breeding season surveys, and therefore these were considered birds on passage rather than resident breeders.
Swift	SI	Not recorded during breeding bird surveys.	Two birds recorded in July and three in September. No apparent suitable nesting locations are present within the Development, and it is therefore considered unlikely to be breeding.	Not recorded during breeding bird surveys.
Woodcock	WK	Not recorded during breeding bird surveys.	Two birds recorded during a breeding bird survey in July.	Not recorded during breeding bird surveys.
BoCCI (2020-2026) Amber-listed species				
Cormorant	CA	Up to two birds observed foraging/flying along the Morningstar River. Not considered to be breeding within the 5 km buffer.	Individuals recorded on two occasions in May along the Morningstar River, with 1 to 2 birds recorded frequently during VP watches. Not considered to be breeding within the 5 km buffer.	One to two birds observed foraging/flying along the Morningstar River on seven occasions during breeding bird surveys and recorded frequently during VP watches. Not considered to be breeding within the 5 km buffer.
Goldcrest	GC	Not recorded during breeding bird surveys.	Common and widespread breeding in suitable woodland/plantation habitat within the 500 m buffer.	Common and widespread breeding in suitable woodland/plantation habitat within the 500 m buffer.

Species *27	BTO code	Breeding status in 2022	Breeding status in 2023	Breeding status in 2024
Herring gull	HG	Not recorded during breeding bird surveys.	Not recorded during breeding bird surveys.	One bird recorded flying through the 500 m buffer during April. Not considered to be breeding within the 5 km buffer.
Hen harrier *	HH	Male observed during a breeding bird survey flying north through 500 m buffer in late August. Only record in entire season. Not considered to be breeding in the 2 km buffer.	Male observed during a breeding bird survey flying over conifer plantation in a northwest direction during May and being mobbed by two rooks. Only record in entire season. Not considered to be breeding in the 2 km buffer.	Not recorded during breeding bird surveys.
House martin	HM	Recorded foraging/flying through 500 m turbine (max. 40 birds). Breeding evidence not recorded, but potentially suitable nesting sites in farm structures.	Recorded foraging/flying through 500 m buffer (1-4 birds) during May and July. Breeding evidence not recorded, but potentially suitable nesting sites in farm structures.	Five birds recorded foraging over agricultural land adjacent to Morningstar River during July. Breeding evidence not recorded, but potentially suitable nesting sites in farm structures.
House sparrow	HS	Not recorded during breeding bird surveys.	Breeding evidence not recorded, but likely in suitable farm structures.	Recorded during May and July at farmyard within the 500 m buffer. Considered a probable breeder in buildings associated with the farmstead.

Species *27	BTO code	Breeding status in 2022	Breeding status in 2023	Breeding status in 2024
Lesser black-backed gull	LB	Not recorded during breeding bird surveys.	Not recorded during breeding bird surveys.	Low numbers (1-3) recorded flying through the 500 m buffer once in April and on three dates in July during breeding bird surveys.
Linnet	LI	Confirmed breeding within 500 m buffer and associated with hedgerow and scrub habitat.	A maximum of 57 birds recorded during breeding bird surveys. Possible breeding in the 500 m buffer, mostly associated with hedgerow and scrub habitat.	Confirmed breeding within the 500 m buffer, with a max of 15 birds, mostly associated with hedgerow and scrub habitat, particularly along the Morningstar River.
Mallard	MA	Not recorded on breeding bird surveys, although up to two birds seen during VP watches would indicate possible breeding within the 500 m buffer.	Up to four birds recorded during breeding bird surveys and more regular sighting during VP watches would suggest probable nesting in areas with suitable cover within the 500 m buffer.	Up to three birds recorded during breeding bird surveys, with nest building observed. Activity was mostly concentrated along Morningstar River.
Merlin *	ME	Not recorded during breeding bird surveys.	Not recorded during breeding bird surveys.	One bird recorded flying through the 500 m buffer during April during a breeding bird survey was likely on passage and no evidence of breeding was recorded.
Mute swan	MS	Not recorded during breeding bird surveys.	Not recorded during breeding bird surveys.	Confirmed breeding within the 500 m buffer, with nest located along tributary of Morningstar River. Pair

Species *27	BTO code	Breeding status in 2022	Breeding status in 2023	Breeding status in 2024
				recorded during breeding bird surveys and accompanied by four cygnets in September.
Sand martin	SM	Flock of 40 birds recorded foraging along floodplain of Morningstar River within the 500 m buffer. No nesting colonies located, and banks of Morningstar River were assessed as having limited suitability for nesting.	Not recorded during breeding bird surveys.	Not recorded during breeding bird surveys.
Skylark	S	Recorded during breeding season and considered likely to be nesting in less heavily managed grassland in northern section of the 500 m buffer.	Recorded during breeding season and considered likely to be nesting in less heavily managed grassland in northern section of 500 m buffer, with a max of seven birds recorded during May.	Mostly one or two and occasionally up to three individuals, seen frequently during breeding bird surveys. Mostly associated with less heavily managed grasslands. Confirmed breeding within the northern section of the 500 m buffer.
Starling	SG	Flock sizes of up to 200 birds recorded during the breeding season within 500 m buffer. Likely to be breeding in tree cavities or buildings in 500 m buffer.	Maximum flock size of 50 birds recorded. Likely to be breeding in tree cavities or buildings within the 500 m buffer.	Small flocks of between one to four birds recorded throughout breeding season, with a maximum of eight in April. Breeding was confirmed within the 500 m buffer, with nesting in farm buildings.

Species ^{*27}	BTO code	Breeding status in 2022	Breeding status in 2023	Breeding status in 2024
Swallow	SL	Foraging birds recorded during May to August within 500 m buffer, with a maximum count of 120 in August. No nests recorded, however considered probably breeding in farm buildings.	Up to seven birds recorded during breeding season within 500 m buffer. No nests recorded, however considered probably breeding in farm buildings.	Foraging birds (up to 45) recorded within 500 m buffer between April and September. No nests recorded, however considered likely to be breeding in farm buildings.
Teal	T.	Not recorded during breeding bird surveys.	Not recorded during breeding bird surveys.	Flock of six birds flushed from Morningstar River during a breeding bird survey in mid-March. Not considered to be breeding within 500 m buffer.
Whooper swan *	WS	Not recorded during breeding bird surveys.	Not recorded during breeding bird surveys.	Flock of 12 recorded foraging adjacent to Morningstar River in March. Whooper swan is resident during the non-breeding season in Ireland and is not a resident breeder. Likely part of the non-breeding whooper swan flock that were recorded during non-breeding surveys.
Willow warbler	WW	Widespread breeding species within 500 m buffer with nesting associated with hedgerow and scrub habitat.	Widespread breeding species within 500 m buffer with nesting associated with hedgerow and scrub habitat.	Widespread breeding species within 500 m buffer with nesting associated with hedgerow and scrub habitat.

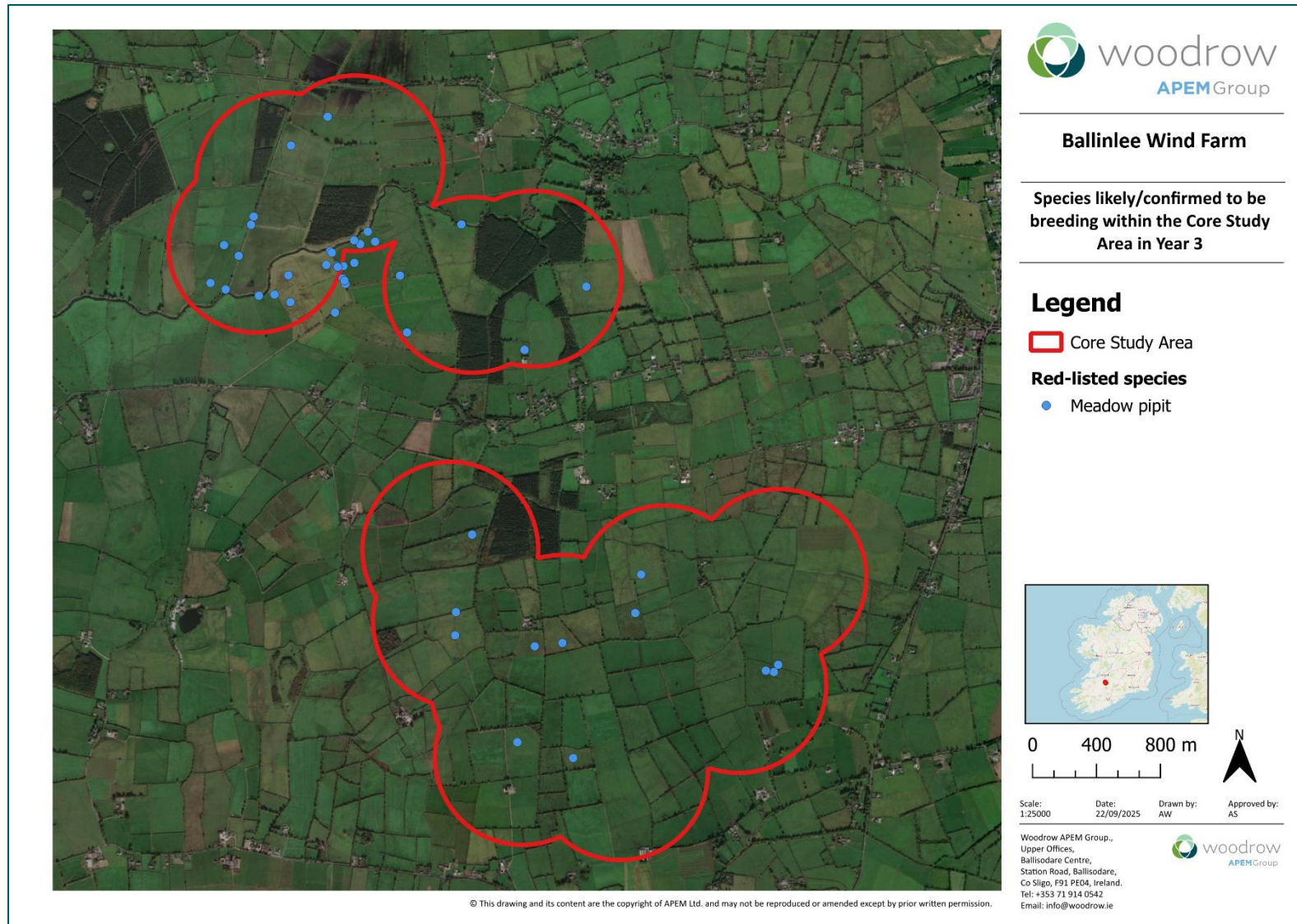


Figure 10: Red-listed species recorded during breeding bird surveys in Year 3

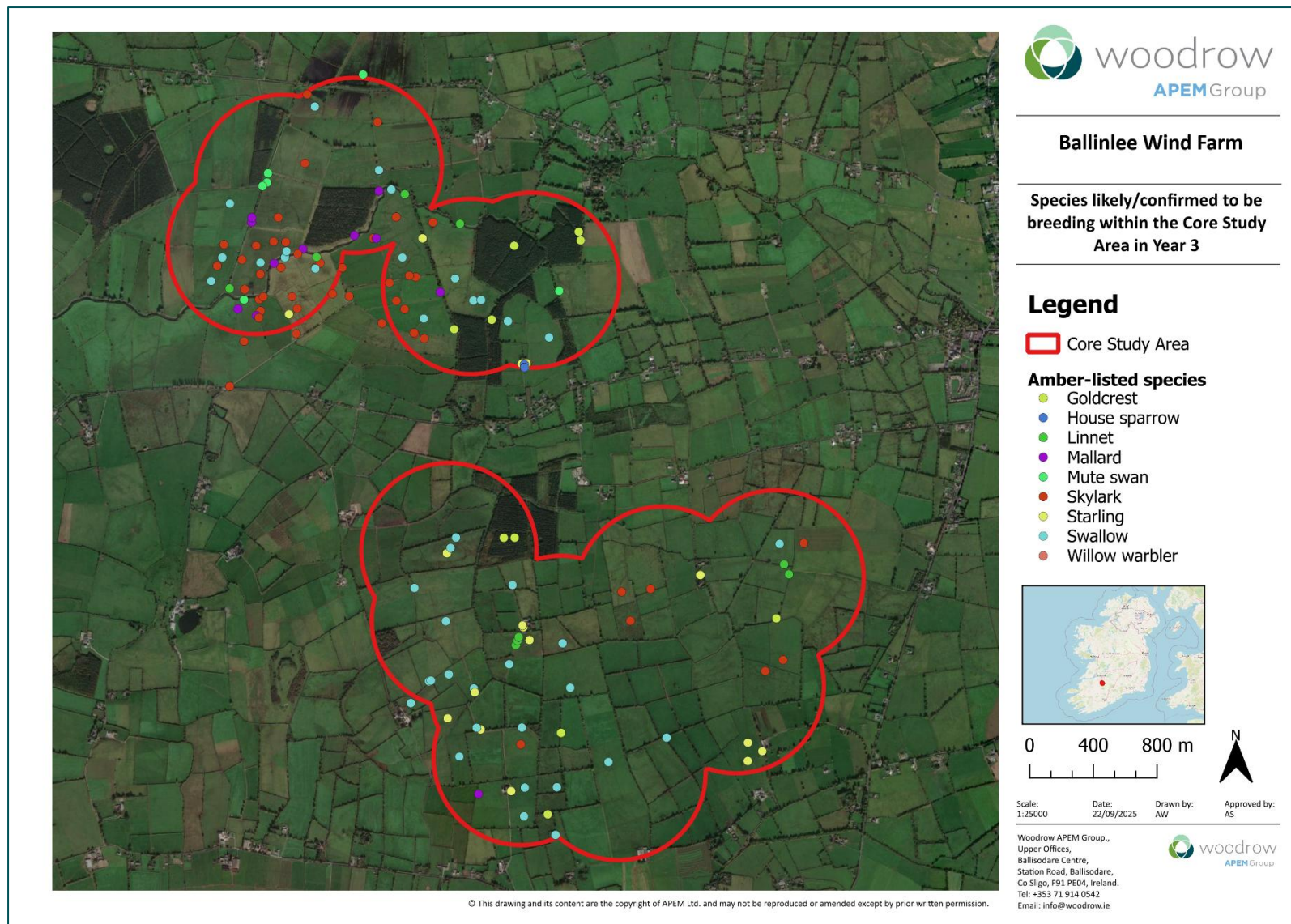


Figure 11: Amber-listed species recorded during breeding bird surveys in Year 3

4.2.2. Dusk surveys

No crepuscular or nocturnal species, including owls, woodcock or snipe, were recorded during dusk surveys carried out in the Year 2 (2023) and Year 3 (2024) breeding seasons. Incidental records of buzzard and kestrel were recorded and a full list of species observations including green-listed species can be found in Appendix VI – All survey results.

4.3. Breeding raptor surveys

Table 38 presents a summary of the breeding season raptor survey results from Year 1 (2022), Year 2 (2023) and Year 3 (2024). These observations were analysed in conjunction with flight behaviour recorded during VP watches, other breeding season surveys and incidental records to create maps showing breeding raptor territories, see Figure 12, 13 and 14.

Buzzard and kestrel were the most frequently recorded species during the breeding raptor surveys, with both species confirmed to be breeding within or adjacent to the 2 km buffer. Buzzard breeding behaviour (such as pairs soaring together and talon grasping) was observed during each year of surveys. Buzzard nests were located within the 500 m buffer in Years 2 and 3, whilst a further buzzard nest site was identified within the 2km buffer in Year 2.

Kestrels were recorded utilising the Development for hunting and were regularly recorded commuting through the 500 m buffer during all three years of surveys. No signs of breeding behaviour were observed within the 500 m buffer, however, observations of potential breeding behaviour were recorded within the 2 km buffer during breeding raptor surveys in Year 3.

Two pairs of peregrine were confirmed to be breeding within the surrounding area during Year 2. These breeding sites, in a castle and a quarry, are typical nesting habitats favoured by peregrines, although as they were beyond the 5 km buffer they are not presented in the results.

A sparrowhawk nesting site was recorded within woodland in the northern section of the 500 m buffer and breeding was confirmed in this area during Year 3 of monitoring.

Table 38: Summary results for breeding season raptor surveys in Years 1, 2 and 3

Species ^{*28}	BTO code	Breeding season 2022	Breeding season 2023	Breeding season 2024
Kestrel	K	Two observations of kestrels were made during the breeding raptor survey in April 2022, both within the 2 km buffer although no breeding activity was recorded. In June 2022, kestrel pellets, moulted feathers and whitewash were recorded in a metal-roofed barn in the northern area of the Development, as such Kestrel were considered to be possibly breeding within the 500 m buffer.	Although up to three birds were observed regularly during the breeding season, no evidence of breeding was recorded within the 2 km buffer.	Individual kestrels were observed frequently from May-August 2024. Although observations were of individual birds only, some behaviour in late May suggested that a possible nest site was within the 2 km buffer.
Buzzard	BZ	Three observations of buzzards were made during the breeding raptor survey in April 2022, all within the 2 km buffer although no breeding activity was recorded.	Buzzards were observed displaying breeding behaviour within the 2 km buffer. In July, juvenile buzzards were heard making food-begging calls to adults in the southern section of the 500 m buffer, confirming successful breeding.	Buzzards were observed during the survey period within the 2 km buffer. Breeding was confirmed approximately 430 m east of the 500 m buffer.
Peregrine *	PE	One observation of peregrine was made during the breeding raptor survey in April 2022 within the 2 km buffer.	Not recorded during raptor surveys within the 2 km buffer.	Not recorded during raptor surveys within the 2 km buffer.

²⁸ * Denotes a species listed as Annex I of the EU Birds Directive

Species *28	BTO code	Breeding season 2022	Breeding season 2023	Breeding season 2024
		No breeding behaviour was recorded.		
Sparrowhawk	SH	Sparrowhawk were not recorded during raptor surveys within the 2 km buffer.	Sparrowhawk were not recorded during raptor surveys within the 2 km buffer.	One observation of a pair of sparrowhawk being mobbed by corvids was made in May within the 2 km buffer. A nest was located within the 500 m buffer during a breeding bird survey.

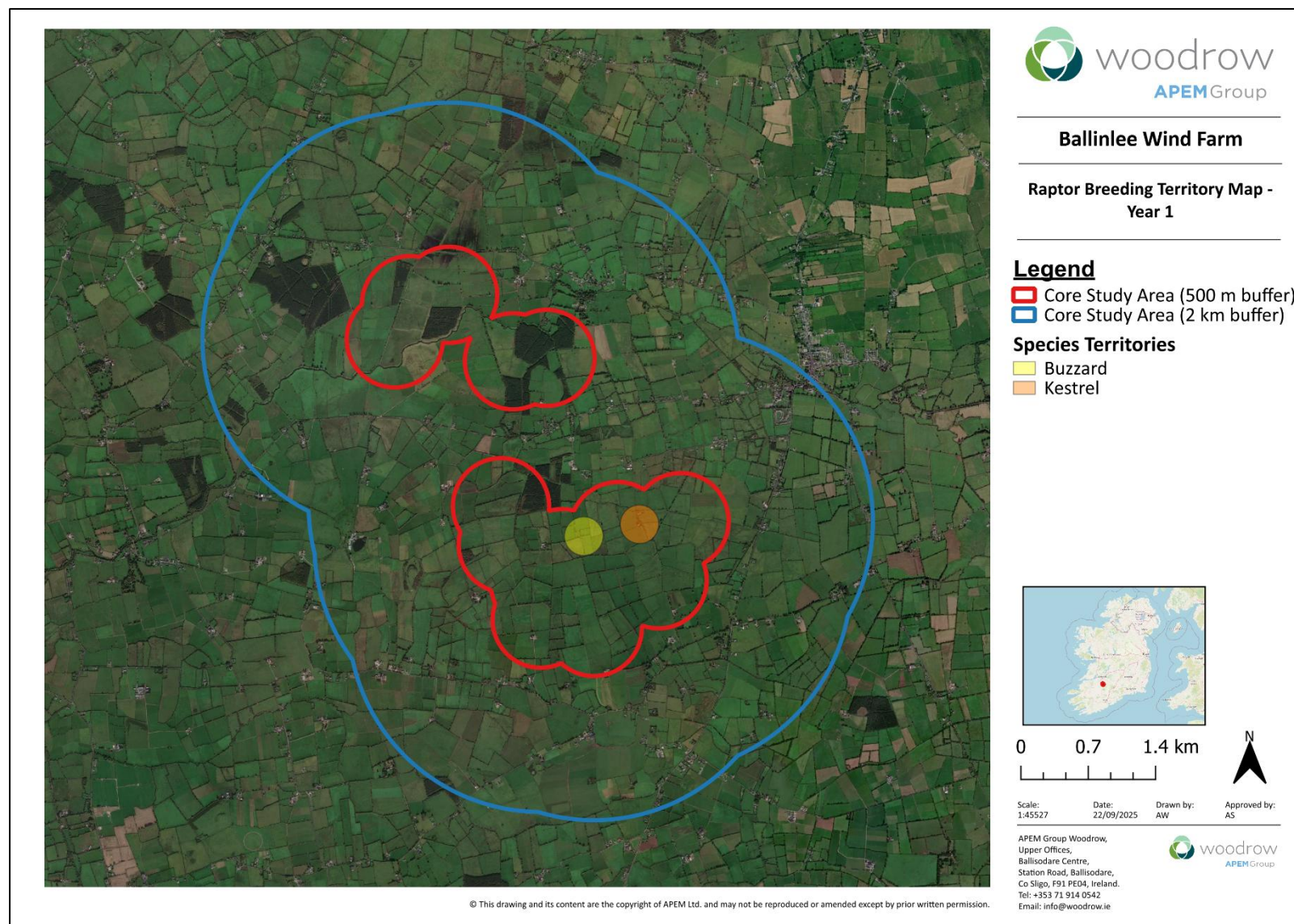


Figure 12: Raptor species recorded breeding within the 2 km buffer in Year 1 surveys

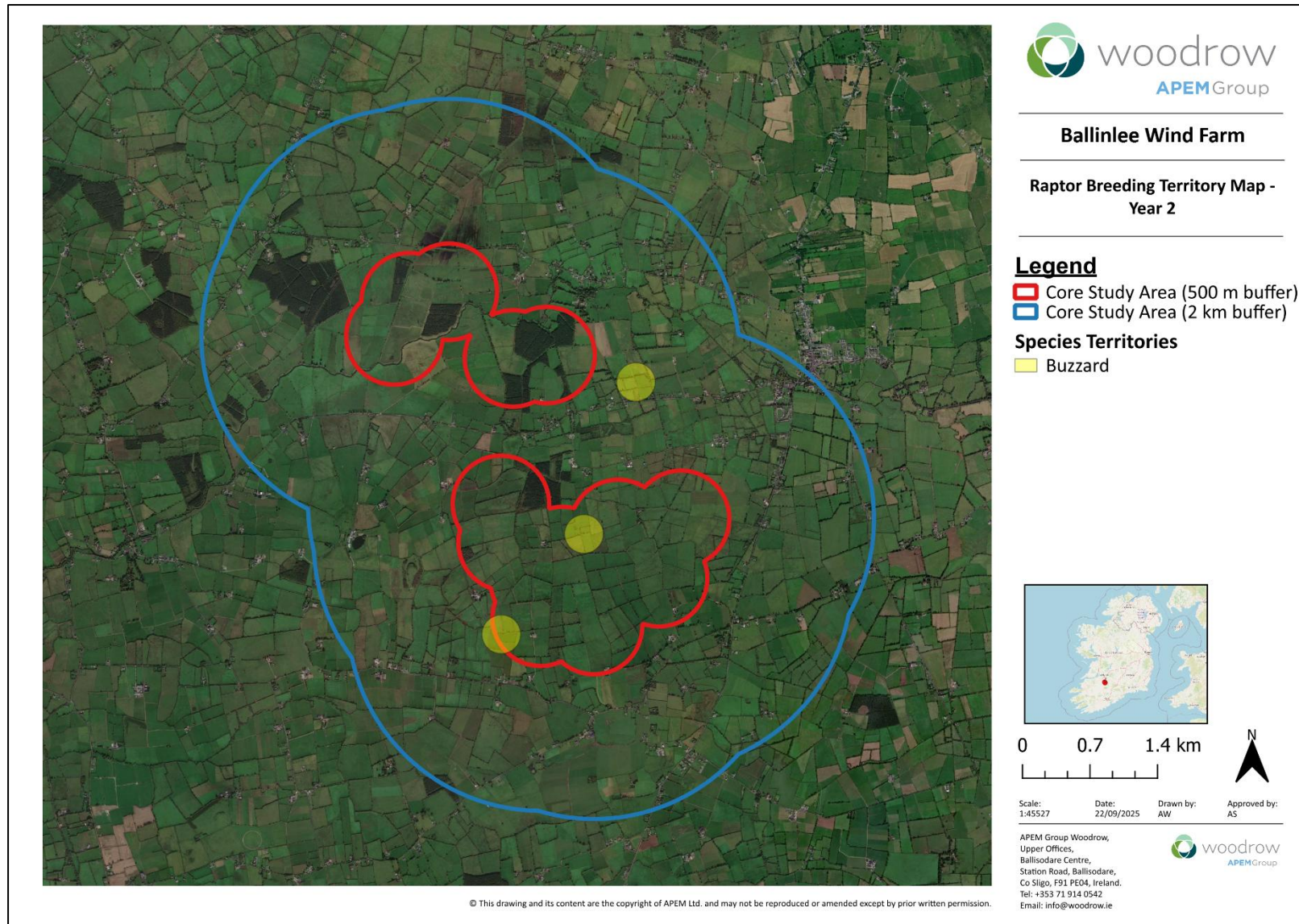


Figure 13: Raptor species recorded breeding within the 2 km buffer in Year 2 surveys

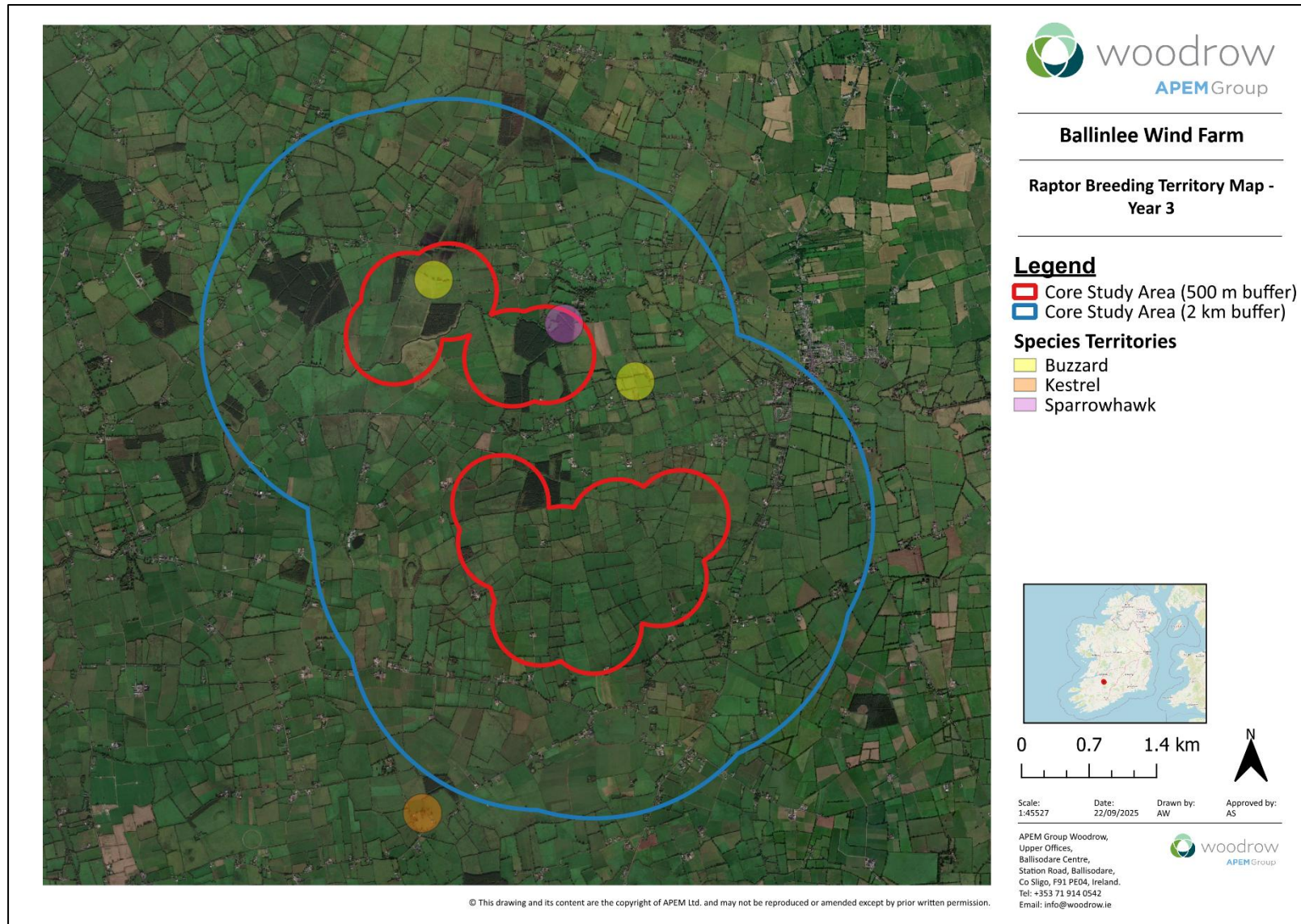


Figure 14: Raptor species recorded breeding within the 2 km buffer in Year 3 surveys

4.3.1. Barn owl surveys

Barn owl surveys conducted during Year 1 (2022) and Year 2 (2023) breeding seasons recorded no barn owls within the 1 km buffer.

However, confirmed breeding was recorded at Ballygrennan Castle, located approximately 900 m east of the 2 km buffer boundary, in 2022 (see Figure 15). In 2023, although fresh signs of occupancy (pellets and whitewash) and sightings of a single adult emerging from the castle were recorded, no evidence of breeding was found, and it was concluded that barn owls did not nest at the site that year.

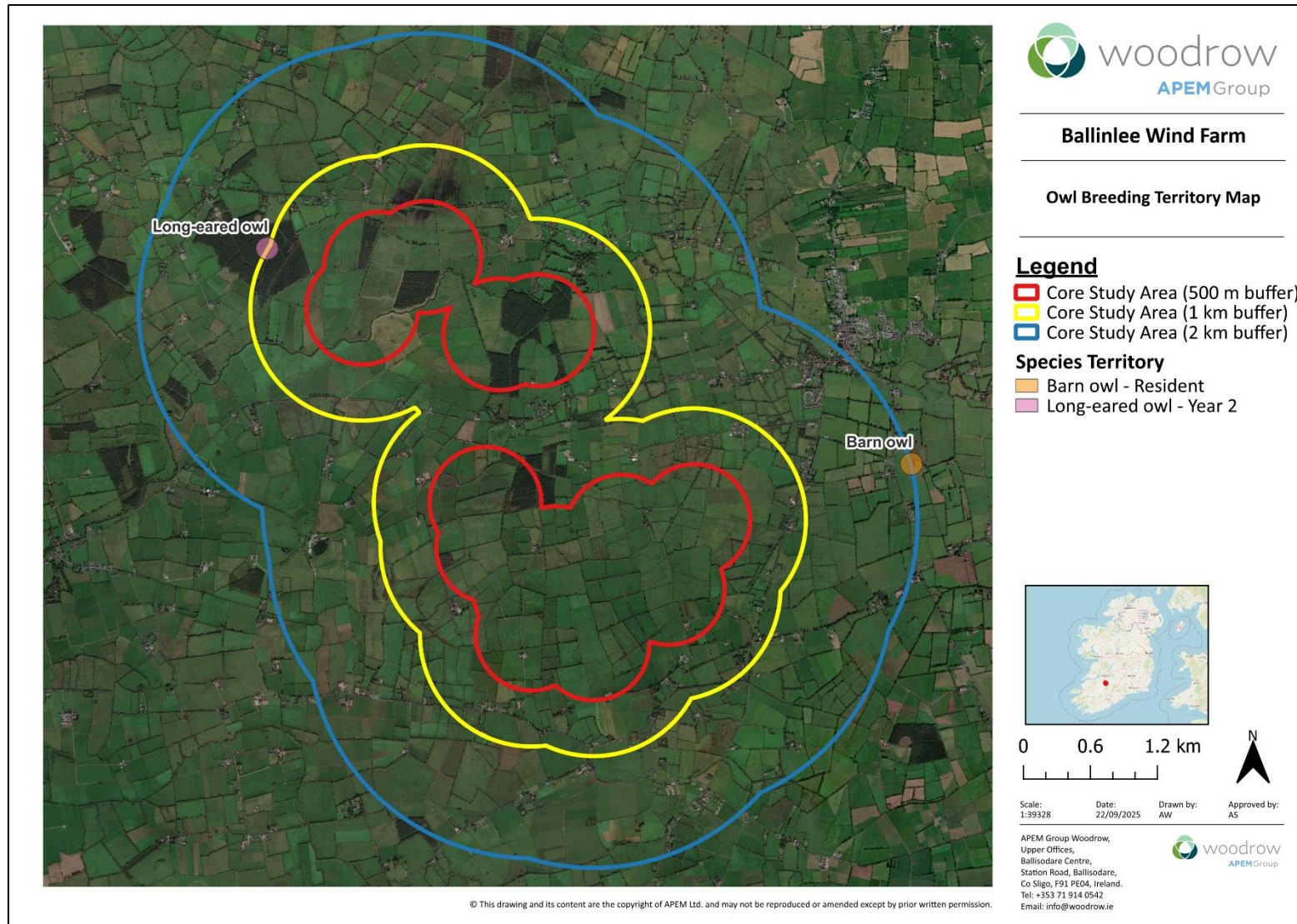


Figure 15: Owl breeding territories located within the 2 km buffer in Years 1 and 2

4.4. Winter walkover surveys

A total of 43 species were recorded during the winter walkover surveys undertaken within the 500 m buffer during the non-breeding seasons of Year 1 (2021-22), Year 2 (2022-23) and Year 3 (2023-24), including seven red-listed and 13 amber-listed species. Table 39, 40 and 41 provide the list of red and amber-listed species recorded during each season, respectively. While there were some differences in the species recorded between years, overall, the populations and species ranges were broadly similar across all survey years. Therefore, the locations of species shown in Figure 16 and Figure 17 are considered broadly indicative of those recorded during the Year 1 and Year 2 winter walkover surveys.

The range of species recorded during Years 1 and 2 was broadly similar, although curlew and snipe were added to the list of red-listed species in Year 2, along with black-headed gull amongst the amber-listed species. In Year 3, grey wagtail *Motacilla cinerea* and stock dove *Columba oenas* were newly recorded, red-listed species, while greenfinch *Chloris chloris*, house sparrow and teal were recorded for the first time among the amber-listed species.

Figure 16 and Figure 17 contain the location of all winter walkover survey observations recorded for red and amber-listed species, respectively, during the 2023-24 non-breeding season in relation to the 500 m buffer.

Table 39: Summary results of winter walkover surveys in Year 1

Species ^{*29}	BTO code	No. individuals					
		14 Oct-21	19 Nov-21	23 Dec-21	21 Jan-22	21 Feb-22	16 Mar-22
BoCCI (2020-2026) Red-listed							
Kestrel	K.	1	1	3	1	1	1
Meadow pipit	MP	-	17	17	27	24	18
Redwing	RE	-	180	600	450	-	100
BoCCI (2020-2026) Amber-listed							
Cormorant	CA	-	1	0	2	-	2
Goldcrest	GC	-	-	10	-	-	7
Lesser black-backed gull	LB	7	-	-	0	-	-
Linnet	LI	48	-	8	14	27	8
Mallard	MA	-	3	-	-	4	2

²⁹ * Denotes species listed as Annex I of the EU Birds Directive

Species ^{*29}	BTO code	No. individuals					
		14 Oct-21	19 Nov-21	23 Dec-21	21 Jan-22	21 Feb-22	16 Mar-22
Mute swan	MS	-	-	-	-	-	5
Skylark	S.	-	-	-	-	-	4
Starling	SG	205	150	80	100	200	350
Whooper swan *	WS	-	25	-	50	10	-

Table 40: Summary results of winter walkover surveys in Year 2

Species ^{*30}	BTO code	No. individuals		
		09, 11 & 14 Nov-22	11 & 12 Jan-23	06 & 21 Mar-23
BoCCI (2020-2026) Red-listed				
Curlew	CU	2	-	-
Kestrel	K.	-	-	1
Snipe	SN	4	10	-
Meadow pipit	MP	10	11	5
Redwing	RE	187	72	93
BoCCI (2020-2026) Amber-listed				
Black-headed gull	BH	27	9	-
Goldcrest	GC	4	-	4
Lesser black-backed gull	LB	1	5	-
Linnet	LI	15	-	-
Mute swan	MS	-	-	3
Skylark	S.	-	-	3
Starling	SG	241	85	32
Whooper swan *	WS	2	13	9

Table 41: Summary results of winter walkover surveys in Year 3

³⁰ * Denotes species listed as Annex I of the EU Birds Directive

Species ^{*31}	BTO code	No. individuals	
		03 & 04 Jan-24	15 Mar-24
BoCCI (2020-2026) Red-listed			
Grey wagtail	GL	1	-
Kestrel	K.	2	1
Meadow pipit	MP	30	4
Redwing	RE	537	-
Snipe	SN	31	10
Stock dove	SD	1	-
BoCCI (2020-2026) Amber-listed			
Cormorant	CA	-	1
Goldcrest	GC	4	-
Greenfinch	GR	2	-
House sparrow	HS	14	-
Linnet	LI	5	-
Mallard	MA	-	4
Mute swan	MS	-	4
Skylark	S.	4	15
Starling	SG	342	2
Teal	T	-	6
Whooper swan *	WS	-	12

³¹ * Denotes species listed as Annex I of the EU Birds Directive

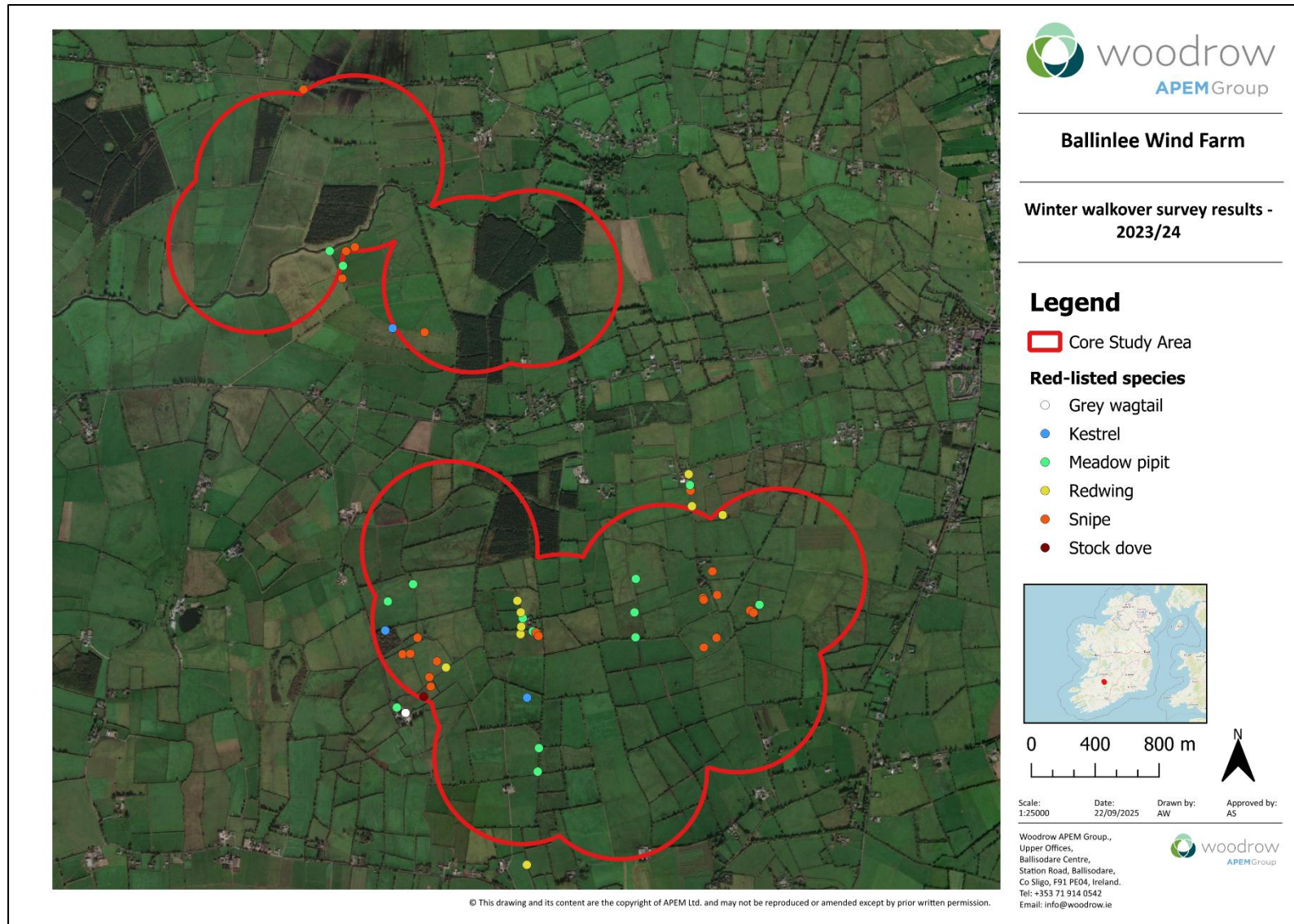


Figure 16: Red-listed species recorded during winter walkover surveys in Year 3

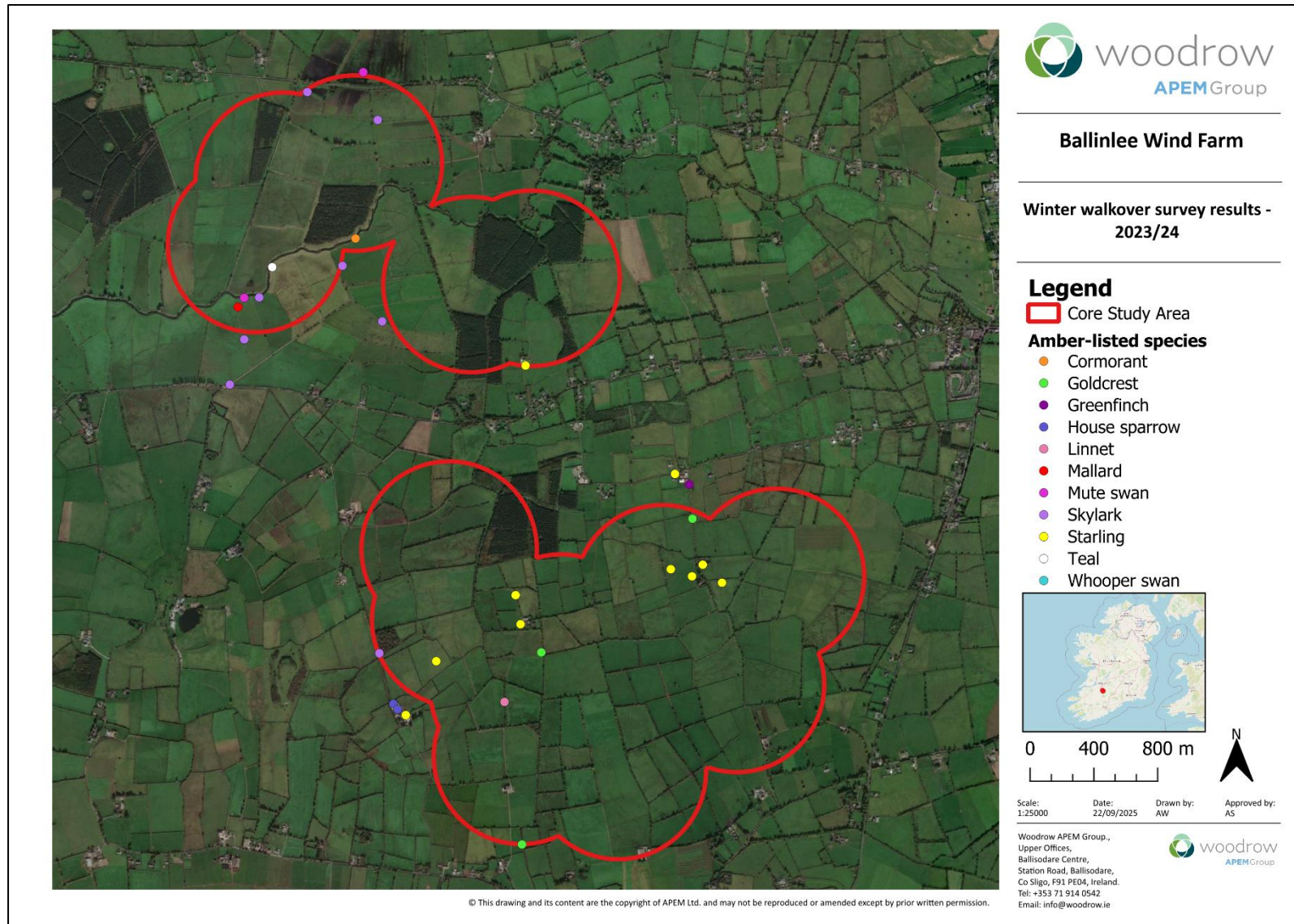


Figure 17: Amber-listed species recorded during winter walkover surveys in Year 3

4.5. Wintering waterbird surveys

Wintering waterbird surveys were carried out during the non-breeding season in Year 2 (2022-23) focusing on Lough Gur and were extended in Year 3 (2023-24), to include the floodplains of the Morningstar River and Camoge River and any other wetlands identified within the 5 km buffer. Table 42 and Table 43 provide a summary of the species and counts recorded during wintering waterbird surveys conducted in Years 2 and 3, respectively.

Although no formal wintering waterbird surveys were conducted during Year 1, and some differences in the species recorded were noted between years, overall, the populations and species ranges were broadly similar across survey years. Consequently, the locations of species recorded in Year 3, as shown in Figure 18, are considered broadly indicative of those recorded during Year 2 wintering waterbird surveys.

A total of 27 waterbird species were recorded over the two non-breeding seasons, including six red-listed and 13 amber-listed species. The species composition between years was broadly similar, although five additional species were recorded during Year 3 surveys: the red-listed golden plover, amber-listed brent goose *Branta bernicla* and common sandpiper along with pink-footed goose and ring-necked duck *Aythya collaris* that are both green-listed.

Lough Gur is an important site for waterbirds in an Irish context due to its ecological value as a wetland habitat and is annually used as a roosting site by a flock of whooper swans during the winter months. This flock was consistently counted at foraging areas, in agricultural fields adjacent to the Morningstar River within the 500 m buffer and in agricultural fields adjacent to the Camoge River, approximately 6 km north of the northern 500 m buffer.

Table 42: Summary results of wintering waterbird surveys at Lough Gur in Year 2

Species ^{*32}	BTO Code	No. individuals					
		28 Oct-22	16 Nov-22	15 Dec-22	11 Jan-23	14 Feb-23	19 Mar-23
BoCCI (2020-2026) Red-listed							
Curlew	CU	-	17	-	-	29	-
Lapwing	L.	-	36	2	24	2	-
Scaup	SP	-	-	-	-	2	-
Shoveler	SV	-	7	23	24	25	28

³² * Denotes species listed as Annex I of the EU Birds Directive

Species *32	BTO Code	No. individuals					
		28 Oct-22	16 Nov-22	15 Dec-22	11 Jan-23	14 Feb-23	19 Mar-23
Snipe	SN	-	-	5	-	-	-
BoCCI (2020-2026) Amber-listed							
Black-headed gull	BH	-	-	1	1	-	-
Coot	CO	1	6	4	4	16	18
Cormorant	CA	9	11	12	5	13	5
Gadwall	GA	-	2	14	32	14	2
Great crested grebe	GG	-	-	-	-	1	1
Greylag goose	GJ	-	36	40	-	-	7
Mallard	MA	6	34	66	16	10	19
Mute swan	MS	38	24	35	27	20	15
Teal	T.	-	49	8	23	78	22
Tufted duck	TU	-	2	42	124	111	37
Whooper swan *	WS	-	-	-	-	-	-
Wigeon	WN	8	51	228	384	202	234
BoCCI (2020-2026) Green-listed							
Grey heron	H	3	3	1	4	1	3
Little egret *	ET	-	-	-	-	1	1
Little grebe	LG	3	8	10	-	1	1
Moorhen	MH	8	1	7	1	4	11
Water rail	WA	-	-	1	-	4	-
Feral goose		1	1	1	-	-	-

Table 43: Summary results of wintering waterbird surveys within the 5 km buffer in Year 3

Species ^{*33}	BTO Code	No. individuals				
		02/03 Nov-23	22 Dec-23	18 Jan-24	23 Feb-24	20/21 Mar-24
BoCCI (2020-2026) Red-listed						
Curlew	CU	26	23	28	8	-
Golden plover*	GP	40	750	-	-	62
Lapwing	L.	100	-	2	-	-
Shoveler	SV	-	6	78	14	-
Snipe	SN	11	4	1	5	2
BoCCI (2020-2026) Amber-listed						
Brent goose	BG	11	-	-	-	-
Common sandpiper	CS	2	-	-	-	-
Coot	CO	4	-	-	2	-
Cormorant	CA		5		1	6
Gadwall	GA	-	-	16	-	-
Great crested grebe	GG	-	-	-	4	-
Greylag goose	GJ	-	37	-	5	6
Mallard	MA	7	8	4	-	3
Mute swan	MS	12	17	2	8	3
Teal	T.	-	-	63	9	2
Tufted duck	TU	16	93	4	27	27
Whooper swan *	WS	39	47	69	68	61
Wigeon	WN	-	100	451	161	10
BoCCI (2020-2026) Green-listed						
Grey heron	H	9	-	1	3	2
Little egret *	ET	-	-	-	1	6

³³ *Denotes species listed as Annex I of the EU Birds Directive

Species *33	BTO Code	No. individuals				
		02/03 Nov-23	22 Dec-23	18 Jan-24	23 Feb-24	20/21 Mar-24
Little grebe	LG	3	-	-	1	-
Moorhen	MH	6	-	1	-	1
Pink-footed goose	PG	-	-	4	-	-
Ring-necked duck	NG	-	1	-	1	4
Water rail	WA	-	-	1	-	-

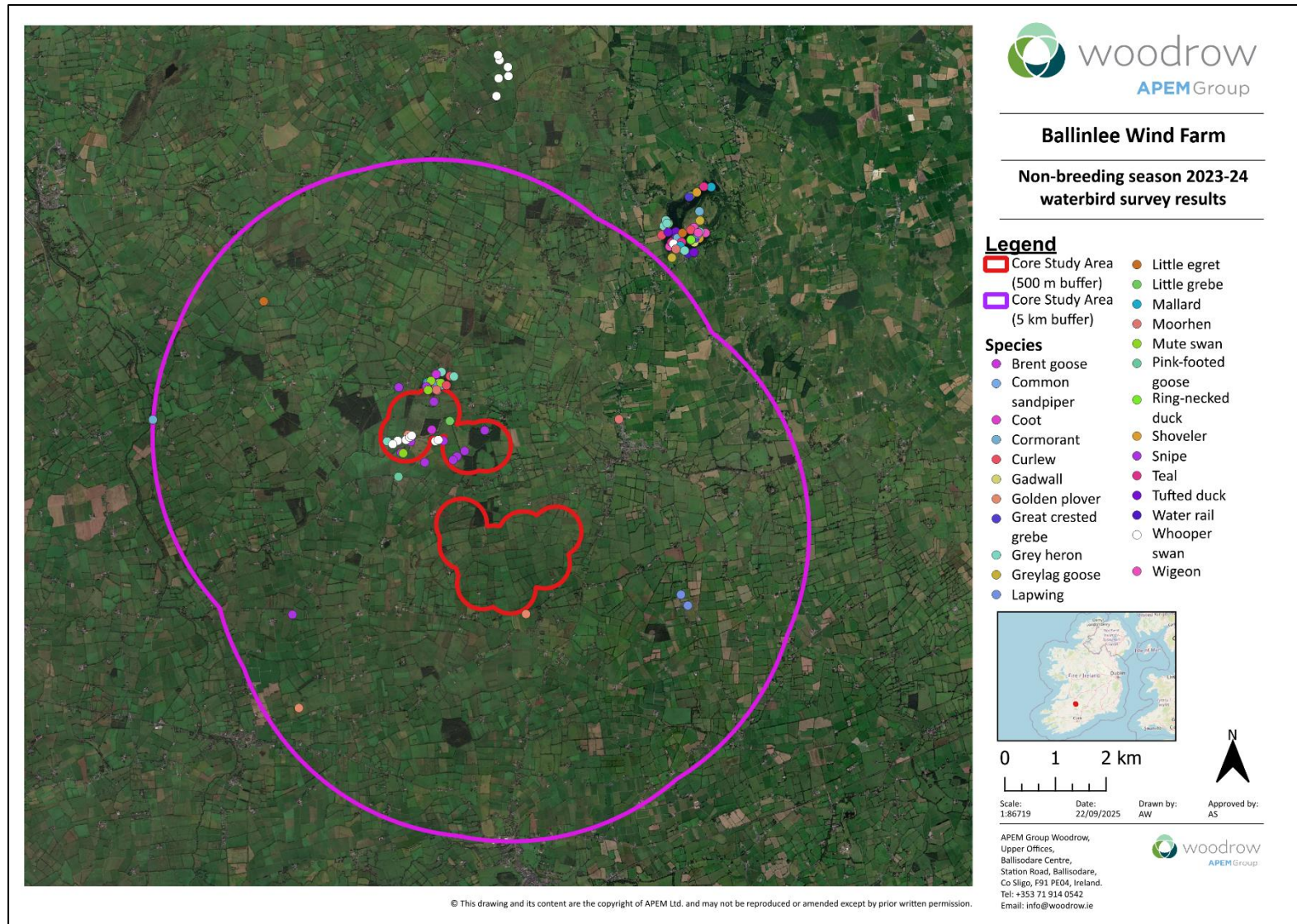


Figure 18: Wintering waterbird survey results for Year 3

4.5.1. Whooper swan surveys

Targeted whooper swan surveys were carried out in non-breeding seasons of Year 1 (2021-22) , Year 2 (2022-23) and Year 3 (2023-24), with the results summarised in Table 44, 45 and 46, respectively.

A wintering flock of whooper swan which historically roost at Lough Gur are known to forage close to the Development, occasionally utilising agricultural grasslands within the northern section of the 500 m buffer along the Morningstar River. The Lough Gur flock has used three feeding sites; all located within a short flight of their roost at the lough. These key areas include floodplain meadows along the River Camoge (Ballycullane and Ballysallagh) 4 km northwest and 4.5 km northeast, respectively, and grasslands along the Morningstar River (Camas South) 6 km southwest of Lough Gur.

Whooper swans regularly used Ballycullane and Camas South as foraging sites during the non-breeding seasons across all three survey years. In Year 1, peak numbers were recorded on 27 January 2022, with a total of 67 birds (51 at Camas South and 16 at Ballycullane). Swans were consistently recorded from late October to late February, with lower or no counts in December and March.

In Year 2, swan presence was more variable. No birds were recorded in October or November, but moderate counts were observed from December to March, including a maximum of 33 foraging swans on 14 December 2022. Several observations of flights and changes in behaviour (e.g., timing of roost departures) were noted, suggesting active foraging use and movement between sites.

Year 3 showed consistently high usage of both sites, with swans present from October through March. The highest count occurred on 17 January 2024, with 71 swans (59 at Ballycullane and 12 at Camas South). Notably, substantial numbers were present at both sites in most months, with both locations used simultaneously at times, indicating continued importance of both sites for winter foraging.

Table 44: Summary results of Whooper swan counts at Ballycullane and Camas South during non-breeding season in Year 1

Non-breeding season 2021-22			
Date	Ballycullane	Camas South	Total ³⁴
	No. of Whooper swan	No. of Whooper swan	
27/10/2021	None	15	15
15/11/2021	None	30	30
17/11/2021	None	30	30
26/11/2021	None	42	42
30/11/2021	None	35	35
14/12/2021	None	None	-
17/12/2021	None	None	-

³⁴ Total represents the combined number of Whooper Swans at Ballycullane and Camas South on each survey date. It is not a seasonal total, as birds may be recorded on multiple visits.

Non-breeding season 2021-22			
Date	Ballycullane	Camas South	Total ³⁴
	No. of Whooper swan	No. of Whooper swan	
28/12/2021	None	6	6
30/12/2021	None	8	8
27/01/2022	16	51	67
28/01/2022	18	None	18
31/01/2022	None	30	30
25/02/2022	34	6	40
28/02/2022	55	6	61
27/03/2022	None	None	-
Total			

Table 45: Summary results of Whooper swan counts at Ballycullane and Camas South during non-breeding season in Year 2

Non-breeding season 2022-23			
Date	Ballycullane	Camas South	Total ³⁵
	No. of Whooper swan	No. of Whooper swan	
27/10/22	None	None	-
23/11/22	8	None	8
14/12/22	None	33	33
13/01/23	None	16	16
15/02/23	45	18	63
15/03/23	None	12	12
24/03/23	None	10	10

³⁵ Total represents the combined number of Whooper Swans at Ballycullane and Camas South on each survey date. It is not a seasonal total, as birds may be recorded on multiple visits.

Table 46: Summary results of Whooper swan counts at Ballycullane and Camas South during non-breeding season in Year 3

Non-breeding season 2023-24			
Date	Ballycullane	Camas South	Total ³⁶
	No. of Whooper swan	No. of Whooper swan	
26/10/2023	None	2	2
22/11/2023	None	37	39
21/12/2023	20	28	48
17/01/2024	59	12	71
22/02/2024	29	39	68
20/03/2024	55	6	61

4.5.2. Whooper swan roost surveys

Between November 2023 and March 2024, seven flight speed surveys were conducted to assess the movements of whooper swans between their foraging sites (Ballycullane and Camas South) and their roost site at Lough Gur. A total of 18 individual flights were recorded and analysed, with the results summarised in Table 47 and Table 48.

Flight speeds ranged from 58.42 km/h to 79.97 km/h, with the fastest flights recorded on 23 February 2024 and the slowest on 18 January 2024 during extreme cold weather conditions. Wind conditions played a notable role, with two flights being wind-aided (Beaufort scale f4), 14 flights were against the wind (f2 – f4) and two flights occurred in -5°C with calm air, which also corresponded with the longest flight durations (8–10 minutes). The results indicate that whooper swans fly at an average speed of 70.46 km/h (43.78 mph or 19.57 m/s) when commuting between their foraging and roost areas.

Flight distance varied depending on the swans' exact departure and arrival points within the 1.55 km stretch of Lough Gur and their chosen approach paths, which often included circling flights as they assessed where to land on their approach into the site.

Swans were consistently observed commuting in groups ranging from 2 to 49 individuals, with the highest combined count on 23 February 2024 (69 swans) and peak flight speeds also recorded on that day.

These observations confirm regular and energy efficient commuting behaviour between roost and foraging grounds, with weather and wind being key influences on flight speed and duration.

³⁶ Total represents the combined number of Whooper Swans at Ballycullane and Camas South on each survey date. It is not a seasonal total, as birds may be recorded on multiple visits.

Table 47: Summary results of Whooper swan flight speed survey counts during non-breeding season in Year 3

Non-breeding season 2023-24			
Date	Ballycullane	Camas South	Total ³⁷
	No. of Whooper swan	No. of Whooper swan	
22/11/2023	20	28	48
28/11/2023	1	37	38
22/12/2023	26	28	54
18/01/2024	57	7	64
23/02/2024	61	8	69
21/03/2024	49	19	68

³⁷ - Total represents the combined number of Whooper Swans at Ballycullane and Camas South on each survey date. It is not a seasonal total, as birds may be recorded on multiple visits.

Table 48: Summary results of flight speed tests between foraging and roosting grounds during non-breeding season in Year 3

Date	Flight no.	No. Whooper swan	Departure time	Arrival time	Flight time min/sec	Flight distance metres	Km/h	mph	Metres per sec	Wind scale	Wind +/-
22/11/2023	1	31	17:13	17:18	05:19	6966.49	78.61	48.84	21.84	F4	Aided by
	2	6	17:15	17:20	05:26	6598.08	72.86	45.27	20.24	F4	Aided by
28/11/2023	0	No flights									
22/12/2023	0	No flights									
11/01/2024	1	8	17:22	17:26	04:51	4780	59.48	36.87	16.48	F2	Against
	2	49	17:24	17:28	04:28	4280	59.34	37	16.52	F2	Against
18/01/2024	1	4	09:02	09:10	08:59	8601	58.42	36.3	16.23	F0	Cold (-5)
	2	4	09:17	09:27	10:32	6249	64.49	40.07	17.91	F0	Cold (-5)
23/02/2024	1	3	07:43	07:48	05:15	6770	77.37	48.08	21.9	F3	Against
	2	4	07:46	07:50	04:59	6420	77.3	48.03	21.47	F3	Against
	3	2	07:48	07:52	04:49	6420	79.97	49.69	22.21	F3	Against
	4	3	07:50	07:55	05:32	7240	78.51	48.78	21.81	F3	Against
	5	7	07:53	07:57	04:41	6420	78.61	48.85	21.84	F3	Against
21/03/2024	1	12	07:00	07:04	04:28	5137.79	69.02	42.89	19.18	F4	Against

Date	Flight no.	No. Whooper swan	Departure time	Arrival time	Flight time min/sec	Flight distance metres	Km/h	mph	Metres per sec	Wind scale	Wind +/-
	2	4	07:08	07:13	05:23	6141.36	68.45	42.53	19.01	F4	Against
	3	5	07:12	07:16	04:44	5284.1	66.98	41.62	18.61	F4	Against
	4	4	07:17	07:22	05:12	6085.15	70.21	43.63	19.5	F4	Against
	5	12	07:18	07:23	04:46	5353.7	76.39	41.87	18.72	F4	Against
	6	9	07:22	07:26	04:49	5043.31	66.52	41.34	18.18	F4	Against
	7	2	07:29	07:33	04:48	5266.34	65.83	40.9	18.29	F4	Against

4.6. Hen harrier roost survey

No suitable roost habitat was located within the 2 km buffer, and no hen harrier were recorded during hen harrier roost surveys that were undertaken within the 5 km buffer during the Year 3 non-breeding season (2023-24).

4.7. Bioacoustics surveys

A total of 1,904 nocturnal detections of whooper swan were recorded during the 2023–24 non-breeding season, compared to 406 detections in 2022–23. While this represents a 369% increase across the full 24-hour dataset, a more direct comparison with 2022–23 was made by restricting analysis to the standard survey window (three hours before and after both sunrise and sunset). Within these time-windows, detections increased from 385 in 2022–23 to 822 in 2023–24, representing a 113% rise. This confirms that the observed increase in activity reflects genuine changes in seasonal site use, rather than being solely attributable to the extended overnight recording effort introduced in 2023-24.

Although the ± 3 -hour windows are consistent with standard survey guidance, their use here was primarily to ensure a valid year-to-year comparison with 2022–23, when recording was limited to these periods.

Spatially, in 2023–24, the majority of detections were recorded at detector WSS065 (Turbine 3), indicating a strong spatial concentration of nocturnal activity in this area. Additional detectors showing high levels of activity including WSS045, located along a known flight corridor, which logged 178 detections, and WSS047, situated to the west of the wind farm (Rathcannon Pond). In contrast, detections in 2022–23 were lower overall and more evenly distributed across the detector network, with no single detector showing a dominant pattern of activity.

Monthly patterns also differed significantly between years. In 2023–24, detections peaked sharply in December, which accounted for 1,571 records or 87.5% of the season's total. By contrast, 2022–23 detections were more evenly spread across the later part of the winter, peaking in January (157 detections; 44.3%) and February (171 detections; 42.1%).

Hourly detection patterns show that in 2023–24 the greatest concentration of activity occurred between 00:00 and 01:00, with 925 detections (48.5%) recorded during this hour. However, when restricted to the standard survey windows, peaks in activity were observed around both sunrise and sunset, broadly consistent with patterns recorded in 2022–23. In 2022-23 evening peaks occurred slightly earlier, with 117 detections (28.8%) at 18:00 and 90 detections (22.1%) at 17:00.

Overall, these findings indicate a genuine increase in nocturnal whooper swan activity between 2022–23 and 2023–24, evident across the full 24-hour dataset, within the standardised survey windows, and in the concentration of activity both spatially and temporally.

4.8. Incidental observations

Several incidental observations of target species were recorded within the 5 km buffer during non-survey periods, including while surveyors were travelling to and from survey locations. In total, 17 species were recorded incidentally, including eight amber-listed and five red-listed species. Notably,

two species that were not recorded during other surveys were observed: the green-listed whimbrel and the red-listed white-tailed eagle *Haliaeetus albicilla*, the latter being observed flying over at an altitude of between 300-400m in November 2021.

5. ORNITHOLOGICAL BASELINE

The following sections provide the ornithological baseline for the occurrence of target species in relation to the Development. The below sections assimilate the ornithological data collected for target species and the avian assemblages recorded during the survey period October 2021 to September 2024, including all incidental observations of target species across surveys. Where appropriate, the findings from the desk study are included.

5.1. Summary of waterbird assemblage

The following sections on waterbirds detail how each species utilises the Development, and importantly, provide context to assessing the overall significance of the wider area for the assemblage of wintering waterbirds.

In summary across all surveys, there have been 30 species of waterbird recorded during the three-year survey period, including six red-listed species and 17 amber-listed species.

5.1.1. Non-breeding season 2021-22 waterbird summary

During the non-breeding season of Year 1 (2021–22), a range of waterbird species was recorded within the 500 m buffer through vantage point (VP) watches, winter walkover surveys, and dedicated whooper swan counts. VP watches documented 12 waterbird species, including red-listed species such as golden plover, lapwing, and snipe. Up to 70 lapwings were observed utilising improved grasslands within the core study area during November and December, while up to four snipe were recorded during all months except November. Amber-listed species included low numbers of black-headed gull, common gull and lesser black-backed gull which were mainly seen overflying the 500 m buffer, although some utilisation of improved grasslands and flooded areas were observed. Other waterbird species observed in flight included cormorant *Phalacrocorax carbo*, grey heron *Ardea cinerea*, and little egret *Egretta garzetta*. Winter walkover surveys added further records, including small numbers of mallard *Anas platyrhynchos* (four) and mute swan (five), as well as regular sightings of whooper swan between October and February. Dedicated whooper swan counts at Ballycullane and Camas South confirmed consistent use by whooper swans, with a peak count of 67 individuals on 27 January 2022 (51 at Camas South and 16 at Ballycullane). Whooper swans were absent during mid-December and March.

5.1.2. Breeding season 2022 waterbird summary

In 2022, a total of eight target waterbird species were recorded within the 500 m buffer during the breeding season. Among these were two red-listed wader species, golden plover and snipe; however, both were observed outside the core months (May to August), and no breeding activity was suspected. Of the four amber-listed species, only mallard was considered a possible breeder within the 500 m buffer, based on occasional sightings. The other amber-listed species, cormorant, herring gull and lesser-black-backed gull were mostly recorded as overflying individuals and showed no signs of breeding within the Development.

5.1.3. Non-breeding season 2022-23 waterbird summary

During the non-breeding season of Year 2 (2022–23), a broad suite of waterbird species was recorded across the 500 m buffer through VP watches, winter walkover surveys, and targeted waterbird counts, including those at Lough Gur during I-WeBS counts and dedicated whooper swan counts. VP watches identified 18 waterbird species, including red-listed species such as golden plover, dunlin, lapwing, and snipe. Lapwing activity peaked at 190 individuals, while snipe were frequently recorded with a peak of 23 individuals. A single flock of 80 golden plover were present during early October. Amber-listed gull species including black-headed gull, lesser black-backed gull, and great black-backed gull *Larus marinus* were frequently observed, largely in flight, with some foraging behaviour recorded. Other waterbirds such as mallard, cormorant, grey heron, little egret, greylag goose, mute swan, and teal were also documented. Winter walkover surveys further confirmed the presence of small numbers of mallard (eight), mute swan (three), and whooper swan, with up to 13 whoopers observed in January and regular presence through to late March. At Ballycullane and Camas South, dedicated counts recorded the return of whooper swans from December, with a peak count of 33 foraging birds observed on 14 December 2022. These observations, along with recorded flights and behavioural shifts, suggest active use of the 5 km buffer and movement between feeding and roosting sites throughout the winter period. Regular monthly surveys at Lough Gur provided additional context for regional waterbird activity, with high numbers of wigeon (384), teal (78), tufted duck *Aythya fuligula* (124), mallard (66), and mute swan (38) recorded, further supporting the importance of the wider landscape for overwintering waterbirds.

5.1.4. Breeding season 2023 waterbird summary

In 2023, a total of 12 target waterbird species were recorded within the 500 m buffer during the breeding season. This included five red-listed wader species, the majority of which were considered passage birds based on timing: golden plover (early April), curlew (August), snipe (September) and lapwing (September) were all recorded outside the core breeding months. However, woodcock, with two individuals recorded during a July breeding bird survey, may have possibly been breeding onsite. Among the five amber-listed species, only mallard was considered a possible breeder within the 500 m buffer. Black-headed gull, cormorant, and lesser-black-backed gull were primarily recorded as overflying individuals, while up to seven mute swan were observed commuting into the 500 m buffer to forage in adjacent fields, with no evidence of nesting.

5.1.5. Non-breeding season 2023-24 waterbird summary

During the Year 3 non-breeding season, a total of 16 waterbird species were recorded across non-wintering waterbird surveys, winter walkover surveys, and targeted counts within the 5 km buffer, including whooper swan flight speed surveys and I-WeBS counts of the significant wetland area at Lough Gur. Whooper swan, a species of conservation concern, was present in consistently high numbers, with peak counts of 71 individuals in January 2024 (59 at Ballycullane and 12 at Camas South). Regular movement between key foraging sites at Ballycullane and Camas South, and roosting at Lough Gur, was confirmed through dedicated flight speed surveys, highlighting the continued importance of the area for this Annex I migratory species. Other red-listed wader species such as curlew (28), golden plover (750), lapwing (100), and snipe (31) were recorded frequently. Amber-listed species, including brent goose (11), teal (63), gadwall *Mareca strepera* (16), and cormorant (six), were also recorded, alongside green-listed species such as grey heron (nine), little grebe *Tachybaptus*

ruficollis (three), and moorhen *Gallinula chloropus* (six). Winter walkover surveys provided additional insight into waterbird presence, recording species such as teal (35), mallard (29), and snipe (14), while dedicated wintering waterbird surveys captured seasonal changes in abundance, particularly in mid-winter. This comprehensive suite of surveys confirmed the significance of Lough Gur and its surrounding habitats as a critical resource for overwintering waterbirds within the 5 km buffer.

5.1.6. Breeding season 2024 waterbird summary

In 2024, a total of ten target waterbird species were recorded within the 500 m buffer during the breeding season. Only one red-listed wader species, snipe, was observed, with 12 records of one to three birds being flushed during March and April; these were considered passage birds, as sightings fell outside the core breeding months. Of the seven amber-listed species, both mallard (1-2 pairs) and mute swan (1 pair) were recorded as confirmed breeding within the 500 m buffer. In contrast, black-headed gull, cormorant and lesser-black-backed gull were primarily recorded as overflying individuals, showing no evidence of nesting. Teal and whooper swan were each recorded once during March and were considered transient winter visitors departing the area.

5.2. Summary of raptor assemblage

During the Year 1 (2022), Year 2 (2023), and Year 3 (2024) breeding seasons, seven raptor species were recorded within the 2 km buffer: kestrel (red-listed); hen harrier and merlin (amber-listed); and buzzard, long-eared owl, peregrine, sparrowhawk (green-listed).

The baseline study recorded four species of breeding raptor within the 2 km buffer. These were buzzard (2-3 pairs), kestrel (1-2 pairs), long-eared owl (1 pair) and sparrowhawk (1 pair). Additionally, the red-listed barn owl was confirmed breeding at Ballygrennan Castle, located just outside the 2 km buffer and peregrine was confirmed breeding just beyond the 5 km buffer.

Three further raptor species were recorded during all surveys and included hen harrier, merlin and white-tailed eagle. There was no indication of breeding within the 2 km buffer by these species.

5.2.1. Breeding season 2022 raptor summary

During the 2022 breeding season, six raptor species were recorded: barn owl, buzzard, hen harrier, kestrel, peregrine, and sparrowhawk. Kestrels were observed hunting and commuting through the 500 m buffer, with possible breeding indicated by the presence of pellets, moulted feathers, and whitewash in a metal-roofed barn in June. A single male hen harrier was observed flying north through the 500 m buffer during a breeding bird survey in late August, marking the only record for the entire season, and it was considered not to be breeding in the Development or 2 km buffer. Buzzards were regularly observed within the 2 km buffer, with breeding behaviour confirmed in July when juvenile buzzards were heard calling in the southern section of the 500 m buffer. One peregrine was recorded during the breeding raptor survey, but no breeding behaviour was observed. Barn owls were also surveyed during the breeding season. No barn owls were recorded within the 1 km buffer, but confirmed breeding was reported at Ballygrennan Castle, approximately 900 m east of the 2 km buffer boundary. An adult barn owl was observed emerging from a cavity at Ballygrennan Castle during an August survey, although no vocalisations were heard, suggesting that any young would likely have fledged by the time of the survey.

5.2.2. Breeding season 2023 raptor summary

During the 2023 breeding season, five raptor species were recorded within the 2 km buffer. Buzzard was the most frequently observed, with one to three individuals recorded during the breeding season. Buzzards displayed breeding behaviour within the 2 km buffer, and juvenile buzzards were heard making food-begging calls, confirming active nesting in July. Kestrel had one to two individuals observed during VP watches, though no breeding activity was detected within the 2 km buffer. Kestrels were known to be nesting at Rockstown Castle, approximately 9 km from the Development. Sparrowhawk was recorded with up to two individuals observed, but no breeding activity was detected within the 2 km buffer. Hen harrier, another amber-listed species, was observed in May flying over a conifer plantation, but no breeding activity was recorded. Long-eared owl fledglings were recorded calling from conifer woodland, about 300 m west of the 500 m buffer, indicating confirmed breeding nearby.

Additionally, signs of barn owl were noted just east of the 2 km buffer at Ballygrennan Castle, though no breeding was confirmed. Peregrine was also recorded outside of the 5 km buffer, with confirmed breeding at Kilballyowen Quarry and Ballyneety Castle.

5.2.3. Breeding season 2024 raptor summary

During the 2024 breeding season, four raptor species were recorded within the 2 km buffer. Buzzard had one to three individuals observed, with breeding confirmed approximately 430 m east of the northern section of the 500 m buffer. Kestrel had one to two individuals observed, and although no breeding activity was confirmed within the 2 km buffer, possible breeding was suggested by behaviour observed in late May. Sparrowhawk was recorded with one to two individuals, and breeding was confirmed with a nest found within the 500 m buffer. Merlin was recorded once in April, likely on passage, with no evidence of breeding.

5.3. Summary of passerine assemblage

Surveys recorded eight regularly occurring red and amber-listed species of confirmed and probable breeding passerines within the 500 m buffer: meadow pipit *Anthus pratensis*, goldcrest, starling *Sturnus vulgaris*, swallow *Hirundo rustica*, house sparrow, linnet *Linaria cannabina*, skylark *Alauda arvensis*, and willow warbler *Phylloscopus trochilus*.

Notably, meadow pipit was the only red-listed passerine recorded during the breeding bird surveys. It was confirmed as breeding in all three years, primarily in less heavily managed grassland, particularly in the northern section of the 500 m buffer.

Other key species included linnet, which was confirmed as breeding across all three years, typically in hedgerow and scrub habitats. The house sparrow was recorded in 2023 and 2024, likely breeding in buildings associated with farmsteads. Skylark was frequently recorded in the northern section of the 500 m buffer, where it is nesting in less heavily managed grassland. Additionally, starling was recorded in flocks, with evidence suggesting breeding in tree cavities or buildings within the 500 m buffer, particularly in 2024. Swallow were observed foraging in the core study area, with possible breeding linked to farm buildings, though no nests were confirmed. Goldcrest was recorded as breeding commonly in suitable woodland/plantation habitats in both 2023 and 2024.

Other amber-listed species recorded during breeding bird surveys, but not confirmed as breeding, included sand martin *Riparia riparia*, noted foraging along the Morningstar River, and house martin *Delichon urbicum*, associated with potentially suitable nesting sites in farm structures.

Additionally, swift, a red-listed near passerine, was recorded in 2023, with two birds observed in July and three in September, though no suitable nesting locations were identified within the Development, making breeding unlikely.

6. CONCLUSIONS

This report provides the ornithological baseline information required to undertake a robust ornithological impact assessment for the Development. Ornithological surveys conducted between October 2021 and September 2024 comply fully with the SNH (2017) guidelines for informing impact assessment of onshore wind farms. The information contained in this report includes baseline data, which can be used to assess the likely significant effects of the Development on the avifauna in the area. No substantial limitations were identified in terms of scale, scope or context in the preparation of this report.

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8. APPENDICES

Appendix I – BTO Species codes

Appendix II – Protected species records

Appendix III – Viewshed Analysis

Appendix IV – Survey effort & weather conditions

Appendix V – VP flightline results with tables

Appendix VI – All survey results

Appendix VII – Survey routes

Appendix I - BTO Species Codes

BTO SPECIES CODES

AC	Arctic Skua	GA	Gadwall	LE	Long-eared Owl	SM	Sand Martin
AE	Arctic Tern	GX	Gannet	LT	Long-tailed Tit	SS	Sanderling
AV	Avocet	GW	Garden Warbler	MG	Magpie	TE	Sandwich Tern
BO	Barn Owl	GY	Garganey	MA	Mallard	VI	Savi's Warbler
BY	Barnacle Goose	GC	Goldcrest	MN	Mandarin Duck	SQ	Scarlet Rosefinch
BA	Bar-tailed Godwit	EA	Golden Eagle	MX	Manx Shearwater	SP	Scaup
BR	Bearded Tit	OL	Golden Oriole	MR	Marsh Harrier	CY	Scottish Crossbill
BS	Berwick's Swan	GF	Golden Pheasant	MT	Marsh Tit	SW	Sedge Warbler
BI	Bittern	GP	Golden Plover	MW	Marsh Warbler	NS	Serin
BK	Black Grouse	GN	Goldeneye	MP	Meadow Pipit	SA	Shag
TY	Black Guillemot	GO	Goldfinch	MU	Mediterranean Gull	SU	Shelduck
BX	Black Redstart	GD	Goosander	ML	Merlin	SX	Shorelark
BJ	Black Tern	GI	Goshawk	M.	Mistle Thrush	SE	Short-eared Owl
B.	Blackbird	GH	Grasshopper Warbler	MO	Montagu's Harrier	SV	Shoveler
BC	Blackcap	GB	Great Black-backed Gull	MH	Moorhen	SK	Siskin
BH	Black-headed Gull	GG	Great Crested Grebe	MS	Mute Swan	S.	Skylark
BN	Black-necked Grebe	ND	Great Northern Diver	N.	Nightingale	SZ	Slavonian Grebe
BW	Black-tailed Godwit	NX	Great Skua	NJ	Nightjar	SN	Snipe
BV	Black-throated Diver	GS	Great Spotted Woodpecker	NH	Nuthatch	SB	Snow Bunting
BT	Blue Tit	GT	Great Tit	OP	Osprey	ST	Song Thrush
BU	Bluethroat	GE	Green Sandpiper	OC	Oystercatcher	SH	Sparrowhawk
BL	Brambling	G.	Green Woodpecker	PX	Peafowl/Peacock	AK	Spotted Crake
BG	Brent Goose	GR	Greenfinch	PE	Peregrine	SF	Spotted Flycatcher
BF	Bullfinch	GK	Greenshank	PH	Pheasant	DR	Spotted Redshank
BZ	Buzzard	H.	Grey Heron	PF	Pied Flycatcher	SG	Starling
CG	Canada Goose	P.	Grey Partridge	PW	Pied Wagtail	SD	Stock Dove
CP	Capercaillie	GV	Grey Plover	PG	Pink-footed Goose	SC	Stonechat
C.	Carriion Crow	GL	Grey Wagtail	PT	Pintail	TN	Stone-curlew
CW	Cetti's Warbler	GJ	Greylag Goose	PO	Pochard	TM	Storm Petrel
CH	Chaffinch	GU	Guillemot	PM	Ptarmigan	SL	Swallow
CC	Chiffchaff	FW	Guineafowl (Helmeted)	PU	Puffin	SI	Swift
CF	Chough	HF	Hawfinch	PS	Purple Sandpiper	TO	Tawny Owl
CL	Cirl Bunting	HH	Hen Harrier	Q.	Quail	T.	Teal
CT	Coal Tit	HG	Herring Gull	RN	Raven	TK	Temminck's Stint
CD	Collared Dove	HY	Hobby	RA	Razorbill	TP	Tree Pipit
CM	Common Gull	HZ	Honey Buzzard	RG	Red Grouse	TS	Tree Sparrow
CS	Common Sandpiper	HC	Hooded Crow	KT	Red Kite	TC	Treecreeper
CX	Common Scoter	HP	Hoopoe	ED	Red-backed Shrike	TU	Tufted Duck
CN	Common Tern	HM	House Martin	RM	Red-breasted Merganser	TT	Turnstone
CO	Coot	HS	House Sparrow	RQ	Red-crested Pochard	TD	Turtle Dove
CA	Cormorant	JD	Jackdaw	FV	Red-footed Falcon	TW	Twite
CB	Corn Bunting	J.	Jay	RL	Red-legged Partridge	WA	Water Rail
CE	Corncrake	K.	Kestrel	NK	Red-necked Phalarope	W.	Wheatear
CI	Crested Tit	KF	Kingfisher	LR	Redpoll (Lesser)	WM	Whimbrel
CR	Crossbill (Common)	KI	Kittiwake	RK	Redshank	WC	Whinchat
CK	Cuckoo	KN	Knot	RT	Redstart	WG	White-fronted Goose
CU	Curlew	LM	Lady Amherst's Pheasant	RH	Red-throated Diver	WH	Whitethroat
DW	Dartford Warbler	LA	Lapland Bunting	RE	Redwing	WS	Whooper Swan
DI	Dipper	L.	Lapwing	RB	Reed Bunting	WN	Wigeon
DO	Dotterel	TL	Leach's Petrel	RW	Reed Warbler	WT	Willow Tit
DN	Dunlin	LB	Lesser Black-backed Gull	RZ	Ring Ouzel	WW	Willow Warbler
D.	Dunnoek	LS	Lesser Spotted Woodpecker	RP	Ringed Plover	OD	Wood Sandpiper
EG	Egyptian Goose	LW	Lesser Whitethroat	RI	Ring-necked Parakeet	WO	Wood Warbler
E.	Eider	LI	Linnet	R.	Robin	WK	Woodcock
FP	Feral Pigeon	ET	Little Egret	DV	Rock Dove (not feral)	WL	Woodlark
ZL	Feral/hybrid goose	LG	Little Grebe	RC	Rock Pipit	WP	Woodpigeon
ZF	Feral/hybrid mallard type	LU	Little Gull	RO	Rook	WR	Wren
FF	Fieldfare	LO	Little Owl	RS	Roseate Tern	WY	Wryneck
FC	Firecrest	LP	Little Ringed Plover	RY	Ruddy Duck	YW	Yellow Wagtail
F.	Fulmar	AF	Little Tern	RU	Ruff	Y.	Yellowhammer

APPENDIX II: SPECIES RECORDS

Table A3.1: NBDC and I-WeBS bird records for target species within the 10 km national grid squares R53 and R63

Common Name ¹	Scientific Name	EU Birds Directive	BoCCI4 status ²	Date of last record	Data source
Barn owl	<i>Tyto alba</i>		Red ^{Br}	2021	NBDC
Curlew	<i>Numenius arquata</i>		Red ^{Br&Win}	2019	I-WeBS
Corncrake	<i>Crex crex</i>	Annex I	Red ^{Br}	1972	NBDC
Golden Plover	<i>Pluvialis apricaria</i>	Annex I	Red ^{Br&Win}	2021	I-WeBS
Grey wagtail	<i>Motacilla cinerea</i>		Red ^{Br}	2023	NBDC
Kestrel	<i>Falco tinnunculus</i>		Red ^{Br}	2023	NBDC
Lapwing	<i>Vanellus vanellus</i>		Red ^{Br&Win}	2021	I-WeBS
Meadow pipit	<i>Anthus pratensis</i>		Red ^{Br}	2011	NBDC
Pochard	<i>Aythya ferina</i>		Red ^{Br&Win}	2012	I-WeBS
Redwing	<i>Turdus iliacus</i>		Red ^{Win}	2011	NBDC
Scaup	<i>Anas marila</i>		Red ^{Win}	2012	I-WeBS
Shoveler	<i>Spatula clypeata</i>		Red ^{Br&Win}	2021	I-WeBS
Snipe	<i>Gallinago gallinago</i>		Red ^{Br&Win}	2021	I-WeBS
Stock dove	<i>Columba oenas</i>		Red ^{Br}	2011	NBDC
Swift	<i>Apus apus</i>		Red ^{Br}	2011	NBDC
Whinchat	<i>Saxicola rubetra</i>		Red ^{Br}	1991	NBDC
Woodcock	<i>Scolopax rusticola</i>		Red ^{Br}	2011	NBDC
Yellowhammer	<i>Emberiza citrinella</i>		Red ^{Br}	1972	NBDC
Barn swallow	<i>Hirundo rustica</i>		Amber ^{Br}	2023	NBDC
Black-headed gull	<i>Chroicocephalus ridibundus</i>		Amber ^{Br&Win}	2021	I-WeBS
Common gull	<i>Larus canus</i>		Amber ^{Br&Win}	2021	I-WeBS
Coot	<i>Fulica atra</i>		Amber ^{Br&Win}	2021	I-WeBS
Cormorant	<i>Phalacrocorax carbo</i>		Amber ^{Br&Win}	2021	I-WeBS
Eurasian teal	<i>Anas crecca</i>		Amber ^{Br&Win}	2021	I-WeBS
Eurasian wigeon	<i>Mareca penelope</i>		Amber ^{Br&Win}	2021	I-WeBS
Gadwall	<i>Mareca strepera</i>		Amber ^{Br&Win}	2021	I-WeBS
Goldcrest	<i>Regulus regulus</i>		Amber ^{Br}	2011	NBDC
Great crested grebe	<i>Podiceps cristatus</i>		Amber ^{Br&Win}	2019	I-WeBS
Great northern diver	<i>Gavia immer</i>	Annex I	Amber ^{Win}	2015	I-WeBS
Greenfinch	<i>Chloris chloris</i>		Amber ^{Br}	2011	NBDC
Greylag goose	<i>Anser anser</i>		Amber ^{Win}	2021	I-WeBS
Hen harrier	<i>Circus cyaneus</i>	Annex I	Amber ^{Br}	2021	NBDC
Herring gull	<i>Larus argentatus</i>		Amber ^{Br&Win}	1984	NBDC
House martin	<i>Delichon urbicum</i>		Amber ^{Br}	2011	NBDC
House sparrow	<i>Passer domesticus</i>		Amber ^{Br}	2014	NBDC
Kingfisher	<i>Alcedo atthis</i>	Annex I	Amber ^{Br}	2011	NBDC

¹ Species are listed alphabetically by conservation status

² The BOCCI4 column refers to whether conservation concern status applies to wintering (Win) or breeding (Br) populations

Common Name ¹	Scientific Name	EU Birds Directive	BoCCl4 status ²	Date of last record	Data source
Lesser black-backed gull	<i>Larus fuscus</i>		Amber ^{Br&Win}	2015	I-WeBS
Linnet	<i>Linaria cannabina</i>		Amber ^{Br}	2011	NBDC
Mallard	<i>Anas platyrhynchos</i>		Amber ^{Br&Win}	2021	I-WeBS
Merlin	<i>Falco columbarius</i>	Annex I	Amber ^{Br}	2011	NBDC
Mute swan	<i>Cygnus olor</i>		Amber ^{Br&Win}	2021	I-WeBS
Pintail	<i>Anas acuta</i>		Amber ^{Win}	1984	NBDC
Sand martin	<i>Riparia riparia</i>		Amber ^{Br}	2023	NBDC
Skylark	<i>Alauda arvensis</i>		Amber ^{Br}	2011	NBDC
Spotted flycatcher	<i>Muscicapa striata</i>		Amber ^{Br}	2011	NBDC
Starling	<i>Sturnus vulgaris</i>		Amber ^{Br}	2014	NBDC
Tree sparrow	<i>Passer montanus</i>		Amber ^{Br}	1991	NBDC
Tufted duck	<i>Aythya fuligula</i>		Amber ^{Br&Win}	2021	I-WeBS
Whooper swan	<i>Cygnus cygnus</i>	Annex I	Amber ^{Br&Win}	2021	NBDC
Willow warbler	<i>Phylloscopus trochilus</i>		Amber ^{Br}	2011	NBDC
Blackbird	<i>Turdus merula</i>		Green	2014	NBDC
Blackcap	<i>Sylvia atricapilla</i>		Green	2011	NBDC
Blue tit	<i>Cyanistes caeruleus</i>		Green	2011	NBDC
Bullfinch	<i>Pyrrhula pyrrhula</i>		Green	2011	NBDC
Buzzard	<i>Buteo buteo</i>		Green	2021	NBDC
Chaffinch	<i>Fringilla coelebs</i>		Green	2014	NBDC
Chiffchaff	<i>Phylloscopus collybita</i>		Green	2014	NBDC
Coal tit	<i>Parus ater</i>		Green	2011	NBDC
Collared dove	<i>Streptopelia decaocto</i>		Green	2011	NBDC
Crane	<i>Grus grus</i>			2012	NBDC
Cuckoo	<i>Cuculus canorus</i>		Green	2011	NBDC
Dipper	<i>Cinclus cinclus</i>		Green	2023	NBDC
Duncock	<i>Prunella modularis</i>		Green	2014	NBDC
Fieldfare	<i>Turdus pilaris</i>		Green	2011	NBDC
Garden warbler	<i>Sylvia borin</i>		Green	2011	NBDC
Goldfinch	<i>Carduelis carduelis</i>		Green	2014	NBDC
Grasshopper warbler	<i>Locustella naevia</i>		Green	1991	NBDC
Great black-backed gull	<i>Larus marinus</i>		Green	1984	NBDC
Great spotted woodpecker	<i>Dendrocopos major</i>		Green	2022	NBDC
Great tit	<i>Parus major</i>		Green	2011	NBDC
Grey heron	<i>Ardea cinerea</i>		Green	2021	I-WeBS
Hooded crow	<i>Corvus cornix</i>		Green	2014	NBDC
Jackdaw	<i>Corvus monedula</i>		Green	2014	NBDC
Jay	<i>Garrulus glandarius</i>		Green	1972	NBDC
Lesser redpoll	<i>Carduelis flammea / cabaret</i>		Green	2011	NBDC
Little egret	<i>Egretta garzetta</i>	Annex I	Green	2017	NBDC

Common Name ¹	Scientific Name	EU Birds Directive	BoCCI4 status ²	Date of last record	Data source
Little grebe	<i>Tachybaptus ruficollis</i>		Green	2021	I-WeBS
Long-eared owl	<i>Asio otus</i>		Green	1972	NBDC
Long-tailed tit	<i>Aegithalos caudatus</i>		Green	2011	NBDC
Mistle thrush	<i>Turdus viscivorus</i>		Green	2011	NBDC
Moorhen	<i>Gallinula chloropus</i>		Green	2021	I-WeBS
Magpie	<i>Pica pica</i>		Green	2014	NBDC
Peregrine	<i>Falco peregrinus</i>	Annex I	Green	2011	NBDC
Pheasant	<i>Phasianus colchicus</i>		Green	2011	NBDC
Pied wagtail	<i>Motacilla alba yarrellii</i>		Green	2017	NBDC
Raven	<i>Corvus corax</i>		Green	2014	NBDC
Reed bunting	<i>Emberiza schoeniclus</i>		Green	2011	NBDC
Rock pigeon	<i>Columba livia</i>		Green	2011	NBDC
Robin	<i>Erithacus rubecula</i>		Green	2011	NBDC
Rook	<i>Corvus frugilegus</i>		Green	2014	NBDC
Sedge warbler	<i>Acrocephalus schoenobaenus</i>		Green	2011	NBDC
Siskin	<i>Spinus spinus</i>		Green	2011	NBDC
Song thrush	<i>Turdus philomelos</i>		Green	2014	NBDC
Sparrowhawk	<i>Accipiter nisus</i>		Green	2011	NBDC
Stonechat	<i>Saxicola rubicola</i>		Green	2011	NBDC
Treecreeper	<i>Certhia familiaris</i>		Green	2011	NBDC
Water rail	<i>Rallus aquaticus</i>		Green	2012	I-WeBS
Whitethroat	<i>Sylvia communis</i>		Green	2011	NBDC
Woodpigeon	<i>Columba palumbus</i>		Green	2014	NBDC
Wren	<i>Troglodytes troglodytes</i>		Green	2011	NBDC

Table A3.2: I-WeBS peak counts for Lough Gur (OI001) – winters 2011/12 to 2020/21

Species ³	1% National	1% International	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Mute swan	90	100	25	41		39			26	24		23
Whooper swan *	150	340	1	3								2
Greylag goose	35	980	17			20			39			41
Wigeon	560	14,000	320	132		268			230	85		226
Gadwall	20	1,200	18			20				13		21
Teal	360	5,000	381	50		172			61	20		140
Mallard	280	53,000	43	36		37			21	21		149
Shoveler	20	650	22	24		40				20		47
Pochard	110	2,000	1									
Tufted duck	270	8,900	216	280		145			346	75		86
Scaup	25	3,100	2									
Great northern diver *	20	50				1						
Little grebe	20	4,700	2	1					6	4		2
Great crested grebe	30	6,300	4			10				2		
Slavonian grebe *												1
Cormorant	110	1,200	20	10		24			27	2		8
Little egret	20	1,100				1						
Grey heron	25	5,000	3	1		4			3	4		4
Water rail			2									
Moorhen				4		10						2
Coot	190	15,500	29	22		29						2
Golden plover *	920	9,300										1
Lapwing	850	72,300	100			30				160		1
Snipe										3		1
Curlew	350	7,600	65	12					15	9		
Black-headed gull			62	1		10						7
Common gull			7									1
Lesser black-backed gull						1						
Greylag Goose (domestic)			52	46		35				5		

³ * Denotes species listed as Annex I of the EU Birds Directive

Species ^{*3}	1% National	1% International	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Green-winged teal			1									

Table A3.3: I-WeBS peak counts for Charleville Lagoons (0L003) – winters 2011/12 to 2020/21

Species ^{*4}	1% National	1% International	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Mute swan	90	100	34	10	17							
Whooper swan*	150	340	1									
Shelduck	100	2500	2	3	2							
Wigeon	560	14000	133	260	274					1		
Gadwall	20	1200	6	7								
Teal	360	5000	120	190	95					230		
Mallard	280	53000	47	60	91					100		
Shoveler	20	650	34	52	50					22		
Pochard	110	2000	4	4	2							
Tufted duck	270	8900	34	28	45							
Little grebe	20	4700	19	5	19					20		
Cormorant	110	1200	2		2					6		
Grey heron	25	5000	1									
Moorhen			3	2								
Coot	190	15500	5	1	3							
Lapwing	850	72300	44	60	50							
Dunlin *	460	13300		20						3		
Snipe			1		1					4		
Black-tailed godwit	200	1100								10		
Curlew	350	7600	5									
Redshank	240	2400		1								
Green sandpiper			2		2							
Black-headed gull			11	32	60							
Lesser black-backed gull				15	45							
Garganey										2		

⁴ * Denotes species listed as Annex I of the EU Birds Directive

APPENDIX III: VIEWSHED ANALYSIS

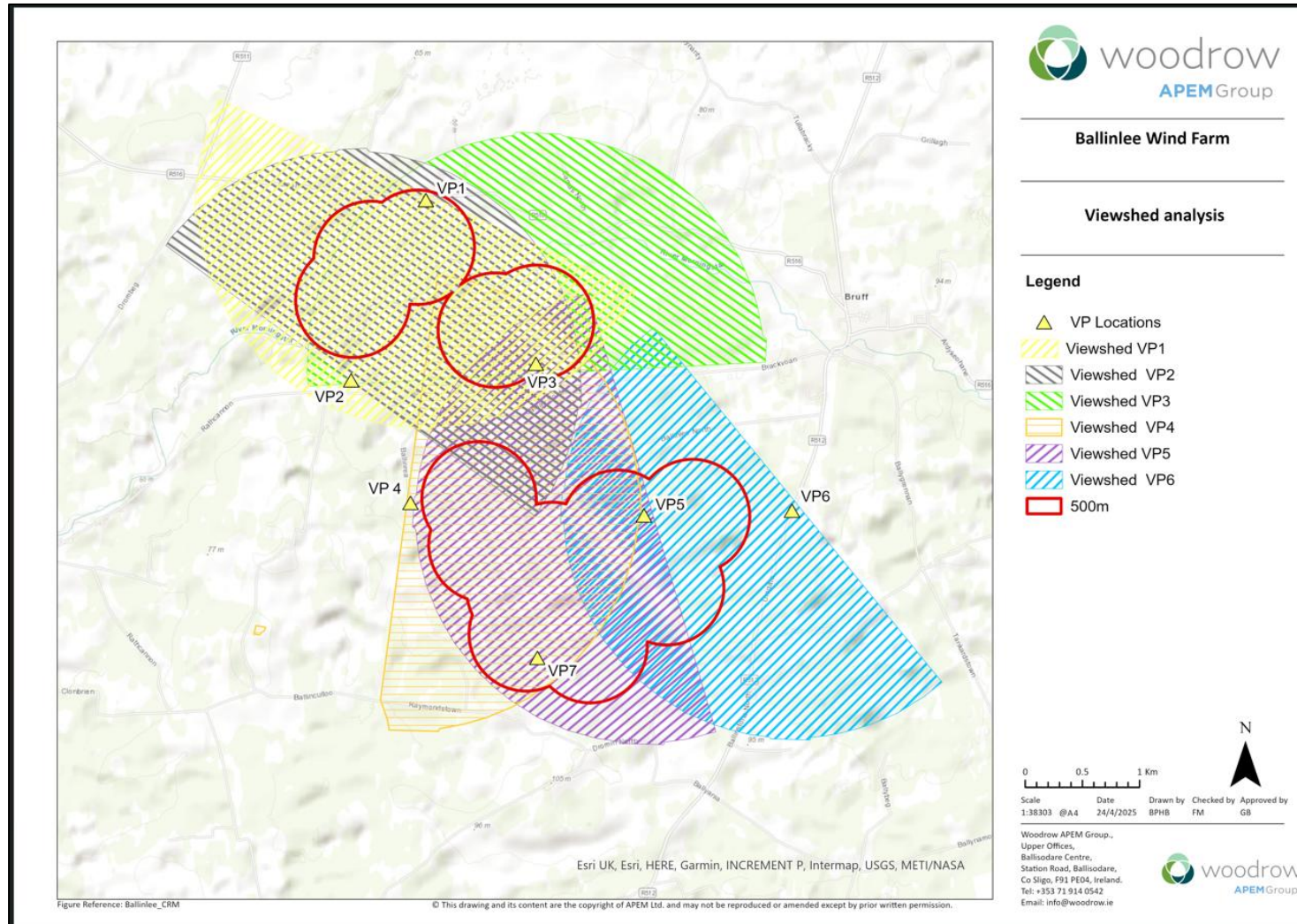


Figure A4.1: Vantage point locations and viewsheds

APPENDIX IV: SURVEY EFFORT & WEATHER CONDITIONS

Table A5.1: VP watches – survey effort & weather conditions – Year 1 & 2

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
Non-breeding 2021-22													
05/10/2021	1	3	0830	JK	F3	NW	Good	2-3	9	Dry	None	None	None
05/10/2021	2	3	1200	JK	F3	NW	Good	3-4	14	Dry	None	None	None
07/10/2021	1	3	1215	JK	F4	SE	Good	7-8	18	Dry	None	None	None
07/10/2021	2	3	0815	JK	F3	SE	Good	7-8	16	Dry	None	None	None
12/10/2021	5	3	0830	JK	F2	W	Good		8	Dry	None	None	None
12/10/2021	6	3	1200	JK	F2	SW	Good		13	Dry	None	None	None
18/10/2021	5	3	1215	JK	F3	SE	Good	7/8	17	Dry	None	None	None
18/10/2021	6	3	0845	JK	F3	SE	Good		14	Dry	None	None	None
21/10/2021	7	3	0815	DF	F2-3	SE	Good	1	4	Dry	None	None	None
21/10/2021	7	3	1145	DF	F2-5	NW	Good	3	8	Dry	None	None	None
26/10/2021	4	3	0900	DF	F4-6	SW	Good	7	10	Dry	None	None	None
26/10/2021	4	3	1230	DF	F4-6	SW	Good	8	14	Dry	None	None	None
01/11/2021	6	3	0845	JK	F4-6	NW	Good	4	7	Damp	Showers	None	None
01/11/2021	4	3	1215	JK	F4-6	NW	Good		9	Damp	Showers	None	None
03/11/2021	5	3	0830	JK	F3	NW	Good	3-4	5	Dry	None	None	None
03/11/2021	7	3	1200	JK	F3	NW	Good	3-4	10	Dry	None	None	None
05/11/2021	6	3	1145	JK	F3	SW	Good	3-4	11	Dry	None	None	None
05/11/2021	4	3	0815	JK	F3	SW	Good	3-4	9	Dry	None	None	None
11/11/2021	5	3	1145	JK	F3	SE	Good	7-8	12	Damp	Showers	None	None
11/11/2021	7	3	0815	JK	F3-4	SE	Good	7-8	12	Dry	None	None	None
11/11/2021	1	3	0900	DF	F4-7	S	Good	7-8	12	Dry	None	None	None
11/11/2021	2	3	1300	DF	F4-7	S	Good	6-7	12	Dry	None	None	None

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
12/11/2021	1	3	1230	DF	F5-7	S	Good	7-8	12	Dry	None	None	None
12/11/2021	2	3	0830	DF	F5-7	S	Good	7-8	12	Dry	None	None	None
03/12/2021	6	3	0815	JK	F3	NW	Good	7-8	7	Dry	None	None	None
03/12/2021	4	3	1145	JK	F3	NW	Good	7-8	8	Dry	None	None	None
04/12/2021	6	3	1230	JK	F4	NW	Good	3-4	7	Dry	Some hail	None	None
04/12/2021	4	3	0915	JK	F4	NW	Good	3-4	6	Damp	Showers	None	None
06/12/2021	1	3	0830	JK	F3	W-NW	Good	4-5	5	Damp	Hail showers	None	None
06/12/2021	2	3	1200	JK	F4	W-SW	Good	5-6	6	Damp	Hail showers	None	None
08/12/2021	1	3	1245	JK	F5	W-NW	Good	4-5	7	Damp	Showers	None	None
08/12/2021	2	3	0930	JK	F5	W-NW	Good	3-4	6	Damp	Showers	None	None
15/12/2021	5	3	0830	JK	F2	SW	Good	3-4	8	Dry	None	None	None
15/12/2021	7	3	1200	JK	F3	SW	Good	3-4	10	Dry	None	None	None
21/12/2021	5	3	1200	JK	F3	SE	Good	3-4	8	Dry	None	None	None
21/12/2021	7	3	0830	JK	F3	SE	Good	7-8	7	Dry	None	None	None
05/01/2022	6	3	0840	JK	F2	NE	Good	3-4	2	Dry	None	None	None
05/01/2022	4	3	1200	JK	F2	NE	Good	3-4	2	Dry	None	None	None
10/01/2022	1	3	0830	JK	F3	SW	Good	6-7	11	Dry	None	None	None
10/01/2022	2	3	1150	JK	F3	SW	Good	7-8	12	Dry	Drizzle	None	None
13/01/2022	2	3	0915	JK	F2	SE	Good	3-4	4	Dry	None	None	None
13/01/2022	1	3	1240	JK	F2	S-SE	Good	7-8	6	Dry	None	None	None
17/01/2022	6	3	1220	JK	F3	SE	Good	7-8	4	Dry	None	None	None
17/01/2022	4	3	0900	JK	F3	SE	Good	3-4	-1	Frost	None	None	None
20/01/2022	5	3	0800	JK	F3	NE	Good	3-4	3	Dry	None	None	None
20/01/2022	7	3	1130	JK	F2	SE	Good	6-7	7	Dry	None	None	None
25/01/2022	5	3	1145	JK	F2	SE	Good	3-4	7	Dry	None	None	None
25/01/2022	7	3	0815	JK	F2	SE	Good	3-4	5	Dry	None	None	None

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
04/02/2022	1	3	0800	JK	F3	NW	Good	3-4	3	Dry	None	None	None
04/02/2022	2	3	1130	JK	F3	NW	Good	3-4	7	Damp	Showers	None	None
08/02/2022	1	3	1230	JK	F3	SW	Good	4-5	11	Damp	Some rain drizzle	None	None
08/02/2022	2	3	0900	JK	F3	SW	Good	7-8	9	Damp	Some rain drizzle	None	None
09/02/2022	6	3	0800	JK	F3	SW	Good	3-4	6	Dry	None	None	None
09/02/2022	4	3	1130	JK	F3	SW	Good	3-4	8	Dry	None	None	None
11/02/2022	5	3	0800	JK	F3	SE	Good	3-4	2	Dry	None	None	None
11/02/2022	7	3	1130	JK	F3	SE	Good	3-4	7	Dry	None	None	None
14/02/2022	6	3	1145	JK	F4	NW	Good	3-4	7	Dry	None	None	None
14/02/2022	4	3	0815	JK	F3-4	NW	Good	3-4	5	Dry	None	None	None
23/02/2022	5	3	1130	JK	F5	SW	Good	3-4	11	Dry	None	None	None
23/02/2022	7	3	0800	JK	F5	SW	Good	3-4	9	Dry	None	None	None
03/03/2022	1	3	0845	JK	F2	N-NW	Good	3-4	5	Dry	None	None	None
03/03/2022	2	3	1215	JK	F3	SE	Good	3-4	8	Dry	None	None	None
04/03/2022	6	3	0800	JK	F2	SW	Good	1-2	1	Dry	None	None	None
04/03/2022	4	3	1130	JK	F2	NW	Good	3-4	6	Dry	None	None	None
09/03/2022	1	3	1200	JK	F4	W-SW	Good	5-6	5	Damp	Some rain drizzle	None	None
09/03/2022	2	3	0845	JK	F4	SW	Good	6-7	5	Damp	Persistent rain	None	None
11/03/2022	6	3	1145	JK	F3	SE	Good	7-8	10	Damp	Showers	None	None
11/03/2022	4	3	0815	JK	F3	SE	Good	7-8	8	Damp	Showers	None	None
21/03/2022	5	3	1130	JK	F3	SE	Good	7-8	12	Dry	None	None	None
21/03/2022	7	3	0800	JK	F3	SE	Good	7-8	8	Dry	None	None	None
28/03/2022	5	3	0845	JK	F2	NE	Good	2-3	4	Dry	None	None	Some fog
28/03/2022	7	3	1215	JK	F2	NE	Good	1-2	12	Dry	None	None	None
Breeding 2022													

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
05/04/2022	2	3	1100	DOB	F4-5	E	Good	6	11	Damp	Light showers	None	None
05/04/2022	2	3	1430	DOB	F2-3	E	Good	8	11	Dry	None	None	None
05/04/2022	6	3	0112	TT	F5	SW	Good	8	12	Dry	None	None	None
05/04/2022	4	3	0824	TT	F5	SW	Good	8	12	Dry	None	None	None
07/04/2022	7	3	1048	TT	F4	NW	Good	5	7-8	Dry	Some showers	None	None
07/04/2022	5	3	0336	TT	F4-5	NW	Good	6	8-9	Dry	Some hail	None	None
12/04/2022	6	3	1048	TT	F1	E	Good	8	13	Dry	None	None	None
12/04/2022	4	3	0336	TT	F1	E	Good	8	13	Damp	Showers	None	None
14/04/2022	1	3	1200	MK	F3	SW	Good	8	11	Dry	None	None	None
14/04/2022	1	3	1530	MK	F2	SW	Good	8	13	Damp	Light showers	None	None
15/04/2022	5	3	1048	TT	F4	SW	Good	3	17	Dry	None	None	None
15/04/2022	7	3	0336	TT	F2	SW	Good	7	13-15	Dry	None	None	None
04/05/2022	2	3	0830	DOB	F2-4	NW	Good	8	12	Dry	Some drizzle	None	None
04/05/2022	2	3	1200	DOB	F2-3	NW	Good	8	16	Dry	None	None	None
10/05/2022	6	3	0712	TT	F4	SW	Good	3-4	12-14	Damp	Showers	None	None
10/05/2022	4	3	0000	TT	F4	SW	Good	3-5	10-11	Dry	None	None	None
11/05/2022	5	3	1312	TT	F3		Good	3	9-11	Dry	None	None	None
11/05/2022	7	3	0600	TT	F3-4	W	Good	4-6	12-13	Damp	Light showers	None	None
13/05/2022	1	3	0700	MK	F2	SW	Good	8	12	Dry	None	None	None
13/05/2022	1	3	1030	MK	F2	SW	Good	5	16	Dry	None	None	None
18/05/2022	6	3	0000	TT	F4-5	SE	Good	4-7	11-15	Dry	None	None	None
18/05/2022	4	3	0712	TT	F5	SE	Good	7	15	Damp	Light showers	None	None
24/05/2022	5	3	0224	TT	F3-4		Good	5-7	14	Dry	Light showers	None	None

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
24/05/2022	7	3	0936	TT	F3	NW	Good	5-7	11-14	Dry	Light showers	None	None
08/06/2022	2	3	1330	DOB	F4-5	W	Good	6-7	16	Dry	None	None	None
08/06/2022	2	3	1700	DOB	F3	W	Good	6	15	Dry	None	None	None
13/06/2022	1	3	1230	MK	F2	N	Good	8	13	Dry	None	None	None
13/06/2022	1	3	1600	MK	F2	N	Good	8	13	Dry	None	None	None
13/06/2022	6	3	0448	TT	F3	NW	Good	8	13-15	Dry	None	None	None
13/06/2022	4	3	1200	TT	F3	W	Good	8	15-16	Dry	None	None	None
14/06/2022	5	3	0112	TT	F2	SW	Good	7	15-17	Dry	None	None	None
14/06/2022	7	3	0936	TT	F2	SW	Good	8	15-16	Dry	None	None	None
17/06/2022	6	3	0112	TT	F3	W	Good	8	16	Dry	None	None	None
17/06/2022	4	3	0824	TT	F3-4	NW	Good	8	14-15	Dry	None	None	None
20/06/2022	5	3	0000	TT	F3	W	Good	1	18-19	Dry	None	None	None
20/06/2022	7	3	0712	TT	F3-4	W	Good	1	19-20	Dry	None	None	None
07/07/2022	7	3	0000	F	F1	NW	Moderate	8	15-17	Dry	None	None	High cloud cover
07/07/2022	7	3	0712	F	F1	NW	Good	6-8	18-20	Dry	None	None	None
08/07/2022	4	3	1048	F	F1	NW	Good	6	20-22	Dry	None	None	None
13/07/2022	5	3	0600	TT	F2-3	NW	Good	7	17-18	Dry	None	None	None
13/07/2022	6	3	1312	TT	F2-3	NW	Good	6-7	14-16	Dry	None	None	None
19/07/2022	2	3	0715	DOB	F1-2	SW	Good	8	16	Dry	None	None	None
19/07/2022	2	3	1045	DOB	F2-3	NE	Good	6	18	Dry	None	None	None
19/07/2022	5	3	1200	TT	F1-3	NW	Moderate	8	17-18	Dry	Light showers	None	High cloud cover
19/07/2022	6	3	0448	TT	F3-4	NW	Good	8	18-19	Dry	None	None	None
22/07/2022	4	3	0000	F	F1	SW	Good	4	14-17	Dry	None	None	None
28/07/2022	1	3	0600	CBH	F1	-	Good	8	12	Dry	None	None	None
28/07/2022	1	3	0930	CBH	F1	-	Good	8	12	Dry	None	None	None

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
03/08/2022	5	3	0448	TT	F4	W	Good	7	14-17	Dry	None	None	None
03/08/2022	6	3	1200	TT	F4	W	Good	6-8	17-18	Dry	None	None	None
03/08/2022	7	3	0000	PC	F1	SW	Good	3	15	Dry	None	None	None
17/08/2022	2	3	1100	DOB	F3	NW	Good	3	16-19	Dry	None	None	None
17/08/2022	2	3	1430	DOB	F2-3	N	Good	4	20	Dry	None	None	None
23/08/2022	5	3	0936	TT	F3-4	SW	Good	5	18-20	Dry	None	None	None
23/08/2022	6	3	0712	TT	F3	SW	Good	6	18-20	Dry	None	None	None
23/08/2022	7	3	0000	PC	F1	SW	Good	5	19	Dry	None	None	None
23/08/2022	4	3	0000	TT	F1-2	SW	Good	5	17	Dry	None	None	None
23/08/2022	4	3	0712	TT	F2-3	SW	Good	6	16	Dry	None	None	None
24/08/2022	1	3	1200	CBH	F1	NE	Good	6	16-18	Dry	None	None	None
24/08/2022	1	3	1530	CBH	F1	-	Good	6	18	Dry	None	None	None
Non-breeding 2022-23													
05/10/2022	1	3	0900	JH	5	W	Moderate - Good	6	12	Dry	None	None	None
05/10/2022	1	3	1230	JH	5	W	Moderate - Good	6	12	Dry	None	None	None
05/10/2022	2	3	0900	GM	3	W	Good	6	13	Wet	Heavy Showers	None	None
05/10/2022	2	3	1230	GM	3	W	Good	6	13	Wet	Heavy Showers	None	None
05/10/2022	3	3	0900	TT	3	SW	Good	6	11	Damp	Light Showers	None	None
05/10/2022	3	3	1230	TT	5	SW	Good	8	12	Damp	Light Showers	None	None
10/10/2022	5	3	0905	TT	3	NW	Good	1	7	Dry	None	None	None
10/10/2022	5	3	1235	TT	3	NW	Good	3	13	Dry	None	None	None
10/10/2022	6	3	0900	JH	2	NW	Good	2	13	Dry	None	None	None
10/10/2022	6	3	1230	JH	3	NW	Good	4	13	Dry	None	None	None
10/10/2022	7	3	0900	TR	2	NW	Good	2	13	Dry	None	None	None

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
10/10/2022	7	3	1230	TR	2	NW	Good	2	13	Dry	None	None	None
10/10/2022	4	3	0900	GM	2	NW	Good	2	13	Dry	None	None	None
10/10/2022	4	3	1230	GM	2	NW	Good	2	13	Dry	None	None	None
07/11/2022	5	3	0900	GM	5	SW	Poor	8	13	Wet	Heavy Showers	None	None
07/11/2022	5	3	1230	GM	5	SW	Poor	8	13	Wet	Heavy Showers	None	None
07/11/2022	6	3	0855	TT	4	SW	Moderate	8	12	Wet	Heavy Showers	None	Persistent rain
07/11/2022	6	3	1225	TT	6	SW	Moderate	8	14	Wet	Heavy Showers	None	Persistent rain
07/11/2022	7	3	0900	JH	5	SW	Moderate	8	12	Wet	Heavy Showers	None	Persistent rain
07/11/2022	7	3	1230	JH	7	SW	Moderate	8	12	Wet	Heavy Showers	None	Persistent rain
07/11/2022	4	3	0900	TR	4	SW	Moderate	8	12	Wet	Heavy Rain	None	Persistent rain
07/11/2022	4	3	1230	TR	5	SW	Moderate	8	12	Wet	Heavy Rain	None	Persistent rain
15/11/2022	1	3	0900	TT	3	SE	Good	7	5	Dry	None	None	None
15/11/2022	1	3	1230	TT	5	SE	Good	4	9	Dry	None	None	None
15/11/2022	2	3	0915	SN	3	SE	Good	1	6	Dry	None	None	None
15/11/2022	2	3	1245	SN	3	SE	Good	1	6	Dry	None	None	None
15/11/2022	3	3	0900	GM	3	SW	Good	2	6	Dry	None	None	None
15/11/2022	3	3	1230	GM	3	SW	Good	2	6	Dry	None	None	None
01/12/2022	5	3	0850	TR	3	SE	Good	4	11	Dry	None	None	None
01/12/2022	5	3	1220	TR	3	SE	Good	7	11	Dry	None	None	None
01/12/2022	6	3	0730	GM	3	SE	Good	8	11	Dry	None	None	None
01/12/2022	6	3	1100	GM	3	SE	Good	8	11	Dry	None	None	None
01/12/2022	7	3	0730	TT	3	SE	Good	7	10	Dry	None	None	None
01/12/2022	7	3	1100	TT	4	SE	Good	8	11	Dry	None	None	None

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
01/12/2022	4	3	0730	JH	2	SE	Good	8	10	Dry	None	None	None
01/12/2022	4	3	1100	JH	2	SE	Good	8	10	Dry	None	None	None
12/12/2022	1	3	0730	GM	1	SE	Good	8	-5	Dry	None	None	None
12/12/2022	1	3	1100	GM	2	SE	Good	8	-1	Dry	None	None	None
12/12/2022	2	3	0737	TT	1	SE	Poor - Moderate	8	-5	Dry	None	None	None
12/12/2022	2	3	1107	TT	2	SE	Good	4	-1	Dry	None	None	None
12/12/2022	3	3	0730	TR	1	E	Poor - Moderate	1	-4	Dry	None	None	None
12/12/2022	3	3	1100	TR	1	E	Good	1	-2	Dry	None	None	None
06/01/2023	5	3	1100	JH	4	S	Good	8	10	Dry	None	None	None
06/01/2023	5	3	1430	JH	5	S	Good	8	10	Damp	Light Showers	None	None
06/01/2023	6	3	1100	TR	3	S	Moderate - Good	7	10	Wet	Heavy Showers	None	Persistent rain
06/01/2023	6	3	1430	TR	4	S	Moderate - Good	8	10	Wet	Heavy Showers	None	Persistent rain
06/01/2023	7	3	1100	GM	3	SW	Good	6	9	Damp	Light Showers	None	None
06/01/2023	7	3	1430	GM	4	SW	Good	8	12	Damp	Light Showers	None	None
06/01/2023	4	3	1100	TT	4	SE	Good	4	8	Damp	Light Showers	None	None
06/01/2023	4	3	1430	TT	4	SE	Good	7	10	Damp	Light Showers	None	None
10/01/2023	1	3	1100	TR	3	SW	Moderate	8	11	Damp	Drizzle	None	None
10/01/2023	1	3	1430	TR	4	SW	Moderate	8	11	Wet	Heavy Rain	None	Persistent rain
10/01/2023	2	3	1100	GM	3	SW	Moderate	8	11	Damp	Drizzle	None	Persistent rain
10/01/2023	2	3	1430	GM	4	SW	Moderate	8	11	Wet	Heavy Rain	None	Persistent rain
10/01/2023	3	3	1100	JH	3	SW	Moderate	8	11	Damp	Drizzle	None	Persistent rain

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
10/01/2023	3	3	1430	JH	4	SW	Moderate	8	11	Wet	Heavy Rain	None	Persistent rain
07/02/2023	5	3	0730	TT	2	S	Good	2	5	Dry	None	None	None
07/02/2023	5	3	1100	TT	2	S	Good	2	11	Dry	None	None	None
08/02/2023	6	3	0730	JH	3	S	Good	2	4	Dry	None	None	None
08/02/2023	6	3	1100	JH	3	S	Good	4	9	Dry	None	None	None
08/02/2023	7	3	0730	TR	3	S	Good	2	4	Dry	None	None	None
08/02/2023	7	3	1100	TR	3	S	Good	4	9	Dry	None	None	None
08/02/2023	4	3	0730	GM	3	S	Good	2	4	Dry	None	None	None
08/02/2023	4	3	1100	GM	3	S	Good	4	9	Dry	None	None	None
09/02/2023	1	3	0730	TR	2	SW	Good	1	3	Dry	None	None	None
09/02/2023	1	3	1100	TR	2	SW	Good	3	8	Dry	None	None	None
09/02/2023	2	3	0730	GM	2	SW	Good	1	3	Dry	None	None	None
09/02/2023	2	3	1100	GM	2	SW	Good	3	8	Dry	None	None	None
09/02/2023	3	3	0730	JH	2	SW	Good	1	3	Dry	None	None	None
09/02/2023	3	3	1100	JH	2	SW	Good	3	8	Dry	None	None	None
07/03/2023	5	3	1130	GM	3	E	Good	6	4	Dry	None	None	None
07/03/2023	5	3	1200	GM	3	NE	Good	6	4	Dry	None	None	None
07/03/2023	6	3	1200	PC	3	E	Good	6	6	Dry	None	None	None
07/03/2023	6	3	1530	PC	3	NE	Good	6	2	Dry	None	None	None
07/03/2023	7	3	1200	JH	3	E	Good	6	6	Dry	None	None	None
07/03/2023	7	3	1530	JH	3	NE	Good	6	2	Dry	None	None	None
07/03/2023	4	3	1200	TR	3	E	Good	6	6	Dry	None	None	None
07/03/2023	4	3	1530	TR	3	NE	Good	6	2	Dry	None	None	None
08/03/2023	1	3	1200	JH	4	E	Good	8	3	Dry	None	None	None
08/03/2023	1	3	1530	JH	4	E	Good	8	3	Dry	None	None	None
08/03/2023	2	3	1200	GM	5	NE	Good	8	3	Dry	None	None	None
08/03/2023	2	3	1530	GM	5	NE	Good	8	3	Dry	None	None	None

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
08/03/2023	3	3	1200	TR	2	SW	Good	8	5	Dry	None	None	None
08/03/2023	3	3	1530	TR	2	SW	Good	1	5	Dry	None	None	None
Breeding 2023													
07/04/2023	5	3	1400	TR	F3-4	SW	Good	2-6	9-13	Dry	None	None	None
07/04/2023	5	3	1730	TR	F3-4	SW	Good	2-6	9-13	Dry	None	None	None
07/04/2023	6	3	1400	JH	F4	SW	Good	6-8	9-12	Dry	None	None	None
07/04/2023	6	3	1730	JH	F4	SW	Good	6-8	9-12	Dry	None	None	None
07/04/2023	7	3	1400	PC	F4	SE	Good	6	13	Dry	None	None	None
07/04/2023	7	3	1730	PC	F4	SE	Good	6	13	Dry	None	None	None
07/04/2023	4	3	1345	TT	F4-F5	S/SE	Good	6-8	9-15	Dry	None	None	None
07/04/2023	4	3	1715	TT	F4-F5	S/SE	Good	6-8	9-15	Dry	None	None	None
11/04/2023	1	3	1400	PC	F5-6	S	Good	8	9	Damp	Light rain	None	None
11/04/2023	1	3	1730	PC	F5-6	S	Good	8	5	Damp	Light rain	None	None
11/04/2023	2	3	1400	TR	F4	SW	Moderate	8	9	Wet	Heavy rain	None	None
11/04/2023	3	3	1730	TT	F4	S	Moderate	6	5	Wet	Heavy rain	None	None
11/04/2023	2	3	1730	TR	F4	SW	Moderate	8	5	Wet	Heavy rain	None	None
11/04/2023	3	3	1400	TT	F4	S	Moderate	8	10	Wet	Heavy rain	None	None
04/05/2023	1	3	0630	JH	F4	E	Good	8	11	Dry	None	None	None
04/05/2023	1	3	1000	JH	F4	E	Good	8	11	Dry	None	None	None
04/05/2023	2	3	0630	TT	F3-4	E	Moderate	8	12-13	Dry	None	None	Haze
04/05/2023	2	3	1000	TT	F3-4	E	Moderate	8	12-13	Dry	None	None	Haze
04/05/2023	3	3	0630	TR	F3-4	E	Good	8	11	Dry	None	None	None
04/05/2023	3	3	1000	TR	F3-4	E	Good	8	11	Dry	None	None	None
05/05/2023	5	3	0630	PC	F3	S/W	Good	8	12	Dry	None	None	None
05/05/2023	5	3	1000	PC	F3	S/W	Good	8	12	Dry	None	None	None
05/05/2023	6	3	0623	TT	F3	S/W	Good	7	10-15	Dry	Few light showers	None	None

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
05/05/2023	6	3	0953	TT	F3	S/W	Good	7	10-15	Dry	Few light showers	None	None
05/05/2023	7	3	0630	JH	F2-3	S	Good	8	12-15	Damp	Some light showers	None	None
05/05/2023	7	3	1000	JH	F2-3	S	Good	8	12-15	Damp	Some light showers	None	None
05/05/2023	4	3	0630	TR	F3	SW	Good	3-7	12-15	Dry	None	None	None
05/05/2023	4	3	1000	TR	F3	SW	Good	3-7	12-15	Dry	None	None	None
06/06/2023	5	3	0710	PC	F1-2	E	Good	0	12	Dry	None	None	None
06/06/2023	5	3	1040	PC	F1-2	E	Good	0	12	Dry	None	None	None
06/06/2023	6	3	0710	SD	F1-2	E	Good	0	15	Dry	None	Heavy road traffic	None
06/06/2023	6	3	1100	SD	F1-2	E	Good	0	15	Dry	None	Heavy road traffic	None
06/06/2023	7	3	0730	TR	F3	E	Good	0	15	Dry	None	None	None
06/06/2023	7	3	1100	TR	F3	E	Good	0	15	Dry	None	None	None
06/06/2023	4	3	0730	JH	F2	E	Good	0-5	12-22	Dry	None	None	None
06/06/2023	4	3	1100	JH	F2	E	Good	0-5	12-22	Dry	None	None	None
15/06/2023	1	3	0700	GM	F1	N	Good	6	18-23	Dry	None	None	None
15/06/2023	1	3	1030	GM	F1	SE	Good	6	18-23	Dry	None	None	None
15/06/2023	2	3	0700	SD	F1	S	Good	6	12-20	Dry	None	None	None
15/06/2023	2	3	1030	SD	F1	S	Good	6	12-20	Dry	None	None	None
15/06/2023	3	3	0730	TT	F1	S	Good	5-8	16-24	Dy	None	None	None
15/06/2023	3	3	1100	TT	F1	S	Good	5-8	16-24	Dy	None	None	None
06/07/2023	5	3	0650	JH	F4-5	S	Good	8	13-14	Damp	Light showers	None	None
06/07/2023	5	3	1020	JH	F4-5	S	Good	8	13-14	Damp	Light showers	None	None
06/07/2023	6	3	0710	PC	F4-5	S	Good	5	14	Damp	Light rain	None	None
06/07/2023	6	3	1040	PC	F4-5	S	Good	5	14	Damp	Light rain	None	None

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
06/07/2023	7	3	0720	SD	F4-5	S	Poor	8	10	Wet	Mixed showers	None	Constant rain
06/07/2023	7	3	1100	SD	F4-5	S	Poor	8	10	Wet	Mixed showers	None	Constant rain
06/07/2023	4	3	0720	TR	F4	S	Good	4	13-16	Wet	Heavy showers	None	None
06/07/2023	4	3	1050	TR	F4	S	Good	4	13-16	Wet	Heavy showers	None	None
10/07/2023	1	3	0645	SD	F1	SE	Good	8	15	Damp	Showers	None	None
10/07/2023	1	3	1015	SD	F1	SE	Good	8	15	Damp	Showers	None	None
10/07/2023	2	3	0650	PC	F1	SE	Good	8	15	Dry	Some showers	None	None
10/07/2023	2	3	1020	PC	F1	SE	Good	8	15	Dry	Some showers	None	None
10/07/2023	3	3	0715	JH	F2-3	S	Good	8	14-20	Wet	Light/heavy showers	None	None
10/07/2023	3	3	1045	JH	F2-3	S	Good	8	14-20	Wet	Light/heavy showers	None	None
04/08/2023	5	3	0730	TR	F2	NW	Good	6	16	Dry	None	None	None
04/08/2023	5	3	1100	TR	F2	NW	Good	6	16	Dry	None	None	None
04/08/2023	6	3	0630	JH	F1-2	NW	Good	3-8	9-15	Dry	None	None	None
04/08/2023	6	3	1000	JH	F1-2	NW	Good	3-8	9-15	Dry	None	None	None
04/08/2023	7	3	0720	PC	F1	NW	Good	8	12	Dry	None	None	None
04/08/2023	7	3	1150	PC	F1	NW	Good	8	12	Dry	None	None	None
04/08/2023	4	3	0700	SD	F1	NW	Good	3-4	13	Dry	None	None	None
04/08/2023	4	3	1030	SD	F1	NW	Good	3-4	13	Dry	None	None	None
08/08/2023	1	3	0700	JH	F2	NW	Moderate	8	14-17	Damp	Light showers	None	Mist
08/08/2023	1	3	1030	JH	F2	NW	Moderate	8	14-17	Damp	Light showers	None	Mist
08/08/2023	2	3	0650	SD	F2	NW	Poor	8	12	Damp	Light showers	None	None

Date	V P	Duration (hr)	Start time	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
08/08/2023	2	3	1025	SD	F2	NW	Poor	8	12	Damp	Light showers	None	None
08/08/2023	3	3	0720	PC	F1	N	Good	8	13	Dry	None	None	None
08/08/2023	3	3	1050	PC	F1	N	Good	8	13	Dry	None	None	None
11/09/2023	5	3	0700	SD	F3	Wind Dir.	Good	8	14	Damp	None	None	None
11/09/2023	5	3	1030	SD	F3	Wind Dir.	Good	8	14	Damp	None	None	None
11/09/2023	6	3	0730	TR	F2	S	Good	4-8	17	Damp	Light showers	None	None
11/09/2023	6	3	1100	TR	F2	S	Good	4-8	17	Damp	Light showers	None	None
11/09/2023	7	3	0700	JH	F2	NW	Good	8	15-16	Wet	Heavy showers	None	None
11/09/2023	7	3	1030	JH	F2	NW	Good	8	15-16	Wet	Heavy showers	None	None
11/09/2023	4	3	0700	PC	F2	NW	Good	8	16	Damp	Light rain	None	None
11/09/2023	4	3	1030	PC	F2	NW	Good	8	16	Damp	Light rain	None	None
12/09/2023	1	3	0700	PC	F1	N/NW	Good	1	6	Dry	None	None	None
12/09/2023	1	3	1030	PC	F1	N/NW	Good	1	6	Dry	None	None	None
12/09/2023	2	3	0700	JH	F2-3	N	Good	3-5	9-15	Dry	None	None	None
12/09/2023	2	3	1030	JH	F2-3	N	Good	3-5	9-15	Dry	None	None	None
12/09/2023	3	3	0700	SD	F2-3	N	Good	0	10	Dry	None	None	None
12/09/2023	4	3	0830	JK	F3	NW	Good	2-4	5	Dry	None	None	None

Table A5.2: VP watches - survey effort and weather conditions – Year 3

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
Non-breeding season 2023-24														
19/10/2023	5	3.00	845	None	GO	2-3	SE	Good	4-7	14	Damp	None	None	Very slight mist
20/10/2023	6	3.00	915	BZ	GO	1-2	N	Good	8	16	Wet	Drizzle, one shower	None	Drizzle, one shower
20/10/2023	4	1.50	1245	None	GO	2-3	N	Mod-Good	8	13	Wet	Half the time	None	Rain
26/10/2023	2	3.00	1215	BH, L, CA, BZ	EM	3	S	Good	6	12	Wet	Light	None	None
26/10/2023	2	3.00	845	CA, GP, K, H	EM	3	S	Good	4-7	13	Wet	Very light shower	None	None
26/10/2023	7	3.00	1015	BZ	GO	3	SW-S	Good	2-4	12.5	Wet	None	None	None
26/10/2023	4	3.00	1400	LB, H, GB, BZ, HG, BH	GO	2-3	S-SE	Good	6-8	12.5	Wet	At first	None	Rain at first
27/10/2023	3	3.00	1045	BZ, SN, SH	EM	4-7	SE	Good	4-7	12	Wet	Light Showers	None	None
27/10/2023	1	1.50	1000	SN	EM	3	SE	Good	7	11	Wet	Showers	VP on busy road	Rained off 1645. Survey cut short.
27/10/2023	5	3.00	1330	BZ, K	GO	2-4	SE	Good	2-7	14	Wet	One light shower	Vet at cowsheds	One shower
27/10/2023	6	1.50	1345	None	GO	2-3	SE	Poor-Good	7-8	13	Wet	At end of VP	None	Rain at end of VP
27/10/2023	7	3.00	930	K, BZ	GO	2	SE	Good	1-6	12	Wet	None	One 4x4 with trailer	None
28/10/2023	1	3.00	1300	L, SN, K	EM	3	S	Good	3-5	11	Wet	None	None	None
28/10/2023	1	1.50	930	L	EM	3	SE	Good	4-5	13	Wet	None	None	None

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
28/10/2023	3	3.00	945	SN, BZ, WK, SH	EM	3	SE	Good	5-7	12	Wet	Light showers	None	None
28/10/2023	6	1.50	1315	GP	GO	2-3	SE	Good	2-6	10.5	Wet	None	Man with dog	None
28/10/2023	4	1.50	945	None	GO	2-3	SE	Good	4	13	Wet	None	None	None
15/11/2023	6	3.00	1315	None	GO	2-3	W	Good	4-6	11.5	Wet	None	None	None
15/11/2023	4	3.00	930	None	GO	2-3	W	Good	4-8	11	Wet	None	Dogs. Alsatian on the road barking	None
16/11/2023	5	3.00	1300	None	GO	3-4	W	Mod-Good	7-8	7	Wet	Showers	None	Light mist at times
16/11/2023	7	1.75	1100	None	GO	3-4	W	Good	6-8	13.5	Wet	One shower	None	One shower
20/11/2023	6	3.00	1000	K	GO	4-5	NW	Good	4-7	11	Wet	None	None	None
21/11/2023	5	3.00	1345	None	GO	2-3	NW	Good	7	7	Wet	None	None	None
21/11/2023	7	3.00	945	None	GO	2-3	NW	Good	6-8	9	Wet	None	Tractors in adjacent farm	None
23/11/2023	4	3.00	1300	BZ, SH, K	GO	4-6	NW	Mod-Good	8	9	Wet	None	None	Dusk
24/11/2023	1	3.00	1315	H, MS, ET, K	GO	1-2	N	Good	4-8	9	Wet	None	None	None
24/11/2023	3	3.00	1000	SH, K	GO	1-3	NE	Good	2-4	10	Wet	None	None	None
25/11/2023	2	3.00	1045	BZ, MS, WS, L, K, PE	GO	2-3	SE	Good	7-8	9.5	Wet	None	Dog walkers - disturbed WS	None
25/11/2023	3	3.00	1415	SH, BZ	GO	1-2	SE	Good	7-8	8	Wet	None	None	None
26/11/2023	1	3.00	900	WS	GO	1-2	SW	Mod-Good	8-7	8	Wet	Mist at first	None	Mist at first - clearing
26/11/2023	2	3.00	1245	WS, MS, SN	GO	2	W	Good	2-7	11	Wet	None	Dog walkers	None

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
27/11/2023	7	3.00	1030	None	GO	3-4	NW	Good	2-7	8	Wet	None	Farmer driving into barn	None
09/12/2023	5	3.00	1415	K	GO	5-6	W	Good	2-8	7	Wet	One shower	None	One hale shower
10/12/2023	6	3.00	930	None	GO	2-4	SW	Good	1-4	7	Wet	None	Possible traffic on road	None
10/12/2023	7	3.00	1300	None	GO	4-5	SW	Good	6-8	7	Wet	Occasional showers	None	A few showers
12/12/2023	6	3.00	1330	None	GO	1-2	W	Mod-Good	7-8	8	Wet	Light rain	None	Light rain at times
15/12/2023	4	1.50	1000	SH	GO	2	SW	Good	7-8	8	Wet	None	None	None
16/12/2023	5	3.00	1330	BZ, SH	GO	4-5	SW	Good	3-7	8	Wet	None	None	None
16/12/2023	7	3.00	1415	None	GO	4	SW	Good	4-7	10	Wet	None	One tractor into barn	None
17/12/2023	1	3.00	1030	SH	GO	4-6	SW	Good	6-8	10	Wet	None	None	None
17/12/2023	2	3.00	1415	K, WS	GO	2-4	SW	Good	6-8	10	Wet	None	One dog walker, one jogger	None
18/12/2023	1	3.00	1000	ET, WS	GO	2-3	SW	Mod-Good	7-8	10	Wet	Light mist at times	None	Light mist at times
18/12/2023	3	3.00	1315	None	GO	2-3	SW	Good	8-7	10	Wet	Occasional mist	None	Occasional mist, showers
19/12/2023	2	3.00	930	SH	GO	3-4	NW	Good	3-7	6	Wet	2 showers	None	None
19/12/2023	3	3.00	1015	None	GO	2-3	NW	Good	1-6	6	Wet	None	None	None
20/12/2023	4	1.50	1330	None	GO	5-6	W	Mod	8	7	Wet	Light mist	None	Light mist
02/01/2024	1	1.50	1045	MS, GP	GO	3-5	W	Good	5-7	7	Wet	One shower	Muck spreader x2	One shower

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
02/01/2024	2	3.00	1415	None	GO	2-3	SW	Mod-Good	4-8	6	Wet	At first, light	None	Light rain at first
03/01/2024	1	3.00	1030	H, L	GO	2-3	SW	Good	4-7	5	Wet	Light shower	Road traffic	One light shower
03/01/2024	3	3.00	845	None	GO	2-3	SW	Good	2-8	6	Wet	Light showers	None	Light showers
04/01/2024	1	1.50	915	MS, H, L, GB	GO	2-3	SW	Good	2-3	4	Wet	None	None	None
04/01/2024	2	3.00	1245	CA, L	GO	2-3	SW	Good	1-3	2	Wet	None	None	None
05/01/2024	3	3.00	1215	None	GO	2-3	NW	Good	1-4	4	Wet	None	None	None
05/01/2024	4	3.00	845	None	GO	2	NW	Good	1-2	2	Wet	None	None	None
06/01/2024	6	3.00	1015	BZ, K, GP	GO	1	NW	Good	0	-1	Wet	None	None	None
06/01/2024	7	3.00	1400	None	GO	1	NW	Good	1	4	Wet	None	None	None
07/01/2024	5	3.00	1045	None	GO	1-2	E	Poor-Mod	8	-2	Wet	None	None	Mist/fog
07/01/2024	6	3.00	1000	None	GO	1	E	Poor-Good	8	1	Wet	Mist/fog	Traffic	Mist/fog
08/01/2024	5	3.00	1330	SH	GO	2-3	E	Good	1-2	-1	Wet	None	None	None
08/01/2024	7	3.00	1345	None	GO	2-3	E	Good	2-4	2	Wet	None	None	None
09/01/2024	4	3.00	930	BZ	GO	2-3	NE	Good	7-8	-1	Wet	None	None	None
07/02/2024	5	3.00	1300	BZ	GO	1-2	N	Mod-Good	7-8	2	Wet	Mist at first	None	Mist at first
07/02/2024	4	3.00	930	K	GO	2	NE	Good	6-8	6	Wet	None	None	None
08/02/2024	6	3.00	945	None	GO	2-3	E	Mod-Good	8	4	Wet	Mist & showers at time	None	Mist and rain at times
08/02/2024	7	3.00	1315	K	GO	2-3	SE	Good	8	6	Wet	Mist, showers	None	Mist, showers
09/02/2024	5	3.00	945	BZ	GO	2	SW	Good	2-6	9	Wet	None	None	None

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
09/02/2024	6	3.00	1315	None	GO	1	SE	Mod-Good	8	6	Wet	Light rain mist at first	None	Light rain, mist at first
10/02/2024	7	3.00	930	None	GO	2	NE	Mod-Good	7-8	7	Wet	Rain and mist at times	None	Rain and mist at times
10/02/2024	4	3.00	1300	K	GO	2	SE	Mod-Good	8	6	Wet	Occasional light showers	None	Rain and mist at times
11/02/2024	1	3.00	1100	L, WS	GO	2-3	W	Good	3-6	6	Wet	One shower	Busy road	None
11/02/2024	2	3.00	1000	CA, Swan	GO	2-3	W	Good	2-6	6	Wet	None	Dog walkers	None
12/02/2024	1	3.00	1345	WS, L	GO	3-4	SW	Good	2-6	6	Wet	Occasional showers	Helicopter to NW at 1235. Farmer with 4x4 at 1325	None
12/02/2024	3	3.00	945	BZ	GO	3-4	SW	Good	2-7	6	Wet	Occasional showers	None	Occasional showers
13/02/2024	2	3.00	1300	WS	GO	2	E	Good	7-8	6	Wet	One shower	One van driving along track	One shower
13/02/2024	3	3.00	1315	None	GO	2	E	Mod-Good	7-8	7	Wet	Showers	None	Shower and light rain at end
04/03/2024	2	3.00	1000	WS, CA	GO	4-5	SW	Poor-Good	7-8	8.5	Wet	Mist, showers and light rain	None	Mist, showers and light rain
05/03/2024	5	3.00	1045	BZ	GO	4-5	SW	Good	1-4	7	Wet	None	None	None
05/03/2024	6	3.00	1415	BZ	GO	3-4	SW	Good	6-7	8	Wet	None	Busy road	None
06/03/2024	7	3.00	900	None	GO	4-5	SE	Mod-Good	3-8	7	Wet	Showers at end	None	Showers, light rain at end of watch

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
06/03/2024	4	3.00	1245	None	GO	4-5	SE	Good	6-8	9	Wet	Occasional light showers	None	Occasional light showers
07/03/2024	5	3.00	1030	BZ	GO	4-5	SE	Good	4-7	7	Wet	None	Soil sampling	None
07/03/2024	6	3.00	1415	None	GO	4-5	SE	Good	3-5	9	Wet	None	Busy road	None
08/03/2024	7	3.00	930	None	GO	4-5	E	Mod-Good	7-8	5	Wet	Light mist	2 tractors	None
08/03/2024	4	3.00	1300	SH	GO	3-5	E	Mod-Good	6-8	5	Wet	Light mist at first	None	Light mist at first
09/03/2024	1	3.00	1330	WS	GO	4-5	NE	Mod	8	3	Wet	Mist	Busy road	Mist
09/03/2024	3	3.00	1000	None	GO	3-4	NE	Mod	8	4	Wet	Light mist	None	Light mist
10/03/2024	2	3.00	1330	MS, WS, CA	GO	3-4	N	Mod-Good	7-8	4	Wet	Light mist	Two 4x4 jeeps	Light mist
10/03/2024	1	3.00	1415	None	GO	3-4	N	Mod	8	4	Wet	Light mist	None	Light mist throughout
11/03/2024	3	3.00	1030	BZ	GO	1-2	NW	Good	6-8	6	Wet	None	One helicopter and one light aircraft	None
Breeding season 2024														
22/03/2024	2	3.00	915	BZ, CA, SH, K	PD	3-4	E	Good	1-6	8	Damp	Heavy Rain	None	Heavy rain/hail showers
22/03/2024	3	3.00	1230	BZ,	PD	4	E	Good	4-5	8	Damp	Light - Heavy rain	None	None
26/03/2024	2	3.00	915	MA, K, BZ	PD	3	NE	Poor	8	6	Wet	Heavy/Moderate	None	Heavy consistent rain

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
26/03/2024	1	3.00	1230	BZ, H	PD	2-3	NE	Mod	7-8	7	Wet	Light-Heavy	None	Low cloud base/rain
27/03/2024	7	3.00	945	BZ, SN	PD	3	NW	Good	5-8	6	Wet	Light-Mod	None	None
27/03/2024	4	3.00	1300	BZ, SH	PD	4	NW	Mod	6-8	4	Wet	Light-Heavy	None	Low cloud base
28/03/2024	3	3.00	945	BZ, CA, H, SH	PD	2	W	Good	4	3	Wet	None	None	None
28/03/2024	6	3.00	1315	BZ, MA	PD	1	W	Good	6	9	Wet	None	None	None
02/04/2024	1	3.00	1300	MA, CA	PD	3	NW	Good	6-8	13	Wet	Light	None	None
06/04/2024	6	3.00	930	BZ, MA	PD	1	N	Good	5	9	Damp	None	None	None
06/04/2024	4	3.00	1245	BZ, SH, K	PD	1	N	Good	6	11	Damp	Light	None	None
09/04/2024	5	3.00	1300	HG, BZ	PD	5	SW	Good	3-6	11	Wet	Light/Heavy Rain	None	None
11/04/2024	7	3.00	930	H, BZ	PD	3	NW	Good	7-8	13	Wet	Light	None	None
11/04/2024	5	3.00	1245	None	PD	3	NW	Poor	8	14	Wet	Light-Heavy	None	Heavy rain
06/05/2024	2	3.00	1245	CA, H, MA, BZ	PD	3	SE	Good	8	14	Damp	None	None	None
08/05/2024	1	3.00	915	K, BZ, CA	PD	2-3	N	Good	7-8	12	Damp	None	None	None
09/05/2024	3	3.00	1000	BZ, MA, SH, K	PD	2-3	NW	Good	3-5	15	Damp	None	None	None
13/05/2024	2	3.00	1030	MA, CA, H	PD	4	SW	Mod	8	12	Damp	Heavy	None	Consistent rain
17/05/2024	3	3.00	1315	BZ	PD	3	N	Good	4-8	16	Damp	None	None	None
27/05/2024	1	3.00	1345	H, MA, CA, BZ	PD	3	NE	Good	7-8	13	Damp	None	Farmer digging drains	None
27/05/2024	6	1.50	1240	K	GO	2	SW	Good	7	15	Damp	None	None	None
27/05/2024	5	3.00	1425	K	GO	2-3	SW	Good	6-7	16	Moist	None	None	None

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
28/05/2024	7	3.00	925	None	GO	3-4	SW	Good	6-8	15	Moist	Short period of drizzle	None	Short period of drizzle
29/05/2024	4	3.00	1005	None	GO	2-3	NW	Good	7-8	15	Moist	One drizzle	Forage harvesters for 1 hour. Helicopter --> W over site	None
29/05/2024	5	3.00	1325	K	GO	3	NW	Good	7-8	15	Moist	None	None	None
30/05/2024	6	3.00	910	None	GO	3-5	NW	Good	4-8	16	Moist	None	Tractor spreading fertiliser, light aircraft	None
30/05/2024	7	3.00	1233	SH	GO	3-4	NW	Good	7-8	15	Moist	None	None	None
30/05/2024	6	1.50	1615	None	GO	2-3	NW	Good	7-8	15	Moist	None	None	None
31/05/2024	4	3.00	825	None	GO	2-3	N	Good	4-7	13	Moist	None	Silage harvesting	Light heat haze
19/06/2024	5	3.00	1035	None	GO	2-3	N	Good	4-6	18.5	Dry	None	Silage harvester, quad bike	None
19/06/2024	6	1.50	1420	None	GO	2	N	Good	2-3	17.5	Dry	None	None	None
20/06/2024	7	3.00	1035	BZ	GO	2	SW	Good	4-8	18	Dry	None	Tractor into barn twice, cutting silage.	None
20/06/2024	4	3.00	1635	None	GO	2-3	SW	Good	6-8	18	Dry	None	Silage tractor and trailer in and out. Cows out after milking	None

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
21/06/2024	5	3.00	715	BZ	GO	4-5	S	Good	8	14	Dry	Light, short spell	None	None
21/06/2024	6	3.00	1354	None	GO	3-4	SW	Good	7-8	15	Damp	Light at first	None	Light rain at first
22/06/2024	7	3.00	850	PE	GO	2-3	SW	Good	6-8	18	Moist	None	None	None
22/06/2024	6	1.50	1225	None	GO	2-3	S	Good	7-8	19	Moist	None	None	None
22/06/2024	4	3.00	1415	BZ, H	GO	2-3	SW	Good	7-8	19	Damp	None	None	None
27/06/2024	1	3.00	1125	None	GO	4-5	N	Good	6-8	14	Moist	Occasional showers	No, busy road	Occasional showers
27/06/2024	2	3.00	1435	None	GO	5-6	N	Good	6-8	14	Moist	None	One farmer in a 4x4	None
28/06/2024	3	3.00	950	None	GO	3-4	N	Good	4-8	14	Damp	None	None	None
28/06/2024	1	3.00	1315	BZ	GO	3-4	N	Good	4-8	18	Moist	None	Helicopter to SE	None
29/06/2024	3	3.00	730	None	GO	1-2	SE	Good	8	17	Moist	At end of watch	None	Rain at end
29/06/2024	2	3.00	1040	None	GO	2-3	N	Mod	7-8	17	Moist	Light and Mist	Slurry spreader x 8 times	light rain, mist
14/07/2024	5	3.00	925	None	GO	2	S	Good	7-8	15	Dry	None	Light aircraft -- > W <-- E	None
14/07/2024	6	3.00	1250	None	GO	2-3	S	Good	2-3	14.5	Damp	Light, at times	Busy road!	Light rain at times
15/07/2024	7	3.00	905	None	GO	2	NE	Mod-Good	7-8	15	Damp	Light at first	None	Light rain at first
15/07/2024	4	3.00	1235	None	GO	2-3	E	Good-Mod	7-8	17	Damp	None	Tractor spreading fertiliser	Mist at times
16/07/2024	5	3.00	915	BZ	GO	3-4	NW	Good	4-8	14	Damp	None	Digger moving sileage bales	None
16/07/2024	6	3.00	1255	BZ	GO	3-4	NW	Good	4-8	22.5	Damp	None	None	None

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
17/07/2024	7	3.00	925	BZ	GO	3-4	S	Good	4-8	18	Damp	None	None	None
17/07/2024	4	3.00	1250	SH, BZ	GO	3-4	S	Good	7-8	19	Damp	None	None	None
23/07/2024	1	3.00	1020	None	GO	1	NE	Good	7-8	16	Damp	None	None	None
23/07/2024	2	3.00	1340	None	GO	1	NE-SW	Good	8	18	Damp	None	Tractor, van, dog walker	None
24/07/2024	3	3.00	925	SH	GO	4-5	S	Good	7-8	15	Damp	Shower at first	None	None
24/07/2024	1	3.00	1305	H	GO	3	SW-W	Good	8-4	16	Damp	None	Busy road	None
24/07/2024	2	3.00	1635	K, SH	GO	2-3	W	Good	4-7	17	Damp	None	None	None
25/07/2024	3	3.00	920	None	GO	3-4	SW	Good	7-8	16	Moist	None	One light aircraft	None
21/08/2024	5	3.00	1035	BZ	GO	4-5	SW	Good	7-8	15	Moist	Occasional showers/drizzle	None	Occasional showers, drizzle
21/08/2024	6	3.00	1410	None	GO	4-5	SW	Good	7-8	19	Damp	None	One tractor	None
22/08/2024	7	3.00	850	SH	GO	2-4	W	Good	7-8	15	Moist	Occasional light drizzle	4x4 jeep	Light drizzle on 2 occasions
22/08/2024	4	3.00	1221	None	GO	3-4	SW	Good	7-8	15	Damp	3 short showers	None	3 showers (short)
22/08/2024	7	3.00	1550	None	GO	2-3	SW	Good-Mod	7-8	15.5	Wet	Showers increasing	None	Showers getting heavier
23/08/2024	1	3.00	910	BZ	GO	2-4	NW	Good	2-8	16	Damp	One shower	Busy road, otherwise none.	One shower
23/08/2024	2	3.00	1240	None	GO	2-3	NW	Good	4-6	18	Damp	None	One tractor in and out	None

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
23/08/2024	3	3.00	1610	None	GO	3-5	SW	Good	4-8	16	Damp	Occasional showers/rain	None	Occasional showers/rain
24/08/2024	1	3.00	835	K, H	GO	2-4	SW	Good	1-6	16	Damp	One shower	Busy road	None
24/08/2024	4	1.50	1725	None	GO	4-5	SW	Good	4	18.5	Damp	None	None	None
28/08/2024	6	3.00	1025	None	GO	2-3	SW	Good	7-4	14	Damp	None	None	None
28/08/2024	5	3.00	1405	None	GO	3-4	SW	Good	2-4	18	Damp	None	None	None
29/08/2024	2	3.00	840	None	GO	2-3	W	Good	2-7	15	Damp	Two short showers	No (one walker)	2 short showers
29/08/2024	3	3.00	1450	BZ	GO	2-4	NW	Good	2-4	19	Damp	None	None	None
29/08/2024	4	1.50	1801	None	GO	2-3	NW	Good	6	17	Damp	None	None	None
04/09/2024	6	3.00	1220	None	GO	3-4	NW	Good	4-8	12	Damp	Light showers	One car driving over fields	3 light showers
04/09/2024	5	1.50	1550	None	GO	4	NW	Good-Mod	7-8	13	Damp	Rain + Drizzle	None	Rain + drizzle
05/09/2024	3	3.00	1735	None	GO	2-3	NE	Good	5-7	17	Damp	None	Farmer loading cattle	None
05/09/2024	7	3.00	1040	None	GO	3-4	NE	Good	4-8	13	Damp	None	None	None
05/09/2024	4	3.00	1410	K	GO	4-5	N	Good	7-8	16	Damp	None	None	None
05/09/2024	7	3.00	1735	None	GO	2-3	NE	Good	5-7	17	Damp	None	Farmer loading cattle	None
06/09/2024	2	3.00	815	None	GO	2	NW	Good	8	16.5	Damp	None	Farmer with 4x4	None
06/09/2024	1	3.00	1145	BZ, MS	GO	3	NW	Good	7-8	19	Damp	None	No (busy road)	None
11/09/2024	5	3.00	1440	None	GO	4-5	NW	Good	6-8	16	Moist	None	One tractor	None
12/09/2024	6	3.00	1010	None	GO	2-3	NW	Good	3-6	13	Damp	None	None	None
12/09/2024	7	3.00	1340	None	GO	4-5	NW	Good	2-7	15	Damp	One shower	None	One shower
13/09/2024	1	3.00	910	None	GO	1-3	S	Good	6-8	10	Damp	One shower	Busy road	One shower

Date	VP	Duration (hr)	Start Time	Target Species BTO codes – collision risk species	Surveyor	Wind Force (Beaufort)	Wind Dir.	Vis.	Cloud (oktas)	Temp. (°C)	Ground Cond.	Rain	Disturbance	Factors affecting visibility
13/09/2024	2	3.00	1635	K, BZ	GO	3-4	SW	Good-Mod	7-8	15	Moist	Drizzle at end	one 4x4	Shower and drizzle at end
13/09/2024	4	3.00	1325	None	GO	2-3	S	Good	7-8	10	Moist	None	None	None
14/09/2024	3	3.00	805	SH	GO	4-5	SW	Good	6-8	14	Moist	None	None	None
14/09/2024	5	1.50	1155	None	GO	4-5	S	Good	7-8	15	Moist	None	One tractor	None
22/03/2024	2	3.00	915	BZ, CA, SH, K	PD	3-4	E	Good	1-6	8	Damp	Heavy Rain	None	Heavy rain/hail showers

Table A5.3: Breeding bird survey effort during breeding season 2022

Visit	Date	Survey Type	Start times	Duration (hrs)	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
1	19/04/2022	Walkover	1530	2.5	JK	F3	NW	3-4	11	Heavy showers
2	27/05/2022	Walkover	1145	2.5	JK	F3	NW	2-3	16	None
3	17/06/2022	Walkover	1215	2.25	JK	F3	SW	6-7	18	None
4	25/07/2022	Walkover	0730	2.25	JK	F4	NW	6-7	14	None
5	26/08/2022	Walkover	1145	2.5	JK	F3	NE	3-4	16	None

Table A5.4: Breeding bird survey effort during breeding season 2023

Visit	Date	Survey Type	Start times	Duration (hrs)	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
1	09/05/2023	Walkover	0900	4.5	SD	F1-2	N	7	12-13	None
1	22/05/2023	Walkover	1145	1.75	TR	F3	N	1-2	15	None
2	17/07/2023	Walkover	0700	5	SD	F1-2	S	1-2	13-15	None
3	04/09/2023	Walkover	0900	4	PC	1	SE	1-2	16	None
3	05/09/2023	Walkover	1015	1.75	SD	4	S	3-4	19	None

Table A5.5: Breeding bird survey effort during breeding season 2024

Visit	Date	Survey Type	Start times	Duration (hrs)	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
1	15/03/2024	Walkover	900	7.5	EM	3	W	4	12	None
2	02/04/2024	Walkover	830	2.17	PD	2	N	3-4	10	None
2	09/04/2024	Walkover	845	3	PD	4	SSE	5-7	11	None
3	15/04/2024	Walkover	845	6.25	PD	4	S	8	10	Scattered showers
3	06/05/2024	Walkover	840	2.84	PD	2	WNW	5-6	13	None
3	08/05/2024	Walkover	1120	2.33	PD	3	SE	5-7	15	None
3	09/05/2024	Walkover	1200	3.25	PD	3	SSE	5-6	18	None
4	17/05/2024	Walkover	905	3	PD	3	N	5-6	15	None
5	17/07/2024	Walkover	1340	6	PD	4	SSE	7-8	15	Light
4	29/07/2024	Walkover	855	5	PD	3-4	W	3-6	17	None

Table A5.6: Dusk survey effort during the 2023 breeding season

Visit No	Date	Survey Type	Start time	Duration (hrs)	Sunrise/sunset time	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
	05/04/2023	Dusk	1700	3.50	1958	TR	F3	SW	6	13-15	None
	17/04/2023	Dusk	1835	3.00	2037	TT	F3	SE	1	10	None

Table A5.7: Dusk survey effort during the 2024 breeding season

Visit No	Date	Survey Type	Start time	Duration (hrs)	Sunrise/sunset time	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
1	20/06/2024	Dusk	2100	2.00	2211	GO	0-3	W	N/A	Mild	Dry
2	22/06/2024	Dusk	2100	2.00	2212	GO	0-3	W	N/A	Mild	Intermittent or drizzle
3	27/06/2024	Dusk	2110	1.83	2211	GO	4-6	W	N/A	12	Intermittent or drizzle
4	28/06/2024	Dusk	2035	2.50	2211	GO	0-3	SW	N/A	10	Intermittent or drizzle
5	15/07/2024	Dusk	2040	2.17	2158	GO	0-3	W	N/A	Mild	Dry
6	16/07/2024	Dusk	2050	2.00	2157	GO	0-3	W	N/A	Mild	Dry

Visit No	Date	Survey Type	Start time	Duration (hrs)	Sunrise/sunset time	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
7	24/07/2024	Dusk	2045	2.00	2146	GO	0-3	W	N/A	17	Dry
8	30/07/2024	Dusk	2030	2.00	2136	GO	0-3	NW	N/A	15	Dry
9	23/08/2024	Dusk	1945	2.00	2045	GO	0-3	S	N/A	14	Dry
10	29/08/2024	Dusk	1945	2.00	2031	GO	0-3	W	N/A	16.5	Dry

Table A5.8: Breeding raptor survey effort during the 2022 breeding season

Visit	Date	Survey Type	Start times	Duration (hrs)	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
1	20/04/2022	Raptor	1230	6.75	TT	F3	SE	4	11-15	None

Table A5.9: Breeding raptor survey effort during the 2023 breeding season

Date	Survey Type	Start times	Duration (hrs)	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
04/04/2023	Peregrine	1000	5.00	JM	F2-3	S	6	10	None
18/05/2023	Peregrine	1000	4.00	JM	F1-3	SE		13-15	None
08/06/2023	Peregrine	0640	6.00	JH	F2	E	4-7	12-20	None
12/06/2023	Raptor	0830	5.00	SN	F2-3	NW	8	15	None
16/06/2023	Peregrine	0700	5.50	JH	F3-4	SE	8	15-18	Light drizzle
07/07/2023	Peregrine	0645	5.00	JH	F4-5	S	8	17-19	Light drizzle
12/07/2023	Raptor	0700	5.75	JH	F3	W	8	14-17	Light drizzle

Table A5.10: Breeding raptor survey effort during the 2024 breeding season

Date	Survey Type	Start times	Duration (hrs)	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
13/05/2024	Raptor	1345	3	PD	4	SW	7	16	None
27/05/2024	Raptor	1030	3	PD	3	NE	5-8	11	Light showers
28/05/2024	Raptor	745	6	PD	3	E	8	13	Light showers
02/06/2024	Raptor	1410	2.33	GO	2	SW	4-8	18	None
21/06/2024	Raptor	1015	3.66	GO	2-4	S-SW	7-8	18	Light
28/06/2024	Raptor	1615	2.25	GO	2	WNW	NA	15	None
30/06/2024	Raptor	1040	4	GO	1-2	SE	4-8	18	None
14/07/2024	Raptor	1550	3	GO	2-3	S	4-6	15	None
15/07/2024	Raptor	1535	2.5	GO	2-3	E	7-8	15	Occasional showers
16/07/2024	Raptor	1555	3	GO	3-4	NW	8	18	None
30/07/2024	Raptor	1830	1.66	GO	1-2	N	2	17	None
31/07/2024	Raptor	711	7.33	GO	1	SE	NA	15	None
04/08/2024	Raptor	1015	9	GO	4-6	S	4-8	18	None
05/08/2024	Raptor	910	8	GO	3-4	S	8	16	Light mist

Table A5.11: Barn owl survey effort during the 2022 breeding season

Date	Survey Type	Start time	Duration (hrs)	Sunrise/sunset time	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
26/06/2022	Building inspection	NA	NA		MO'C	F4	NW	3-4	13-17	Light showers
20/08/2022	Dusk	NA	NA	2049	MO'C	F4	SW	3-4	14-18	Light showers

Table A5.12: Barn owl survey effort during the 2023 breeding season

Date	Survey Type	Start time	Duration (hrs)	Sunrise/sunset time	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
16/05/2023	Building inspection	1525	5.00	2127	MO'C	F3	NW	3-4	16	None
24/05/2023	Dusk	2120	4.50	2137	MO'C	F2	NW	7	14	None
06/08/2023	Dusk	2110	2.00	2120	MO'C	F3	WNW	2	13	None

Table A5.13: Winter walkover survey effort during the non-breeding season 2021-22

Date	Survey Type	Start time	Duration (hrs)	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
14/10/2021	Walkover	08:40	Not Specified	JK	F2	SE	6-7	11	None
19/11/2021	Walkover	12:00	Not Specified	JK	F3	SE	6-7	13	None
23/12/2021	Walkover	12:00	Not Specified	JK	F3	S-SW	1-2	12	None
21/01/2022	Walkover	11:45	Not Specified	JK	F2	SW	6-7	6	None
21/02/2022	Walkover	11:45	2.35	JK	F6	NW	4-5	9	None
16/03/2022	Walkover	09:15	2.05	JK	F3	W-NW	3-4	7	None

Table A5.14: Winter walkover survey effort during the non-breeding season 2022-23

Date	Survey Type	Start time	Duration (hrs)	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
09/11/2022	Walkover	0930	5.5	TR	F3	SW	5	10-13	None
11/11/2022	Walkover	1140	1	TR	F5	S	8	14	Light rain
11/01/2023	Walkover	1110	4.5	TR	F5	SW	8	14	Heavy rain
12/01/2023	Walkover	1100	1	TR	F4	SW	2	8	None
06/03/2023	Walkover	1200	0.50	TR	F3	W	8	8	Light rain
21/03/2023	Walkover	0815	4	PC	F2-3	SW	7	10	None

Table A5.15: Winter walkover survey effort during the non-breeding season 2023-24

Date	Survey Type	Start time	Duration (hrs)	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
03/01/2024	Walkover	1015	5.75	AR	3	SW	7	11	2 very light showers
04/01/2024	Walkover	1000	7	AR	4	NW	5	9	None
15/03/2024	Walkover	900	7.5	EM	3	W	4	12	None

Table A5.16: Wintering waterbird survey effort during the non-breeding season 2022-23

Date	Survey Type	Start time	Duration	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
28/10/2022	Waterbird	Not Specified	NA	TT	F4	S	8	16	None
16/11/2022	Waterbird	Not Specified	NA	TT	F1	SE	2	16	None
15/12/2022	Waterbird	Not Specified	NA	TT	F1	NW	8	-1	None
11/01/2023	Waterbird	Not Specified	NA	TT	F5	SW	8	7	Light showers
14/02/2023	Waterbird	Not Specified	NA	TT	F3	SE	8	12	None
19/03/2023	Waterbird	Not Specified	NA	TT	F3	SE	8	7	Light showers

Table A5.17: Wintering waterbird survey effort during the non-breeding season 2023-24

Date	Survey Type	Start time	Duration (hrs)	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
02/11/2023	Waterbird	840	5.50	PD	F4	WSW	6	11	Light-moderate showers
03/11/2023	Waterbird	1010	2.00	PD	F4	W	4	13	None
22/12/2023	Waterbird	1030	3.00	JH	F5	NW	8	8	Light-moderate showers
22/12/2023	Waterbird	1030	3.50	GM	F8	NW	8	8	Light-moderate showers
18/01/2024	Waterbird	1100	3.25	JH	F1	NW	0	0.1	None
23/02/2024	Waterbird	1015	2.25	GM	F3	SW	8	3	Frequent heavy showers
23/02/2024	Waterbird	1000	3.75	JH	F3	SW	8	2	Occasional moderate showers
20/03/2024	Waterbird	600	4.00	GM	F3	W	7	8	None
21/03/2024	Waterbird	945	2.75	GM	F4	W	6	14	None
21/03/2024	Waterbird	930	2.75	JH	F5	SW	7	11	None

Table A5.18 Hen harrier roost watch survey effort undertaken during the non-breeding season 2023-24

Date	Survey Type	Start time	Duration (hrs)	Sunrise/sunset time	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
03/11/2023	HH Roost Watch	845	2.00	731	PD	F1	NE	2	Cold	None
17/12/2023	HH Roost Watch	1645	1.25	1618	GO	F1	S	4-6	10	Intermittent/drizzle
02/01/2024	HH Roost Watch	1545	1.50	1632	GO	F1-2	SW	0-6	6	Occasional light showers
04/01/2024	HH Roost Watch	1530	1.75	1634	GO	F1	SW	0-3	4	None

Date	Survey Type	Start time	Duration (hrs)	Sunrise/sunset time	Surveyor	Wind Force (Beaufort)	Wind Dir	Cloud (oktas)	Temp. (°C)	Rain
11/02/2024	HH Roost Watch	1615	2.00	1738	GO	F1-2	W	0-3	8	Intermittent/drizzle

Table A5.19: Whooper swan survey (WSS) effort undertaken during the non-breeding season 2021-22

Date	Survey Type	Start time	Duration (hrs)	Observer	Wind Force (Beaufort)	Wind Direction	Cloud (oktas)	Temp. (°C)	Rain
27/10/2021	WSS	1130	1.5	JK	F3	SW	6-7	16	Showers
15/11/2021	WSS	1030	1.25	JK	F2	W	6-7	10	None
17/11/2021	WSS	1050	1.50	JK	F3	SW	3-4	12	None
26/11/2021	WSS	1000	NA	JK	F5	NW	3-4	8	None
30/11/2021	WSS	1030	1.3	JK	F3	WSW	6-7	11	None
14/12/2021	WSS	1040	1.15	JK	F3	SE	3-5	6	None
17/12/2021	WSS	1045	1.15	JK	F4	SW	3-4	8	None
28/12/2021	WSS	1045	1.15	JK	F3	SW	6-7	9	None
30/12/2021	WSS	1045	3.15	JK	F3	SW	6-7	12	Showers
27/01/2022	WSS	0729	4.49	GM	F1	SW	6-8	6	Scattered drizzle
27/01/2022	WSS	1315	3.4	GM	F1-2	W	6-8	9	None
25/02/2022	WSS	0635	0.5	GM	F1-2	SW	6-7	3	None
25/02/2022	WSS	1405	1.2	GM	F1-2	SW	6-8	12	Showers
28/02/2022	WSS	1644	0.5	GM	F1-2	NW	2-3	10	None
27/03/2022	WSS	1520	1	GM	F1-2	SW	2-3	18	None

Table A5.20: Whooper swan survey effort undertaken during the non-breeding season 2022-23

Date	Survey Type	Start time	Duration (hrs)	Observer	Wind Force (Beaufort)	Wind Direction	Cloud (oktas)	Temp. (°C)	Rain
27/10/2022	WSS	830	6.50	JH	4-5	S	6	15	Light showers
23/11/2022	WSS	1100	6.50	GM	4-5	SW	8	9	None
14/12/2022	WSS	730	6.50	JH	1	NE	0	-1 to 2	None
13/01/2023	WSS	1100	5.00	GM	2	SW	4	8	None

Date	Survey Type	Start time	Duration (hrs)	Observer	Wind Force (Beaufort)	Wind Direction	Cloud (oktas)	Temp. (°C)	Rain
15/02/2023	WSS	730	6.50	JH	2-3	SW	3-8	11	None

Table A5.21: Whooper swan survey effort undertaken during the non-breeding season 2023-24

Date	Survey Type	Start time	Duration (hrs)	Observer	Wind Force (Beaufort)	Wind Direction	Cloud (oktas)	Temp. (°C)	Rain
26/10/2023	WSS	0725	7.00	GM	F3	SE	3-4	11	Showers
22/11/2023	WSS	1100	6.75	JH	F3-4	W	3-4	11	Light drizzle
21/12/2023	WSS	0730	6.50	GM	F6	WNW	8	11	Frequent showers
17/01/2024	WSS	1030	7.00	GM	F2	NNW	6	-2	None
22/02/2024	WSS	0645	6.50	GM	F3	SW	6	5	Some showers
20/03/2024	WSS	1300	6.50	JH	F3-4	N	2-3	11	None

Table A5.22: Whooper swan flight speed (WSFS) survey effort undertaken during the non-breeding season 2023-24

Date	Survey Type	Start time	Duration (hrs)	Surveyor	Wind Force (Beaufort)	Wind Dir.	Visibility	Cloud	Temp.	Rain	Disturbance
								(oktas)	(°C)		
22/11/2023	WSFS	1700	0.5	GM/JH	3-4	WSW	Good	6	11	Drizzle	None
28/11/2023	WSFS	0645	NA ¹	GM/JH	2	E/SE	Excellent	3-4	-1	None	None
22/12/2023	WSFS	0730	2.45	GM/JH	4-5	W	Good	3-4	10	Drizzle	None
11/01/2024	WSFS	1100	6.5	GM/TT	2	SE	Good	5-6	5	None	None
18/01/2024	WSFS	0715	8.75	GM/JH	0	None	Excellent	1-2	-5	None	None
23/02/2024	WSFS	0645	3.5	GM/JH	3	W/SW	Good	5-6	3	Frequent showers	None
21/03/2024	WSFS	0555	2	GM/JH	3-4	W/NW	Excellent	5-6	8	None	None

¹ No flight speed test as WS roosted on foraging grounds the previous night.

APPENDIX V: VANTAGE POINT (VP) SURVEY FLIGHTLINE MAPS AND TABLES

Year 1 and Year 2

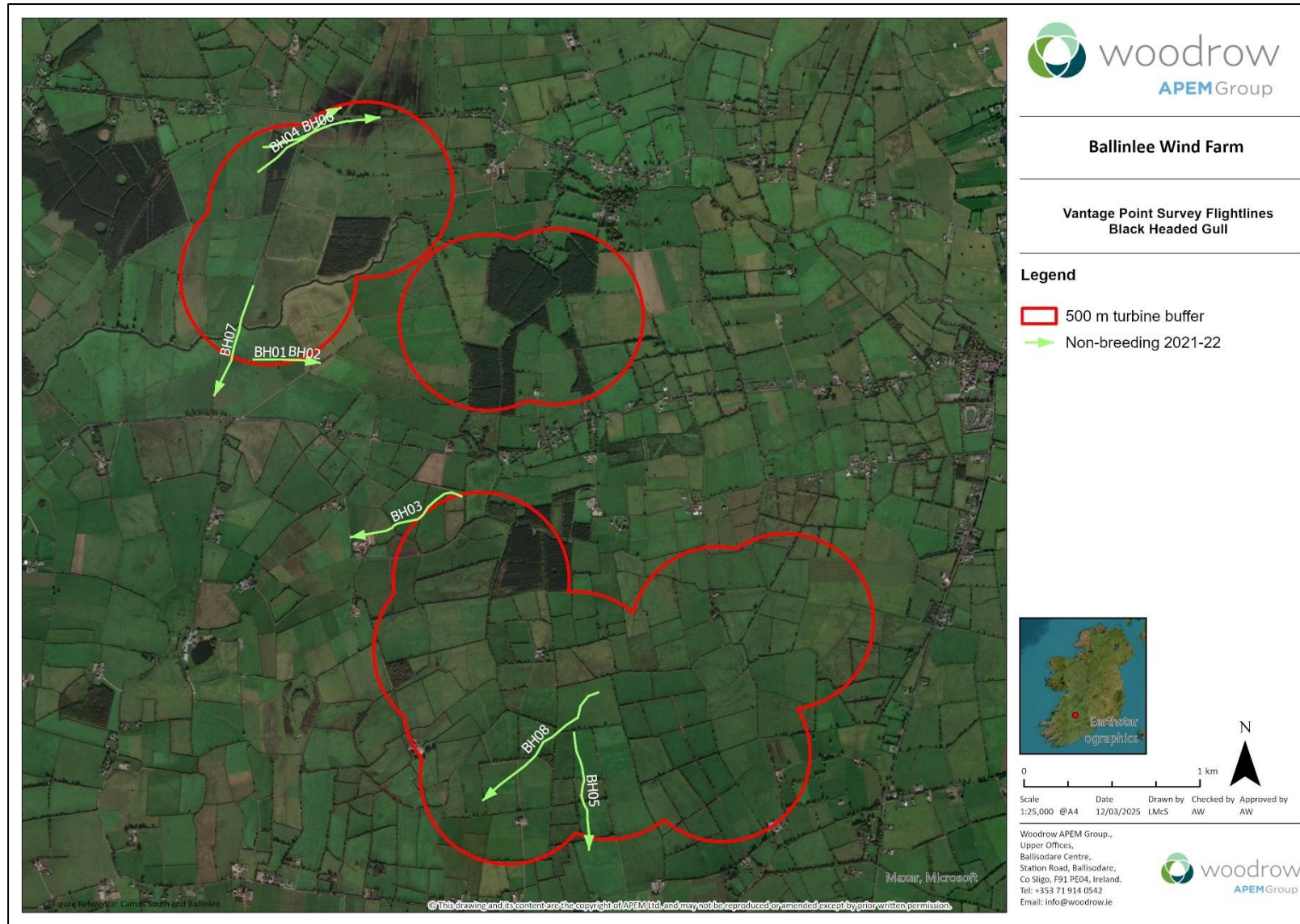


Figure A6.1: Black-headed gull observations recorded during VP watches (non-breeding season 2021-22)

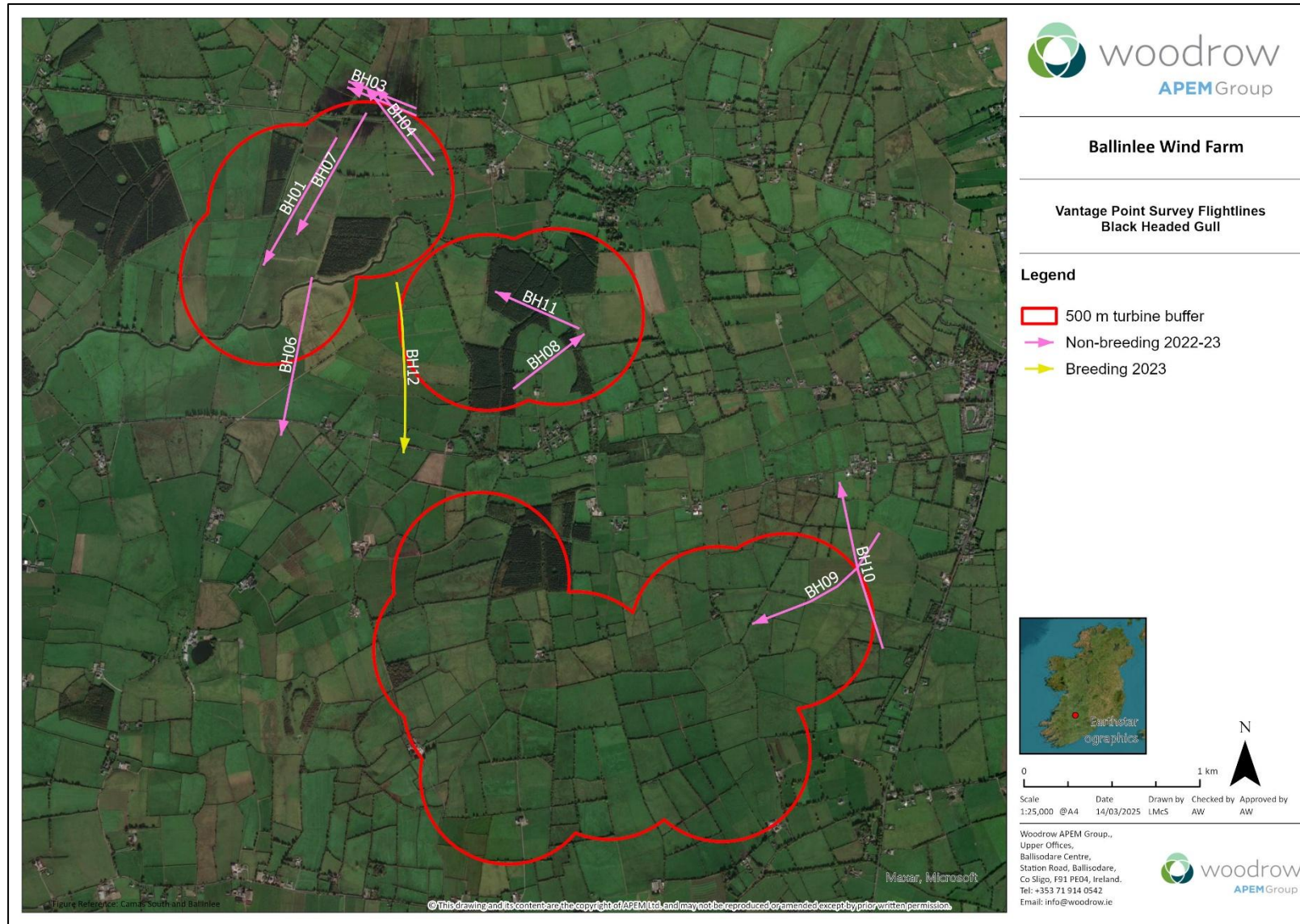


Figure A6.2: Black-headed gull observations recorded during VP watches (non-breeding season 2022-23 & breeding season 2023)

Table A6.1: Black-headed gull

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BH01	Non-breeding 2021-22	2	11/11/2021	13:45	1	10		40						A	Flying	
BH02	Non-breeding 2021-22	2	11/11/2021	13:45	1	10		20						A	Flying	
BH03	Non-breeding 2021-22	4	04/12/2021	10:27	25			51						A	Flying	
BH04	Non-breeding 2021-22	1	08/12/2021	13:24	8	30			28					A	Flying	
BH05	Non-breeding 2021-22	3	21/12/2021	10:51	5				42					A	Flying	
BH06	Non-breeding 2021-22	1	10/01/2022	09:50	10	30		45						A	Flying	
BH07	Non-breeding 2021-22	2	13/01/2022	10:22	8	6			30					A	Flying	
BH08	Non-breeding 2021-22	3	20/01/2022	12:10	25				63					A	Flying	
BH01	Non-breeding 2022-23	1	15/11/2022	09:13	28	30-40			25					A	Flying	
BH02	Non-breeding 2022-23	1	15/11/2022	09:59	18	0-50			25					A	Flying	
BH03	Non-breeding 2022-23	1	15/11/2022	10:07	23	0-20		20						A	Flying	Landed flooded area

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BH04	Non-breeding 2022-23	1	15/11/2022	10:09	24	0-60				20				A	Flying	Landed flooded area
BH05	Non-breeding 2022-23	1	15/11/2022	10:13	5	0-50			10					A	Flying	Landed flooded area
BH06	Non-breeding 2022-23	2	15/11/2022	10:19	33	50-100				180				A	Flying	Landed flooded area
BH07	Non-breeding 2022-23	1	15/11/2022	10:44	51	0-40		55	55					A	Flying	Flew south
BH08	Non-breeding 2022-23	3	12/12/2022	12:22	1	0-20		15							Flying	Going south
BH09	Non-breeding 2022-23	6	06/01/2023	11:35	3	20-50			140						Flying	Going east
BH10	Non-breeding 2022-23	6	06/01/2023	16:26	20	0-50		20	20						Flying	Slow flight
BH11	Non-breeding 2022-23	3	10/01/2023	15:51	3	0-20		79							Flying	Travelling through Going north
BH12	Breeding 2023	2	11/04/2023	18:30	1			30						A	Flying	Travelling north east

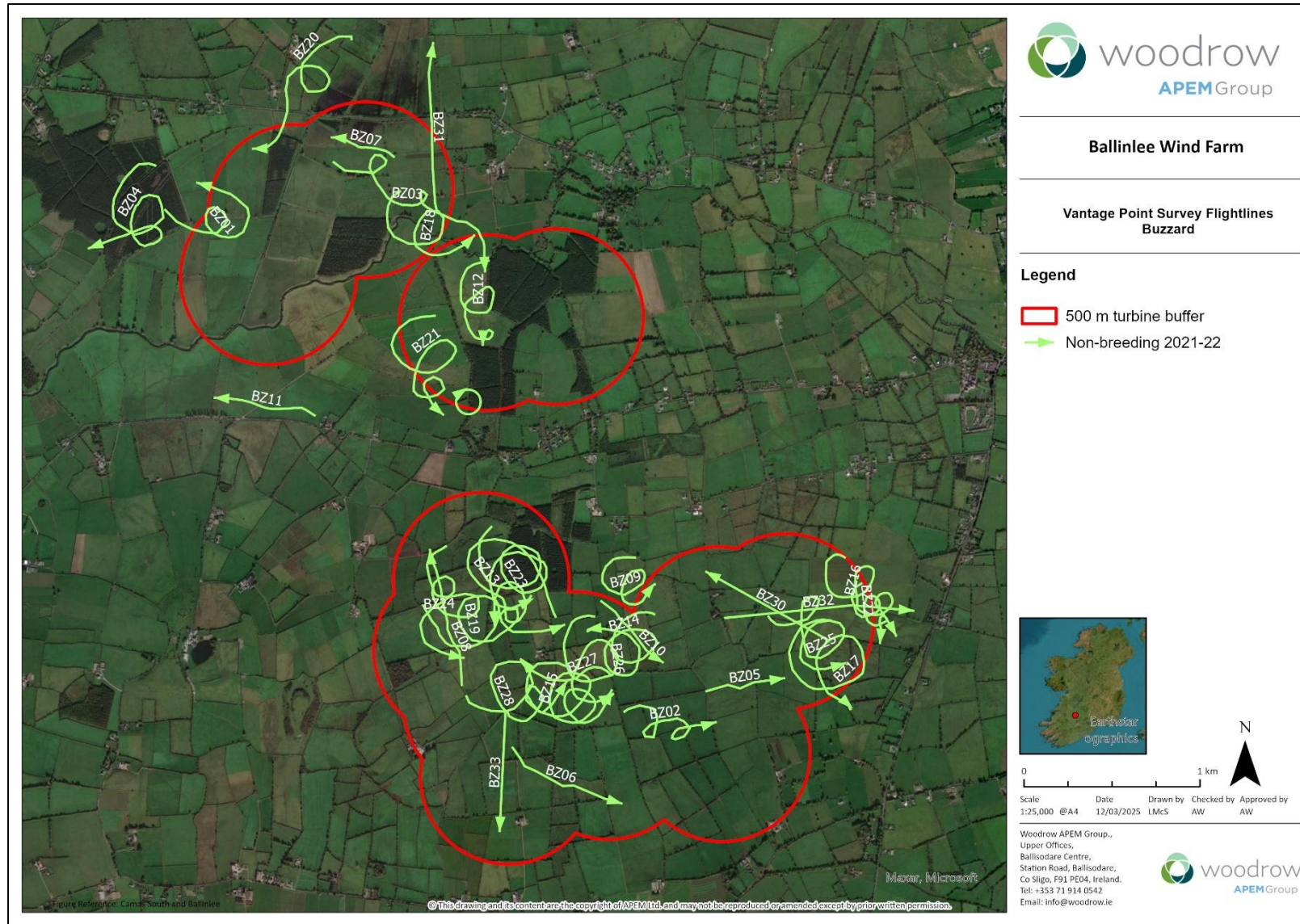


Figure A6.3: Buzzard observations recorded during VP watches (non-breeding season 2021-22)

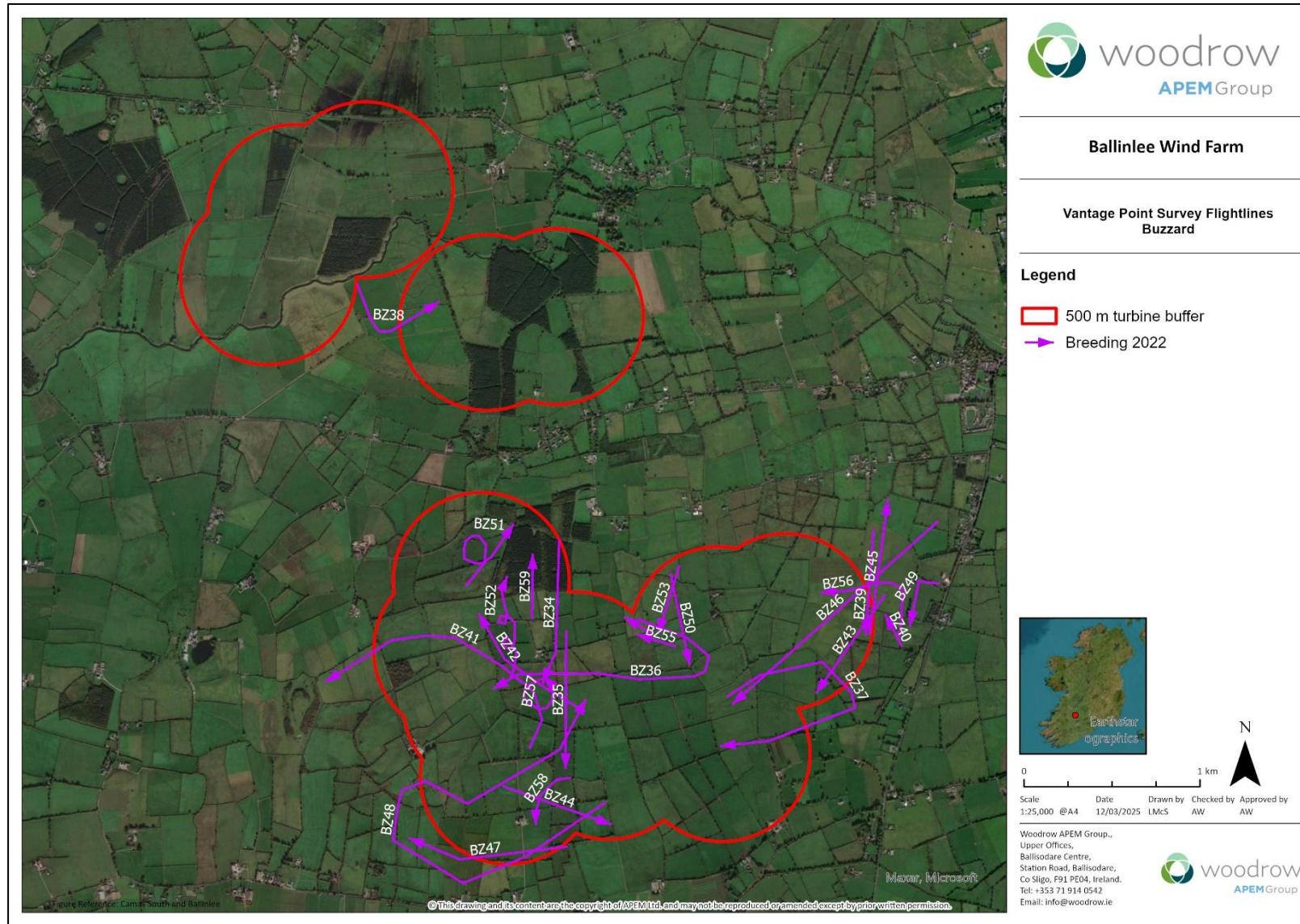


Figure A6.4: Buzzard observations recorded during VP watches (breeding season 2022)

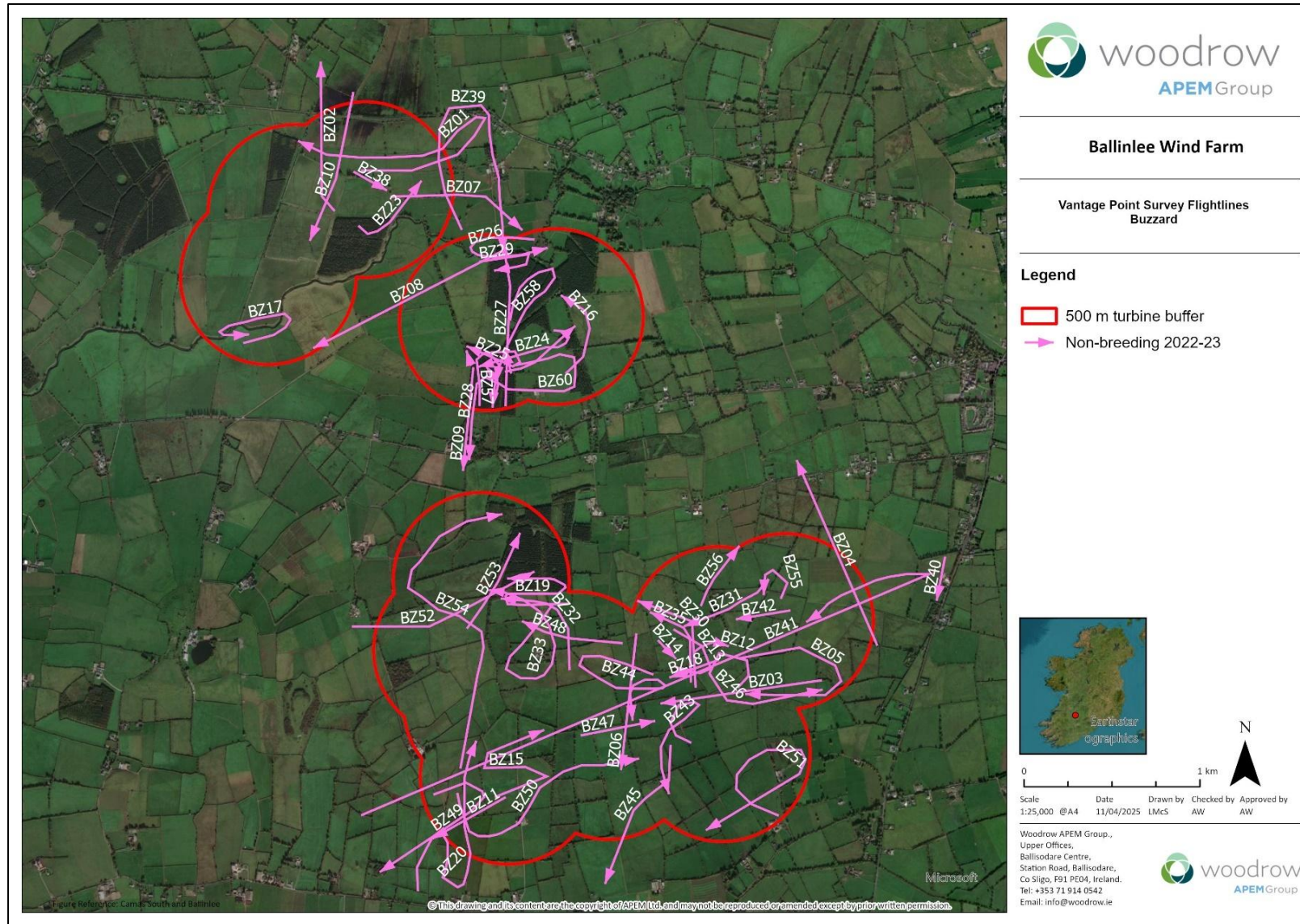


Figure A6.52: Buzzard observations recorded during VP watches (non-breeding season 2022-23)



Table A6.2: Buzzard

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ01	Non-breeding 2021-22	2	05/10/2021	13:18	1	50-100				300					Flying	
BZ02	Non-breeding 2021-22	7	03/11/2021	14:08	1	100				48				A	Soaring	
BZ03	Non-breeding 2021-22	2	08/12/2021	11:09	4	50-100				1500				A	Soaring	
BZ04	Non-breeding 2021-22	2	08/12/2021	11:38	4	50-100				1200				A	Soaring	
BZ06	Non-breeding 2021-22	7	21/12/2021	10:24	1	25			30				M	A	Flying	
BZ05	Non-breeding 2021-22	5	21/12/2021	12:42	1	30			22				F	A	Flying	
BZ07	Non-breeding 2021-22	1	13/01/2022	13:05	1	20-50			32						Flying	
BZ08	Non-breeding 2021-22	4	17/01/2022	10:17	1	20		42						A	Flying	
BZ09	Non-breeding 2021-22	5	25/01/2022	13:09	1	80				120				A	Soaring	
BZ10	Non-breeding 2021-22	5	25/01/2022	13:37	1	50			22					A	Flying	
BZ11	Non-breeding 2021-22	2	04/02/2022	12:50	1	20-50			38				F	A	Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ12	Non-breeding 2021-22	2	04/02/2022	13:11	1	50-100				240				A	Soaring	
BZ13	Non-breeding 2021-22	4	09/02/2022	13:05	1	40			180					A	Flying/Circling	
BZ14	Non-breeding 2021-22	5	11/02/2022	11:16	4	60				480				A	Soaring/Circling	
BZ15	Non-breeding 2021-22	7	11/02/2022	12:05	2	100				720				A	Displaying/Circling	
BZ16	Non-breeding 2021-22	2	11/02/2022	12:18	1					350				A	Soaring	
BZ17	Non-breeding 2021-22	6	14/02/2022	12:09	2	100				240				A	Soaring	
BZ18	Non-breeding 2021-22	1	21/02/2022	00:00	4	100				210				A	Soaring	
BZ19	Non-breeding 2021-22	3	28/02/2022	12:38	4	50-100				200				A	Soaring	
BZ20	Non-breeding 2021-22	1	03/03/2022	11:14	2	50-180				240	300	420	Pair	A	Soaring	
BZ21	Non-breeding 2021-22	2	03/03/2022	13:10	2	50-100				300			Pair	A	Soaring	
BZ22	Non-breeding 2021-22	6	04/03/2022	10:28	1	60				120			F	A	Flying/Circling	
BZ23	Non-breeding 2021-22	4	04/03/2022	13:05	2	100m-200				420	300	600		A	Soaring/displaying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ24	Non-breeding 2021-22	4	04/03/2022	13:58	2	100m-200				420		600		A	Soaring	
BZ25	Non-breeding 2021-22	6	11/03/2022	12:48	1	100				300			M	A	Soaring	
BZ27	Non-breeding 2021-22	7	21/03/2022	09:22	1	30			42					A	Flying	
BZ26	Non-breeding 2021-22	5	21/03/2022	11:48	2	100				480				A	Soaring	
BZ28	Non-breeding 2021-22	7	28/03/2022	13:10	2	100				300				A	Soaring	
BZ29	Breeding 2022	2	05/04/2022	14:58	1	20-25		13	5							Circling
BZ30	Breeding 2022	5	07/04/2022	13:43	1	40			15					A	Flying	
BZ31	Breeding 2022	1	14/04/2022	16:16	1	15-60		30		18						Flying
BZ33	Breeding 2022	7	15/04/2022	14:25	1	30			45					A	Circling/ Flying	
BZ32	Breeding 2022	5	15/04/2022	17:42	1	250						180		A	Circling/ Flying	
BZ34	Breeding 2022	4	10/05/2022	09:51	1	40			5					A	Flying	
BZ35	Breeding 2022	7	11/05/2022	13:04	1	40			10					A	Hunting	
BZ36	Breeding 2022	5	24/05/2022	12:01	2	40			45					A	Hunting	
BZ37	Breeding 2022	5	24/05/2022	12:28	2	200						100		A	Circling	
BZ38	Breeding 2022	2	08/06/2022	14:31	1	10-20		17								Flying

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ41	Breeding 2022	4	13/06/2022	17:30	1	40-75			40	110				A	Flying/Hunting	
BZ42	Breeding 2022	4	13/06/2022	17:30	1	40-75			30	90				A	Hunting	
BZ39	Breeding 2022	6	13/06/2022	19:06	1	30			30					A	Flying	
BZ40	Breeding 2022	6	13/06/2022	19:47	1	15		5						A	Flying	
BZ44	Breeding 2022	7	14/06/2022	07:22	1	20		10						A	Hunting	
BZ43	Breeding 2022	5	14/06/2022	17:59	1	60				30				A	Hunting	
BZ45	Breeding 2022	6	17/06/2022	14:16	1	15		5						A	Flying	
BZ46	Breeding 2022	6	17/06/2022	14:26	1	200						60		A	Soaring/Hunting	
BZ47	Breeding 2022	7	20/06/2022	16:04	1	30			60					A	Hunting	
BZ48	Breeding 2022	7	20/06/2022	16:05	1	125					240			A	Soaring/Circling	
BZ49	Breeding 2022	6	13/07/2022	07:21	1	10		15						A	Flying	
BZ50	Breeding 2022	5	19/07/2022	08:19	1		10	1980						A	Flying/Perched	
BZ51	Breeding 2022	4	22/07/2022	13:15	1	150					120				Flying/Soaring/Circling	
BZ52	Breeding 2022	4	22/07/2022	14:35	1	200						60			Soaring/Circling	
BZ56	Breeding 2022	6	03/08/2022	16:10	1	80-200				20		40		A	Soaring	
BZ53	Breeding 2022	5	03/08/2022	19:45	1	10		5							Flying	
BZ55	Breeding 2022	5	03/08/2022	20:02	4	10		10						A & J	Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ54	Breeding 2022	5	03/08/2022	20:10	2	10		5							Flying	
BZ57	Breeding 2022	7	05/08/2022	15:00	1	75-100				128					Flying/ Hunting/ Soaring	
BZ59	Breeding 2022	4	23/08/2022	09:18	1	55				32			F	A	Flying/ Hunting	
BZ58	Breeding 2022	7	23/08/2022	10:21	1	20		27							Flying/ Hunting	
BZ01	Non-breeding 2022-23	1	05/10/2022	10:01	2	20		240							Flying/ Circling	
BZ02	Non-breeding 2022-23	1	05/10/2022	11:02	1	15-20		72							Flying	
BZ03	Non-breeding 2022-23	6	10/10/2022	11:25	1	120-150					139				Flying/ Soaring	
BZ04	Non-breeding 2022-23	6	10/10/2022	13:01	1	20-25			200						Flying	
BZ05	Non-breeding 2022-23	5	10/10/2022	13:48	1	50-100				360				A	Flying/ Soaring	
BZ06	Non-breeding 2022-23	5	07/11/2022	14:46	1	0-20		82							Flying	
BZ07	Non-breeding 2022-23	1	15/11/2022	11:59	2	20-40			40					A	Flying	
BZ08	Non-breeding 2022-23	3	15/11/2022	13:11	1	100-200					312				Flying/ Hunting	
BZ09	Non-breeding 2022-23	3	15/11/2022	13:20	1	20-50			99						Flying/ Hunting	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ10	Non-breeding 2022-23	1	15/11/2022	14:55	1	15-20		25						A	Flying	
BZ11	Non-breeding 2022-23	7	01/12/2022	07:45	1	15		5						A	Flying	
BZ12	Non-breeding 2022-23	5	01/12/2022	09:27	1	0-20	200	40							Flying/ Perched	
BZ13	Non-breeding 2022-23	5	01/12/2022	10:30	1	0-20	1100	100						J	Flying/ Perched	
BZ14	Non-breeding 2022-23	5	01/12/2022	10:40	1	0-20	60	90							Flying/ Perched	
BZ15	Non-breeding 2022-23	7	01/12/2022	13:01	1	2-40		55	55					A	Hunting/ Perched	
BZ16	Non-breeding 2022-23	3	12/12/2022	12:25	1	0-50		35	20						Flying	
BZ17	Non-breeding 2022-23	2	14/12/2022	09:36	2	0-20		59							Flying/ Perched	
BZ18	Non-breeding 2022-23	5	06/01/2023	12:06	1	0-20		42							Flying/ Hunting	
BZ19	Non-breeding 2022-23	7	06/01/2023	14:48	1	0-20		191							Hunting/ Circling	
BZ20	Non-breeding 2022-23	7	06/01/2023	15:44	1	0-20		48							Flying/ Hunting	
BZ21	Non-breeding 2022-23	3	10/01/2023	11:08	1	0-20		25							Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ22	Non-breeding 2022-23	1	10/01/2023	12:30	1	0-20		15							On Ground	
BZ23	Non-breeding 2022-23	1	10/01/2023	15:12	1	20-60		100	20						Hunting/ Soaring	
BZ24	Non-breeding 2022-23	3	10/01/2023	15:13	1	0-20		139							Flying/ Hunting	
BZ25	Non-breeding 2022-23	3	10/01/2023	15:19	2	0-20		104							Soaring/ Circling	
BZ26	Non-breeding 2022-23	1	10/01/2023	15:20	4	0-100		80	250	80					Flying/ Circling	
BZ27	Non-breeding 2022-23	2	10/01/2023	15:22	3	20-50			315						Hunting	
BZ28	Non-breeding 2022-23	3	10/01/2023	15:23	1	20-50			157						Circling/ Soaring	
BZ29	Non-breeding 2022-23	1	10/01/2023	15:46	2	0-50		20	70						Flying/ Circling	
BZ30	Non-breeding 2022-23	5	07/02/2023	10:23	2	0-20	160	10						A	Perched/ Flying	
BZ31	Non-breeding 2022-23	5	07/02/2023	11:30	1	0-20	80	35						A	Flying/ Perched	
BZ32	Non-breeding 2022-23	5	07/02/2023	12:31	1	20-50			20					A	Flying	
BZ33	Non-breeding 2022-23	5	07/02/2023	12:42	2	50-200				10	70			A	Circling	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ35	Non-breeding 2022-23	5	07/02/2023	13:12	1	0-20	220	20						A	Perched/ Flying	
BZ36	Non-breeding 2022-23	4	08/02/2023	08:08	1	0-20		341							Hunting/ On Ground	
BZ37	Non-breeding 2022-23	4	08/02/2023	13:15	1	0-20	2907	12							Perched/ Flying	
BZ38	Non-breeding 2022-23	1	09/02/2023	08:23	1	0-20		18							Flying/ Perched	
BZ39	Non-breeding 2022-23	1	09/02/2023	13:05	2	0-100		350	500	50					Display	Display and territorial calling
BZ40	Non-breeding 2022-23	6	07/03/2023	12:00	2	5-15		40							Flying/ Hunting	Calling while Flying over head
BZ41	Non-breeding 2022-23	6	07/03/2023	12:43	1	2-6		26						A	Flying/ Hunting	
BZ42	Non-breeding 2022-23	5	07/03/2023	12:44	1	0-20	15	21							Flying/ Perched	
BZ43	Non-breeding 2022-23	5	07/03/2023	12:56	3	50-100				87					Mobbing/ Soaring	
BZ44	Non-breeding 2022-23	5	07/03/2023	12:59	1	100-200					138				Circling/ Soaring	
BZ45	Non-breeding 2022-23	7	07/03/2023	13:02	2	100-200					114				Flying/ Soaring	
BZ46	Non-breeding 2022-23	5	07/03/2023	13:08	2	20-100			150	192					Circling/ Soaring	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ47	Non-breeding 2022-23	7	07/03/2023	13:24	1	0-50		50	90						Flying/Hunting	
BZ48	Non-breeding 2022-23	5	07/03/2023	13:37	1	0-20		68							Circling/Soaring	
BZ49	Non-breeding 2022-23	7	07/03/2023	14:10	3	100-200					388				Flying/Soaring	
BZ50	Non-breeding 2022-23	7	07/03/2023	14:54	1	50-100				183					Flying/Soaring	
BZ51	Non-breeding 2022-23	5	07/03/2023	14:56	2	20-100			48	200					Circling/Soaring	
BZ52	Non-breeding 2022-23	4	07/03/2023	15:30	1	100-220					600	100			Soaring	Soaring, Mobbed by corvids
BZ53	Non-breeding 2022-23	5	07/03/2023	15:43	1	0-50		21	100						Soaring/Circling	
BZ54	Non-breeding 2022-23	4	07/03/2023	15:50	2	20-100			300	300					Display/Soaring	Display, Soaring together
BZ55	Non-breeding 2022-23	6	07/03/2023	16:30	1	20-30			48					A	Soaring/Circling	
BZ56	Non-breeding 2022-23	5	07/03/2023	16:56	1	0-20		19							Flying	
BZ57	Non-breeding 2022-23	2	08/03/2023	12:33	1	20-50			119						Hunting/Soaring	
BZ58	Non-breeding 2022-23	3	08/03/2023	13:00	5	0-100		600	500	100			F&M	A	Display	Tallon grasp display, likely 2 neighbouring pairs

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ59	Non-breeding 2022-23	2	08/03/2023	13:24	1	0-100		100	50	71					Soaring/ Circling	
BZ60	Non-breeding 2022-23	3	08/03/2023	16:02	2	0-50		260	280				F&M	A	Display	Talons grasp, low display over forest block
BZ61	Non-breeding 2022-23	3	08/03/2023	17:59	2	0-50		100	260				F&M	A	Display/ Perched	Perched edge of conifers
BZ62	Breeding 2023	5	07/04/2023	15:24	1	0-20		10							Flying	Low over hedgerow
BZ63	Breeding 2023	7	07/04/2023	17:41	1	15		6						A	Flying/ Hunting	
BZ64	Breeding 2023	5	07/04/2023	17:51	1	0-20		90					F		Flying	Low slow glide over hedgerow
BZ65	Breeding 2023	4	07/04/2023	17:53	2									A	Circling/ Flying	1 bird initially, joined by a second bird for approx. 1 min
BZ66	Breeding 2023	2	11/04/2023	14:55	1			50	50	140					Hunting	
BZ67	Breeding 2023	2	11/04/2023	16:40	3			380	100						Circling / Display	Tallon grasping, Circling and gliding
BZ68	Breeding 2023	3	11/04/2023	16:43	2			5	345					A	Flying / Hunting	Mostly hanging, Hovering
BZ69	Breeding 2023	3	11/04/2023	16:46	1				25					A	Flying	
BZ70	Breeding 2023	1	11/04/2023	17:57	1	35m			40					A	Flying, Hunting, Soaring	
BZ71	Breeding 2023	3	11/04/2023	18:14	2				300	60				A	Flying / Hunting	Drifting, hanging in the wind
BZ72	Breeding 2023	3	11/04/2023	18:21	1				350					A	Flying	Interacting with pair at 6
BZ73	Breeding 2023	2	11/04/2023	18:25	2			60					Pair	A	Display / Perched	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180 m				
BZ74	Breeding 2023	2	11/04/2023	19:16	2			30	210						Soaring	Soaring together
BZ75	Breeding 2023	1	11/04/2023	19:57	1	20-22			24					A	Flying, Hunting	
BZ76	Breeding 2023	2	11/04/2023	20:00	1			70							Flying	Travelling low Going west
BZ77	Breeding 2023	1	11/04/2023	20:14	1	02-20		15						A	Flying, Hunting	Flew east before landing in field
BZ78	Breeding 2023	3	04/05/2023	07:05	1			10	50					A	Flying	Gliding over conifers
BZ79	Breeding 2023	1	04/05/2023	08:26	1			15							Flying / Perched	Perched in treeline and dropping into field
BZ80	Breeding 2023	1	04/05/2023	10:33	1			63							Flying / Circling	Travelling towards treeline
BZ81	Breeding 2023	2	04/05/2023	12:09	1			3	110					A	Flying / Hunting	Drifting slowly before dropping in hedge
BZ82	Breeding 2023	1	04/05/2023	12:13	1			66							Flying	Descending into Conifer Plantation
BZ84	Breeding 2023	7	05/05/2023	10:09	1	0-20 m		68							Flying/ Perched	Travelling south. Landing into treeline
BZ85	Breeding 2023	7	05/05/2023	10:33	1	20-100 m			60	130					Flying/ Soaring	Soaring and Travelling northwest
BZ86	Breeding 2023	4	05/05/2023	10:37	1	0-100 m		60	120	60					Flying	Gliding over plantation
BZ87	Breeding 2023	5	05/05/2023	11:00	1									A	Flying/ Hunting/ Soaring	
BZ88	Breeding 2023	4	05/05/2023	11:56	1	100+				150	150				Circling/ Soaring	
BZ89	Breeding 2023	5	05/05/2023	12:18	1									A	Flying/ Hunting/ Circling	
BZ90	Breeding 2023	5	05/05/2023	12:52	1									A	Flying/ Soaring/ Circling	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ91	Breeding 2023	7	05/05/2023	12:57	1	20-50 m			147						Flying	Travelling southwest
BZ92	Breeding 2023	5	06/06/2023	07:14	1	0-20 m		4						A	Flying/Hunting	
BZ94	Breeding 2023	6	06/06/2023	08:10	1	0-50 m		20	20						Flying/Perched	Landed in mature trees
BZ95	Breeding 2023	7	06/06/2023	10:25	2	50-100m				56					Flying / Circling	Circling and Travelling east
BZ96	Breeding 2023	7	06/06/2023	11:38	1	20-100 m			30	60					Soaring/Hunting	
BZ97	Breeding 2023	7	06/06/2023	11:46	1	20-100 m			40	120					Soaring	
BZ98	Breeding 2023	7	06/06/2023	12:20	1	0 - 100m		20	60	60				A	Flying	
BZ99	Breeding 2023	4	06/06/2023	12:58	1	0-100m		20	10	90					Flying / Mobbing	Hunting and Flying east
BZ100	Breeding 2023	7	06/06/2023	13:00	1	0 - 100m		100	200	600					Hunting / Soaring	
BZ101	Breeding 2023	5	06/06/2023	00:00	2											Consistent activity all day
BZ102	Breeding 2023		07/06/2023	10:11	2									A	Flying	
BZ103	Breeding 2023	4	15/06/2023	09:32	2				38					A	Flying / Hunting	Flew into first rotation forest
BZ104	Breeding 2023	1	15/06/2023	09:36	1				36					A	Flying / Hunting	
BZ105	Breeding 2023	1	15/06/2023	10:49	1			890	8					A	Flying / Perched	Flying then Perched on dead tree
BZ106	Breeding 2023	2	15/06/2023	12:15	1					15	100			A	Circling / Flying	Circling and drifting east
BZ107	Breeding 2023	1	15/06/2023	12:42	1					250				A	Soaring	Flying East
BZ108	Breeding 2023	3	15/06/2023	13:26	1			4						A	Flying	Disappeared behind forestry
BZ109	Breeding 2023	3	06/07/2023	08:14	1	0-20m		40							Flying	Flying towards treeline

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category/						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
BZ110	Breeding 2023	5	06/07/2023	12:26	1	50-100m		80						A	Flying	
BZ111	Breeding 2023	1	10/07/2023	10:40	1				26					A	Flying	
BZ112	Breeding 2023	7	10/07/2023	13:05	1				600					A	Flying / Soaring	
BZ113	Breeding 2023	2	10/07/2023	13:07	1				282					A	Flying / Hunting	
BZ114	Breeding 2023	2	10/07/2023	13:23	2					235					Flying / Soaring	Soaring and drifting west
BZ115	Breeding 2023	5	04/08/2023	08:04	1	0-20m		20						A	Flying	
BZ116	Breeding 2023	4	04/08/2023	11:33	2	50-100m				390				A & J	Circling	
BZ117	Breeding 2023	2	04/08/2023	12:00	2	0-20m		45						A & J	Perched / Flying	
BZ118	Breeding 2023	4	11/09/2023	07:58	1	0-20m		15						J	Perched / Flying	Perched for 20 minutes then Flew west
BZ119	Breeding 2023	5	11/09/2023	13:10	1	0-20m		35							Flying	Gliding
BZ120	Breeding 2023	6	12/09/2023	07:06	1			23							Flying / Hunting	

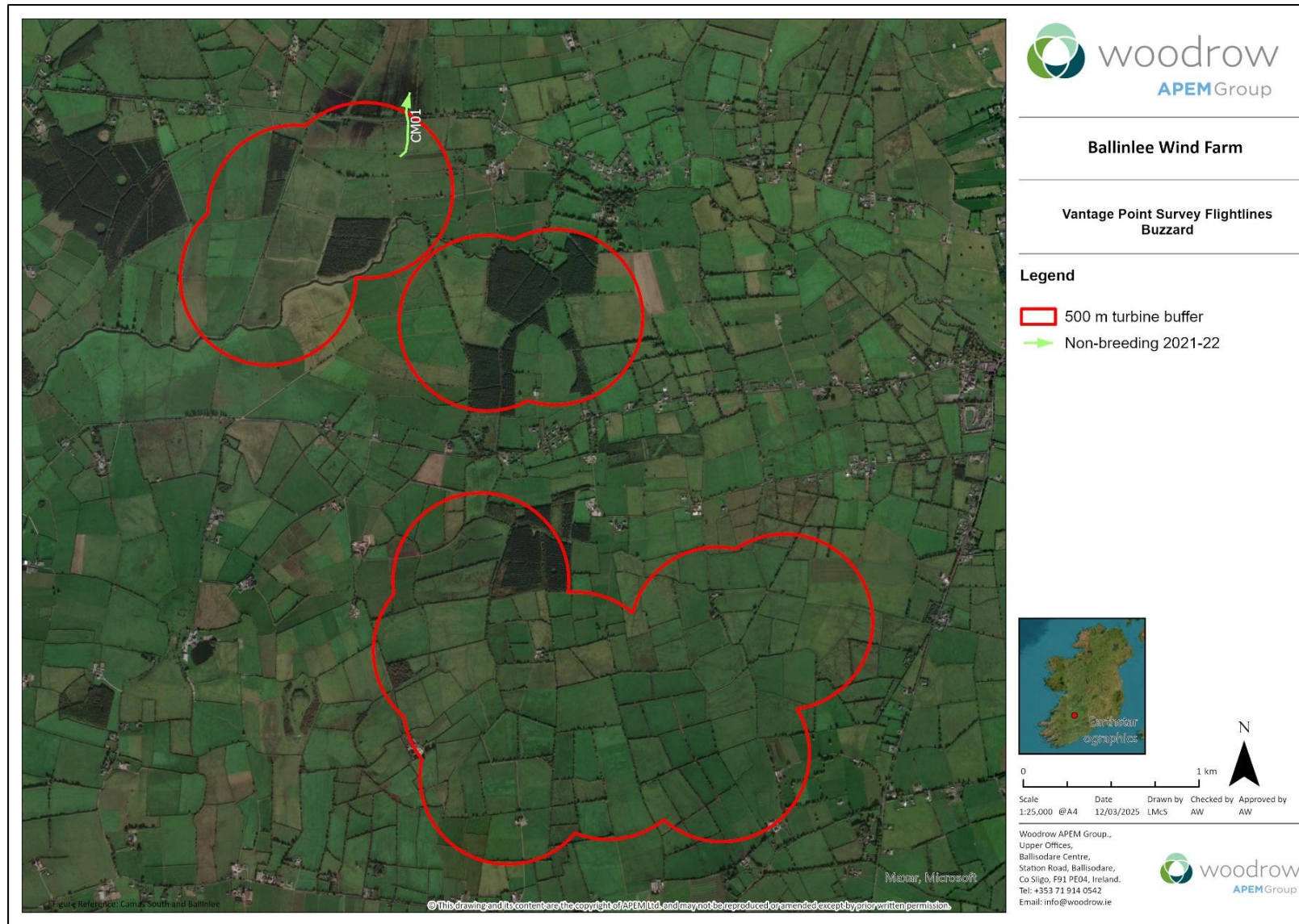


Figure A6.74: Common gull observations recorded during VP watches

Table A6.3: Common Gull

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
CM01	Non-breeding 2021-22	1	08/12/2021	14:16	2	2-20		5							Flying	

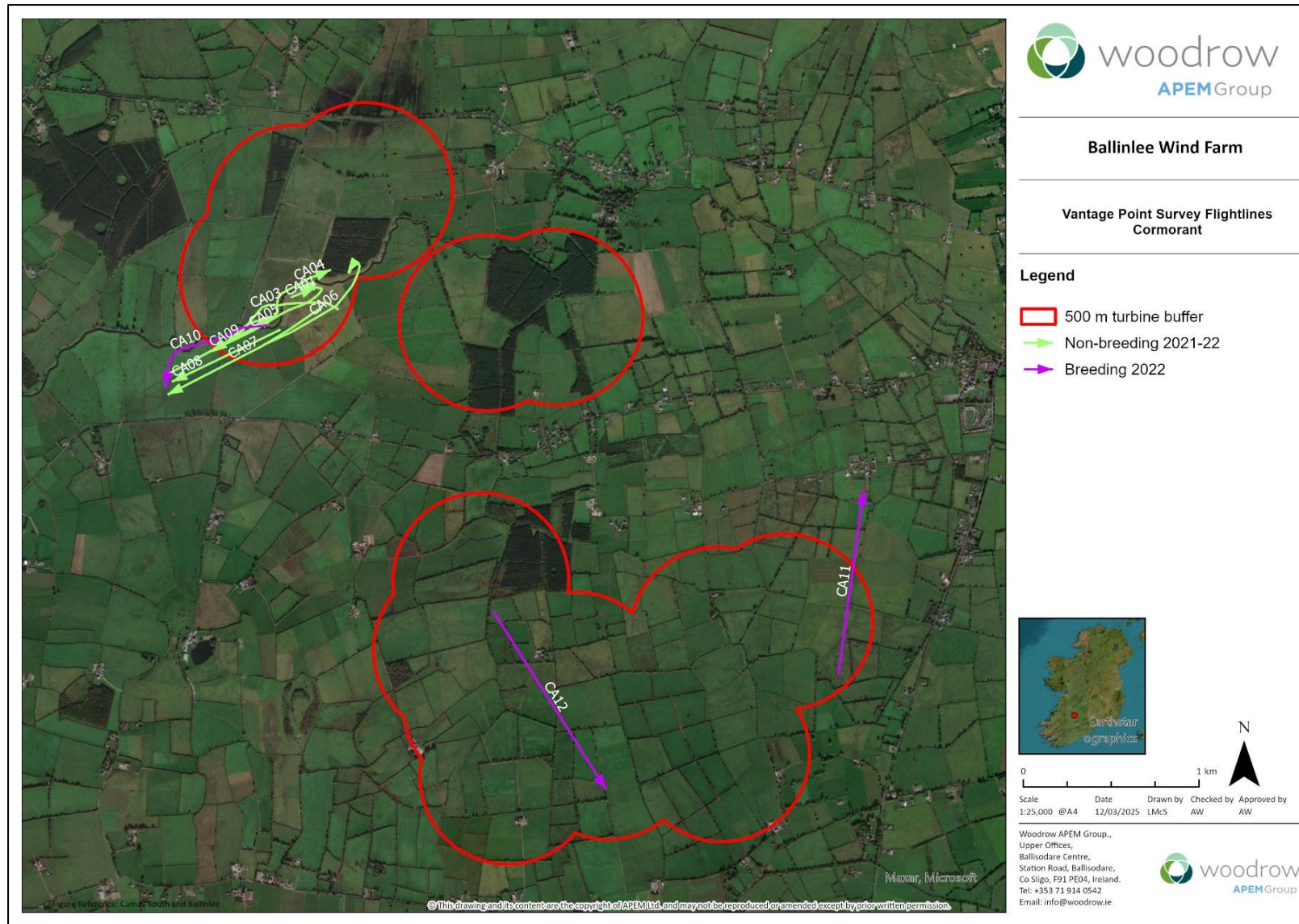


Figure A6.85: Cormorant observations recorded during VP watches

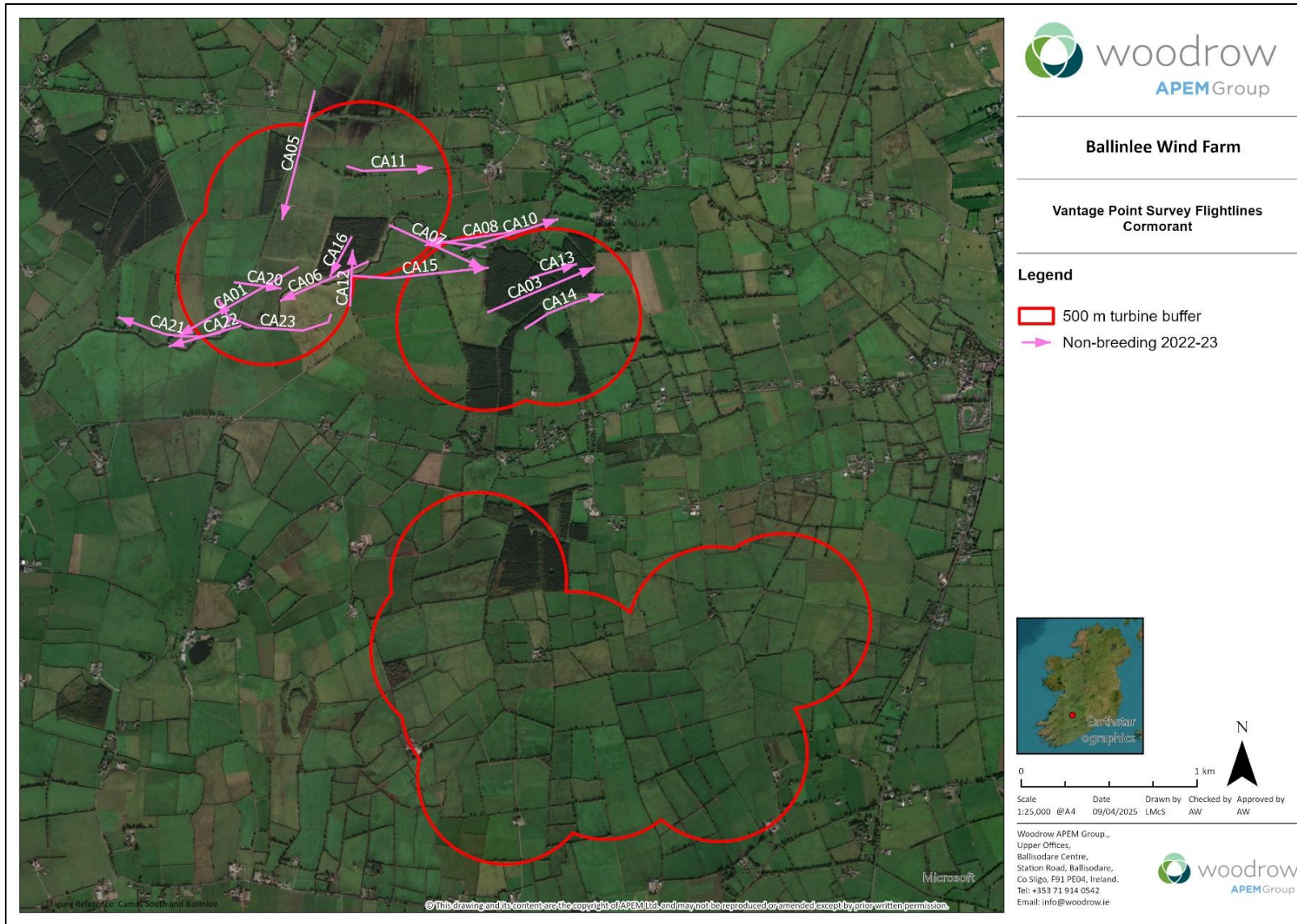


Figure A6.9: Cormorant observations recorded during VP watches

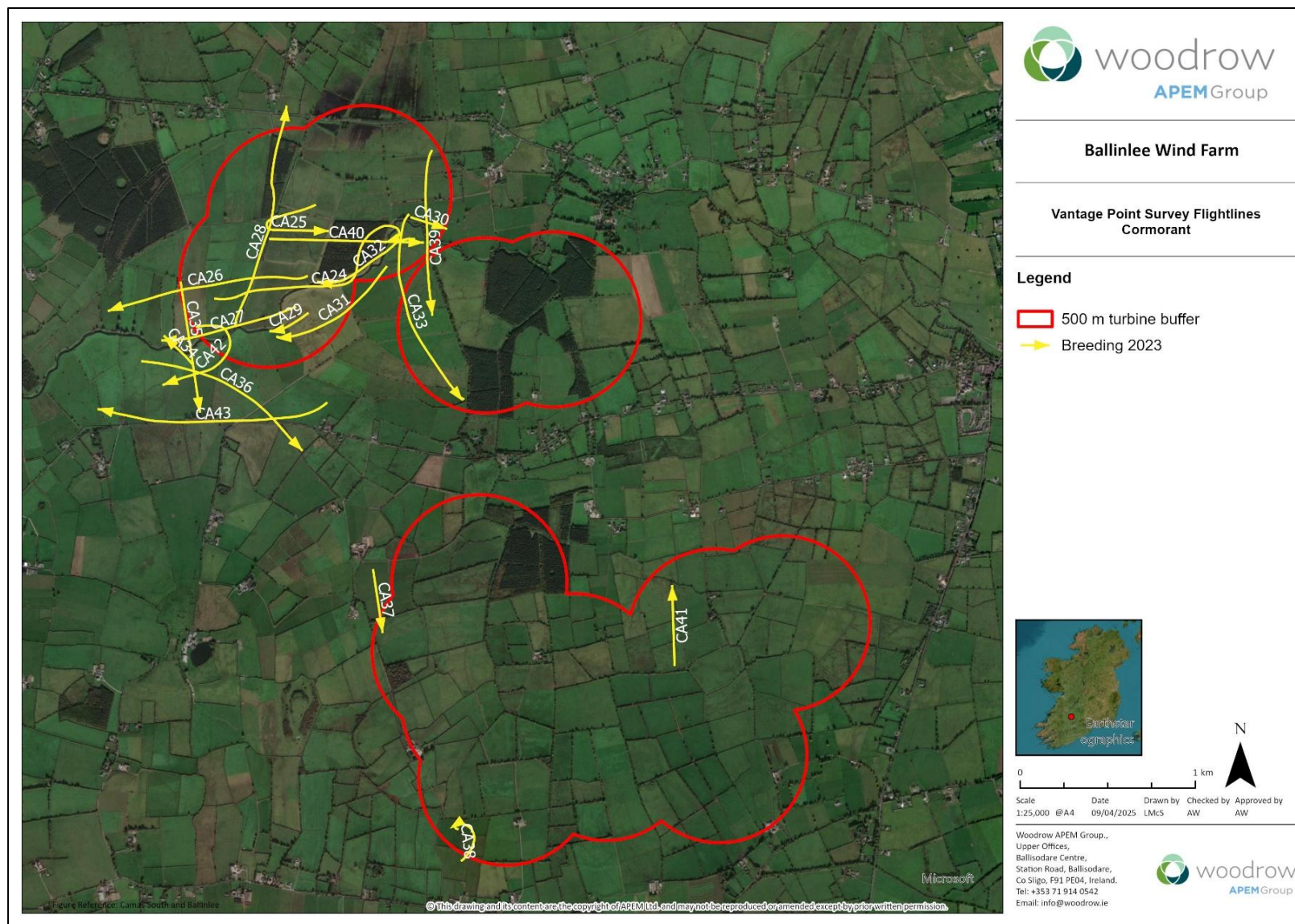


Figure A6.10: Cormorant observations recorded during VP watches

Table A6.4: Cormorant

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
CA01	Non-breeding 2021-22	2	11/11/2021	14:50	1	0-20	5								Flying	
CA02	Non-breeding 2021-22	2	11/11/2021	14:50	2	0-20	2								Flying	
CA03	Non-breeding 2021-22	2	04/02/2022	12:27	2	50-100				36					Flying	
CA04	Non-breeding 2021-22	2	08/02/2022	10:24	2	0-20		30						A	Flying	
CA05	Breeding 2022	2	05/04/2022	11:26	1	0-15		19							Flying	
CA06	Breeding 2022	2	05/04/2022	13:21	1	6-0		28							Flying	
CA07	Breeding 2022	2	05/04/2022	13:40	3	20-50			45						Flying	
CA08	Breeding 2022	2	05/04/2022	15:16	2	5		6							Flying	
CA09	Breeding 2022	2	05/04/2022	15:50	2	1-5		15							Flying	
CA11	Breeding 2022	5	11/05/2022	08:04	1	80				20				A	Flying	
CA12	Breeding 2022	7	11/05/2022	10:42	1	75				30				A	Flying	
CA01	Non-breeding 2022-23	2	05/10/2022	10:44	1	20-50	228		52						Flying	Perched on ESB poles
CA03	Non-breeding 2022-23	3	05/10/2022	13:35	1	150					20			A	Flying	Travelling NE

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
CA05	Non-breeding 2022-23	1	15/11/2022	12:50	1	30			15					A	Flying	Going south
CA06	Non-breeding 2022-23	2	15/11/2022	13:34	1	50-100				10				A	Flying	Flew southwest
CA07	Non-breeding 2022-23	1	15/11/2022	14:39	1	35			12					A	Flying	Going southeast
CA08	Non-breeding 2022-23	1	10/01/2023	12:42	1	20-50			30						Flying	Travelling
CA09	Non-breeding 2022-23	2	10/01/2023	12:46	1	0-20	1800	8							Perched / Flying	
CA10	Non-breeding 2022-23	1	10/01/2023	15:42	1	20-50			40						Flying	Travelling fast
CA11	Non-breeding 2022-23	1	10/01/2023	15:48	1	0-20		30							Flying	Flying
CA12	Non-breeding 2022-23	2	10/01/2023	15:51	1	0-20		15							Flying	
CA13	Non-breeding 2022-23	3	10/01/2023	16:16	1	0-20		32							Flying	Travelling east
CA14	Non-breeding 2022-23	3	09/02/2023	09:42	1	0-20		40							Flying	Travelling east
CA15	Non-breeding 2022-23	2	09/02/2023	09:44	1	50-100				55				A	Flying	White breeding patch
CA16	Non-breeding 2022-23	2	09/02/2023	09:51	1	0-20		27						A	Flying	White breeding patch

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
CA17	Non-breeding 2022-23	2	09/02/2023	10:03	1	0-20	1037	15						A	Flying/ Perched	Perched on pole at riverbank
CA18	Non-breeding 2022-23	2	09/02/2023	10:24	1	0-20	3720	10						A	Flying/ Perched	Perched on pole at riverbank
CA19	Non-breeding 2022-23	1	09/02/2023	12:02	1	0-20		20							Flying	Low over river
CA20	Non-breeding 2022-23	2	08/03/2023	12:29	1	50-100				108				A	Flying	
CA21	Non-breeding 2022-23	2	08/03/2023	13:04	1	0-20		32							Flying	
CA22	Non-breeding 2022-23	2	08/03/2023	15:37	1	0-20		26						A	Flying	Dropped down into river
CA23	Non-breeding 2022-23	2	08/03/2023	18:04	1	0-20	2018	82							Flying/ Perched	Perched and Flying
CA25	Breeding 2023	2	11/04/2023	14:42	1			45							Flying	Landed into river
CA26	Breeding 2023	2	11/04/2023	15:05	1			75							Flying	Landed out of view
CA27	Breeding 2023	2	11/04/2023	16:20	1			35							Flying	Travelling low over river
CA28	Breeding 2023	2	11/04/2023	20:20	2			100	50						Flying	Flew up from river, went north
CA29	Breeding 2023	2	04/05/2023	07:11	1			3						A	Flying	Dropped into river
CA30	Breeding 2023	1	04/05/2023	09:19	1			22							Flying	Travelling east along the river
CA31	Breeding 2023	2	04/05/2023	10:28	1			5	30					A	Flying	Landed on ESB pole

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
CA33	Breeding 2023	2	04/05/2023	12:36	1			10	10	30				A	Flying	
CA32	Breeding 2023	1	04/05/2023	12:36	2			82								Travelling west along river
CA34	Breeding 2023	2	04/05/2023	12:40	1			4						A	Flying / Perched	Flew up from river to perch
CA35	Breeding 2023	2	15/06/2023	07:14	1				24					A	Flying / Perched	
CA36	Breeding 2023	2	15/06/2023	08:17	1			70						A	Flying	Flew east
CA37	Breeding 2023	4	06/07/2023	09:45	1	0-20m		15							Flying	Travelling south low
CA38	Breeding 2023	7	06/07/2023	09:48	1	0-20m		30						A	Flying	
CA39	Breeding 2023	1	10/07/2023	09:10	1			20						A	Flying	
CA40	Breeding 2023	1	10/07/2023	13:10	1			50						A	Flying	
CA41	Breeding 2023	5	04/08/2023	08:49	1	20-50m			15						Flying	Passing through Going north
CA42	Breeding 2023	2	12/09/2023	09:05	2			72							Flying / Circling	
CA43	Breeding 2023	2	12/09/2023	12:01	1			48							Flying	Circling and Travelling south

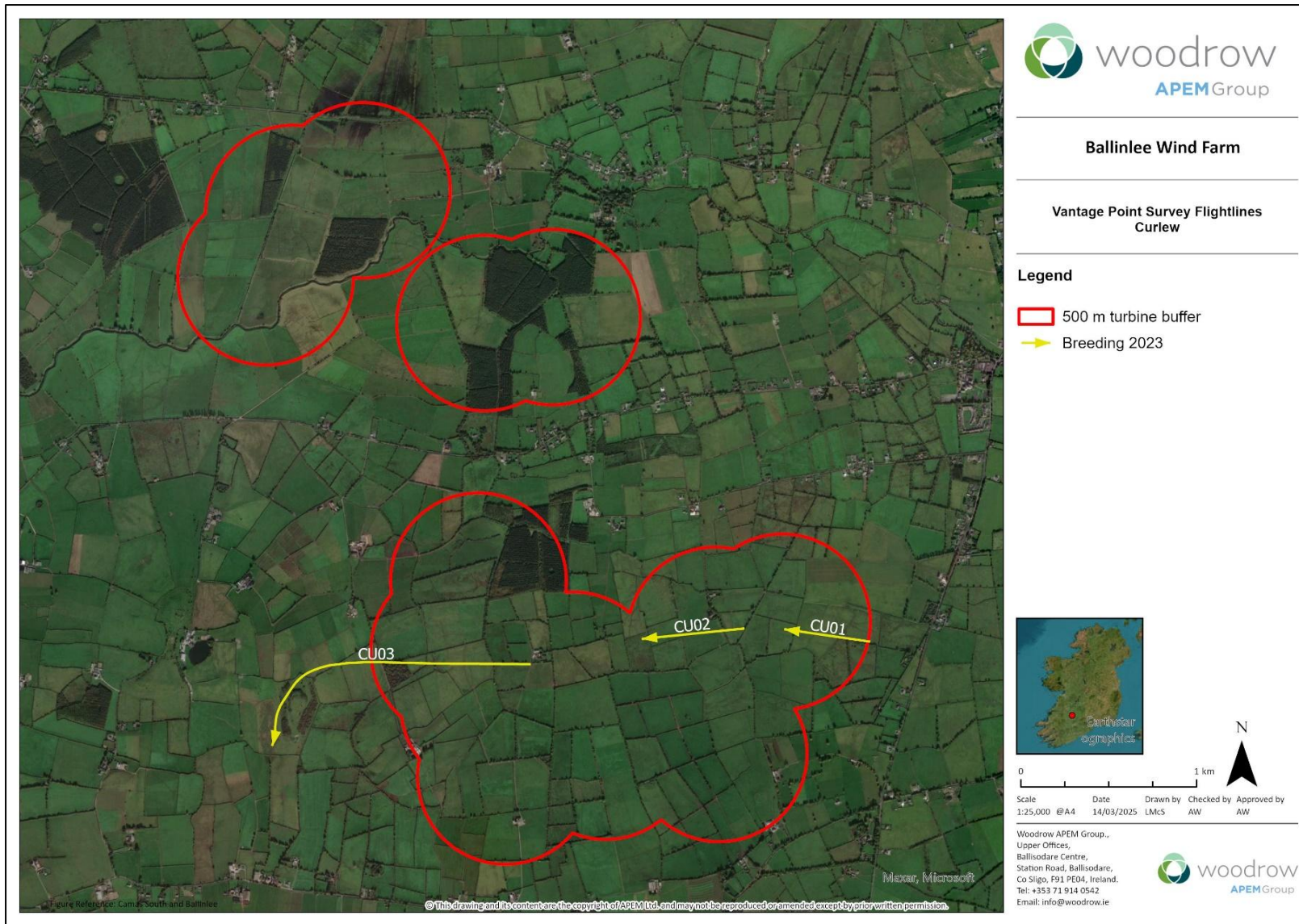


Figure A6.116: Curlew observations recorded during VP watches

Table A6.5: Curlew

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
CU01	Breeding 2023	6	04/08/2023	07:36	1	20-50m			46						Flying	Travelling west
CU02	Breeding 2023	5	04/08/2023	07:37	1	0-20m		35							Flying	Passing through, calling, Going west
CU03	Breeding 2023	4	04/08/2023	07:39	1	20-50m			65					A	Flying	Flying west then south Same Bird

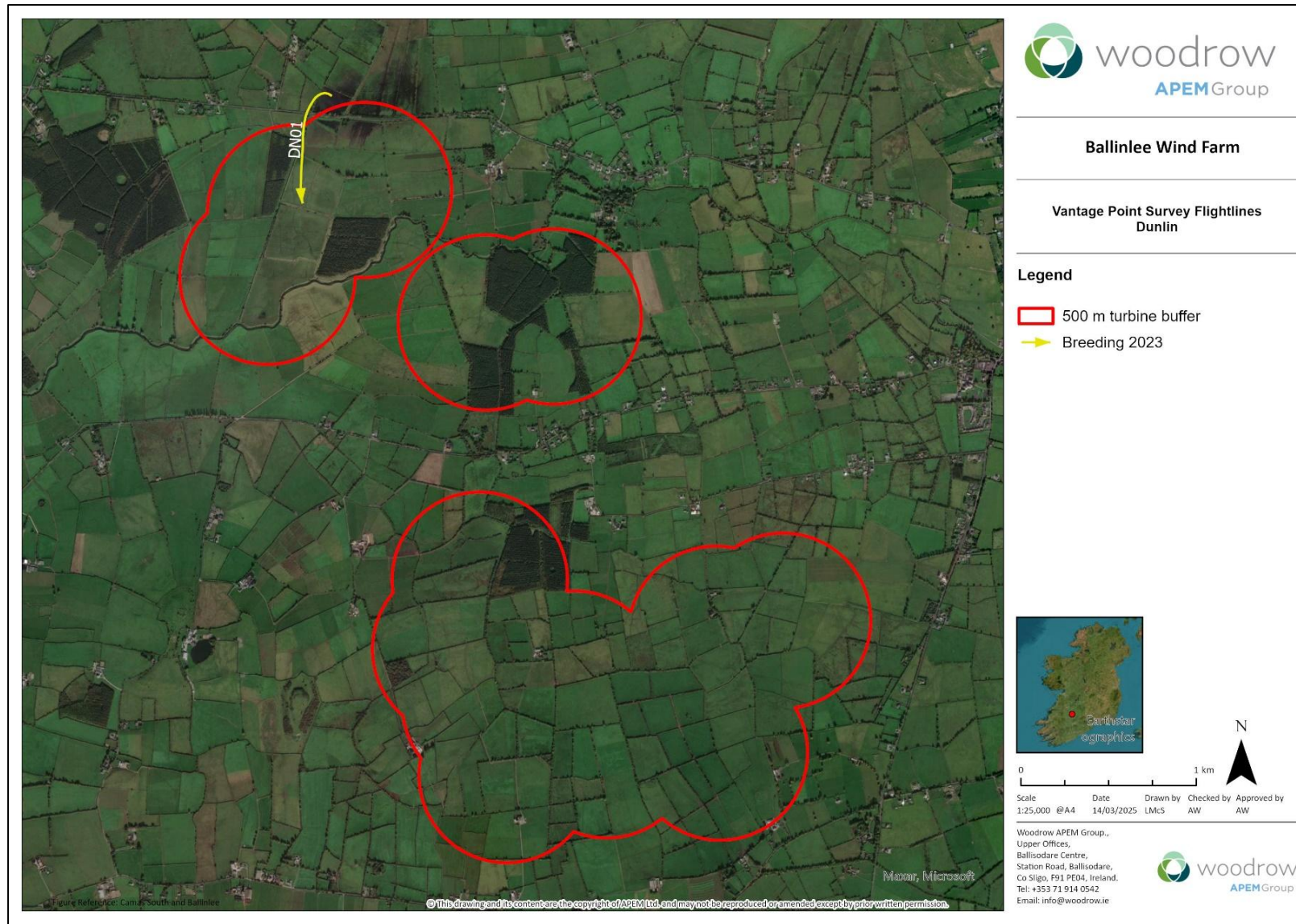


Figure A6.12: Dunlin observations recorded during VP watches

Table A6.6: Dunlin

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
DN01	Non-breeding 2022-23	1	15/11/2022	14:52	2	40-50			25						Circling/ Flying	With Lapwing flock

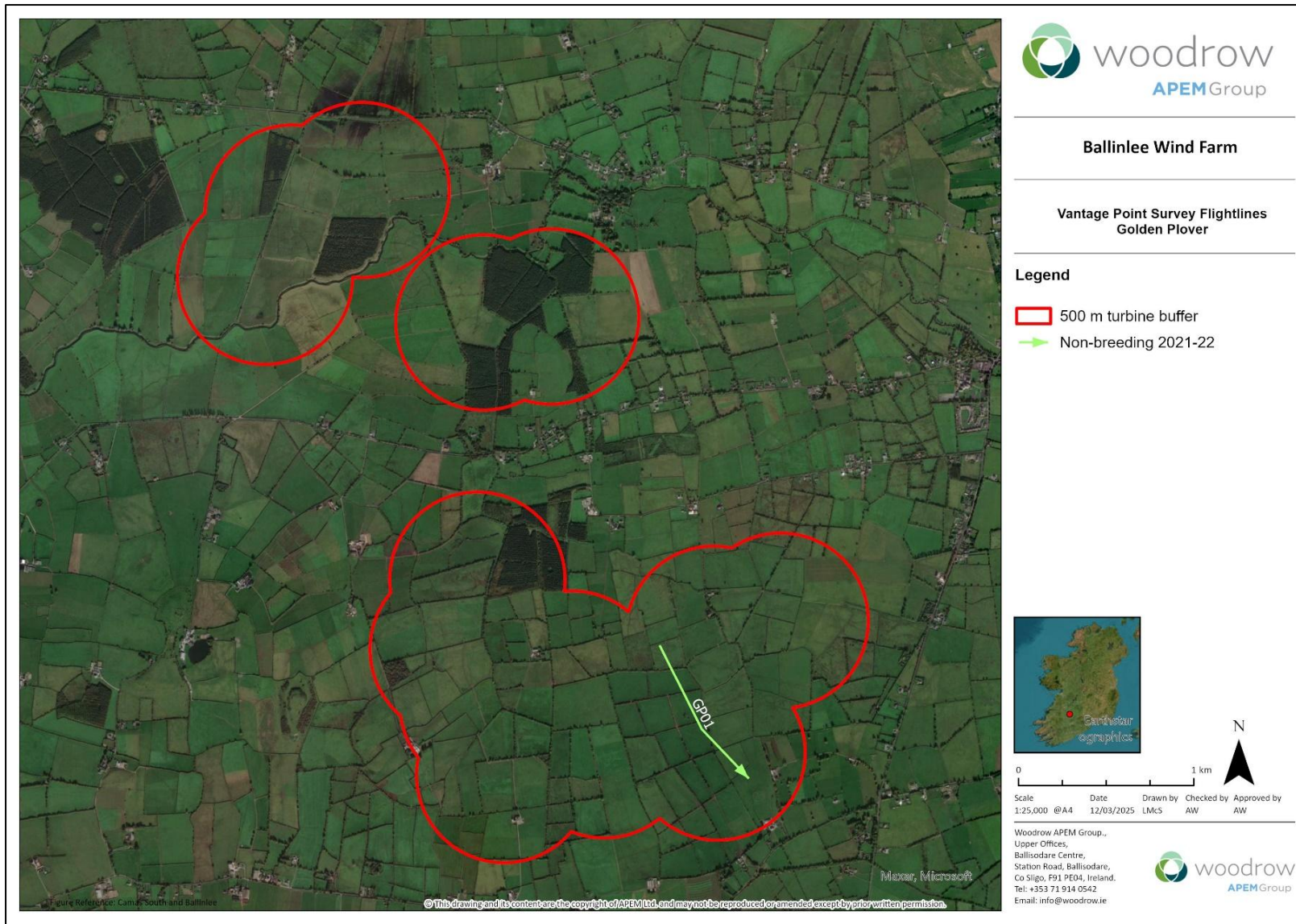


Figure A6.137: Golden plover observations recorded during VP watches (non-breeding season 2021-22)

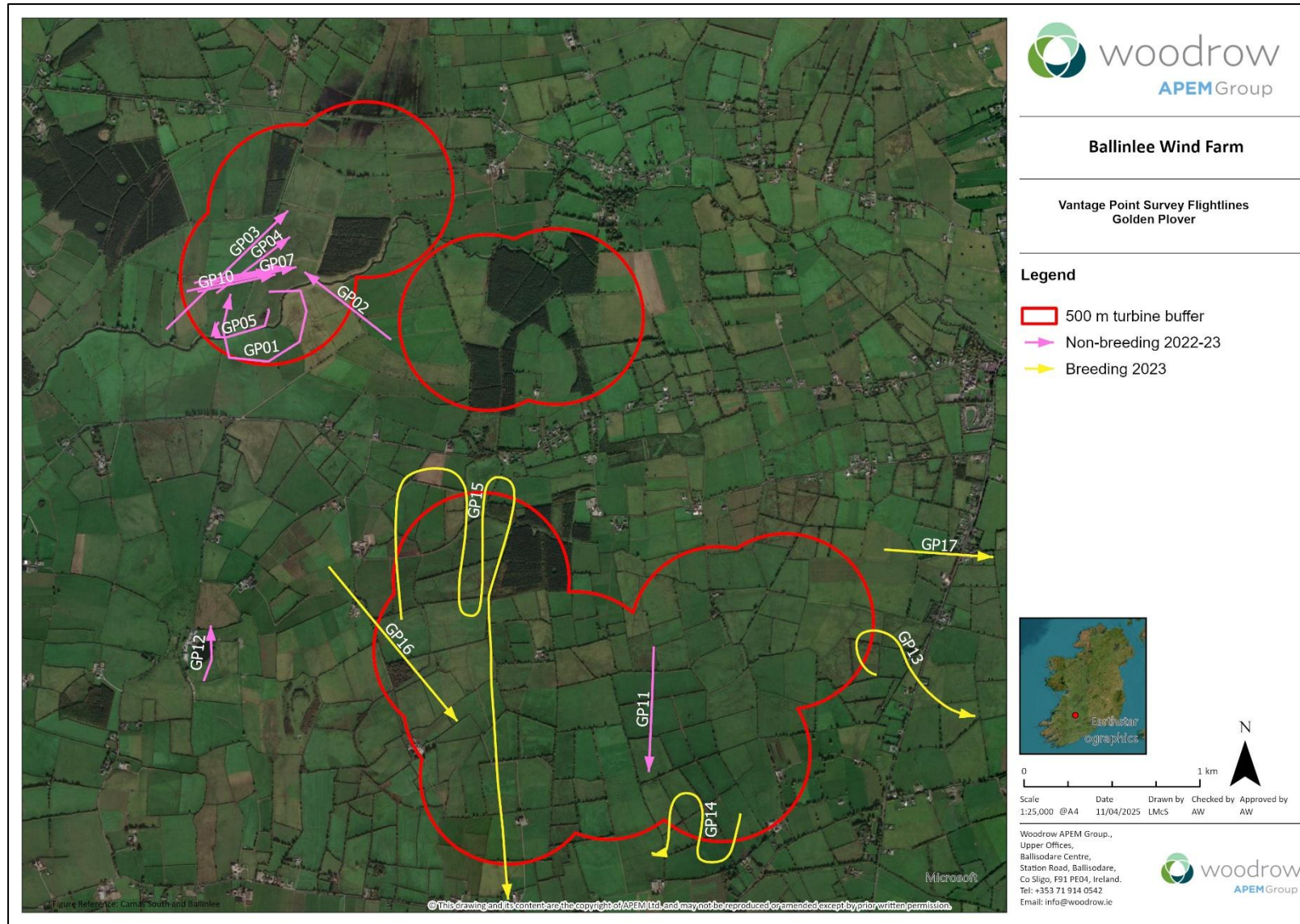


Figure A6.148: Golden plover observations recorded during VP watches (non-breeding season 2022-23)

Table A6.7: Golden Plover

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
GP01	Non-breeding 2021-22	5	07/04/2022	14:11	65	120					10			A	Flying	
GP01	Non-breeding 2022-23	2	05/10/2022	09:09	70	50-100				300					Flying/ Circling	
GP02	Non-breeding 2022-23	2	05/10/2022	09:49	78	20-50			18						Flying/ Circling	Landed into rough grassland/ improved grassland
GP03	Non-breeding 2022-23	2	05/10/2022	11:17	74	20-50			108						Flying/ Circling	Landed in field
GP04	Non-breeding 2022-23	2	05/10/2022	11:59	70	0-20		24							Flying	Landed in foraging field
GP05	Non-breeding 2022-23	2	05/10/2022	12:31	70	20-50			86						Flying	
GP07	Non-breeding 2022-23	2	05/10/2022	14:31	80	0-20		388							Flying/ on Ground	
GP08	Non-breeding 2022-23	2	05/10/2022	14:42	80	0-20		68							Flying/ Circling	Landed in field
GP09	Non-breeding 2022-23	2	05/10/2022	14:46	80	0-20		78							Flying/ Circling	Landed on west side of river
GP10	Non-breeding 2022-23	2	05/10/2022	14:50	80	0-20		114							Flying/ Circling	Landed on west side of river
GP11	Non-breeding 2022-23	1	07/11/2022	09:28	4										Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
GP12	Non-breeding 2022-23	4	07/11/2022	09:30	2										Flying	Flying off site
GP13	Breeding 2023	6	07/04/2023	15:08	45	20-50m			50						Flying/ Circling	
GP14	Breeding 2023	5	07/04/2023	15:48	10	100-180 m					60				Circling/ Flying	
GP15	Breeding 2023	5	07/04/2023	15:57	130	100 +					330	450			Circling/ Flying	
GP16	Breeding 2023	4	07/04/2023	16:02	45										Flying	
GP17	Breeding 2023	6	07/04/2023	16:07	9	20-50m			40						Flying	

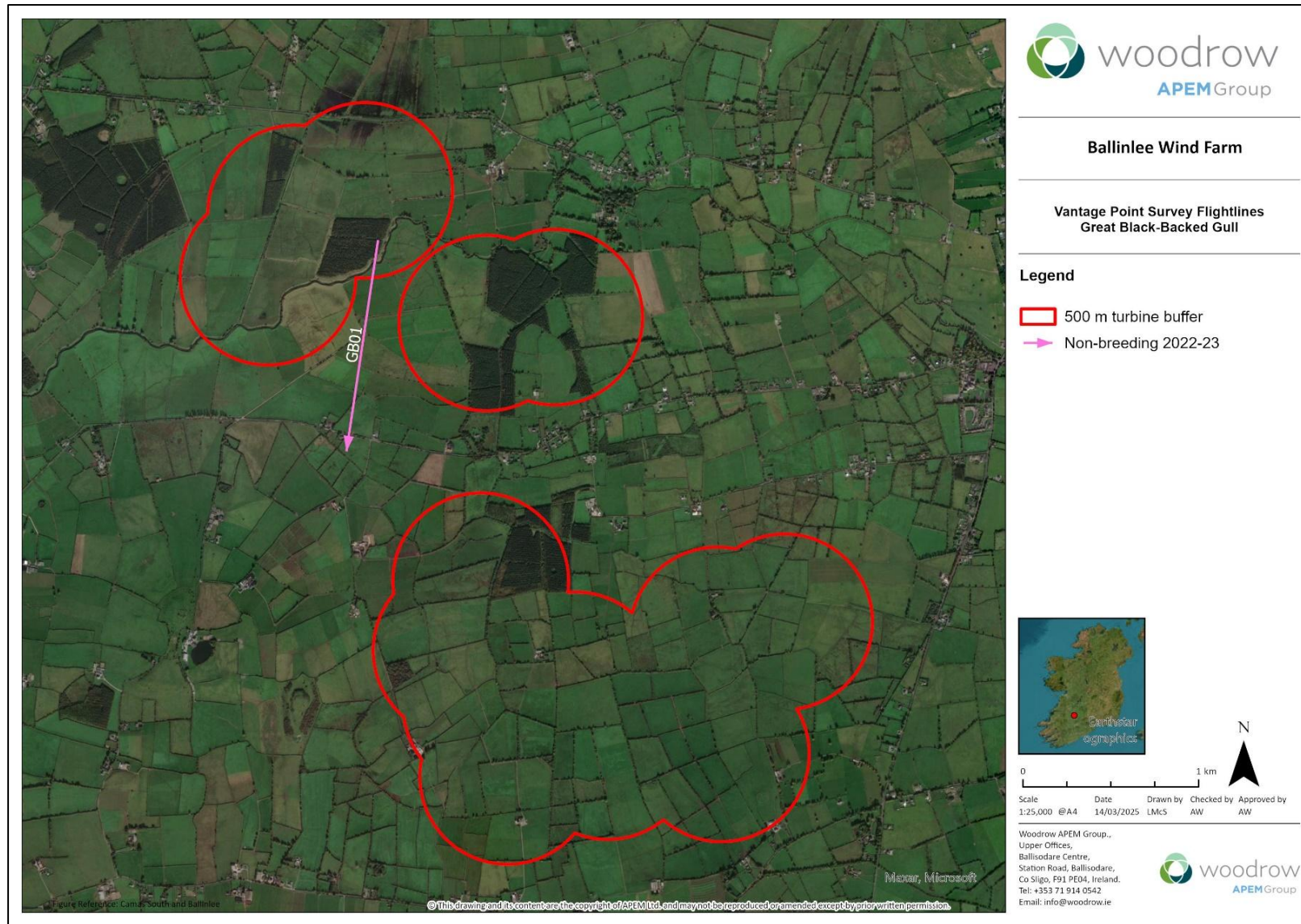


Figure A6.159: Great black-backed gull observations recorded during VP watches

Table A6.8: Great Black-Backed Gull

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
GB01	Non-breeding 2022-23	2	15/11/2022	10:23	1	50-100				10				A	Flying	Flew South

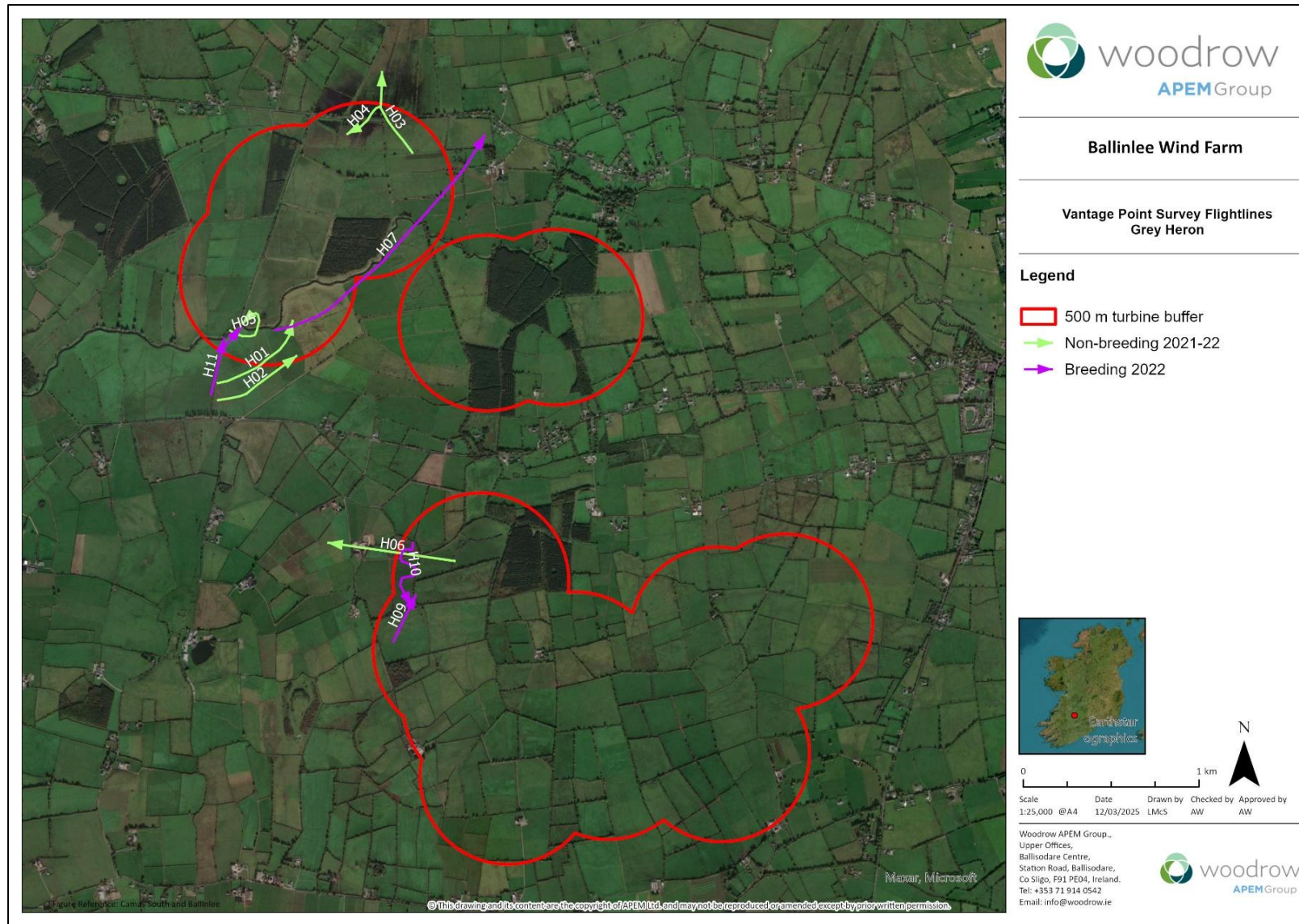


Figure A6.1610: Grey heron observations recorded during VP watches (non-breeding 2021-22 and breeding seasons 2022)

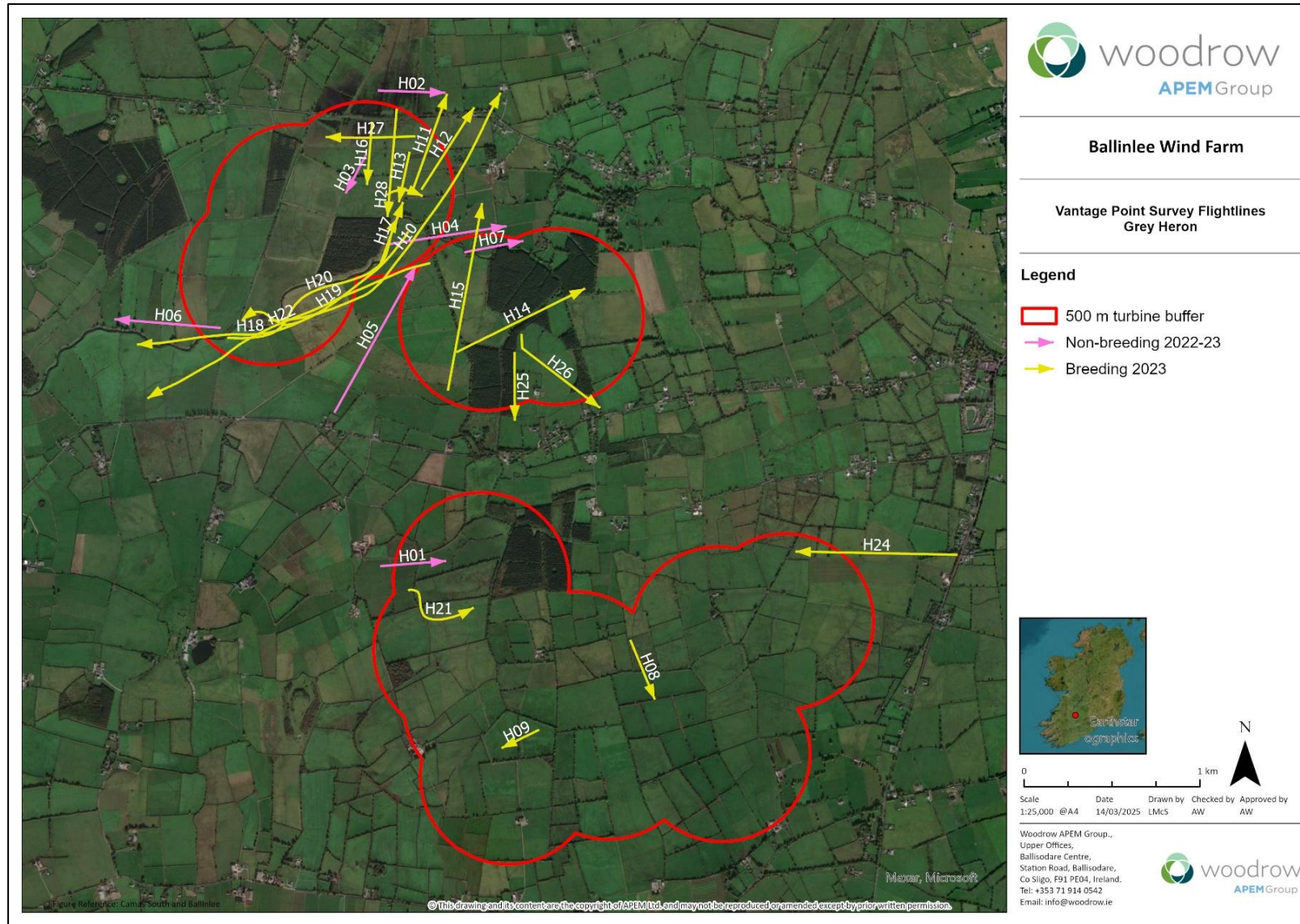


Figure A6.1711: Grey heron observations recorded during VP watches (non-breeding 2022-23 and breeding seasons 2023)

Table A6.9: Grey Heron

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20 m	20-50m	50-100m	100-180m	>180 m				
H01	Non-breeding 2021-22	2	07/10/2021	10:20	1	20-50			54						Flying	
H02	Non-breeding 2021-22	2	08/12/2021	10:18	1	20-50			45					A	Flying	
H03	Non-breeding 2021-22	1	03/03/2022	11:25	1	20-50			42					A	Flying	
H04	Non-breeding 2021-22	1	09/03/2022	13:55	1	0-20		15						A	Flying	
H05	Breeding 2022	2	05/04/2022	13:12	1	5-0		6							Flying	
H06	Breeding 2022	4	12/04/2022	18:03	1	30			40					A	Flying	
H07	Breeding 2022	2	04/05/2022	11:43	1	15-20		61							Flying	Slow flight
H08	Breeding 2022	2	08/06/2022	17:12	1	5		6							Flying	
H09	Breeding 2022	4	13/06/2022	16:07	1	15		10						A	Flying	
H10	Breeding 2022	4	22/07/2022	15:53	1	10		15							Flying	
H11	Breeding 2022	1	24/08/2022	17:04	1	2-3		3						A	Flying	
H01	Non-breeding 2022-23	4	10/10/2022	NA	1	0-20		16							Flying	
H02	Non-breeding 2022-23	1	15/11/2022	09:51	1	15		13						A	Flying	Going east

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-fligh t	0-20 m	20-50m	50-100m	100-180m	>180 m				
H03	Non-breeding 2022-23	1	15/11/2022	10:14	1	0-20		25						A	Flying	Going south
H04	Non-breeding 2022-23	1	15/11/2022	13:32	1	40-50			25					A	Flying	Going north east
H05	Non-breeding 2022-23	2	15/11/2022	13:32	1	50-100				10				A	Flying	Flew northeast
H06	Non-breeding 2022-23	2	12/12/2022	13:42	1	40			20						Flying/ on Ground	
H07	Non-breeding 2022-23	1	09/02/2023	07:52	1	0-20		35							Flying	Slow flight
H08	Breeding 2023	5	07/04/2023	14:27	1	0-20		25						A	Flying	
H09	Breeding 2023	7	07/04/2023	14:42	1	5-7 m		8						A	Flying	
H10	Breeding 2023	2	11/04/2023	15:50	2		50	60							Flying	Travelling northeast over site
H11	Breeding 2023	1	11/04/2023	15:52	2	5-6m	18						F	A	Flying	Flying Northeast
H12	Breeding 2023	1	11/04/2023	16:18	1	6m	16							A	Flying	Flying Northeast
H13	Breeding 2023	1	11/04/2023	16:27	2	3m	13							A	Flying	Flying southwest
H14	Breeding 2023	3	11/04/2023	16:51	1			60						A	Flying	Flying northeast
H15	Breeding 2023	2	11/04/2023	16:52	1		90								Flying	Travelling slowly north
H16	Breeding 2023	1	11/04/2023	19:03	1	2	12							A	Flying	Flew South, Landed in field
H17	Breeding 2023	2	04/05/2023	09:29	2		2	4						A	Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20 m	20-50m	50-100m	100-180m	>180 m				
H18	Breeding 2023	2	04/05/2023	09:30	2		100	15						A	Flying	Pair Flew west, one dropped into river
H19	Breeding 2023	2	04/05/2023	10:28	1		15	45						A	Flying	Flew west before dropping to river
H20	Breeding 2023	2	04/05/2023	12:07	1			130						A	Flying	Flying slowly up river
H21	Breeding 2023	4	05/05/2023	11:55	1	0-20 m		40						A	Hunting/ Perched	
H22	Breeding 2023	2	15/06/2023	08:38	1			50						A	Flying	
H23	Breeding 2023	1	10/07/2023	09:04	1		30							A	Flying	
H24	Breeding 2023	6	04/08/2023	06:59	1	0-20m		80							Flying	
H25	Breeding 2023	3	08/08/2023	09:17	1			12						A	Flying	
H26	Breeding 2023	3	08/08/2023	11:15	1			40						A	Flying	
H27	Breeding 2023	1	08/08/2023	11:35	1		32								Flying	
H28	Breeding 2023	1	12/09/2023	08:35	1		20							A	Flying	

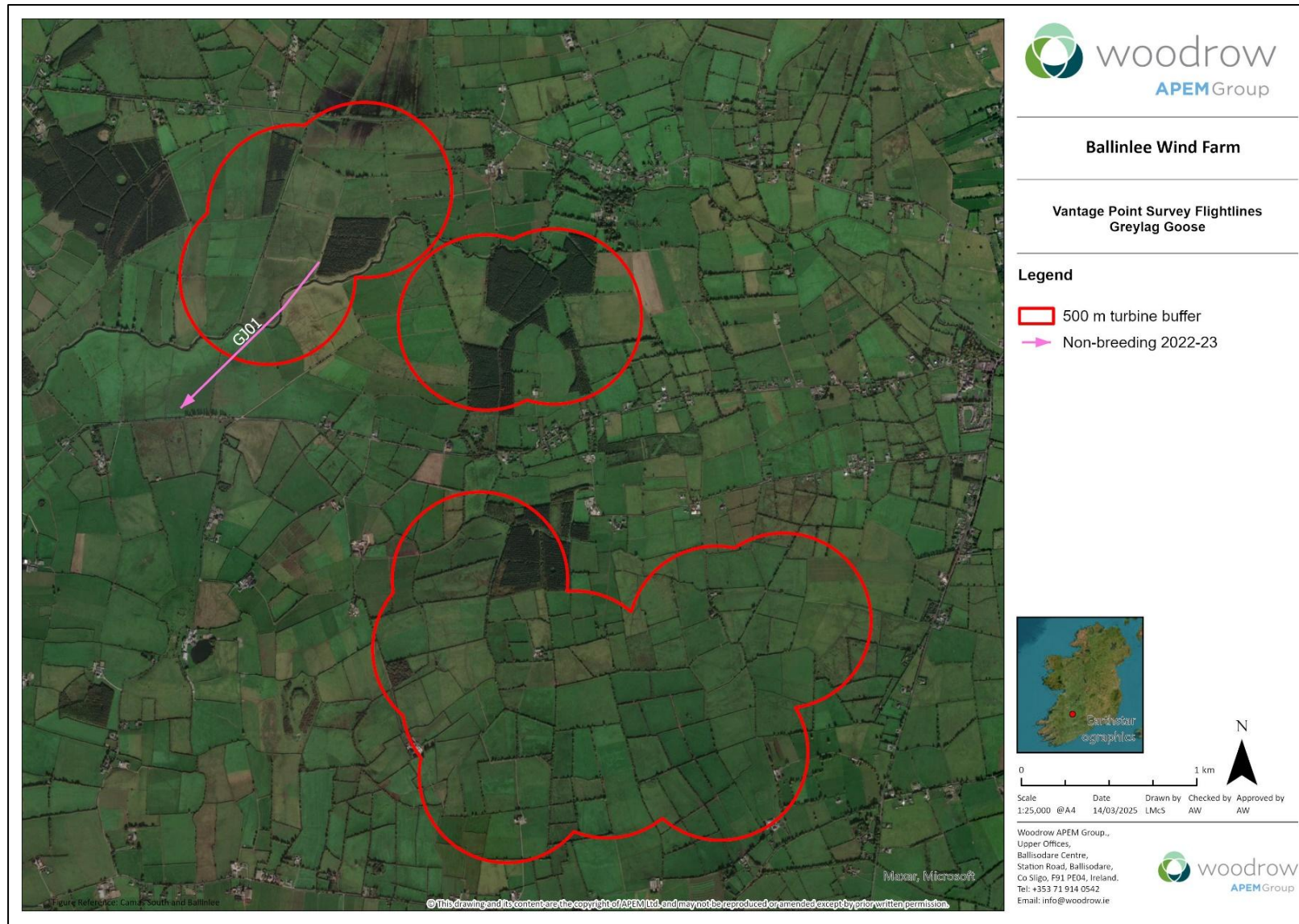


Figure A6.1812: Greylag goose observations recorded during VP watches

Table A6.10: Greylag Goose

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
GJ01	Non-breeding 2022-23	2	15/11/2022	09:14	8	50-100				10				A	Flying	Flew southwest

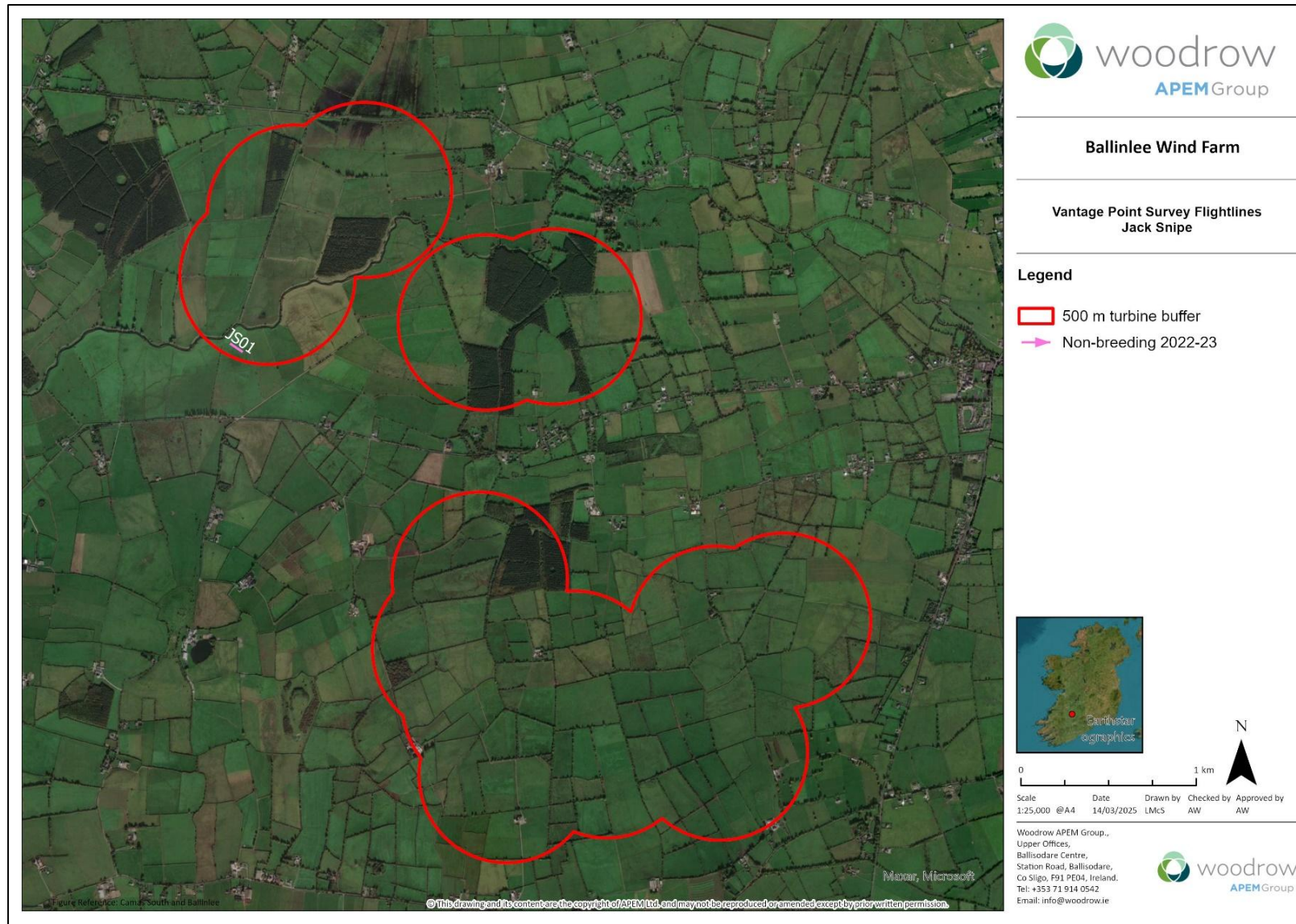


Figure A6.1913: Jack snipe observations recorded during VP watches

Table A6.11: Jack Snipe

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
JS01	Non-breeding 2022-23	2	09/02/2023	13:15	1	5		10							Flying	Flushed

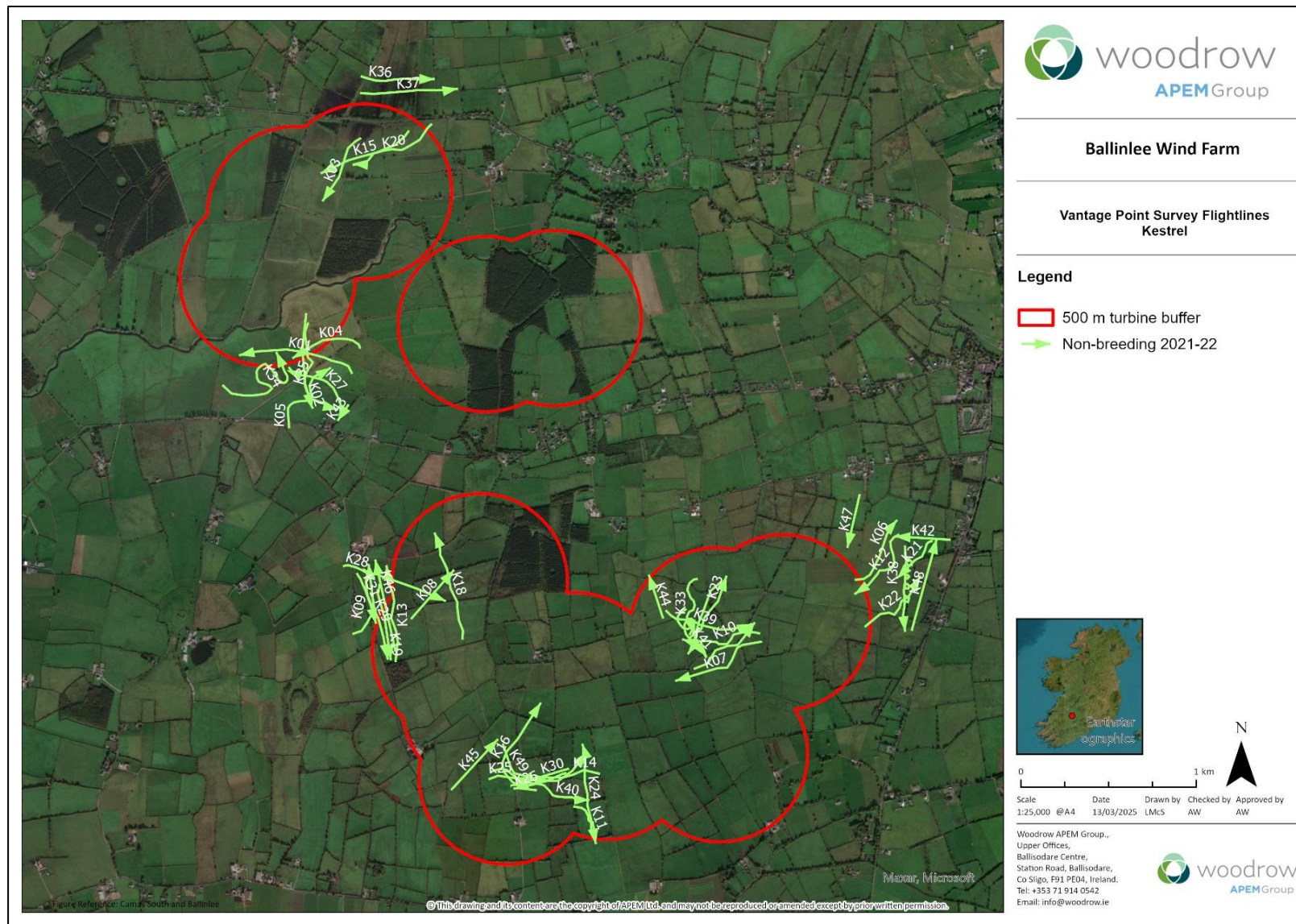


Figure A6.2014: Kestrel observations recorded during VP watches

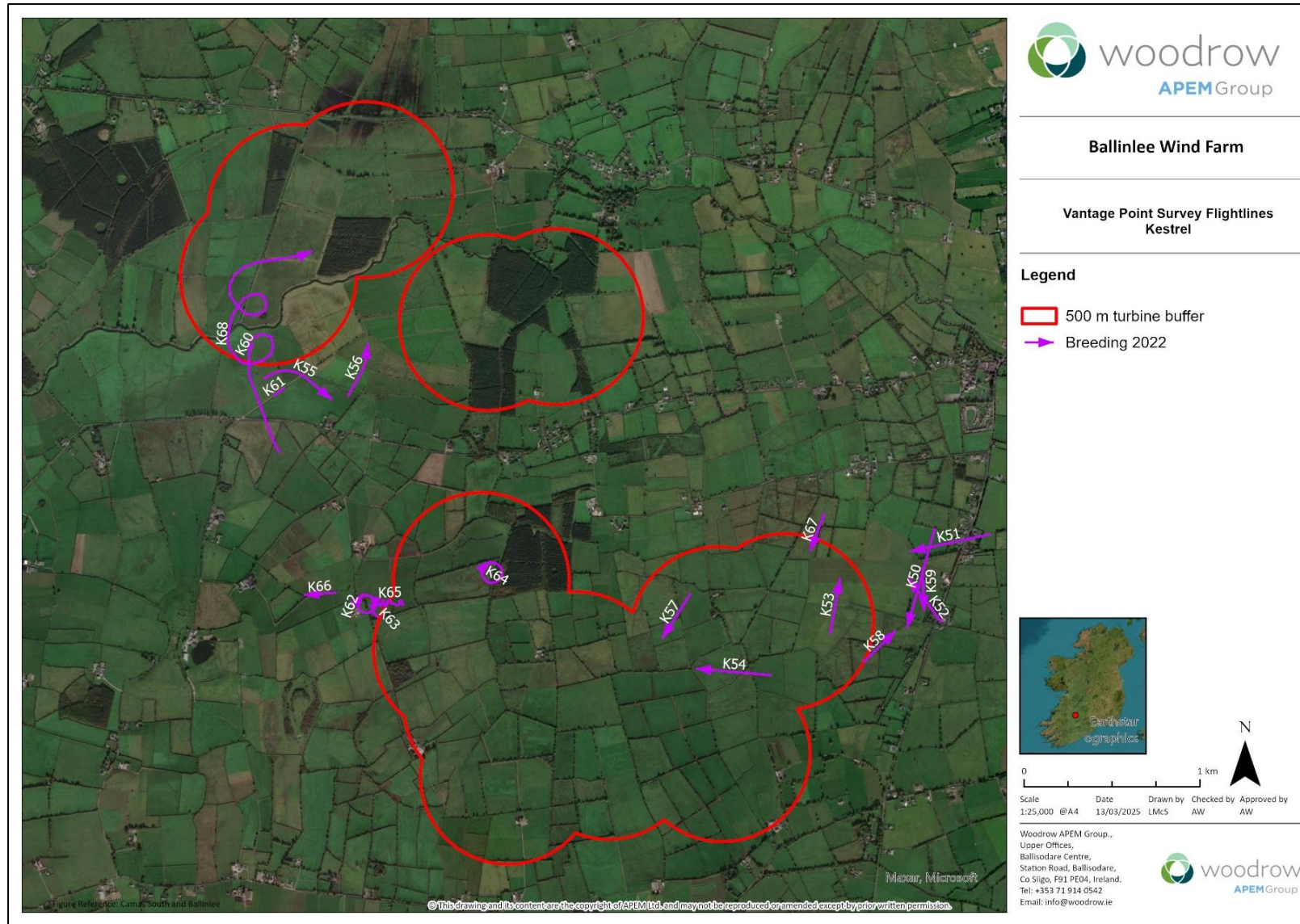


Figure A6.2115: Kestrel observations recorded during VP watches

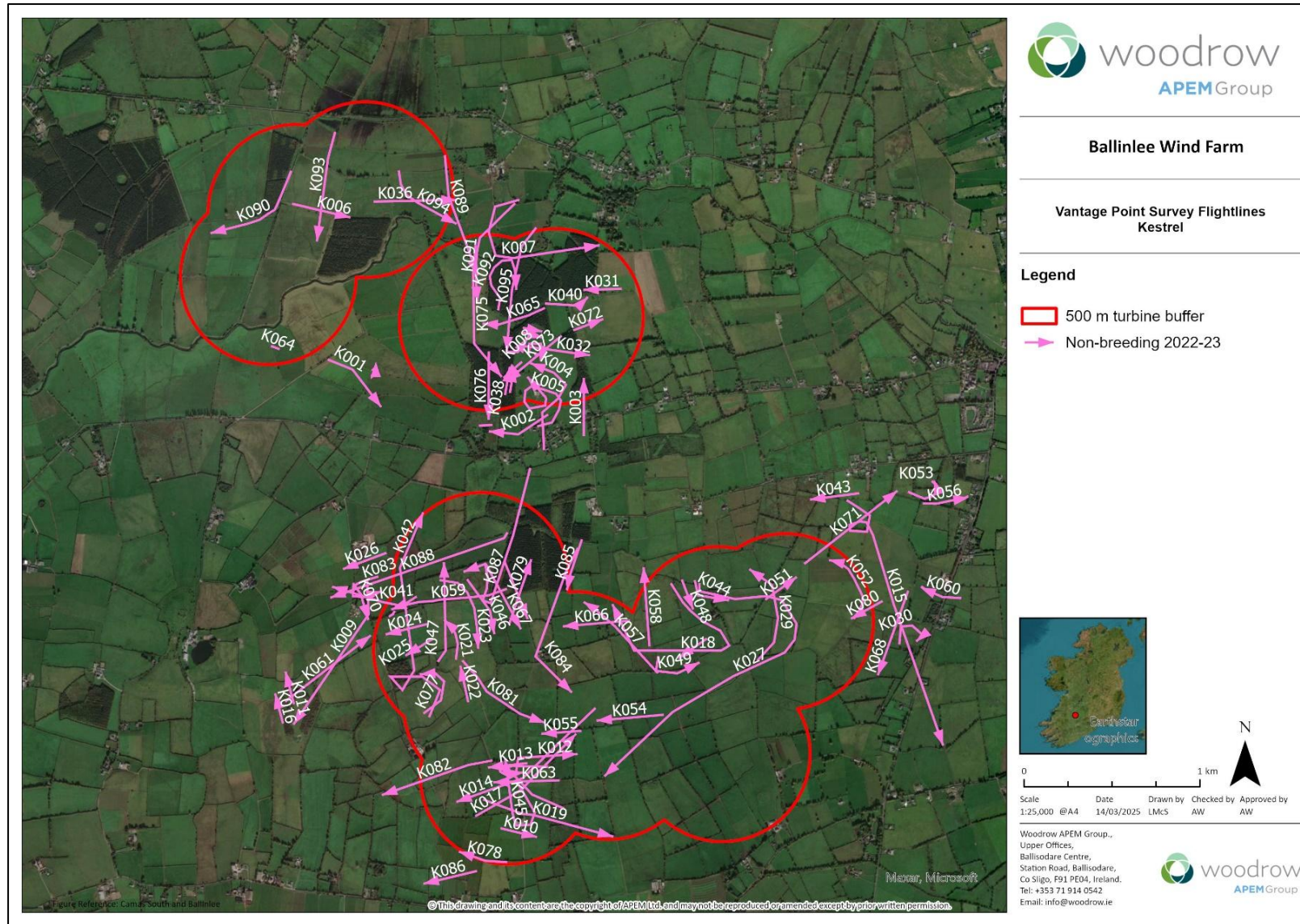


Figure A6.2216: Kestrel observations recorded during VP watches

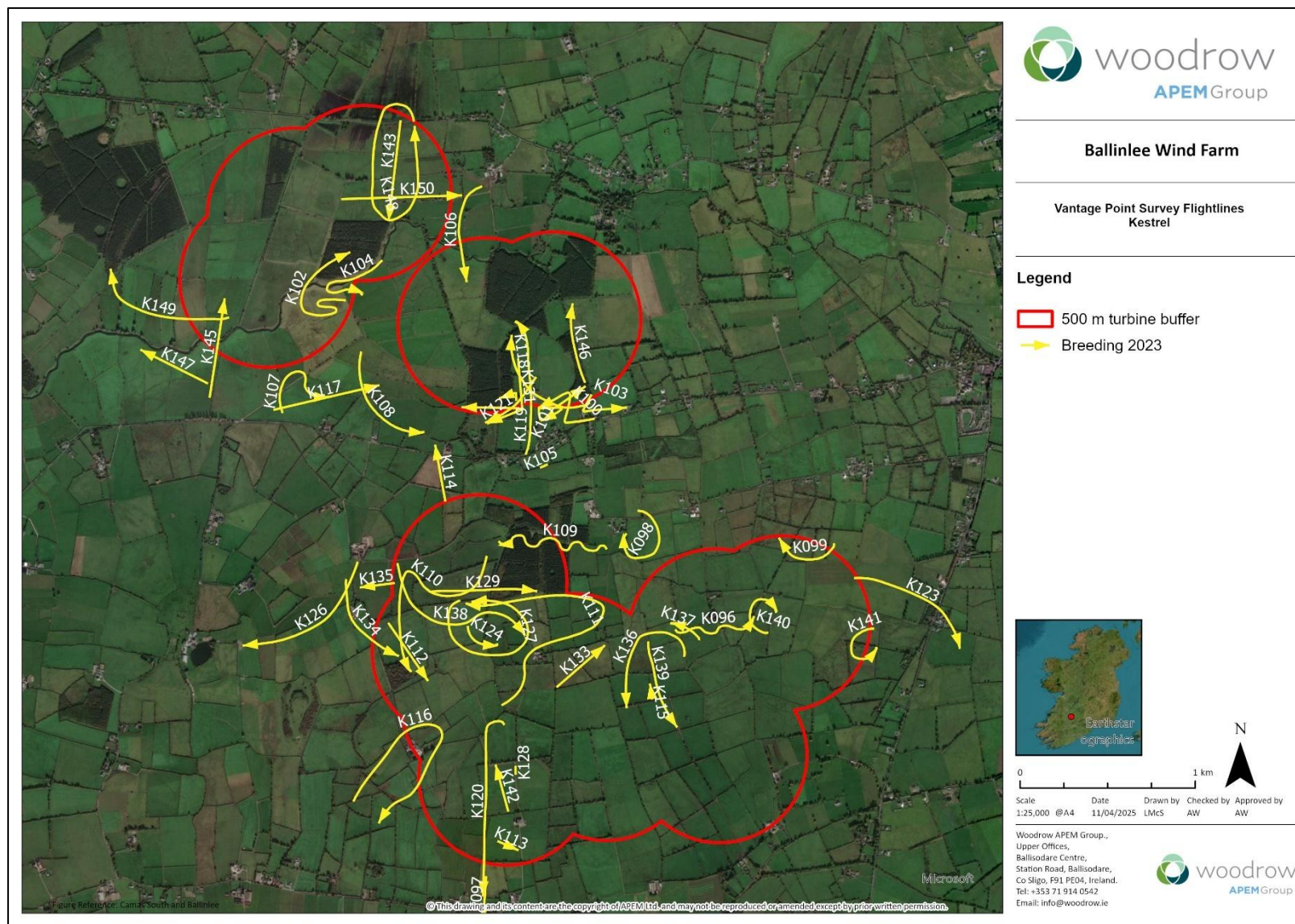


Figure A6.2317: Kestrel observations recorded during VP watches

Table A6.12: Kestrel

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K01	Non-breeding 2021-22	2	05/10/2021	13:27	1	0-20		120							Flying	
K02	Non-breeding 2021-22	2	05/10/2021	14:35	1	20-50			80						Flying	
K04	Non-breeding 2021-22	2	07/10/2021	09:38	1	0-20		240					F		Hunting	
K05	Non-breeding 2021-22	2	07/10/2021	11:07	1	0-20		120					F		Hunting	
K03	Non-breeding 2021-22	1	07/10/2021	13:48	1	0-20		720							Hunting	
K06	Non-breeding 2021-22	6	18/10/2021	10:44	1	15		70					M	A	Hunting	
K07	Non-breeding 2021-22	5	18/10/2021	11:54	1	20		120					F	A	Hunting	
K08	Non-breeding 2021-22	4	26/10/2021	10:25	1	10		20							Flying	
K09	Non-breeding 2021-22	4	01/11/2021	13:47	1	20		180							Hunting	
K10	Non-breeding 2021-22	5	03/11/2021	10:28	2	20		600					F	J	Hunting	
K11	Non-breeding 2021-22	7	03/11/2021	13:26	1	20		75					M	A	Hunting	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K13	Non-breeding 2021-22	4	05/11/2021	10:50	1	40			25				M	A	Flying	
K12	Non-breeding 2021-22	6	05/11/2021	11:52	1	20		300					M	A	Hunting	
K14	Non-breeding 2021-22	7	11/11/2021	10:48	1	40			20					A	Flying	
K15	Non-breeding 2021-22	1	08/12/2021	13:55	1	0-20		30							Flying	
K16	Non-breeding 2021-22	7	15/12/2021	13:05	1	20		420					F	A	Hunting	
K17	Non-breeding 2021-22	5	21/12/2021	13:37	1	30			18				M	A	Flying	
K18	Non-breeding 2021-22	4	05/01/2022	13:09	1	20		240					F	A	Hunting	
K19	Non-breeding 2021-22	4	05/01/2022	14:02	1	30			18				F	A	Flying	
K20	Non-breeding 2021-22	1	10/01/2022	09:46	1	20-50			25				F	A	Flying	
K21	Non-breeding 2021-22	6	17/01/2022	12:47	1	20		240					M	A	Hunting	
K22	Non-breeding 2021-22	6	17/01/2022	14:03	1	20		75					M	A	Hunting	
K23	Non-breeding 2021-22	5	20/01/2022	09:46	1	0-20	120	28					M	A	Flying/ Perched	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K24	Non-breeding 2021-22	7	20/01/2022	12:36	1	20		420					M	A	Hunting	
K25	Non-breeding 2021-22	7	25/01/2022	09:42	1	20		180					F	A	Hunting	
K26	Non-breeding 2021-22	3	01/02/2022	Not noted	1	0-20		50						A	Hunting	
K27	Non-breeding 2021-22	2	04/02/2022	13:36	1	0-20		120					F	A	Hunting	
K28	Non-breeding 2021-22	4	09/02/2022	12:10	1	20		420					M	A	Hunting	
K29	Non-breeding 2021-22	4	09/02/2022	13:42	1	20		18						A	Flying	
K30	Non-breeding 2021-22	7	11/02/2022	13:23	1	20		300					M	A	Hunting	
K31	Non-breeding 2021-22	4	14/02/2022	09:05	1	10		18					M	A	Flying	
K32	Non-breeding 2021-22	1	21/02/2022	Not noted	1	15		45						A	Hunting	
K33	Non-breeding 2021-22	5	23/02/2022	11:52	1	20		480					M	A	Hunting	
K34	Non-breeding 2021-22	2	03/03/2022	12:22	1	0-20		720					M	A	Hunting	
K35	Non-breeding 2021-22	2	03/03/2022	13:48	1	0-20		420					M	A	Hunting	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K36	Non-breeding 2021-22	1	09/03/2022	14:16	1	20-50			320				M	A	Hunting	
K37	Non-breeding 2021-22	1	09/03/2022	14:16	1	0-20		360					M	A	Hunting	
K38	Non-breeding 2021-22	6	11/03/2022	12:25	1	15		180						A	Hunting	
K40	Non-breeding 2021-22	7	21/03/2022	10:36	1	20		300					F	A	Hunting	
K39	Non-breeding 2021-22	5	21/03/2022	13:06	1	20		160					F	A	Hunting	
K41	Non-breeding 2021-22	5	28/03/2022	10:57	1	60				120			M	A	Soaring	
K42	Breeding 2022	6	05/04/2022	17:13	1	15		5					M	A	Hunting	
K43	Breeding 2022	2	05/04/2022	17:14	1	2		6							Flying	
K44	Breeding 2022	5	07/04/2022	13:38	1	60				120			M	A	Hunting	
K45	Breeding 2022	7	07/04/2022	16:44	1	50				10				A	Hunting	
K47	Breeding 2022	6	12/04/2022	13:31	1	40			10					A	Hunting	
K48	Breeding 2022	6	12/04/2022	13:32	1	30			10				M	A	Flying	
K46	Breeding 2022	4	12/04/2022	18:53	1	10		5						A	Flying	
K49	Breeding 2022	7	15/04/2022	14:25	1	50				120			M	A	Mobbing/ Hunting	
K50	Breeding 2022	6	10/05/2022	11:46	1	35			210				F	-	Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K52	Breeding 2022	6	10/05/2022	11:46	1	60				5			M		Hunting	
K51	Breeding 2022	6	10/05/2022	12:25	2	35/60			210	5			F&M	A	Flying	
K53	Breeding 2022	5	11/05/2022	08:04	1	60				10				A	Hunting	
K54	Breeding 2022	5	11/05/2022	08:47	1	50				5				A	Hunting	
K55	Breeding 2022	2	08/06/2022	18:42	1	5-50		126	112				M	A	Flying, Hovering, Hunting	
K56	Breeding 2022	2	08/06/2022	18:42	1	5-50		100	50				M	A	Flying, Hovering, Hunting	
K57	Breeding 2022	5	14/06/2022	18:01	1	20		5					M	A	Flying	
K58	Breeding 2022	6	19/07/2022	11:21	1	30			5					A	Flying	
K59	Breeding 2022	6	19/07/2022	11:47	1	0-20	12	9						A	Flying/ Perched	
K60	Breeding 2022	2	19/07/2022	12:09	1	2-20	242	167					F	A	Flying, Hunting, Hovering, Perched	
K61	Breeding 2022	2	17/08/2022	16:04	1	4		2					F	A	Flying	
K62	Breeding 2022	4	23/08/2022	11:30	1	20		10						A	Flying / Hunting	
K63	Breeding 2022	4	23/08/2022	11:30	1	30			17						Flying / Hunting	
K66	Breeding 2022	4	23/08/2022	12:09	1	12		8							Flying / Hunting	
K65	Breeding 2022	4	23/08/2022	13:36	1	15		11							Flying / Hunting	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K64	Breeding 2022	4	23/08/2022	13:58	2	50			60						Soaring and Hunting	
K67	Breeding 2022	2	23/08/2022	15:48	1	50		10	70						Flying	
K68	Breeding 2022	1	24/08/2022	15:27	1	30-40			180				F	A	Flying	
K001	Non-breeding 2022-23	2	05/10/2022	09:01	1	0-20		26					F		Perched/ Flying	Flew low over the ground
K002	Non-breeding 2022-23	3	05/10/2022	09:12	1	30			15				M	A	Flying	Flying west, Mobbed by corvids
K003	Non-breeding 2022-23	3	05/10/2022	10:41	1	12		5					M	A	Flying	
K004	Non-breeding 2022-23	3	05/10/2022	11:35	1	5-15		25					M	A	Flying	
K005	Non-breeding 2022-23	3	05/10/2022	13:31	1	10-15	510	60					M	A	Flying/ Perched	Hunting before perching on ESB pole
K006	Non-breeding 2022-23	1	05/10/2022	13:43	1	10-15		50							Flying/ Hunting	Hunting and Flying east
K007	Non-breeding 2022-23	1	05/10/2022	14:08	1	10-15		134							Flying/ Hunting	Hunting and Flying east
K008	Non-breeding 2022-23	3	05/10/2022	15:12	1	15	60	60					M	A	Hunting/ Perched	Hunting then Perched in a tree
K009	Non-breeding 2022-23	4	10/10/2022	11:31	1	20-50			118						Flying	Chased by rook
K010	Non-breeding 2022-23	7	10/10/2022	11:40	1	10		25					M	A	Flying	Was Perched on tree

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K011	Non-breeding 2022-23	4	10/10/2022	12:28	1	20-50			179						Flying/ Soaring	
K012	Non-breeding 2022-23	7	10/10/2022	12:55	1	15		60					M	A	Hunting	
K013	Non-breeding 2022-23	7	10/10/2022	13:00	1	1-20		100					M	A	Hunting	
K014	Non-breeding 2022-23	7	10/10/2022	13:10	2	2-40		350	380				Pair	A	Flying	
K015	Non-breeding 2022-23	6	10/10/2022	13:18	1	15-20		30					M	A	Flying/ Circling	Circling and Travelling SE
K016	Non-breeding 2022-23	4	10/10/2022	13:33	1	20-50			221						Flying/ Hunting	Hunting near knocktwo
K017	Non-breeding 2022-23	7	10/10/2022	13:45	2	10-100		50	50	50			Pair	A	Soaring/ Hunting	Went NE
K018	Non-breeding 2022-23	5	10/10/2022	13:54	1	12-80	760	60					F	A	Flying/ Hunting	Mobbed by rook. Hunting and perching. Caught prey and fed while Perched
K019	Non-breeding 2022-23	7	10/10/2022	14:21	1	20-60			300	80			M	A	Hunting	Went East
K020	Non-breeding 2022-23	4	10/10/2022	14:30	1	0-20		21					F		Flying/ Soaring	
K021	Non-breeding 2022-23	4	10/10/2022	14:39	1	30-80		10	130	150						
K022	Non-breeding 2022-23	4	10/10/2022	14:52	1	0-20		29					F		Flying/ Soaring	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K023	Non-breeding 2022-23	4	10/10/2022	14:57	1	0-20		117					M		Soaring/ Hunting	
K024	Non-breeding 2022-23	4	10/10/2022	15:01	1	0-20		39					M		Soaring/ Hunting	
K025	Non-breeding 2022-23	4	10/10/2022	15:06	1	0-20		11					M		Hunting	
K026	Non-breeding 2022-23	4	10/10/2022	15:17	1	0-20		21					M		Hunting/ Soaring	With prey in its feet
K027	Non-breeding 2022-23	1	12/10/2022	13:07	1	0-20		50								
K028	Non-breeding 2022-23	7	07/11/2022	09:30	1	10		35							Flying/ Hunting	Flying west
K029	Non-breeding 2022-23	5	07/11/2022	11:24	1	0-20		31							Hunting	
K030	Non-breeding 2022-23	6	07/11/2022	13:50	1	40			10						Flying	
K031	Non-breeding 2022-23	3	15/11/2022	10:59	1	0-20		49							Flying	
K032	Non-breeding 2022-23	3	15/11/2022	11:04	1	0-20		23					M		Flying/ Hunting	Chased by Jackdaws
K034	Non-breeding 2022-23	3	15/11/2022	11:39	1	0-20		28					M		Flying/ Hunting	
K036	Non-breeding 2022-23	1	15/11/2022	11:53	1	40			15					A	Flying	Going east

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K037	Non-breeding 2022-23	3	15/11/2022	13:34	1	0-20		29					M		Flying/ Hunting	Unsuccessful hunt on redwing
K038	Non-breeding 2022-23	3	15/11/2022	14:06	1	0-20		28					F		Flying/ Hunting	Mobbed by HC
K039	Non-breeding 2022-23	3	15/11/2022	14:39	1	0-20		26					F		Mobbing	Mobbed by rooks
K040	Non-breeding 2022-23	3	15/11/2022	14:59	1	0-20		18					M		Hunting/ mobbing	Mobbed by HC
K041	Non-breeding 2022-23	4	01/12/2022	08:15	1	10		65					F	A	Flying/ Hunting	Hunting and Flying west
K049	Non-breeding 2022-23	5	01/12/2022	11:45	1	0-20	300	40					M	J	Flying/ Perched	Flying and perching
K042	Non-breeding 2022-23	4	01/12/2022	11:58	1	100-140					215		F	A	Flying	Mobbed by corvids, Flying north
K043	Non-breeding 2022-23	6	01/12/2022	12:41	1	20-50			42						Soaring/ Hunting	Dived into scrubland
K044	Non-breeding 2022-23	5	01/12/2022	13:00	1	20-100			30	110					Hunting	Hovering high
K045	Non-breeding 2022-23	7	01/12/2022	13:02	1	10-50			90				M	A	Hunting/ mobbing	Mobbing buzzard
K046	Non-breeding 2022-23	4	01/12/2022	13:02	1	10-15		118					M	A	Flying/ Hunting	Hunting and descending below treeline
K047	Non-breeding 2022-23	4	01/12/2022	13:20	1	10-15		74					M	A	Flying/ Hunting	Travelling north

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K048	Non-breeding 2022-23	5	01/12/2022	13:38	1	0-20		20							Flying	Travelling south
K050	Non-breeding 2022-23	3	12/12/2022	12:34	1	0-20	300	10						J	Perched/ Flying	Perched, then low fast flight
K051	Non-breeding 2022-23	5	06/01/2023	11:30	1	0-20		116							Flying/ Hunting	Travelling east
K052	Non-breeding 2022-23	6	06/01/2023	11:30	1	20-100			30	40					Soaring	Gliding and Soaring, went west
K053	Non-breeding 2022-23	6	06/01/2023	11:57	1	0-50		30	40				M	A	Flying	Gliding/ Circling
K054	Non-breeding 2022-23	5	06/01/2023	11:58	1	0-20		153							Flying/ Hunting	Travelling west
K055	Non-breeding 2022-23	7	06/01/2023	12:09	1	20-50			44						Flying/ Hunting	
K057	Non-breeding 2022-23	5	06/01/2023	13:49	1	0-20		148					M	A	Flying/ Hunting	Hunting and Flying north
K058	Non-breeding 2022-23	5	06/01/2023	14:37	1	0-20		92					M	A	Flying/ Hunting	Hunting and Flying north
K059	Non-breeding 2022-23	4	06/01/2023	14:48	1	6-30		270	270				F	A	Hunting	Hunting along field boundary
K060	Non-breeding 2022-23	6	06/01/2023	15:46	1	0-20		10							Flying	Travelling west
K061	Non-breeding 2022-23	4	06/01/2023	16:32	1	30			40						Hunting	Hunting

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K063	Non-breeding 2022-23	7	06/01/2023	16:41	1	100-200					293				Circling/ Soaring	
K062	Non-breeding 2022-23	5	06/01/2023	16:41	1	0-20		40					M	A	Flying/ Hunting	Landing into hedgerow
K064	Non-breeding 2022-23	2	10/01/2023	15:54	1	20-50			428						Soaring/ Hunting	
K065	Non-breeding 2022-23	3	10/01/2023	16:31	1	0-20		52							Hunting	Travelling west
K066	Non-breeding 2022-23	5	07/02/2023	08:35	1	0-20	340	3					F	A	Perched/ Flying	Flight and Perched
K067	Non-breeding 2022-23	4	08/02/2023	07:51	1	0-20		131					F		Hunting/ Soaring	
K068	Non-breeding 2022-23	6	08/02/2023	08:28	1	0-20		20					M	A	Flying	Travelling south
K069	Non-breeding 2022-23	4	08/02/2023	11:46	1	0-20		61							Hunting/ Soaring	
K070	Non-breeding 2022-23	4	08/02/2023	12:58	1	0-20		67							Hunting	
K071	Non-breeding 2022-23	6	08/02/2023	13:01	1	0-20		54							Flying/ Hunting	Hunting and Flying north
K072	Non-breeding 2022-23	3	09/02/2023	07:59	1	0-20		25							Flying	Travelling east
K073	Non-breeding 2022-23	3	09/02/2023	08:43	1	0-20		46					M	A	Flying/ Hunting	Travelling SW

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K074	Non-breeding 2022-23	3	09/02/2023	11:12	2	0-20		97					F&M	A	Perched/ Circling	Landing, perching and Circling
K075	Non-breeding 2022-23	1	09/02/2023	12:45	1	20-50			90						Flying	Flew south slowly
K076	Non-breeding 2022-23	3	09/02/2023	13:14	1	0-20		85					F	A	Flying/ Hunting	Hunting and Travelling south
K077	Non-breeding 2022-23	4	07/03/2023	12:14	1	0-20		150							Hunting	
K078	Non-breeding 2022-23	7	07/03/2023	12:19	1	0-20		48					M	A	Flying/ Hunting	Hunting and landing in hedgerow
K079	Non-breeding 2022-23	7	07/03/2023	12:39	1	0-20		62							Flying/ Hunting	Hunting and Flying north
K080	Non-breeding 2022-23	6	07/03/2023	12:55	1	30		17							Flying/ Hunting	Kestrel Flying SW, lost view to haze
K081	Non-breeding 2022-23	5	07/03/2023	13:35	1	20-50			128						Circling/ Soaring	
K082	Non-breeding 2022-23	7	07/03/2023	14:04	1	0-20		152					M	A	Flying/ Hunting	Hunting and descending into cover
K083	Non-breeding 2022-23	4	07/03/2023	14:17	1	20-50			230				F	A	Hunting	Hunting grassland
K084	Non-breeding 2022-23	5	07/03/2023	14:20	2	0-20		421							Circling/ Soaring	
K085	Non-breeding 2022-23	5	07/03/2023	15:45	1	0-20		68							Soaring	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K086	Non-breeding 2022-23	7	07/03/2023	15:52	1	0-20		56					M	A	Flying/ Hunting	Hunting and Flying west
K087	Non-breeding 2022-23	4	07/03/2023	17:35	1	0-50		180	100						Hunting	Hunting wood edge and fields
K088	Non-breeding 2022-23	4	07/03/2023	18:05	1	0-50		200	300				M	A	Hunting/ Perched	Hunting then Perched
K089	Non-breeding 2022-23	1	08/03/2023	12:14	1	0-20		57					M	A	Flying/ Hunting	Hunting and Travelling south
K090	Non-breeding 2022-23	2	08/03/2023	12:20	1	0-20		168							Hunting/ Soaring	
K091	Non-breeding 2022-23	1	08/03/2023	12:31	1	0-20		122							Flying/ Hunting	Hunting and Flying south
K092	Non-breeding 2022-23	2	08/03/2023	12:35	1	20-50			181						Hunting/ Soaring	
K093	Non-breeding 2022-23	1	08/03/2023	13:30	1	0-20		35					M	A	Flying	Travelling south
K094	Non-breeding 2022-23	1	08/03/2023	16:40	1	0-20		38							Flying/ Hunting	Hunting and descending into scrub
K095	Non-breeding 2022-23	1	08/03/2023	18:18	1	0-20		124							Flying/ Hunting	Hunting and Travelling south
K096	Breeding 2023	5	07/04/2023	14:36	1	0-50 m		90	90				F	-	Hunting/ Perched	Perched for 20, then Hovered, moved east
K097	Breeding 2023	7	07/04/2023	15:57	1	5- 6 m		9					F	A	Flying/ Hunting	
K098	Breeding 2023	5	07/04/2023	18:40	1	0-50 m		300	200						Hunting	Hovering over grassland

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K099	Breeding 2023	6	07/04/2023	20:06	1	0-20 m	87								Flying/ Hunting	Hunting and descending into cover
K100	Breeding 2023	3	11/04/2023	16:53	1			85	15				F	A	Flying / Hunting / Perched	Flying in between perches and Hunting
K101	Breeding 2023	3	11/04/2023	18:22	1			10	140				F	-	Hunting / Perched	Hunting and Perched on ESB pole
K102	Breeding 2023	2	11/04/2023	19:40	1								F	A	Hunting	
K103	Breeding 2023	3	11/04/2023	19:52	1				15				F	A	Hunting	
K104	Breeding 2023	2	11/04/2023	20:08	1			150	30				F	A	Hunting	Hovering beside river
K105	Breeding 2023	3	11/04/2023	20:10	1			90					F	A	Hunting / Perched	Perched on ESB poles
K106	Breeding 2023	1	04/05/2023	06:44	1				125						Flying / Hunting	Hunting and Travelling south
K107	Breeding 2023	2	04/05/2023	06:49	1			2	5					A	Hunting	Hunting before dropping from sight
K108	Breeding 2023	2	04/05/2023	07:27	1			5	105					A	Hunting	
K109	Breeding 2023	5	05/05/2023	10:42	1								F	A	Flying/ Hunting	
K110	Breeding 2023	4	05/05/2023	10:45	1	0-50 m		400	80				F	A	Hunting	Hovering
K111	Breeding 2023	7	05/05/2023	11:59	1	0-50 m		176	100						Flying/ Hunting	Hunting and Flying east
K112	Breeding 2023	4	06/06/2023	08:43	1	0-20m		35					M	A	Flying / Hunting	Hunting and Flying South
K113	Breeding 2023	7	06/06/2023	11:45	1	0-20 m		15					M	A	Flying/ Perched	Perched on ESB pole
K114	Breeding 2023	4	06/06/2023	12:14	1	20-50m			50				M	A	Flying / Mobbing	Hunting and Travelling north
K115	Breeding 2023	5	06/06/2023	13:02	1	20-50m			4					A	Flying/ Hunting	Hovered briefly

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K116	Breeding 2023	7	06/06/2023	13:20	1	0 - 50m		60	310				M	A	Hunting / Soaring	
K117	Breeding 2023	2	15/06/2023	06:52	1			40					M	A	Flying	Flying west
K118	Breeding 2023	3	15/06/2023	08:12	1			9						A	Flying	
K119	Breeding 2023	3	15/06/2023	08:55	1			20						A	Flying	
K120	Breeding 2023	7	06/07/2023	07:50	1	0-20m		70						A	Hunting	
K121	Breeding 2023	2	10/07/2023	08:16	1			35					M	A	Flying / Hunting	Hunting and Flying southwest
K123	Breeding 2023	6	04/08/2023	08:57	1	0-20m		64					M	A	Flying / Hunting	Hunting and Flying south-easterly
K124	Breeding 2023	4	04/08/2023	10:43	1	20-50m			25					A		
K125	Breeding 2023	7	04/08/2023	10:50	1									J	Calling	
K126	Breeding 2023	4	04/08/2023	11:00	1	20-50m			50				F	A	Hunting	
K127	Breeding 2023	4	04/08/2023	11:25	2	20-50m			65					A & J	Circling	
L128	Breeding 2023	7	04/08/2023	12:33	1	0-20m		10							Flying / Hunting	
K129	Breeding 2023	4	04/08/2023	12:39	1	20-50m			15					J	Flying	
K130	Breeding 2023	3	08/08/2023	07:27	1			6					M	A	Flying / Hunting	
K131	Breeding 2023	3	08/08/2023	11:47	1				12					J	Flying / Hunting	
K132	Breeding 2023	3	08/08/2023	12:42	1				5					J	Flying / Hunting	
K133	Breeding 2023	7	11/09/2023	10:44	1	0-20m		20							Flying	Travelling East
K134	Breeding 2023	4	11/09/2023	11:04	1	0-20m		14					F	A	Flying/ Hunting	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
K135	Breeding 2023	4	11/09/2023	11:46	1	0-20m		75							Flying/ Hunting	
K136	Breeding 2023	5	11/09/2023	11:48	1	0-20m		70						A	Hunting	
K137	Breeding 2023	5	11/09/2023	12:14	1	0-20m		20						A	Hunting	Hunting into the Ash tree
K138	Breeding 2023	4	11/09/2023	12:37	1	0-20m		40						J	Flying/ Hunting	
K139	Breeding 2023	5	11/09/2023	12:54	1	0-20m		15						A	Flying	
K140	Breeding 2023	6	11/09/2023	13:05	1	0-20m		20							Hunting	
K141	Breeding 2023	6	11/09/2023	13:10	1	0-20m		95							Mobbing/ Perched/ Hunting	
K142	Breeding 2023	7	11/09/2023	13:27	1	0-20m		22					M	A	Flying / Hunting	
K143	Breeding 2023	1	12/09/2023	07:17	1			15							Flying / Hunting	
K144	Breeding 2023	3	12/09/2023	07:55	1			20							Flying	Flying east
K145	Breeding 2023	2	12/09/2023	10:32	1			172						J	Flying / Hunting	Hunting and Flying north
K146	Breeding 2023	3	12/09/2023	11:22	1				35							
K147	Breeding 2023	2	12/09/2023	11:34	1			60							Flying / Hunting	
K148	Breeding 2023	1	12/09/2023	11:43	1			1140					F	A	Flying / Hunting	Hunting / Hovering from 11:43 to 12:02
K149	Breeding 2023	2	12/09/2023	12:30	1			45							Flying / Hunting	Hunting and Flying north west.
K150	Breeding 2023	1	12/09/2023	12:53	1			26						J	Flying / Hunting	

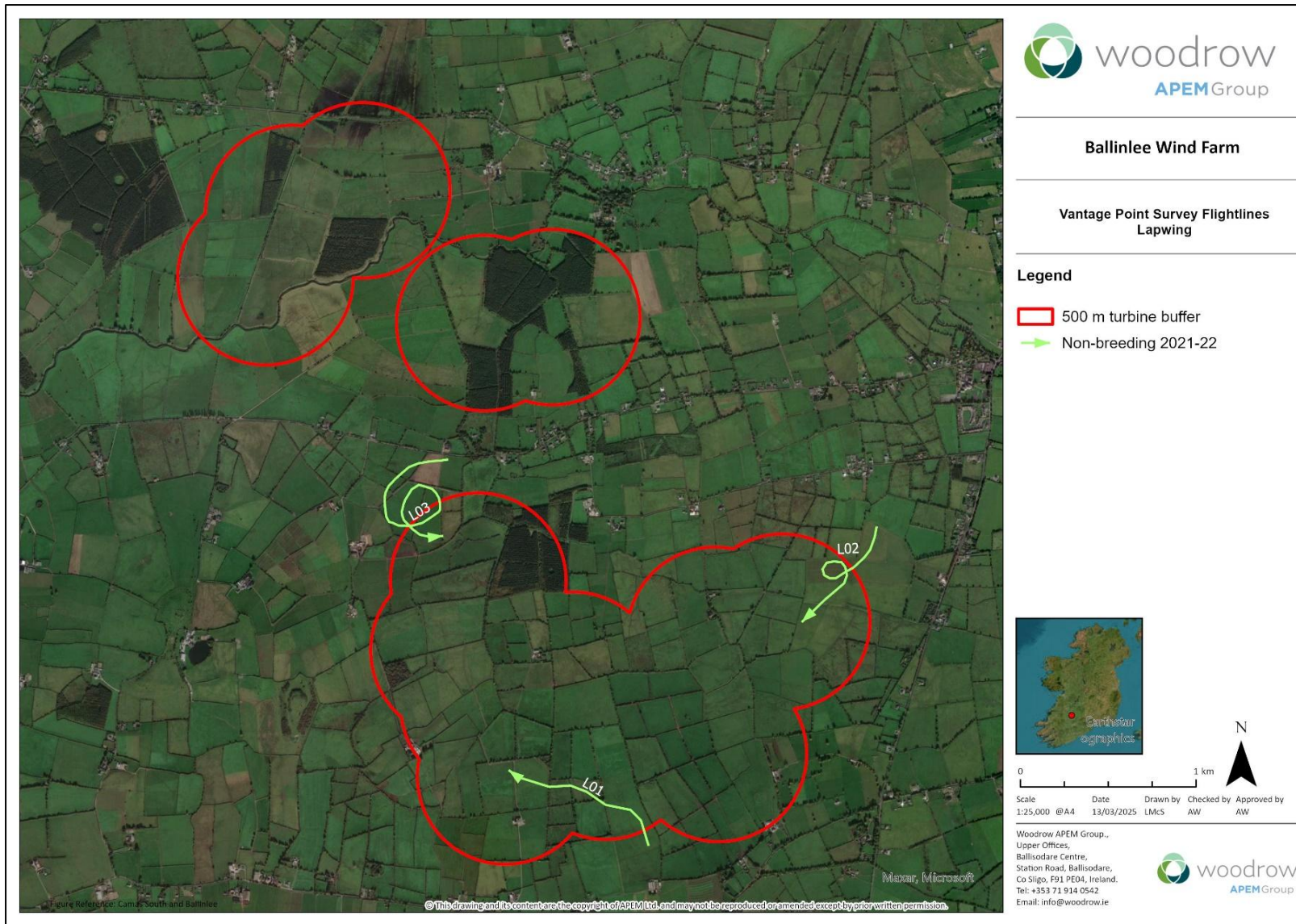


Figure A6.2418: Lapwing observations recorded during VP watches

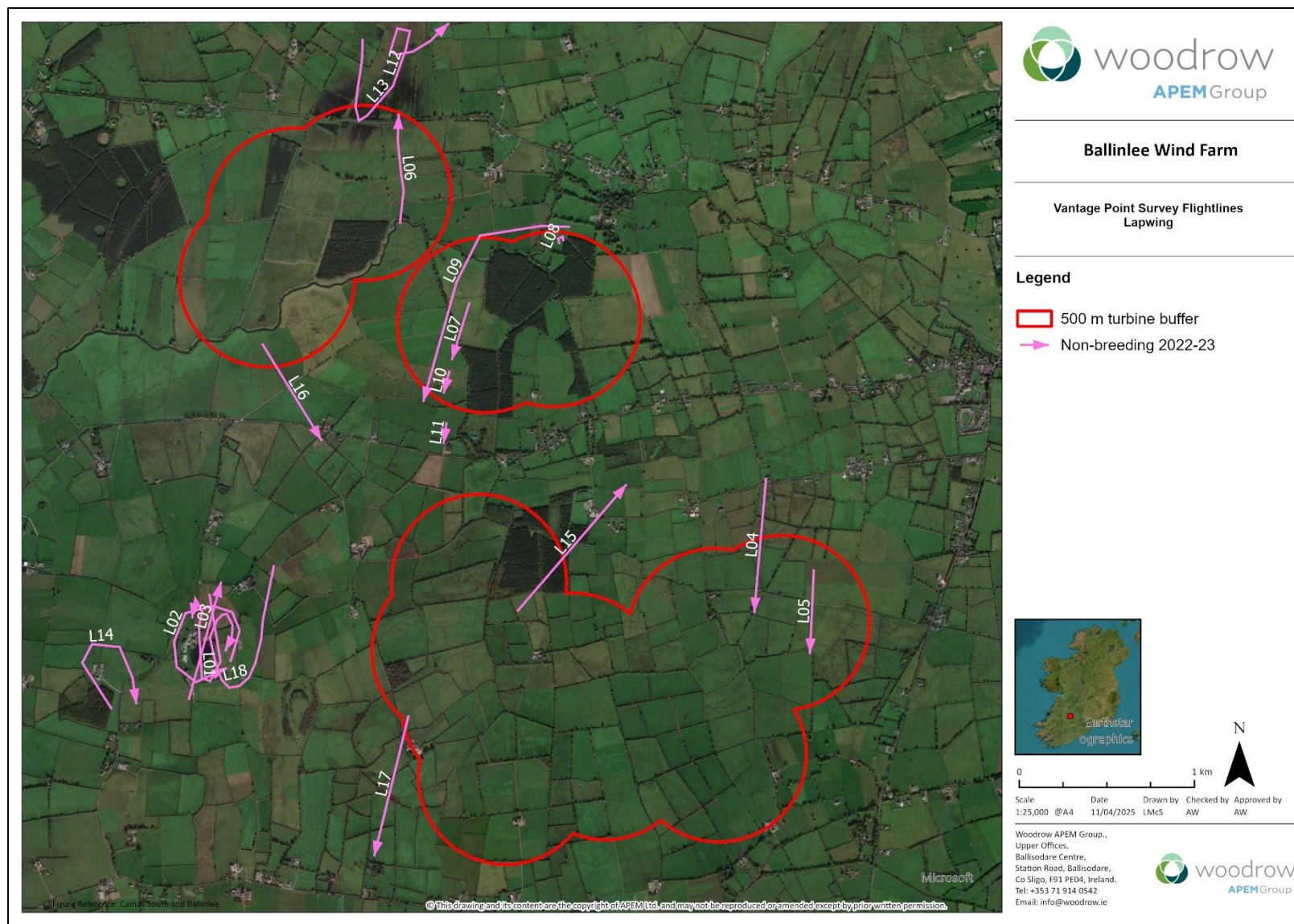


Figure A6.2519: Lapwing observations recorded during VP watches

Table A6.13: Lapwing

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
L01	Non-breeding 2021-22	7	03/11/2021	12:20	70	200						95		A	Flying	
L03	Non-breeding 2021-22	4	04/12/2021	10:22	1	30			75					A	Circling	
L02	Non-breeding 2021-22	6	04/12/2021	13:07	50	60				600				A	Flying/ Circling	
L01	Non-breeding 2022-23	4	07/11/2022	09:20	80	0-20		150							Circling/ on Ground	Circled above fields, Landed. congregating NE of vp4.
L02	Non-breeding 2022-23	4	07/11/2022	09:53	73	0-50		100	110						Circling	Landed out of view
L03	Non-breeding 2022-23	4	07/11/2022	11:27	60	0-20		190							Flying	Travelling slowly, out of view at hill. congregating NE of vp4. Most likely Landed out of view behind hill. Travelled over field from the south.
L04	Non-breeding 2022-23	6	07/11/2022	11:59	55	50-70				25					Flying	
L05	Non-breeding 2022-23	5	07/11/2022	14:02	4	50-100				24					Flying	
L06	Non-breeding 2022-23	1	15/11/2022	09:25	7	25			10					A	Flying	Going north
L07	Non-breeding 2022-23	3	15/11/2022	10:21	27	20-50			43						Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
L08	Non-breeding 2022-23	3	15/11/2022	11:14	80	100-200					10				Flying	
L09	Non-breeding 2022-23	3	15/11/2022	11:31	80	50-100				101					Flying	
L10	Non-breeding 2022-23	3	15/11/2022	11:51	26	20-50			28						Flying	Flew SW
L11	Non-breeding 2022-23	3	15/11/2022	11:56	9	20-50			21						Flying	Flew west
L12	Non-breeding 2022-23	1	15/11/2022	14:52	19	40-50			25					A	Circling/ Flying	
L13	Non-breeding 2022-23	1	15/11/2022	14:53	1	40-50			30					A	Flying	
L14	Non-breeding 2022-23	5	01/12/2022	10:40	190	0-20		12							Circling/ Perched	Circling for 9 mins. Landed west of the site
L15	Non-breeding 2022-23	5	01/12/2022	13:51	47	20-50			80						Flying	Travelling out of view behind forest block
L16	Non-breeding 2022-23	2	12/12/2022	10:35	6	60				15					Flying	
L17	Non-breeding 2022-23	3	06/01/2023	12:44	60	100-200					107				Flying	
L18	Non-breeding 2022-23	4	06/01/2023	14:44	45	0-75		30	30	60					Circling	Circling high up and dropping down

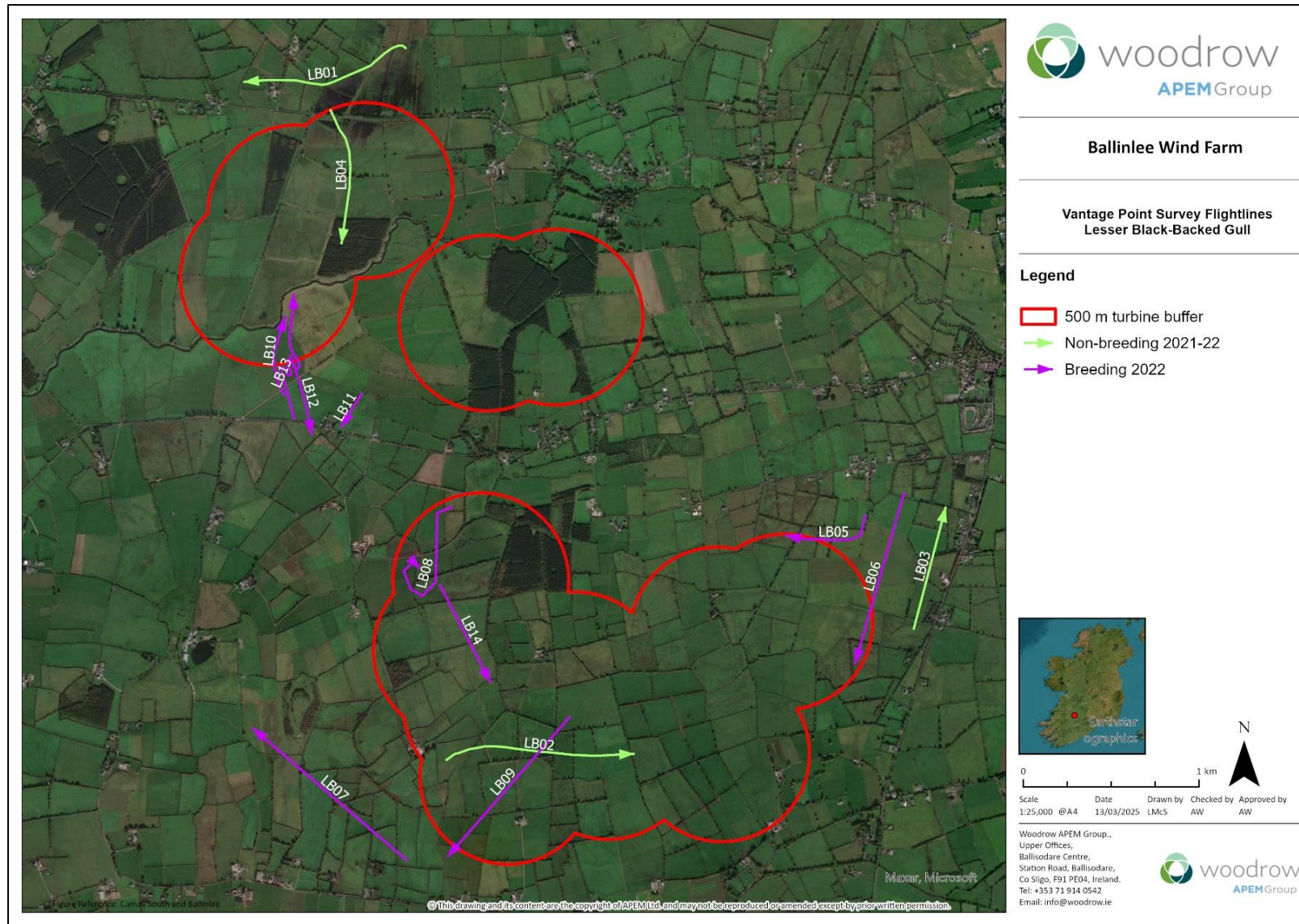


Figure A6.2620: Lesser black-backed gull observations recorded during VP watches

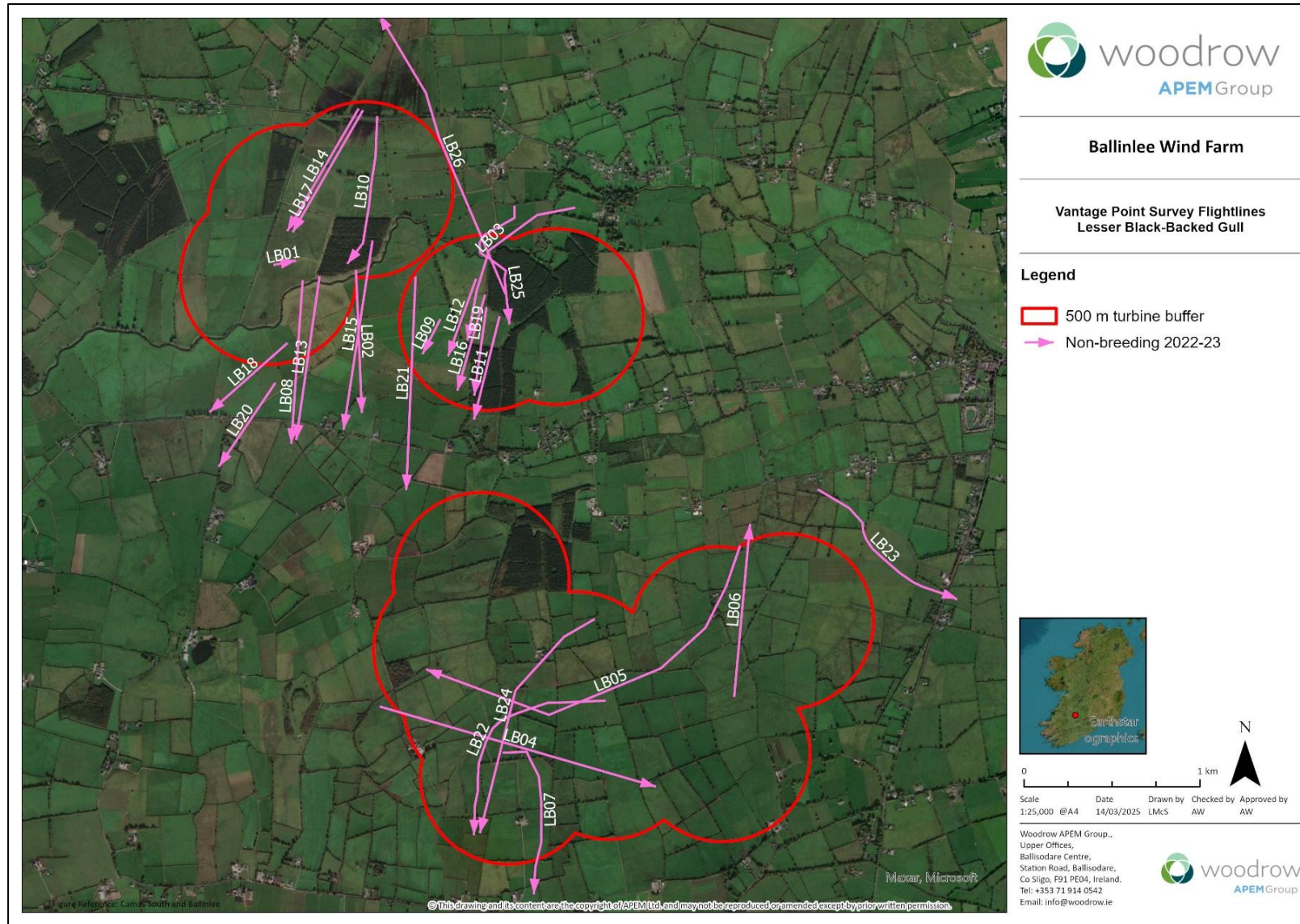


Figure A6.2721: Lesser black-backed gull observations recorded during VP watches

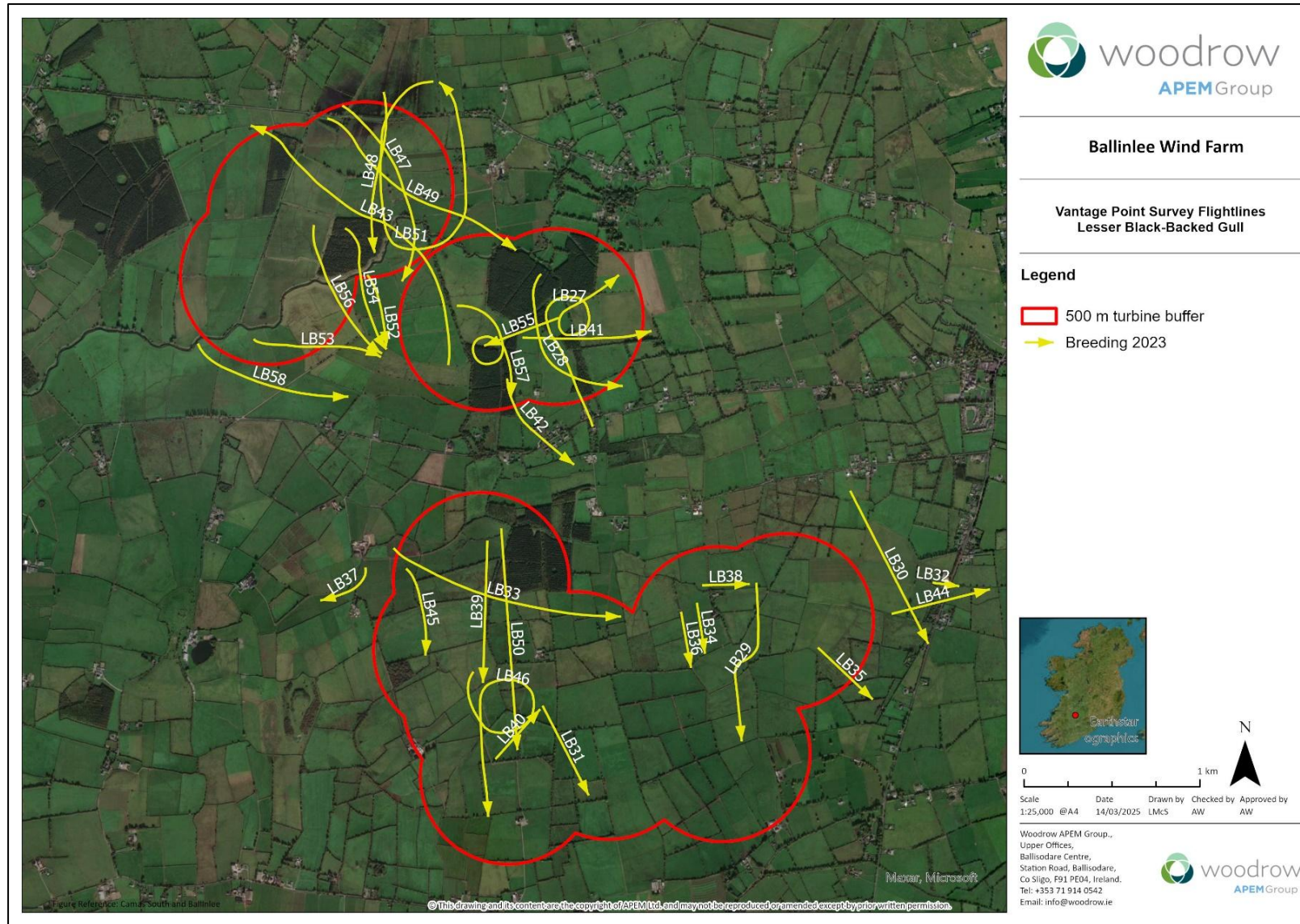


Figure A6.2822: Lesser black-backed gull observations recorded during VP watches

Table A6.14: Lesser black-backed gull

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
LB01	Non-breeding 2021-22	1	07/10/2021	13:24	2	50-100				75					Flying	
LB02	Non-breeding 2021-22	7	23/02/2022	10:07	2	50			28						Flying	
LB03	Breeding 2022	6	05/04/2022	16:41	5	15				5					Flying	
LB04	Breeding 2022	1	14/04/2022	14:02	1	20-40		120	135						Flying	
LB05	Breeding 2022	4	10/05/2022	07:47	6	100					20				Flying	
LB06	Breeding 2022	6	10/05/2022	10:04	7	40			15						Flying	
LB07	Breeding 2022	6	10/05/2022	12:24	7	45			30						Flying	
LB08	Breeding 2022	4	18/05/2022	10:33	1	15		30							Circling	
LB09	Breeding 2022	7	24/05/2022	09:52	5	60				50					Flying	
LB10	Breeding 2022	2	08/06/2022	18:21	1	20-40			21						Flying	
LB11	Breeding 2022	2	08/06/2022	18:53	1	3-20		119							Flying	
LB12	Breeding 2022	2	19/07/2022	08:42	1	10-15		19							Flying	
LB13	Breeding 2022	2	19/07/2022	10:55	1	5-10		42							Flying	
LB14	Breeding 2022	4	22/07/2022	14:30	1	120					30				Flying	
LB01	Non-breeding 2022-23	2	05/10/2022	12:33	21	0-20		134							Flying	Flew off field where farmer was cutting silage

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
LB02	Non-breeding 2022-23	2	05/10/2022	13:44	16	20-50			74						Flying	
LB03	Non-breeding 2022-23	1	05/10/2022	13:49	2	10-15		147							Flying	Travelling east to south
LB04	Non-breeding 2022-23	7	10/10/2022	10:24	1	10-15		90						J	Flying	Flying through
LB05	Non-breeding 2022-23	5	10/10/2022	11:08	2	150					300			J	Flying	
LB06	Non-breeding 2022-23	5	10/10/2022	14:57	1	75				35				A	Flying	Flying north
LB07	Non-breeding 2022-23	7	07/11/2022	12:46	3	10-15		125							Flying	Travelling south
LB08	Non-breeding 2022-23	2	15/11/2022	09:55	2	50-100				10				A	Flying	Flew south
LB09	Non-breeding 2022-23	3	15/11/2022	09:57	1	100-200					24				Flying	
LB10	Non-breeding 2022-23	1	15/11/2022	10:07	4	30-40			25					A	Flying	Going south
LB11	Non-breeding 2022-23	3	15/11/2022	10:09	3	100-200					133				Flying	
LB12	Non-breeding 2022-23	3	15/11/2022	10:14	2	50-100				61					Flying	
LB13	Non-breeding 2022-23	2	15/11/2022	10:16	2	20-50			10					A	Flying	Flew south

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
LB14	Non-breeding 2022-23	1	15/11/2022	10:19	19	0-40		35	35					A	Flying	Going south
LB16	Non-breeding 2022-23	3	15/11/2022	10:23	12	100-200					135				Flying	
LB15	Non-breeding 2022-23	2	15/11/2022	10:23	16	50-100				8				A	Flying	Flew south
LB17	Non-breeding 2022-23	1	15/11/2022	10:27	8	0-30		30	35					A	Flying	Going south
LB18	Non-breeding 2022-23	2	15/11/2022	10:30	2	20-50			8					J	Flying	Flew south west
LB19	Non-breeding 2022-23	3	15/11/2022	10:31	8	100-200					141				Flying	
LB20	Non-breeding 2022-23	2	15/11/2022	11:30	1	50-100				10				A	Flying	Flew southwest
LB21	Non-breeding 2022-23	2	15/11/2022	12:16	1	50-100				10				A	Flying	Flew south
LB22	Non-breeding 2022-23	7	06/01/2023	11:05	3	100-200					217				Flying	
LB23	Non-breeding 2022-23	6	06/01/2023	11:53	1	0-50		50	50					A	Flying	Travelling through, Going SE
LB24	Non-breeding 2022-23	7	06/01/2023	14:44	4	100-200					236				Flying	
LB25	Non-breeding 2022-23	1	10/01/2023	12:45	2	20-50			160						Flying	Travelling slowly through

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
LB26	Non-breeding 2022-23	1	10/01/2023	15:48	23	50-100				320					Flying	Passing through
LB27	Breeding 2023	3	11/04/2023	14:37	5					35					Flying / Circling	Flying north, Circling, then east
LB28	Breeding 2023	3	04/05/2023	11:55	1			20	20						Flying	Travelling SE
LB29	Breeding 2023	5	05/05/2023	06:47	7										Flying	
LB30	Breeding 2023	6	05/05/2023	07:50	5	20-50 m			35						Flying	Commuting south east
LB31	Breeding 2023	7	05/05/2023	08:56	8	20-50 m			50						Flying	Travelling south east
LB32	Breeding 2023	6	06/06/2023	07:20	4	20-50 m			30						Flying	
LB33	Breeding 2023	4	06/06/2023	09:43	1	20-50m			110						Flying	Travelling East
LB34	Breeding 2023	5	06/07/2023	07:41	1	0-20m		30							Flying	Travelling South
LB35	Breeding 2023	6	06/07/2023	07:46	1	0-20m		4							Flying	
LB36	Breeding 2023	5	06/07/2023	07:47	2	0-20m		37							Flying	
LB37	Breeding 2023	4	06/07/2023	08:25	1	20-50m			20						Flying	Passing through Going South West
LB38	Breeding 2023	5	06/07/2023	09:04	1	20-50m			25						Flying	Travelling west to east
LB39	Breeding 2023	4	06/07/2023	09:24	1	20-50m			40						Flying	Passing through Going South
LB40	Breeding 2023	7	06/07/2023	09:54	1	20-50m		20							Flying	
LB41	Breeding 2023	2	10/07/2023	11:10	4			63							Flying	Travelling east
LB42	Breeding 2023	2	10/07/2023	11:30	1				48						Flying	Travelling south

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
LB43	Breeding 2023	2	10/07/2023	12:24	1				48						Flying / Hunting / Soaring	
LB44	Breeding 2023	6	04/08/2023	07:22	2	20-50m			44						Flying	Travelling North-East
LB45	Breeding 2023	4	04/08/2023	07:27	1	20-50m			25						Flying	Flying north
LB46	Breeding 2023	4	04/08/2023	12:41	1	50-100m				30					Circling	
LB47	Breeding 2023	1	08/08/2023	09:12	4				122						Flying	Travelling south
LB48	Breeding 2023	1	08/08/2023	09:23	4				117						Flying	
LB49	Breeding 2023	1	08/08/2023	09:31	2				115						Flying	
LB50	Breeding 2023	4	11/09/2023	10:50	1	20-50m			18						Flying	
LB52	Breeding 2023	2	12/09/2023	07:25	4			40							Flying	
LB53	Breeding 2023	2	12/09/2023	07:36	5			50							Flying	
LB54	Breeding 2023	2	12/09/2023	08:03	9			85							Flying	
LB55	Breeding 2023	3	12/09/2023	08:50	6			45							Flying	
LB56	Breeding 2023	2	12/09/2023	08:55	345			205							Flying	Landing into flooded field
LB57	Breeding 2023	3	12/09/2023	11:00	2					52					Circling	Circling west then south
LB58	Breeding 2023	2	12/09/2023	11:36	36			135							Flying	Landing into flooded field

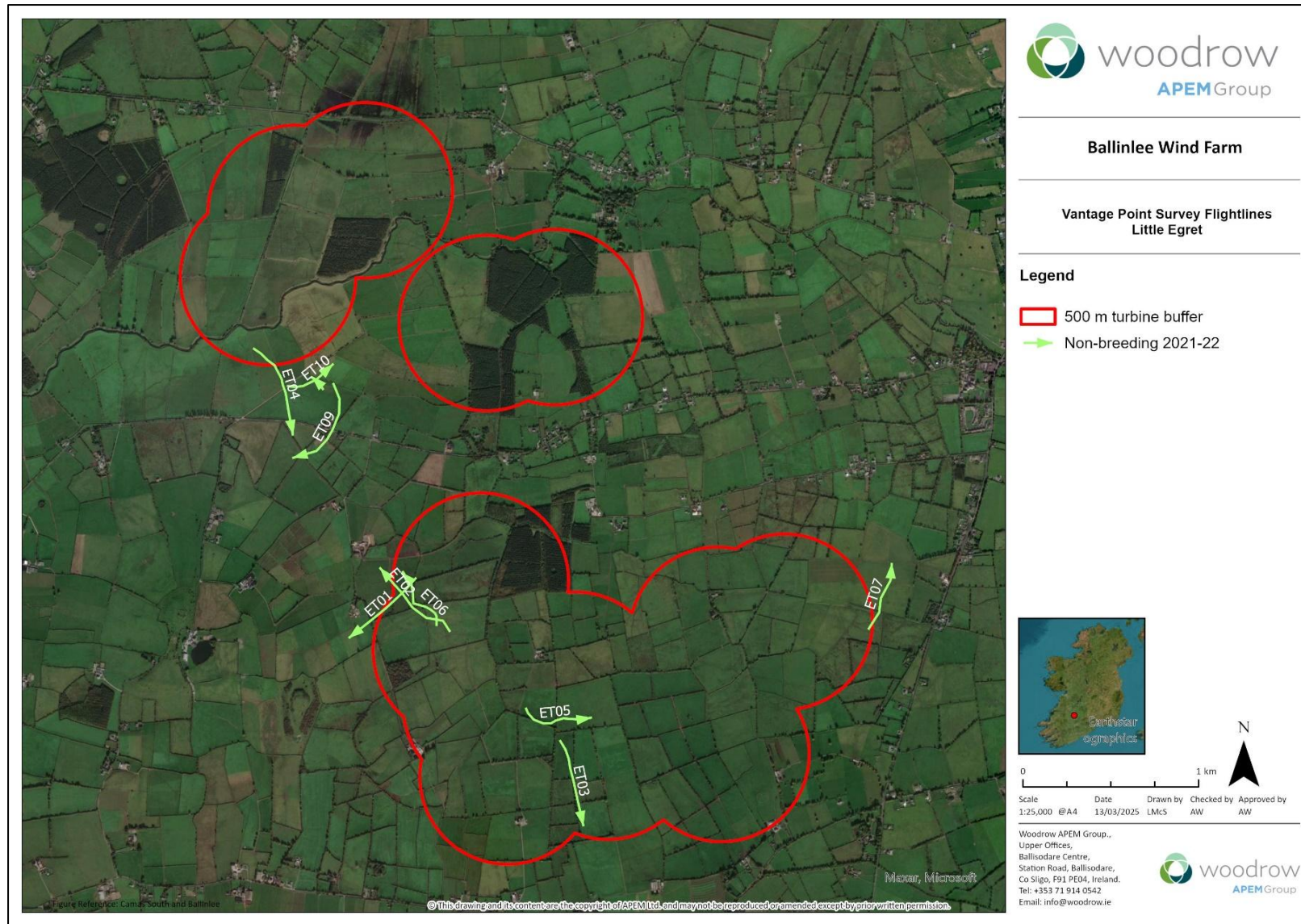


Figure A6.2923: Little egret observations recorded during VP watches

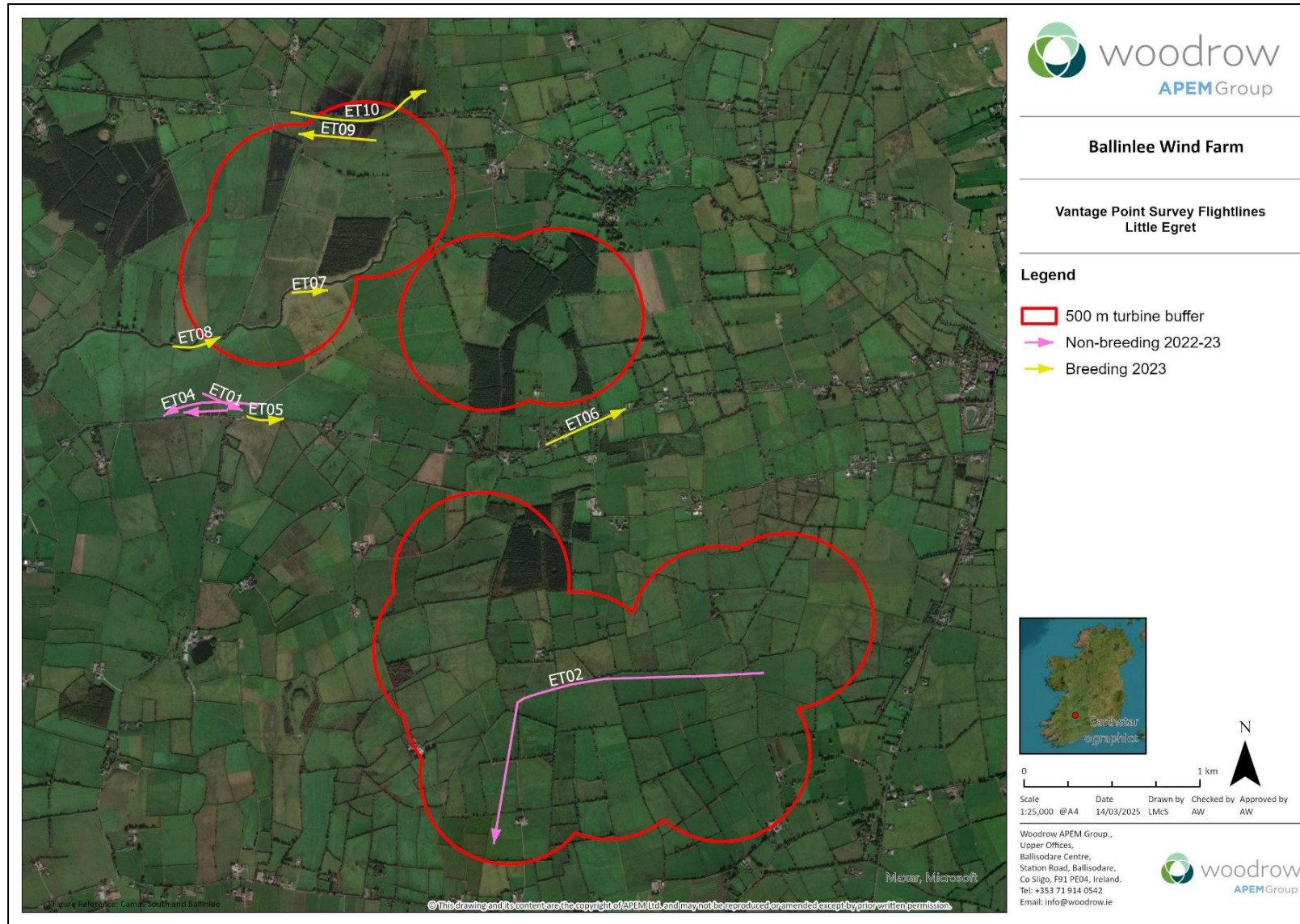


Figure A6.3024: Little egret observations recorded during VP watches

Table A6.15: Little Egret

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
ET01	Non-breeding 2021-22	4	04/12/2021	09:57	1	30			28						Flying	
ET02	Non-breeding 2021-22	4	05/01/2022	12:15	1	30			28						Flying	
ET03	Non-breeding 2021-22	7	25/01/2022	09:18	1	30			35						Flying	
ET04	Non-breeding 2021-22	2	08/02/2022	09:05	1	0-20		25							Flying	
ET05	Non-breeding 2021-22	7	23/02/2022	09:20	1	10		16							Flying	
ET06	Non-breeding 2021-22	4	04/03/2022	12:17	2	25			32						Flying	
ET07	Non-breeding 2021-22	6	11/03/2022	12:05	1				48						Flying	
ET08	Breeding 2022	2	05/04/2022	12:47	1	0-4		4							Flying	
ET10	Breeding 2022	2	05/04/2022	14:45	1	2-0		36							Flying	
ET09	Breeding 2022	2	05/04/2022	14:58	1	10-12		23							Flying	
ET01	Non-breeding 2022-23	2	12/12/2022	11:52	1	2		5							Flying/ on Ground	
ET02	Non-breeding 2022-23	3	06/01/2023	12:29	1	50-100				243					Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
ET03	Non-breeding 2022-23	2	09/02/2023	09:49	1	0-20		11							Flying	Feeding in deep drainage channel at public road
ET04	Non-breeding 2022-23	2	08/03/2023	15:36	2	0-20		11							Flying	Foraging on deep drainage channel near vp2
ET05	Breeding 2023	2	04/05/2023	11:17	1			4							Flying / on ground	Landed in field
ET06	Breeding 2023	3	15/06/2023	10:30	1				5						Flying	
ET07	Breeding 2023	2	10/07/2023	09:10	1			4							Flying	
ET08	Breeding 2023	2	12/09/2023	08:26	1			55							Flying	Flying east along river
ET09	Breeding 2023	1	12/09/2023	08:54	1			10							Flying	
ET10	Breeding 2023	1	12/09/2023	09:10	1				12						Flying	

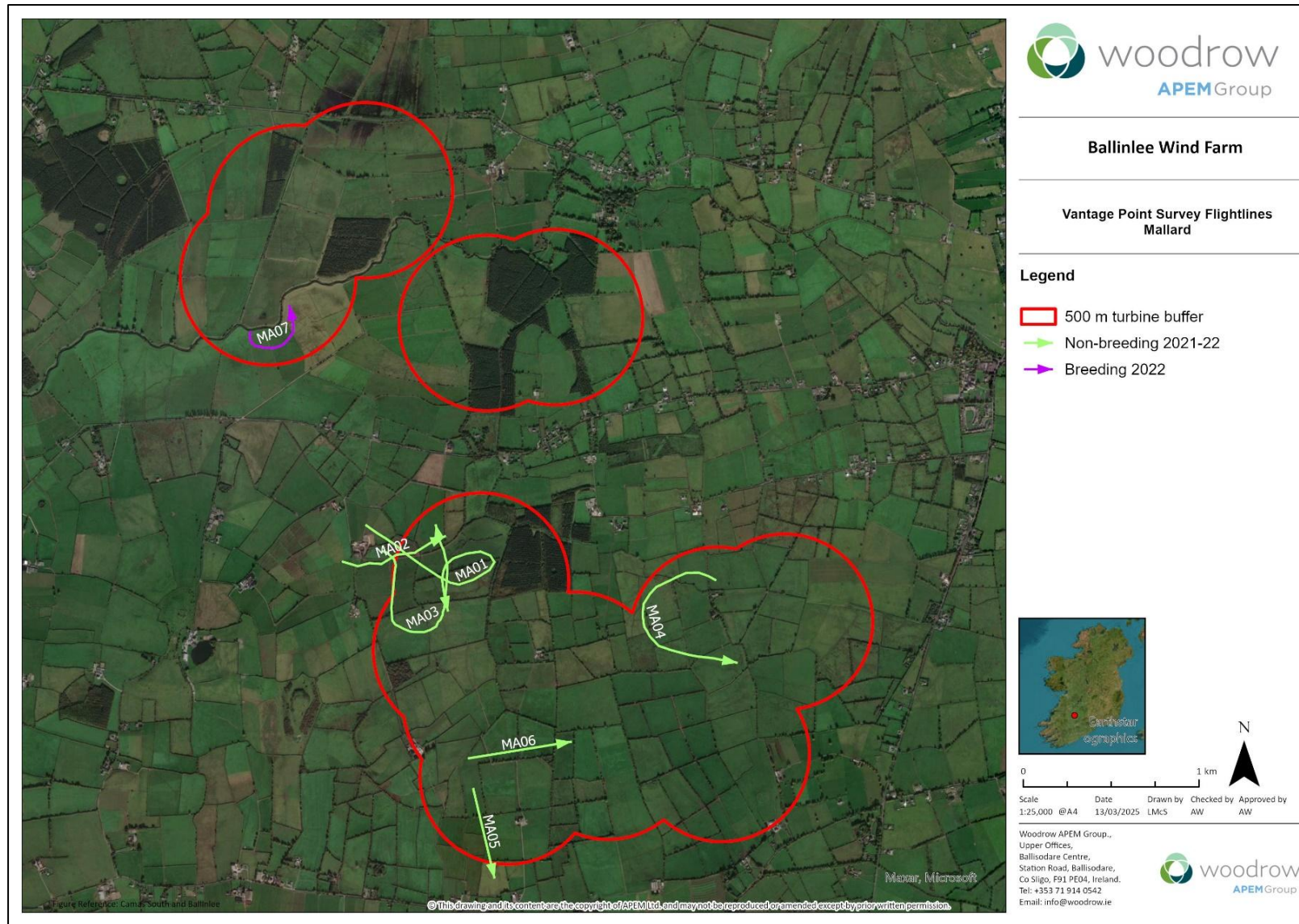


Figure A6.3125: Mallard observations recorded during VP watches

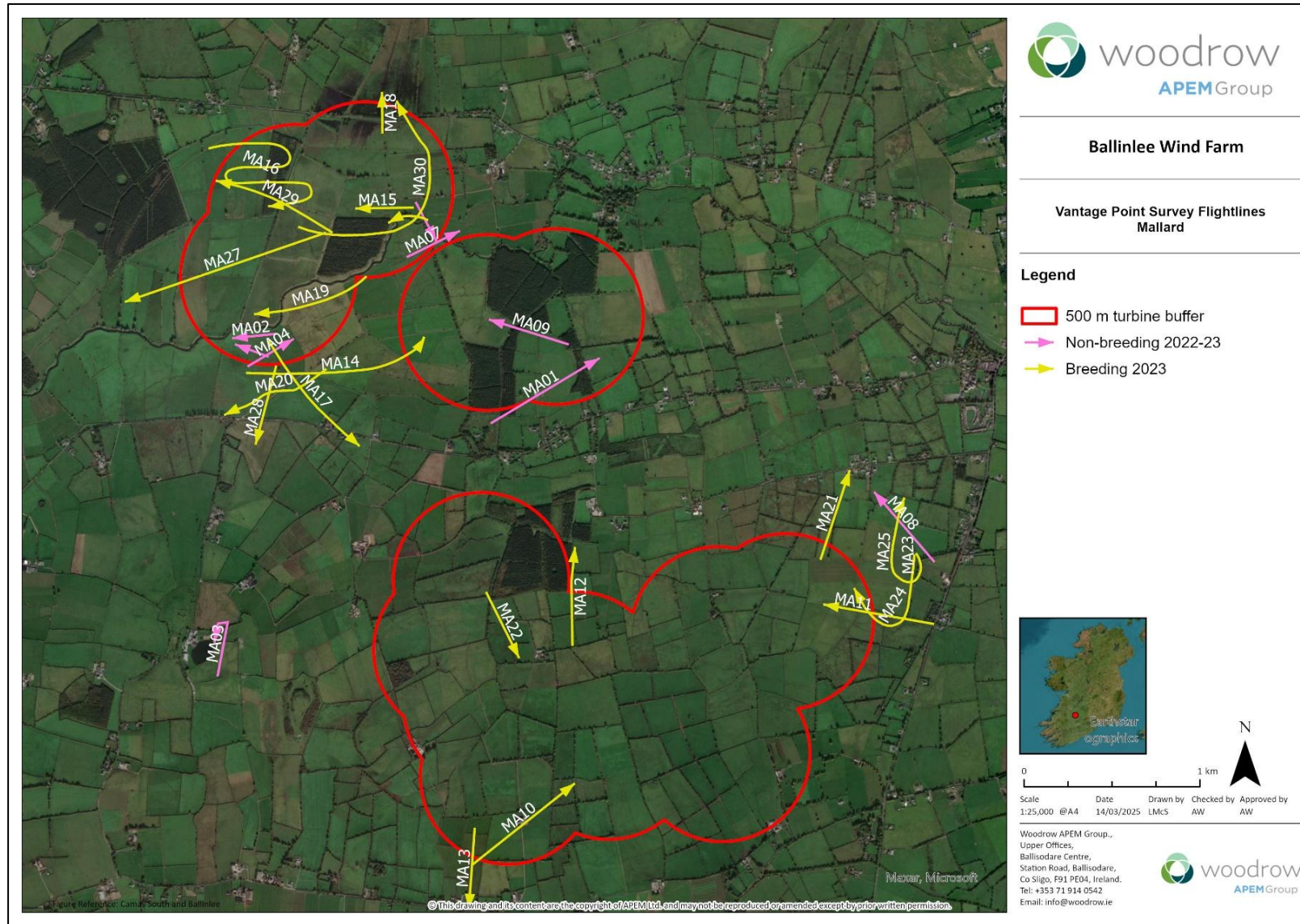


Figure A6.3226: Mallard observations recorded during VP watches

Table A6.16: Mallard

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
MA01	Non-breeding 2021-22	4	01/11/2021	13:18	6	30			45						Circling	
MA02	Non-breeding 2021-22	4	03/12/2021	11:52	4	30			35						Flying	
MA03	Non-breeding 2021-22	4	11/03/2022	08:48	2	30			75						Flying	
MA04	Non-breeding 2021-22	5	21/03/2022	12:37	3	25			90						Flying	
MA05	Breeding 2022	7	07/04/2022	16:10	2	50				10					Flying	
MA06	Breeding 2022	7	15/04/2022	15:11	1	25			15						Flying	
MA07	Non-breeding 2021-22	2	04/05/2022	11:29	2	3-4		8							Flying	
MA01	Non-breeding 2022-23	3	05/10/2022	09:20	7	40			20					A	Flying	Flying east
MA02	Non-breeding 2022-23	2	05/10/2022	13:21	2	0-20		15							Flying	Flew along river
MA03	Non-breeding 2022-23	4	07/11/2022	09:30	8	0-50		400	30						Circling	Circling back and forth
MA04	Non-breeding 2022-23	2	12/12/2022	11:38	2	50			7						Flying	
MA05	Non-breeding 2022-23	2	10/01/2023	15:37	5	20-50			15						Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
MA06	Non-breeding 2022-23	1	09/02/2023	09:40	4	0-20		55							Flying	Landed into river
MA07	Non-breeding 2022-23	2	09/02/2023	09:46	4	0-20		22							Flying	Dropped down into drain
MA08	Non-breeding 2022-23	6	07/03/2023	13:05	2	7		14					F&M	A	Flying	Flew up from a drain
MA09	Non-breeding 2022-23	3	08/03/2023	17:03	1	0-20		10					M	A	Flying	Going west
MA10	Breeding 2023	7	07/04/2023	16:26	1	25-30 m			17				M	A	Flying	
MA11	Breeding 2023	6	07/04/2023	16:43	1	0-20 m	25						M	A	Flying	Travelling west
MA12	Breeding 2023	5	07/04/2023	18:59	2	0-20 m		10					F&M		Flying	Low just slightly Going N
MA13	Breeding 2023	7	07/04/2023	20:13	1	18 m		24							Flying	Too dark to see sex
MA14	Breeding 2023	2	11/04/2023	15:58	2			55					M	A	Flying	2 males Flying low in East direction
MA15	Breeding 2023	1	11/04/2023	16:00	1	3-4m		7					M	A	Flying	Flying North East
MA16	Breeding 2023	2	11/04/2023	16:11	4			30	30						Circling	Circling / chasing
MA17	Breeding 2023	2	11/04/2023	16:15	1			20					M	A	Flying	Travelling SW
MA18	Breeding 2023	1	11/04/2023	16:36	2	1.5m		10					M	A	Flying	Flying North East
MA19	Breeding 2023	2	04/05/2023	06:44	4			7						A	Flying / On Ground	Dropped down towards river / field
MA20	Breeding 2023	2	04/05/2023	08:55	1			13					M	A	Flying	Flew by and Landed in stream
MA21	Breeding 2023	6	05/05/2023	07:03	3	0-20 m		5					M	A	Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
MA22	Breeding 2023	4	05/05/2023	07:03	3	0-20 m		30							Flying	Flying southeast
MA23	Breeding 2023	6	05/05/2023	07:26	2	0-20 m		40					F&M	A	Flying	Pair attempted to land
MA24	Breeding 2023	6	05/05/2023	07:57	2	0-20 m		12					F&M	A	Flying/ Ground	Landed in field
MA25	Breeding 2023	6	05/05/2023	08:12	2	0-20 m		225					F&M	A	Flying	Similar flight path to 2 above
MA26	Breeding 2023	1	10/07/2023	07:14	1			20					F	A	Flying	Flying west
MA27	Breeding 2023	2	10/07/2023	10:41	2			24					F & J	A & J	Flying	
MA28	Breeding 2023	2	10/07/2023	10:55	1			17					M	A	Flying	
MA29	Breeding 2023	2	08/08/2023	13:20	3				35					A	Flying	
MA30	Breeding 2023	1	12/09/2023	08:09	4				106				F&M	A	Flying	

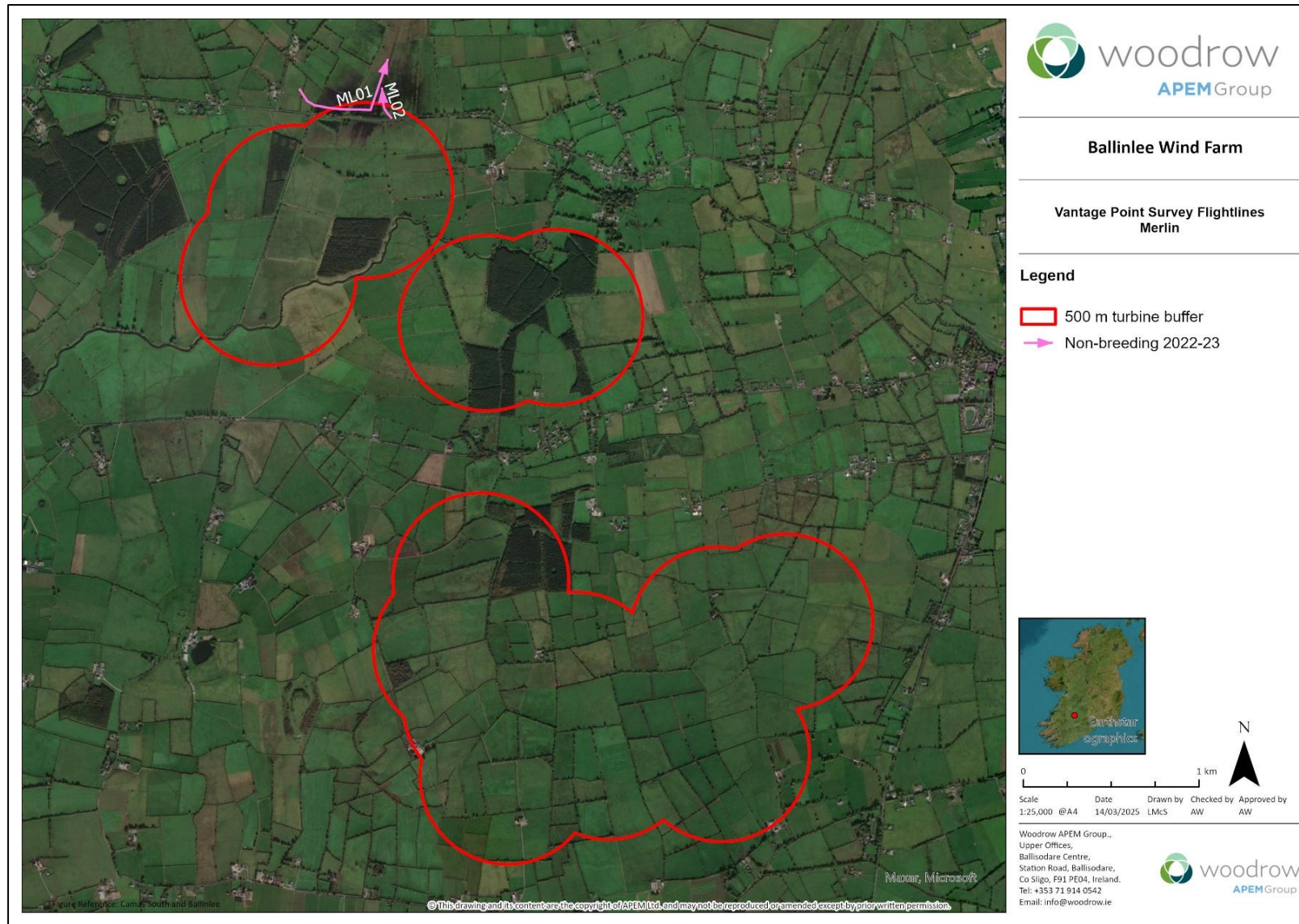


Figure A6.3327: Merlin observations recorded during VP watches

Table A6.17: Merlin

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
ML01	Non-breeding 2022-23	1	15/11/2022	14:51	1	10-25			12					A	Hunting	
ML02	Non-breeding 2022-23	1	09/02/2023	13:00	1	0-20	3575	15					F	A	Flying/ Perched	Perched on tree over water

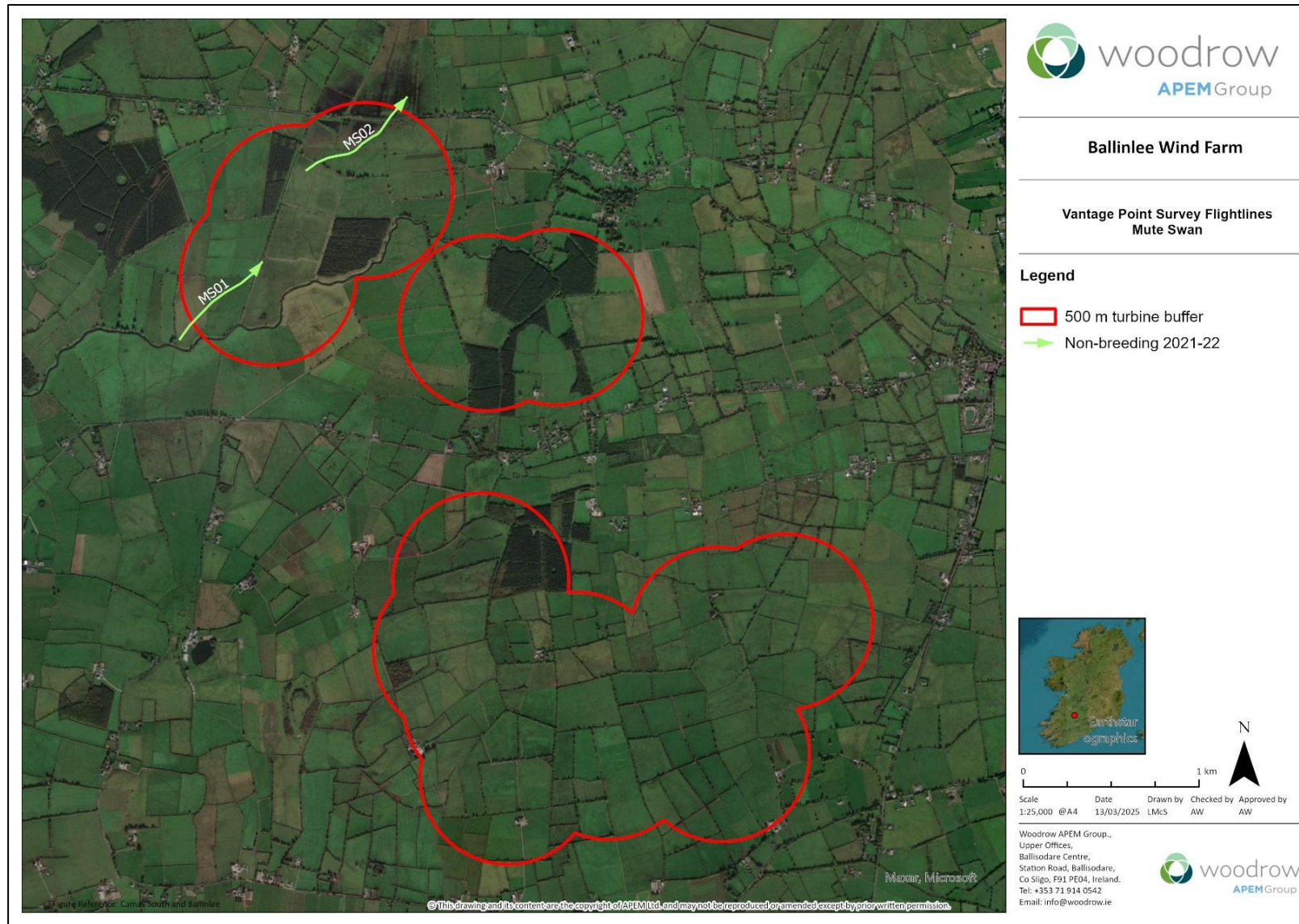


Figure A6.3428: Mute swan observations recorded during VP watches

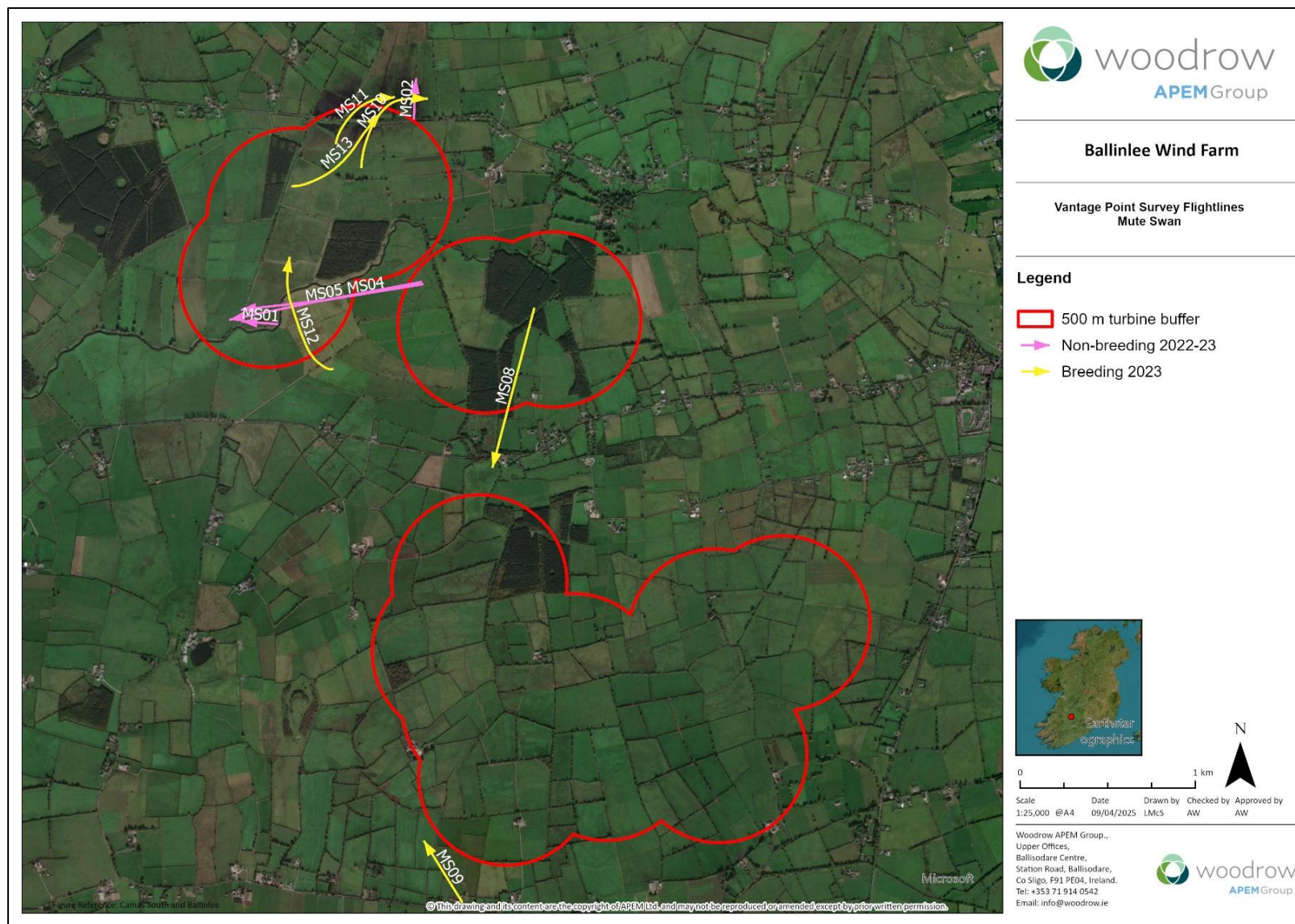


Figure A6.3529: Mute swan observations recorded during VP watches

Table A6.18: Mute Swan

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
MS01	Non-breeding 2021-22	2	13/01/2022	11:47	2	50-100				48					Flying	
MS02	Non-breeding 2021-22	1	04/02/2022	09:47	2	5-100				32			Pair	A	Flying	
MS01	Non-breeding 2022-23	2	15/11/2022	12:32	2	0-20		5						A	Flying	Flew west over river
MS04	Non-breeding 2022-23	2	09/02/2023	07:58	2	0-20		118							Flying	
MS05	Non-breeding 2022-23	2	09/02/2023	12:24	1	0-20		88							Flying	
MS08	Breeding 2023	3	15/06/2023	09:19	2				24				F&M	A	Flying	
MS09	Breeding 2023	7	11/09/2023	11:29	1	0-20		25								
MS10	Breeding 2023	1	12/09/2023	06:59	7			16							Flying	
MS12	Breeding 2023	2	12/09/2023	07:13	1			95							Flying	
MS11	Breeding 2023	1	12/09/2023	07:13	1			7						J	Flying / On Ground	Flew in from the south, in water Feeding for the rest of the day
MS13	Breeding 2023	1	12/09/2023	08:01	1			16						A	Flying	Flew in from SW then Landed in the flooded field.

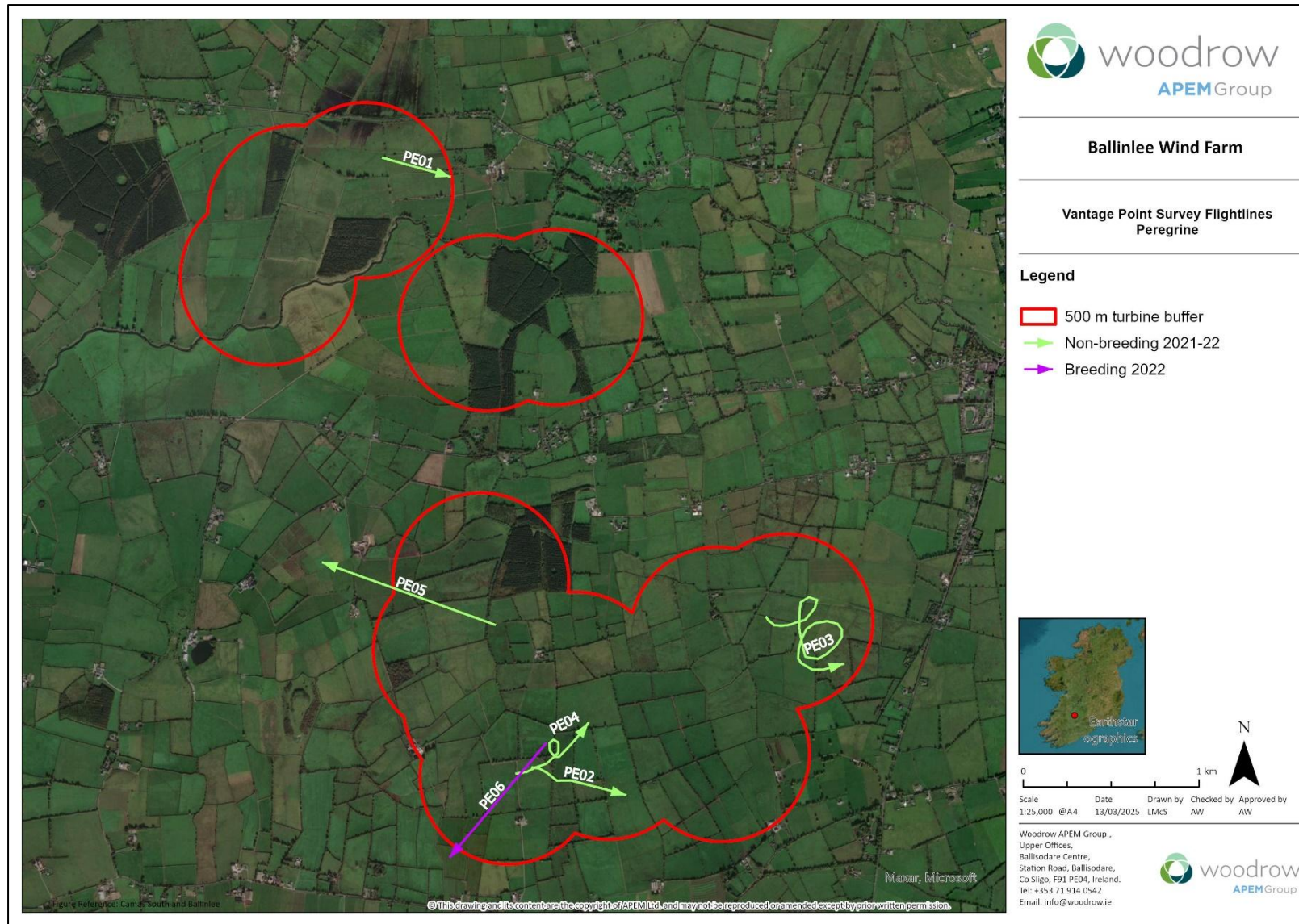


Figure A6.3630: Peregrine observations recorded during VP watches

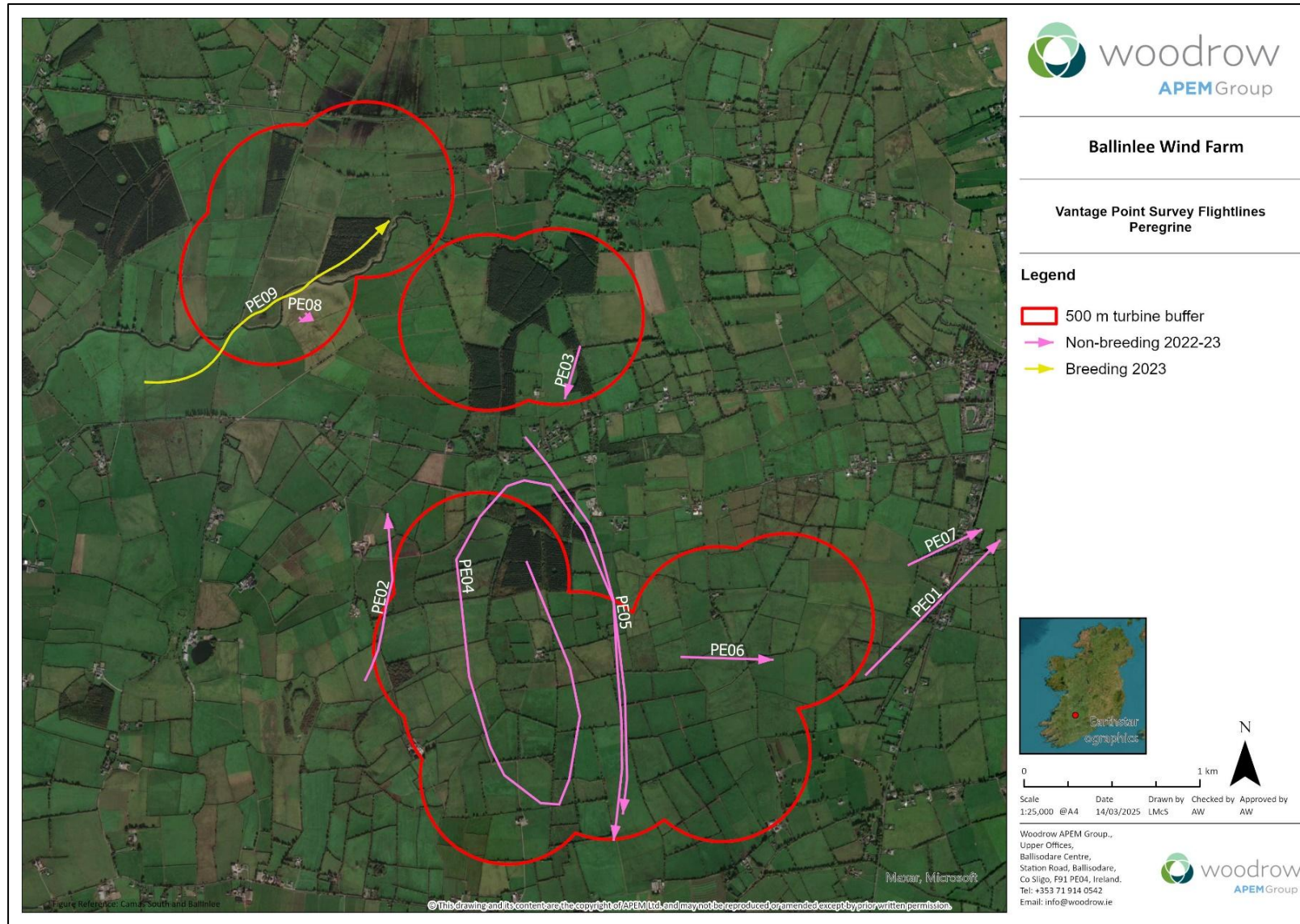


Figure A6.3731: Peregrine observations recorded during VP watches

Table A6.19: Peregrine

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
P01	Non-breeding 2021-22	1	11/11/2021	09:10	1	0-20		10							Flying	
P03	Non-breeding 2021-22	7	20/01/2022	13:55	1	30			18					J	Flying	
P04	Non-breeding 2021-22	6	11/03/2022	12:48	1	100					300			A	Soaring	
P05	Non-breeding 2021-22	7	28/03/2022	12:22	1	30			25				M	A	Flying	
P06	Breeding 2022	4	05/04/2022	15:31	1	30			20					A	Flying	
P07	Breeding 2022	7	11/05/2022	10:52	1	40			10					A	Flying	
PE01	Non-breeding 2022-23	6	10/10/2022	13:39	1	30-40			48				J		Flying	Travelling NE
PE02	Non-breeding 2022-23	4	10/10/2022	15:21	1	0-20		99					M		Flying	Flew over VP and disappeared northwards through McCarthy farm
PE03	Non-breeding 2022-23	3	15/11/2022	10:43	1	0-20		11							Flying	
PE04	Non-breeding 2022-23	5	07/02/2023	12:41	1	100-200					400		F	A	Soaring/ Circling	
PE05	Non-breeding 2022-23	5	07/02/2023	12:46	1	100-200					50		M	A	Soaring	Joined female
PE06	Non-breeding 2022-23	5	07/03/2023	11:30	1	0-20		21							Hunting	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
PE07	Non-breeding 2022-23	6	07/03/2023	12:27	1	12		14					F	A	Flying/ Hunting	Flying NE
PE08	Non-breeding 2022-23	2	08/03/2023	16:03	1	0-20	9795	18							Perched/ Flying	Perched on rock
PE09	Breeding 2023	2	12/09/2023	10:41	1			868	20	30	171		F	J	Flying / Perched	Flying north west & Perched

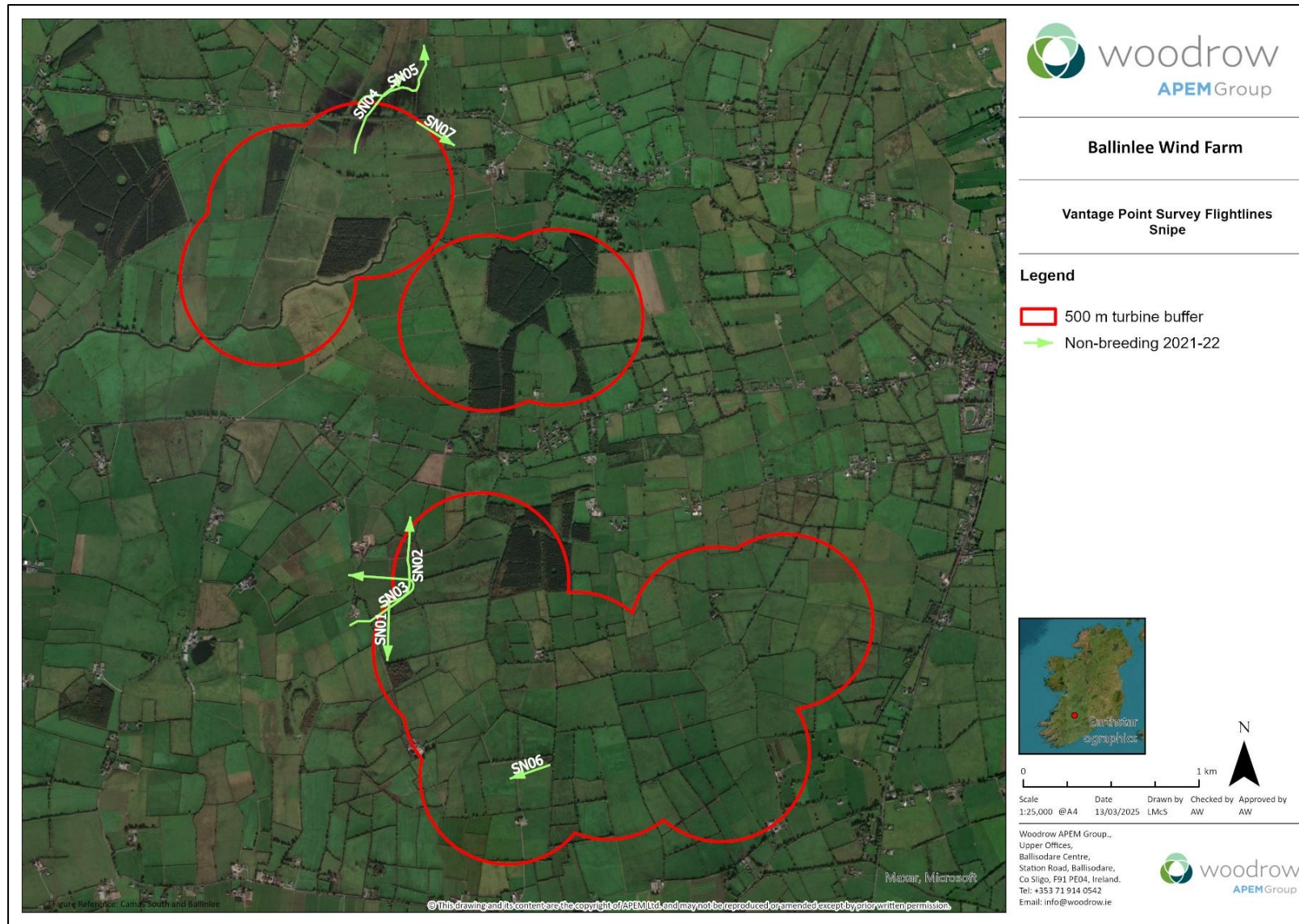


Figure A6.3832: Snipe observations recorded during VP watches

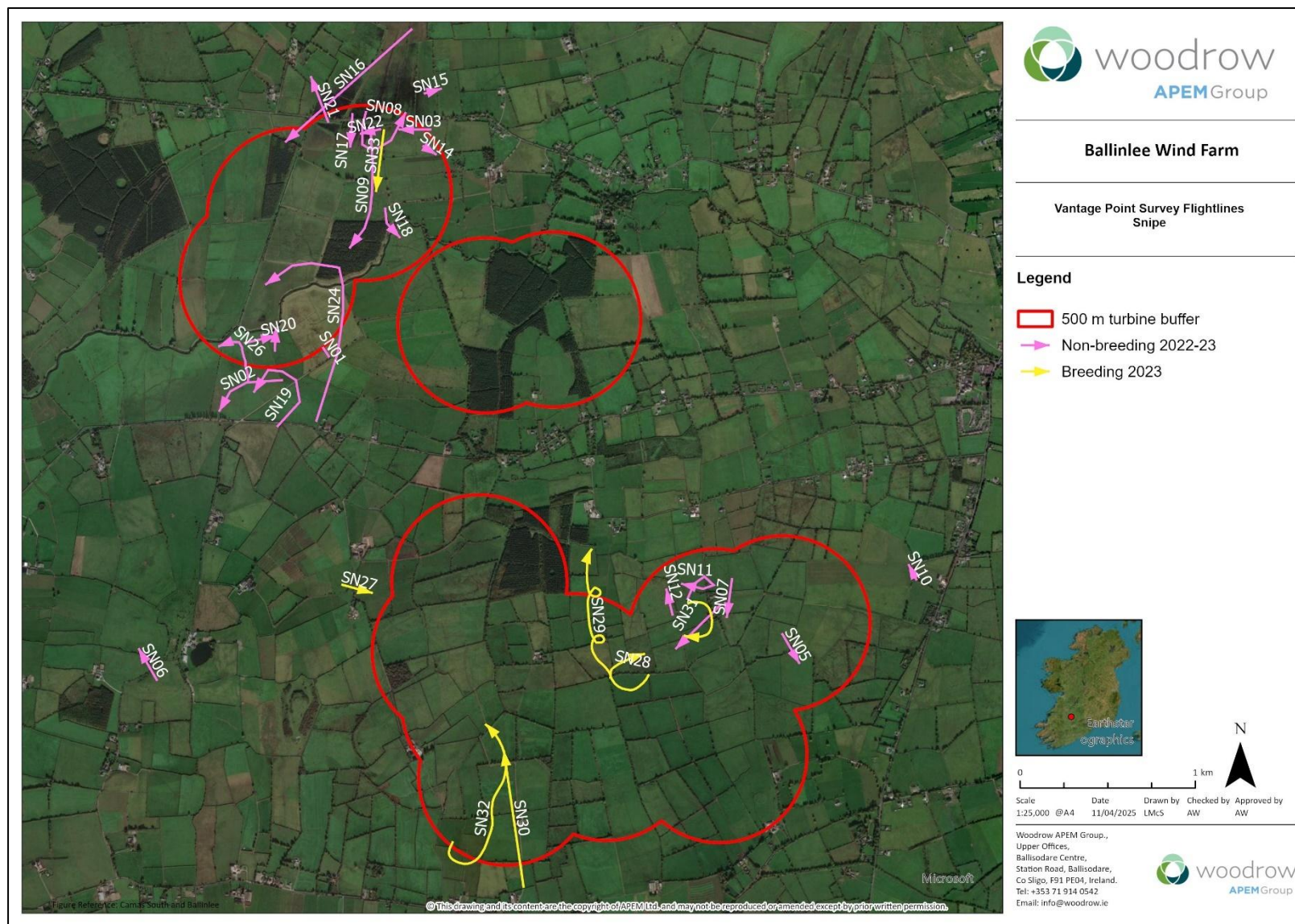


Figure A6.3933: Snipe observations recorded during VP watches

Table A6.20: Snipe

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
SN01	Non-breeding 2021-22	4	26/10/2021	11:00	1	10		5							Flying	
SN02	Non-breeding 2021-22	4	03/12/2021	13:20	2	40			28					A	Flying	
SN03	Non-breeding 2021-22	4	05/01/2022	12:20	2	30			24						Flying	
SN04	Non-breeding 2021-22	1	08/02/2022	13:41	6	20-50			16						Flying	
SN05	Non-breeding 2021-22	1	03/03/2022	09:20	3	20-50			35						Flying	
SN06	Breeding 2022	7	07/04/2022	16:12	1	1		3						A	Flying	
SN07	Breeding 2022	1	14/04/2022	13:16	1	2		15							Flying	
SN01	Non-breeding 2022-23	2	05/10/2022	10:27	1	0-20		9							Flying	Landed in improved grassland
SN02	Non-breeding 2022-23	2	05/10/2022	11:56	1	0-20		15							Flying	Flew one field to another
SN03	Non-breeding 2022-23	1	05/10/2022	12:51	1	10		20							Flying	Landed into grassland
SN04	Non-breeding 2022-23	5	07/11/2022	09:48	1	100-200					96				Flying	
SN05	Non-breeding 2022-23	5	07/11/2022	10:59	1	50-100				111					Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
SN06	Non-breeding 2022-23	4	07/11/2022	11:47	12	0-20		20							Flying	Travelling low. congregating NE of vp4.
SN07	Non-breeding 2022-23	5	07/11/2022	14:08	2	0-20		11							Flying	
SN08	Non-breeding 2022-23	1	15/11/2022	10:46	1	0-60				8				A	Flying	Going north
SN09	Non-breeding 2022-23	1	15/11/2022	12:51	1	60				10				A	Flying	Going south
SN10	Non-breeding 2022-23	6	01/12/2022	07:41	1	0-20		5							Flying	Flushed by surveyor on approach to VP
SN11	Non-breeding 2022-23	5	01/12/2022	09:11	3	0-50		20	30						Circling/ Perched	Circled area, Landed in field
SN12	Non-breeding 2022-23	5	01/12/2022	14:20	1	0-50		10	15						Flying/ Perched	Landed
SN14	Non-breeding 2022-23	1	12/12/2022	07:41	3	1		8							Flying	Flushed by surveyor
SN15	Non-breeding 2022-23	1	12/12/2022	08:38	1	0-20		6							Flying	
SN16	Non-breeding 2022-23	1	12/12/2022	08:46	13	0-20		14							Flying	
SN17	Non-breeding 2022-23	1	12/12/2022	08:54	2	0-20		13							Flying	
SN18	Non-breeding 2022-23	1	12/12/2022	09:18	1	20-50			26						Flying	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
SN19	Non-breeding 2022-23	2	12/12/2022	09:21	1	0-40		5	5						Flying/ on Ground	
SN20	Non-breeding 2022-23	2	12/12/2022	10:33	1	50			6						Flying/ On Ground	
SN21	Non-breeding 2022-23	1	12/12/2022	13:11	5	0-20		31							Flying	
SN22	Non-breeding 2022-23	1	10/01/2023	11:10	3	0-20		10							Flying/ On Ground	Flushed from flooded field
SN23	Non-breeding 2022-23	2	10/01/2023	15:36	12	0-20		18							Flying/ On Ground	
SN24	Non-breeding 2022-23	2	09/02/2023	07:32	2	0-20		8							Flying	Flushed near VP
SN26	Non-breeding 2022-23	2	09/02/2023	13:15	23	5		10							Flying	Flushed
SN27	Breeding 2023	4	07/04/2023	13:56	1	0- 50 m		8	3					A	Ground/ Flying	Flashed beside VP. Flew to field
SN28	Breeding 2023	5	07/04/2023	14:27	1	0-50 m		10	10						Flying	Circling above grassland
SN29	Breeding 2023	5	07/04/2023	19:38	2	20-100 m			150	150					Flying	Circling high then went northwards
SN30	Breeding 2023	7	07/04/2023	19:38	1	25 m			18						Flying	
SN31	Breeding 2023	5	07/04/2023	19:42	2	0-20 m		10							Flying	Low over grassland
SN32	Breeding 2023	7	11/09/2023	11:15	9	0-20m		37							Flying / Circling	
SN33	Breeding 2023	1	12/09/2023	08:46	1			5								

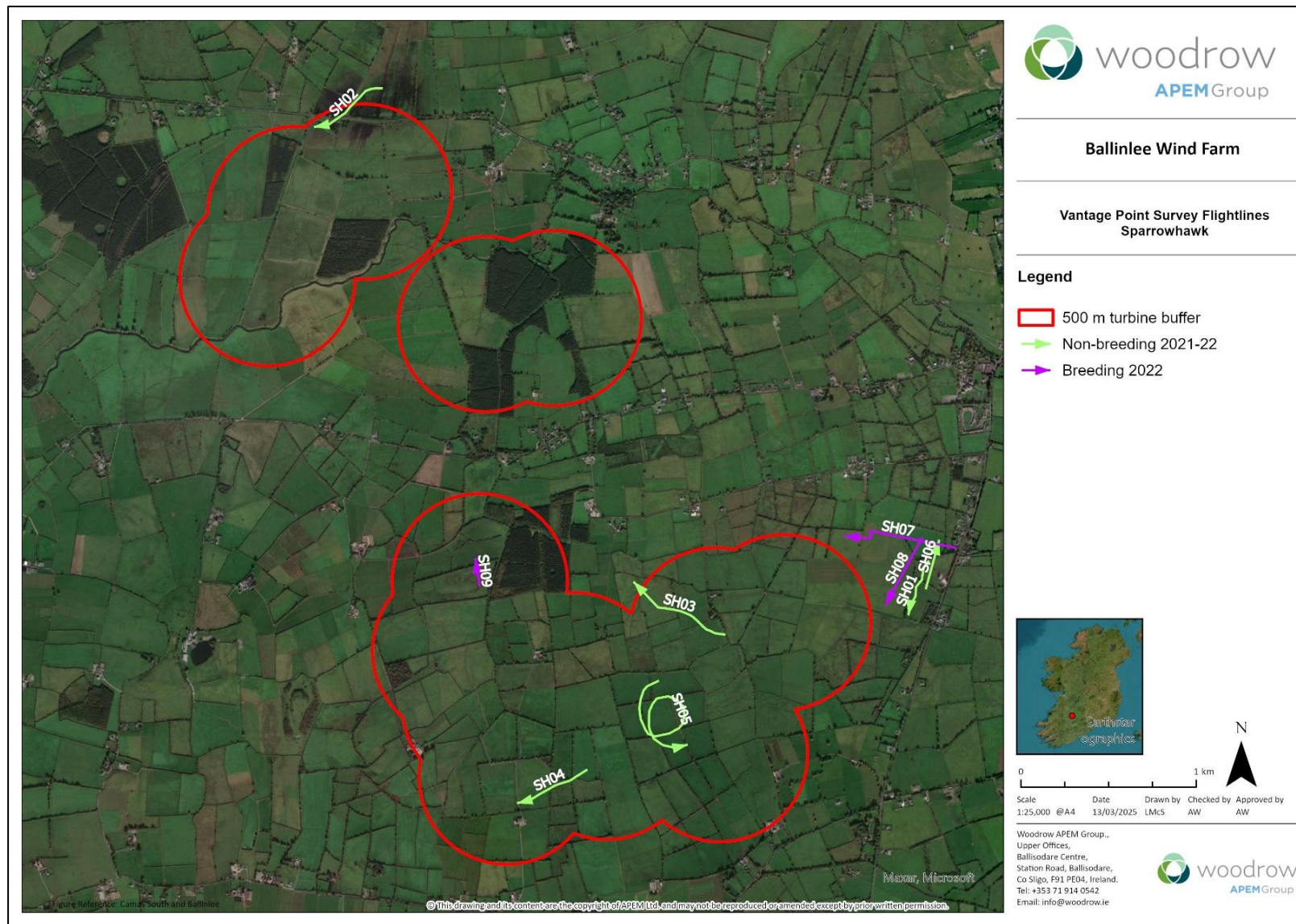


Figure A6.4034: Sparrowhawk observations recorded during VP watches

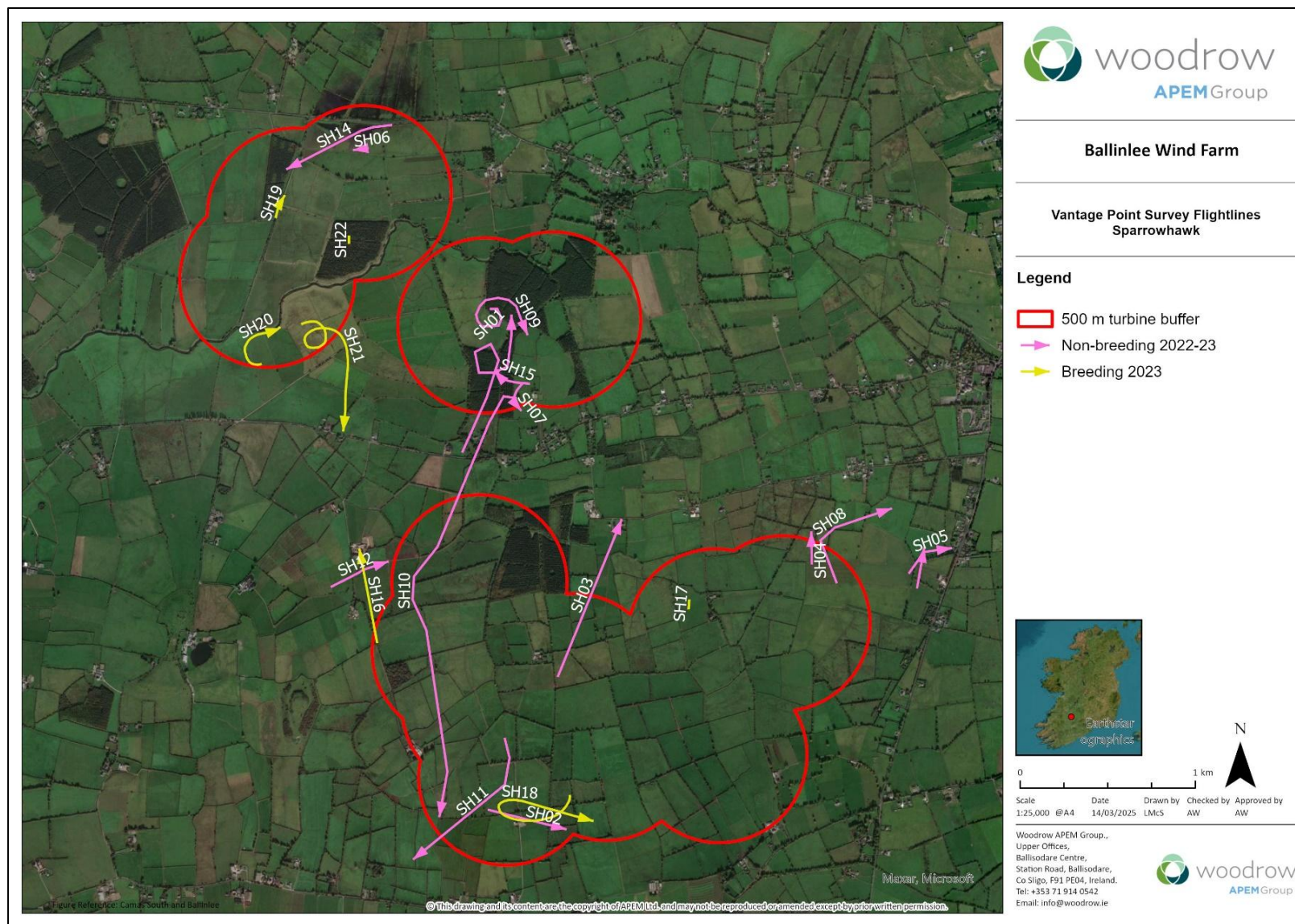


Figure A6.4135: Sparrowhawk observations recorded during VP watches

Table A6.21: Sparrowhawk

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
SH01	Non-breeding 2021-22	6	18/10/2021	09:11	1	2		14						A	Flying	
SH02	Non-breeding 2021-22	1	04/02/2022	09:24	1	20-50			18				F	A	Flying	
SH03	Non-breeding 2021-22	5	11/02/2022	10:42	1	80				45				A	Flying/ Circling	
SH04	Non-breeding 2021-22	7	23/02/2022	08:52	1	5		8					F	A	Flying	
SH05	Non-breeding 2021-22	7	28/03/2022	13:26	1	100-200				180		240		A	Soaring/ Circling	
SH06	Breeding 2022	6	12/04/2022	15:42	1	3		5					F	A	Hunting	
SH07	Breeding 2022	6	13/07/2022	08:20	1	20		60					M	A	Hunting	
SH08	Breeding 2022	6	19/07/2022	14:20	1	15		7					M	A	Hunting	
SH09	Breeding 2022	4	23/08/2022	10:08	1	6		6					F	A	Flying/ Hunting	
SH01	Non-breeding 2022-23	3	05/10/2022	09:53	1	50-100				80				A	Soaring/ Flying	Flying and Soaring
SH02	Non-breeding 2022-23	7	10/10/2022	11:00	1	20-60			40	40			F	A	Flying/ Circling	Mobbed by HC
SH03	Non-breeding 2022-23	5	10/10/2022	11:24	1	40			40				F	A	Flying	Mobbed by rook
SH04	Non-breeding 2022-23	6	10/10/2022	11:26	1	10-15		20					F	A	Flying/ mobbing	Hunted hedgerow, travelled north

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
SH05	Non-breeding 2022-23	6	07/11/2022	10:10	1	2-30			15						Hunting	
SH06	Non-breeding 2022-23	1	15/11/2022	10:12	1	3-5		12						A	Flying	Hunting along road boundary
SH07	Non-breeding 2022-23	3	15/11/2022	11:59	1	0-20		56							Flying/mobbing	Mobbed by rooks
SH08	Non-breeding 2022-23	6	01/12/2022	12:17	1	0-20		54					F		Mobbing/Hunting	Mobbed by corvids
SH09	Non-breeding 2022-23	2	09/02/2023	13:27	1	100-200					241		F	A	Flying	
SH10	Non-breeding 2022-23	4	07/03/2023	12:31	1	0-200			30	300	150		F	A	Soaring/Hunting	Soaring, dived at starling flock, went north
SH11	Non-breeding 2022-23	7	07/03/2023	14:39	1	50-200				70	184		F	A	Flying/Circling	High Circling, Travelling southwest
SH12	Non-breeding 2022-23	4	07/03/2023	16:30	1	0-5		25					F	A	Flying/Hunting	Low along hedgerow
SH13	Non-breeding 2022-23	6	07/03/2023	18:19	1	2		10					M	A	Flying/Hunting	
SH14	Non-breeding 2022-23	1	08/03/2023	12:05	1	0-50		20	47				F	A	Flying/Circling	Circling and Flying west
SH15	Breeding 2023	3	08/03/2023	13:50	1	0-100		30	90	30			F	A	Soaring	Soaring, went out of view high up
SH16	Breeding 2023	4	07/04/2023	16:41	1	0-50 m		4	15				F	A	Flying/Hunting/Circling	

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
SH17	Breeding 2023	5	06/06/2023	09:32	1	20-50 m			100				F	A	Flying/ Soaring/ Circling	Soaring with prey in talon
SH18	Breeding 2023	7	06/06/2023	12:25	1	0-50 m		50	60				F	A	Soaring / Circling	Slow Soaring, went back east.
SH19	Breeding 2023	2	10/07/2023	12:57	1				16				M	A	Flying	
SH20	Breeding 2023	2	12/09/2023	11:54	1			30					F	A	Flying / Hunting	Hunting and perching on fence post close to rive
SH21	Breeding 2023	2	12/09/2023	11:56	2				50	69				J	Flying / Hunting / Circling	Circling and drifting east
SH22	Breeding 2023	1	12/09/2023	13:05	2			22						J	Soaring / Flying / Hunting / On Ground	Soaring / Circling

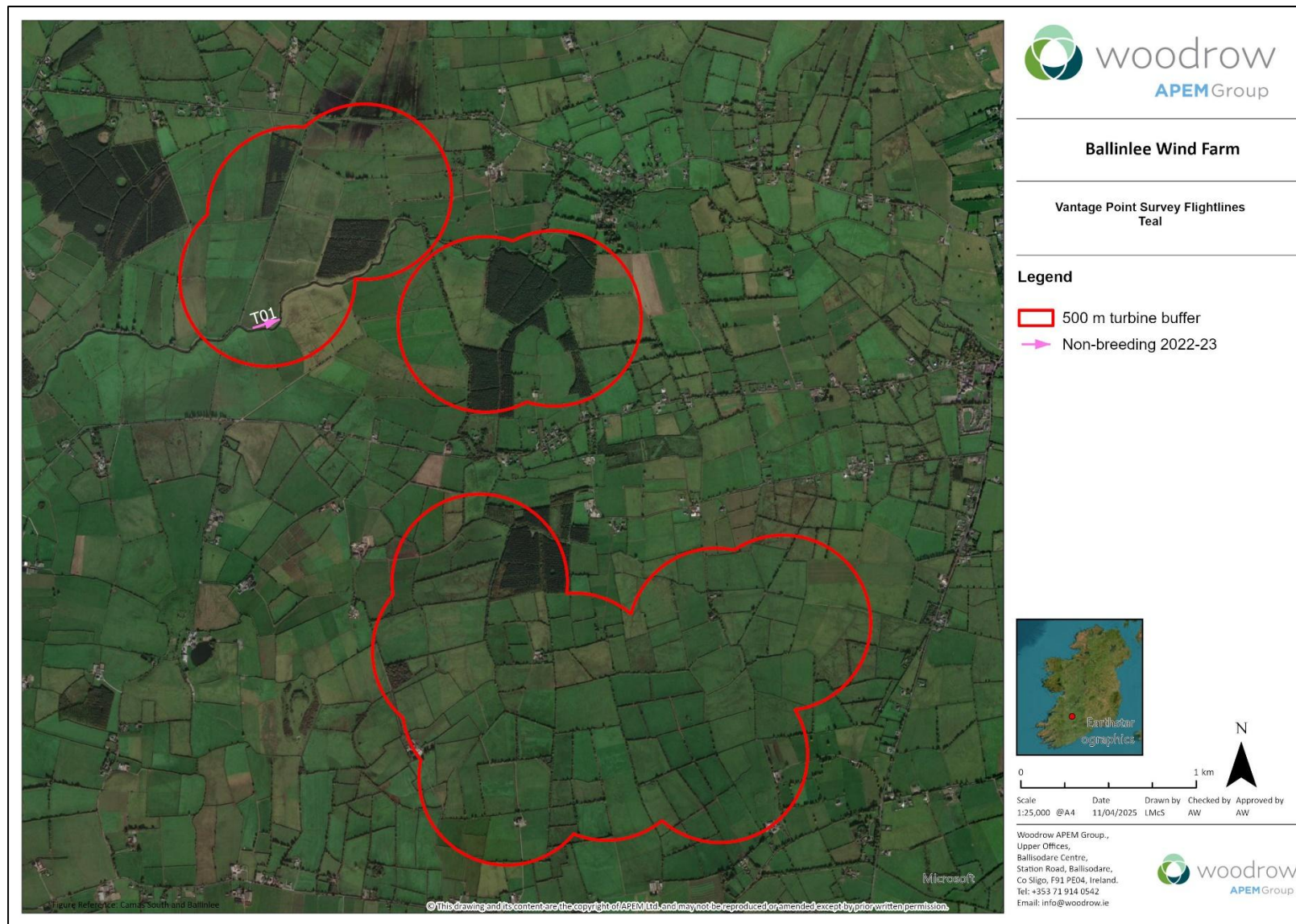


Figure A6.4236: Teal observations recorded during VP watches

Table A6.22: Teal

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
T01	Non-breeding 2022-23	2	12/12/2022	13:42	3	2		5							Flying/ on Ground	

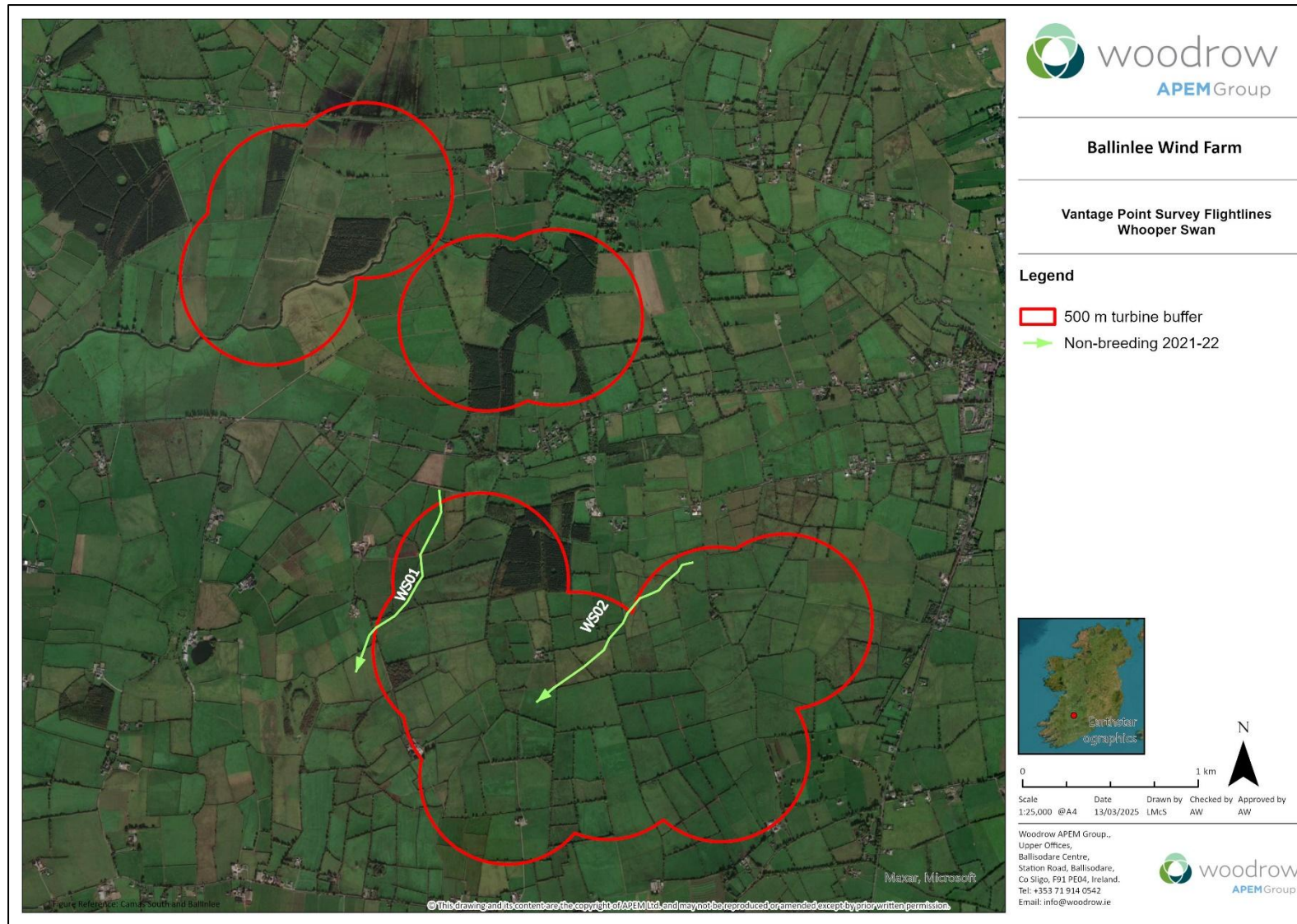


Figure A6.4337: Whooper swan observations recorded during VP watches (non-breeding season 2021-22)

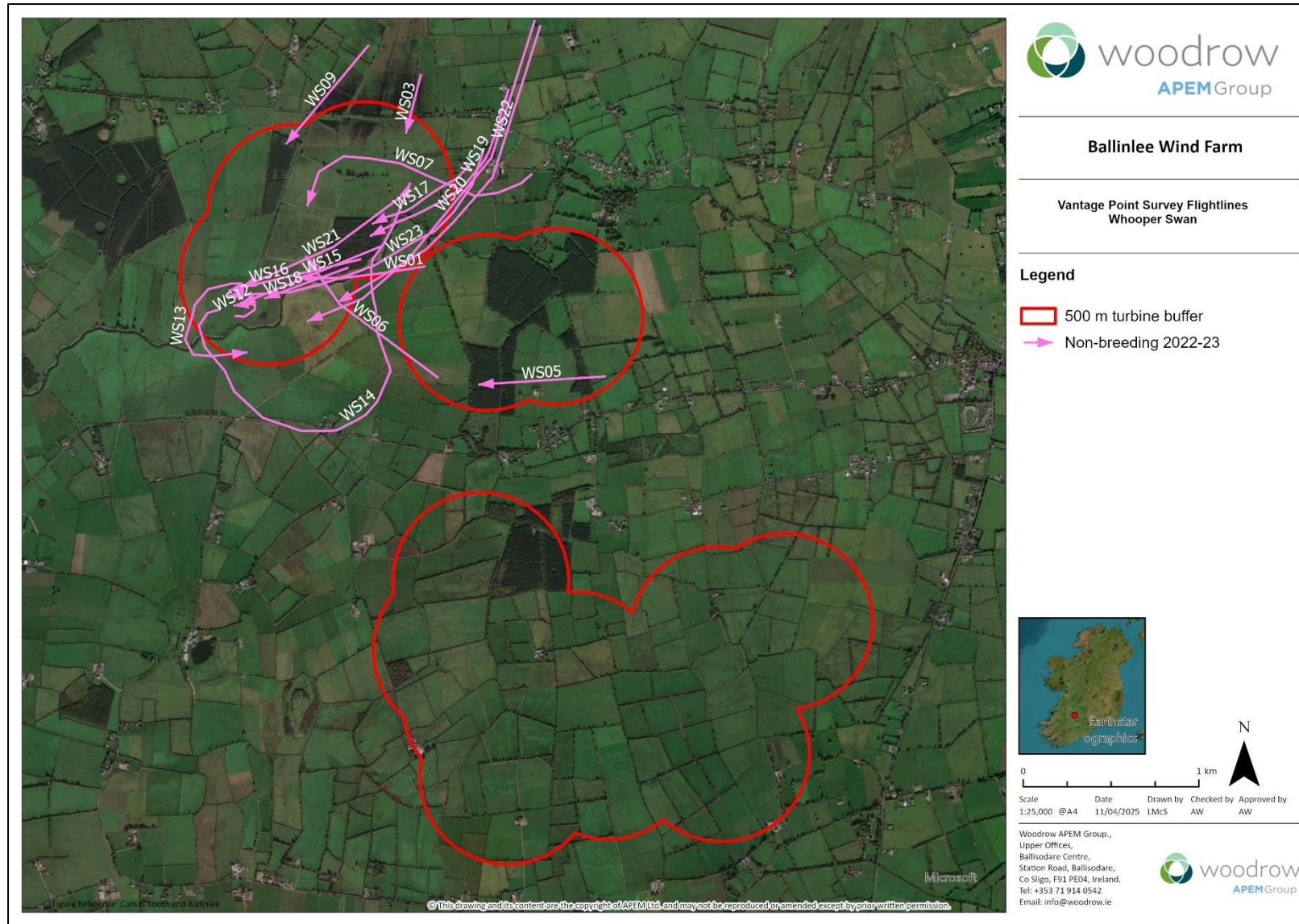


Figure A6.4438: Whooper swan observations recorded during VP watches (non-breeding season 2022-23)

Table A6.23: Whooper Swan

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
WS01	Non-breeding 2021-22	4	01/11/2021	12:35	14	100				43					Commuting flight/ Flying	
WS02	Non-breeding 2021-22	5	15/12/2021	09:20	10	80				55					Commuting flight/ Flying	
WS01	Non-breeding 2022-23	2	12/12/2022	08:26	18	15-20		25							Flying	
WS03	Non-breeding 2022-23	1	12/12/2022	08:36	5	0-20		31							Flying	Commuting through site from roost towards Feeding grounds
WS05	Non-breeding 2022-23	3	12/12/2022	08:48	8	20-50			45						Flying	Travelling from known roost towards known Feeding grounds. Passing within 500m of site boundary
WS06	Non-breeding 2022-23	2	12/12/2022	08:49	7	20		18							Flying	
WS07	Non-breeding 2022-23	1	12/12/2022	09:07	4	0-20		134							Flying	2 adults, 2 juveniles
WS09	Non-breeding 2022-23	1	12/12/2022	12:42	4	0-20		89							Flying	
WS11	Non-breeding 2022-23	2	10/01/2023	15:42	23	0-20		16							Flying / On Ground	Feeding on grassland
WS12	Non-breeding 2022-23	2	10/01/2023	17:10	3	20-50			130						Flying	5 birds took off, 2 Landed back again with main flock

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Time (sec) in Height Category						Sex	Age	Behaviour	Comments
							Non-flight	0-20m	20-50m	50-100m	100-180m	>180m				
WS13	Non-breeding 2022-23	1	10/01/2023	17:22	22	0-20		20							On Ground/ Flying	Taking off from Feeding area, turned to go east away from site to roost at dusk
WS14	Non-breeding 2022-23	2	10/01/2023	17:22	25	20-50			127						Flying	Flying north through site towards roost site at Lough Gur
WS15	Non-breeding 2022-23	2	09/02/2023	08:23	5	0-20		51							Flying	
WS16	Non-breeding 2022-23	2	09/02/2023	08:23	7	0-20		82							Flying	
WS17	Non-breeding 2022-23	1	09/02/2023	08:26	5	20-50			20						Flying	Commuting over site, out of view behind trees
WS18	Non-breeding 2022-23	2	09/02/2023	08:29	5	0-20		65							Flying	
WS19	Non-breeding 2022-23	1	09/02/2023	08:39	7	20-50			30						Flying	Commuting over site, out of view behind trees
WS20	Non-breeding 2022-23	1	09/02/2023	08:49	6	20-50			145						Flying	Travelling SW through site
WS21	Non-breeding 2022-23	2	09/02/2023	08:53	6	0-50		36	71						Flying	
WS22	Non-breeding 2022-23	1	09/02/2023	09:05	4	20-50			155						Flying	Travelling SW through site
WS23	Non-breeding 2022-23	2	09/02/2023	09:08	4	0-50		41	87							

Table A6.244: Incidental Sightings Year 1 and Year 2

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Species	Sex	Age	Behaviour	Comments
N/A	Breeding 2022	6	13/06/2022	19:25	1		Buzzard		A	Perched	
N/A	Breeding 2022	7	07/07/2022	12:28	1		Buzzard			Perched	
N/A	Breeding 2022	6	13/07/2022	08:20	1		Buzzard			Calling	
N/A	Breeding 2022	5	19/07/2022	09:30	1		Buzzard		A	Perched	
N/A	Breeding 2022	6	03/08/2022	15:30	1		Buzzard		J	Calling not seen	
N/A	Breeding 2022	5	03/08/2022	18:55	1		Buzzard		A	Perched	
N/A	Breeding 2022	5	03/08/2022	20:45	1		Buzzard		A	Perched	
BZ34	Non-breeding 2022-23	5	07/02/2023	13:10	1	0-20	Buzzard		A	Perched	
BZ83	Breeding 2023	5	05/05/2023	06:48	1		Buzzard		A	Perched	
BZ93	Breeding 2023	5	06/06/2023	07:58	1		Buzzard		A	Perched	Perched on Pole
N/A	Non-breeding 2021-22	1	08/12/2021	14:16	2		Cormorant		A	Perched	
N/A	Breeding 2022	2	05/04/2022	13:04	1	5	Cormorant			Perched	
N/A	Breeding 2022	2	05/04/2022	13:56	1		Cormorant			Perched	
N/A	Breeding 2022	2	05/04/2022	14:03	2	1-5	Cormorant			Perched	
N/A	Breeding 2022	2	04/05/2022	11:05	1	5	Cormorant			Perched	
CA10	Breeding 2022	2	04/05/2022	12:00	1	5	Cormorant			Perched	
CA02	Non-breeding 2022-23	2	05/10/2022	11:33	1	20-50	Cormorant			Perched	Perched on tall ESB poles
CA04	Non-breeding 2022-23	2	15/11/2022	09:25	1		Cormorant		A	Perched	No Flight
CA09	Non-breeding 2022-23	2	10/01/2023	12:46	1	0-20	Cormorant			Perched	
CA17	Non-breeding 2022-23	2	09/02/2023	10:03	1	0-20	Cormorant		A	Perched	Perched on pole at riverbank
CA18	Non-breeding 2022-23	2	09/02/2023	10:24	1	0-20	Cormorant		A	Perched	Perched on pole at riverbank
CA24	Breeding 2023	2	11/04/2023	14:42	1	10-20	Cormorant				
GP06	Non-breeding 2022-23	2	05/10/2022	14:15	80	On Ground	Golden Plover			On Ground	Feeding on reseeded field on the west side of the river

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Species	Sex	Age	Behaviour	Comments
N/A	Non-breeding 2021-22	2	08/02/2022	09:00	6		Greylag Goose			Foraging	
N/A	Breeding 2022	5	07/04/2022	15:00			Kestrel	M	A	Perched	
N/A	Breeding 2022	5	15/04/2022	16:37	1		Kestrel	M	A	Perched	
K033	Non-breeding 2022-23	2	15/11/2022	11:28	1	Perched	Kestrel	F	A	Perched	On tree east, went to ground
K035	Non-breeding 2022-23	3	15/11/2022	11:44	1	0-20	Kestrel	M		Perched	Flew into forestry
K056	Non-breeding 2022-23	6	06/01/2023	12:10	1	0-20	Kestrel	M	A	Perched	Perched on fence post, Flew east
K122	Breeding 2023	4	04/08/2023	07:56	1		Kestrel	M	A	Perched	Perched at 18m for 380 seconds
N/A	Breeding 2023	7	04/08/2023	12:54	1		Kestrel		J	Perched	
L19	Breeding 2023	1	12/09/2023	07:06	4		Lapwing			Foraging	On ground foraging all day
LB51	Breeding 2023	1	12/09/2023	07:00	384		Lesser Black-backed Gull			Flying / On Ground	Max count 384, foraging, roosting and Flying all day
N/A	Non-breeding 2021-22	1	11/11/2021	09:00	3	0	Mute Swan			On Ground	
N/A	Non-breeding 2021-22	1	12/11/2021	12:30	3	0	Mute Swan			On Ground	
N/A	Non-breeding 2021-22	1	10/01/2022	-			Mute Swan			On Ground	
MS02	Non-breeding 2022-23	1	10/01/2023	14:00	2	0-20	Mute Swan			Perched	Remained there for rest of survey
MS03	Non-breeding 2022-23	2	10/01/2023	15:42	6	0-20	Mute Swan			On Ground	Feeding on grassland
MS06	Non-breeding 2022-23	2	09/02/2023	13:15	3	0-20	Mute Swan			On Ground	Feeding on grassland, same field as previous surveys
MS07	Non-breeding 2022-23	2	08/03/2023	12:00	3	0-20	Mute Swan		A	On Ground	Feeding on grassland
SN13	Non-breeding 2022-23	1	12/12/2022	07:39	1		Snipe			Flying	No visual, flight calling
SN25	Non-breeding 2022-23	1	09/02/2023	13:00	4	0-20	Snipe			On Ground	
T02	Breeding 2023	1	12/09/2023	07:15	8		Teal			Swimming	Swimming, Feeding, all day.

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Species	Sex	Age	Behaviour	Comments
N/A	Non-breeding 2021-22	1	11/11/2021	09:00	7	0	Whooper Swan			Foraging	
N/A	Non-breeding 2021-22	1	12/11/2021	09:00	9	0	Whooper Swan			Foraging	
N/A	Non-breeding 2021-22	1	06/12/2021	08:30	2	0	Whooper Swan			Foraging	
N/A	Non-breeding 2021-22	2	10/01/2022	?	12		Whooper Swan			Foraging	
N/A	Non-breeding 2021-22	2	08/02/2022	09:00	18	0	Whooper Swan			Foraging	
N/A	Non-breeding 2021-22	2	03/03/2022	12:15	6	0	Whooper Swan			Foraging	
N/A	Non-breeding 2021-22	2	09/03/2022	08:45	8	0	Whooper Swan			Foraging	
N/A	Non-breeding 2022-23	1	12/12/2022	08:28	no visual	1-2	Whooper Swan			Flying	Calling
N/A	Non-breeding 2022-23	1	12/12/2022	08:48	no visual	0-20	Whooper Swan			Flying	Flight call only, no visual
WS08	Non-breeding 2022-23	1	12/12/2022	10:21	37	0	Whooper Swan			On Ground	On ground Feeding on grassland
WS10	Non-breeding 2022-23	2	12/12/2022	13:00	41		Whooper Swan			On Ground	Time not specified, no flight, foraging on site
WS24	Non-breeding 2022-23	2	09/02/2023	13:15	27	0-20	Whooper Swan			On Ground	Feeding on grassland, same field as previous surveys
WS25	Non-breeding 2022-23	2	08/03/2023	12:00	14	0-20	Whooper Swan			On Ground	Feeding on grassland

Year 3

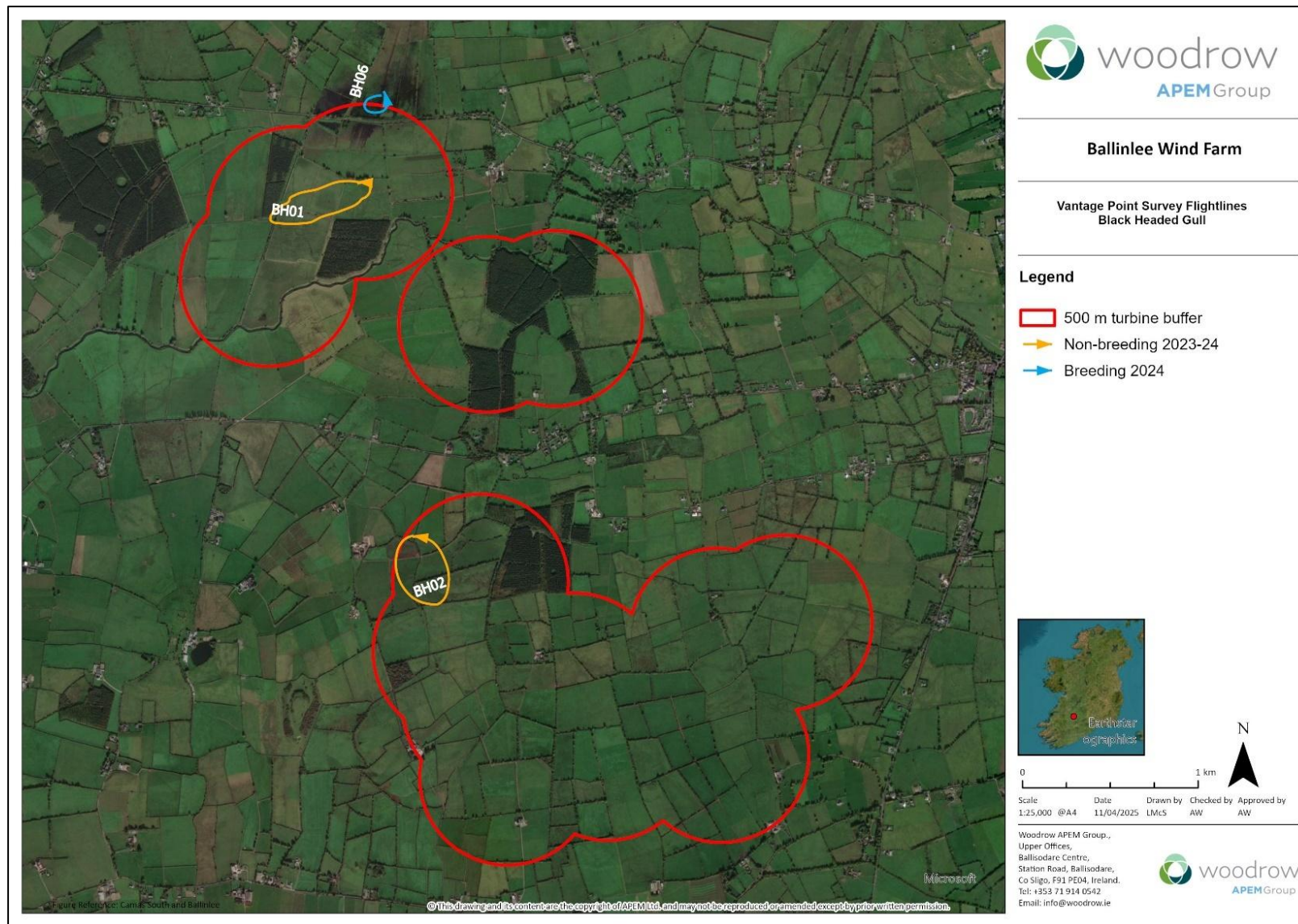


Figure A6.4539: Black-headed gull observations recorded during VP watches

Table A6.255: Black headed Gull

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
BH01	Non-breeding 2023-24	2	26/10/2023	1045	60	0		0-50			Present	Present throughout, various heights (>10 LB in same area). Present for entire 3 hours, second spent in flight unknown.
BH02	Non-breeding 2023-24	4	26/10/2023	1445	5	0					Present	More arrived in flooded fields.
BH03	Non-breeding 2023-24	1	27/10/2023		10	0	0	0			Present	Present S of road
BH04	Non-breeding 2023-24	1	27/10/2023		100	0	0	0			Present	Approximately 100 birds. Present in flooded fields N of road
BH05	Non-breeding 2023-24	1	28/10/2023		20	0					Present	In flooded fields N of road.
BH06	Breeding 2024	1	26/03/2024	1308	5	85	1	0-10		A	Fly-land	Floating in water of flooded field

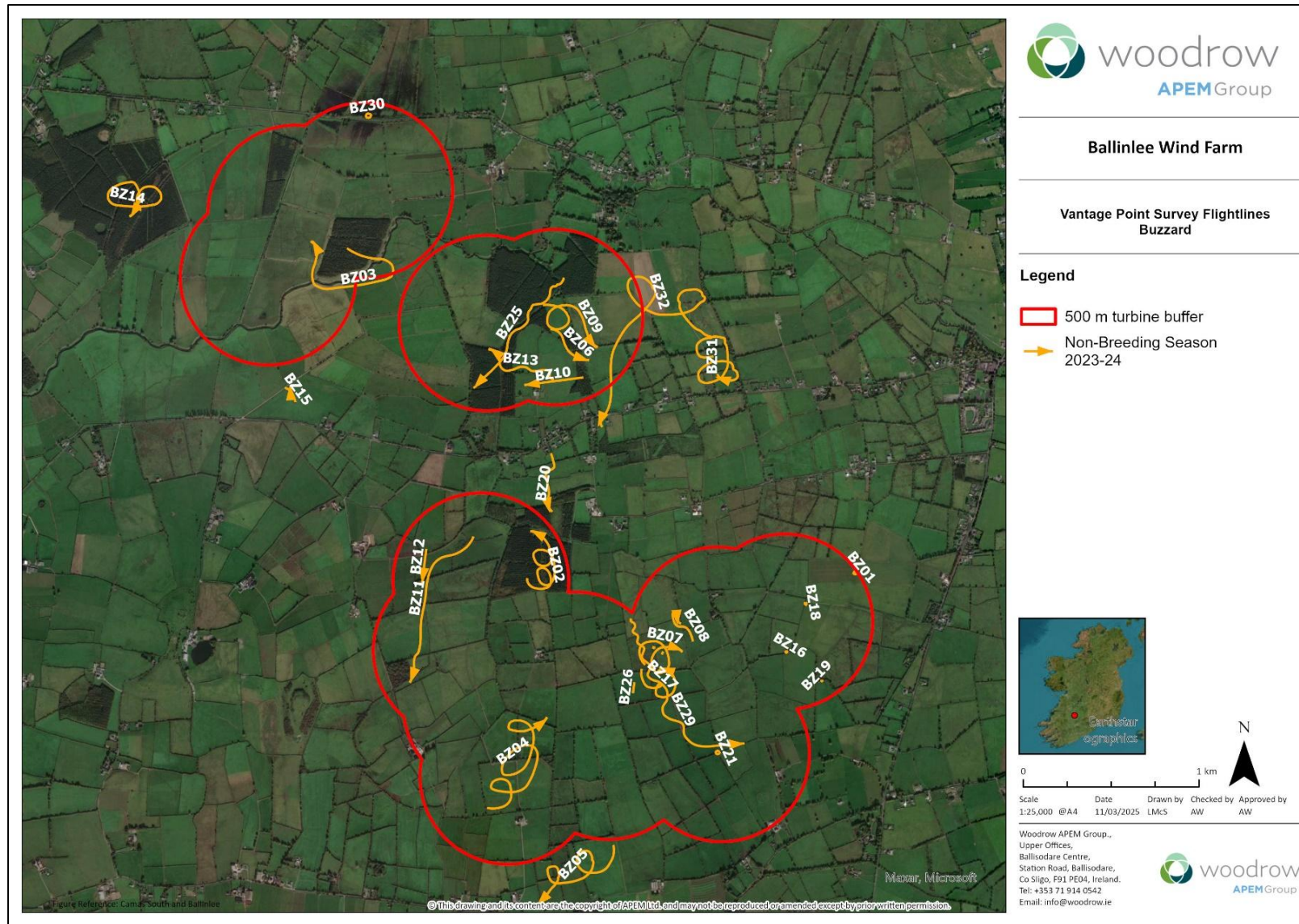


Figure A6.4640: Buzzard observations recorded during VP watches (breeding season 2024)



Table A6.26: Buzzard

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
BZ02	Non-breeding 2023-24	4	26/10/2023	1311	1	15	10				Circling	Circling & flying low over forest
BZ03	Non-breeding 2023-24	2	26/10/2023	1327	1	50	15	20-10		A	Hunting	
BZ04	Non-breeding 2023-24	7	26/10/2023	1602	1	25	15	10-20			Circling	Circling and Flying, Mobbed by RN
BZ06	Non-breeding 2023-24	3	27/10/2023	1212	2	44	20	15-25		A	Flying	Chasing each other over treetops
BZ07	Non-breeding 2023-24	5	27/10/2023	1231	1	45	50				Circling	Circling in distance
BZ08	Non-breeding 2023-24	5	27/10/2023	1242	1	20	10				Present	2nd buzzard closer & lower - out of sight in trees
BZ09	Non-breeding 2023-24	3	27/10/2023	1408	1	135	25	20-30		A	Hunting	Went out of sight, pursued by HC
BZ10	Non-breeding 2023-24	3	28/10/2023	1440	1	35	3	2-4		A	Commuting	Commuting between trees
BZ11	Non-breeding 2023-24	4	23/11/2023	1536	1	18	7			A	Flying	Flying S, fast
BZ12	Non-breeding 2023-24	4	23/11/2023	1547	1	20	3			A	Fly-land	2nd BZ Flying S, then Perched on fence post, Mobbed by 4 HC's. Flight time originally listed as 1200 seconds, confirmed with the subcontractor that 20 seconds were spent in flight and the rest was spent Perched.

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
BZ13	Non-breeding 2023-24	3	25/11/2023	1111	1	10	10			A	Flying	Flying across field, over plantation. Mobbed by HC.
BZ14	Non-breeding 2023-24	2	25/11/2023	1205	1	0	15				Circling	BZ Circling, Mobbed by crows
BZ17	Non-breeding 2023-24	5	16/12/2023	1214	2	720	10				Flying	2 BZ Flying around, low, calling
BZ21	Non-breeding 2023-24	5	07/02/2024	1112	1	0					Calling	BZ calling in distance to ID2
BZ25	Non-breeding 2023-24	3	12/02/2024	1551	1	25	15			A	Flying	Flying SW, Mobbed by RO
BZ26	Non-breeding 2023-24	5	05/03/2024	1147	1	0					Calling	BZ calling SW of VP
BZ28	Non-breeding 2023-24	6	05/03/2024	1428	1	0	70				Soaring	Circling high E of VP, coming down and landing in tree in hedgerow
BZ29	Non-breeding 2023-24	5	07/03/2024	1613	1	35	30				Flying	Steady flight SE
BZ30	Non-breeding 2023-24	1	10/03/2024	1712	1						Flying	BZ on telegraph pole after survey, then Flew E
BZ31	Non-breeding 2023-24	3	11/03/2024	1054	1	0	100				Soaring	Circling high outside buffer, calling
BZ32	Non-breeding 2023-24	3	11/03/2024	1114	1	20	100				Soaring	Calling again, then Flying S over VP
BZ033	Breeding 2024	2	22/03/2024	922	2	94	40	20-40	F&M	A	Circling	
BZ034	Breeding 2024	2	22/03/2024	941	1	192	20	10-100	F	A	Flying	Mobbed by 3 HC

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
BZ035	Breeding 2024	2	22/03/2024	959	3	660	30	15-70	F&M	A	Courtship	2 M competing for F
BZ036	Breeding 2024	2	22/03/2024	1124	2	168	30	20-40	F&M	A	Courtship	Diving together
BZ037	Breeding 2024	2	22/03/2024	1154	1	168	15	10-50	F	A	Mobbed	Mobbed by HC
BZ038	Breeding 2024	2	22/03/2024	1213	2	314	20	10-30	F&M	A	Flying	
BZ039	Breeding 2024	3	22/03/2024	1317	1	32	25	15-25	M	A	Hunting	
BZ040	Breeding 2024	3	22/03/2024	1318	1	28	25	15-25	M	A	Hunting	
BZ041	Breeding 2024	3	22/03/2024	1324	1	66	30	20-30	F	A	Mobbed	Mobbed by HC
BZ042	Breeding 2024	3	22/03/2024	1330	1	65	20	20-30	F	A	Hunting	Mobbed by JD
BZ043	Breeding 2024	3	22/03/2024	1331	1	0	40	30-60	M	A	Hunting	
BZ044	Breeding 2024	3	22/03/2024	1402	1	129	30	20-40	F	A	Flight call	
BZ045	Breeding 2024	3	22/03/2024	1404	2	256	40	20-40	F&M	A	Hunting	Pair Mobbed by 2 HC
BZ046	Breeding 2024	3	22/03/2024	1409	2	358	40	30-60	F&M	A	Hunting	
BZ047	Breeding 2024	2	26/03/2024	1132	1	23	20	15-25		A	Mobbed	
BZ048	Breeding 2024	1	26/03/2024	1259	1	0	30	15-60	F	A	Circling	Mobbed by HC
BZ049	Breeding 2024	1	26/03/2024	1325	1	87	40	30-60		A	Circling	Flew up and landed again
BZ050	Breeding 2024	1	26/03/2024	1331	1	35	30	20-40		A	Circling	Out of sight behind treeline
BZ051	Breeding 2024	1	26/03/2024	1339	1	457	30	20-150	F	A	Circling	Circled high then soared and joined by male (ID 7)
BZ052	Breeding 2024	1	26/03/2024	1341	1	152	20	20-60	M	A	Circling/Courtship	Both M&F Circling and diving together

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
BZ053	Breeding 2024	1	26/03/2024	1344	1	61	30	20-50		A	Circling	
BZ054	Breeding 2024	1	26/03/2024	1352	2	314	25	20-40	F&M	A	Mobbed	Got dived by HC then began courtship behaviour
BZ055	Breeding 2024	1	26/03/2024	1353	1	71	100	90-120		A	Circling	
BZ056	Breeding 2024	1	26/03/2024	1433	3	489	60	50-130	F&M	A	Breeding/Territorial	Pair joined by another male, 2 males diving with talons
BZ057	Breeding 2024	1	26/03/2024	1439	2	246	40	30-50	F&M	A	Flying	
BZ058	Breeding 2024	1	26/03/2024	1440	1	72	40	30-70		A	Circling	Prob one of BZ recorded earlier
BZ059	Breeding 2024	7	27/03/2024	1014	1	56	15	10-20	F	A	Mobbed	Mobbed by HC
BZ060	Breeding 2024	7	27/03/2024	1021	1	193	25	20-60	F	A	Circling	Flew low behind hedgerow out of sight
BZ061	Breeding 2024	7	27/03/2024	1104	1	35	10	10-30	M	A	Flight call	
BZ062	Breeding 2024	4	27/03/2024	1306	1	154	30	10-50		A	Soaring	
BZ063	Breeding 2024	4	27/03/2024	1311	1	40	35	25-40		A	Soaring	
BZ064	Breeding 2024	4	27/03/2024	1315	1	86	40	10-40		A	Circling	
BZ065	Breeding 2024	4	27/03/2024	1316	1	46	30	10-30		A	Breeding/Territorial	Met with ID2.1 in flight and dove with talons on show
BZ066	Breeding 2024	4	27/03/2024	1321	1	122	60	60-90		A	Mobbed	Mobbed by 8 HC
BZ067	Breeding 2024	4	27/03/2024	1405	1	119	20	15-40	M	A	Mobbed	Mobbed by 2 HC
BZ068	Breeding 2024	4	27/03/2024	1445	2	618	40	30-100	F&M	A	Circling	Circling and soaring
BZ069	Breeding 2024	4	27/03/2024	1541	2	68	25	15-25	F&M	A	Circling	
BZ071	Breeding 2024	3	28/03/2024	1057	1	139	35	25-50	F	A	Soaring	

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
BZ072	Breeding 2024	3	28/03/2024	1208	2	706	35	30-100	F&M	A	Circling	
BZ073	Breeding 2024	6	28/03/2024	1340	2	0	25	25-100	F&M	A	Flight call	
BZ074	Breeding 2024	6	28/03/2024	1421	1	344	40	30-150	F	A	Circling	
BZ075	Breeding 2024	6	28/03/2024	1431	1	149	50	30-70	F	A	Circling	
BZ076	Breeding 2024	6	06/04/2024	938	1	117	20	20-80	F	A	Circling	
BZ077	Breeding 2024	4	06/04/2024	1249	1	217	50	25-110	F	A	Mobbed	Mobbed by HC
BZ078	Breeding 2024	4	06/04/2024	1348	1	384	50	30-100	F&M	A	Mobbed	Mobbed by HC then joined other BZ
BZ079	Breeding 2024	4	06/04/2024	1349	1	301	35	30-70	F	A	Circling	
BZ080	Breeding 2024	4	06/04/2024	1351	2	386	80	40-100	F&M	A	Circling	Male diving at male ID5
BZ081	Breeding 2024	4	06/04/2024	1425	2	504	50	40-80	F&M	A	Mobbed	Mobbed at first and then Circled
BZ082	Breeding 2024	5	09/04/2024	1354	2	438	20	15-80	F&M	A	Mobbed	Mobbed by 4 HC
BZ083	Breeding 2024	5	09/04/2024	1402	1	99	15	10-30	F	A	Hunting	Female from pair ID 2. Circling and "Hovering"
BZ084	Breeding 2024	5	09/04/2024	1406	1	428	40	5-35		A	Fly-land	Landed in tree and perched
BZ085	Breeding 2024	5	09/04/2024	1526	1	246	20	15-60	F	A	Hunting	"Hovering" then Mobbed by 2 HC
BZ086	Breeding 2024	5	09/04/2024	1535	1	320	80	0-80	F	A	Hunting	Soaring & "Hovering, then dove to ground for prey, missed
BZ087	Breeding 2024	7	11/04/2024	1004	1	20	5	2-10	M	A	Hunting	Flew low behind hedgerow
BZ088	Breeding 2024	2	06/05/2024	1450	1	56	30	20-40	M	A	Mobbed	Mobbed by 3 HC
BZ090	Breeding 2024	1	08/05/2024	1112	1	19	35	30-40		A	Flying	Dropped below tree line

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
BZ091	Breeding 2024	3	09/05/2024	1000	1						Flying	
BZ092	Breeding 2024	3	09/05/2024	1016	1	45	35	40-20	M	A	Flying	
BZ093	Breeding 2024	3	09/05/2024	1018	1	166	60	10-70	F	A	Circling/Hunting	Dove down on prey
BZ094	Breeding 2024	3	09/05/2024	1025	1	162	20	10-80	F	A	Circling/Hunting	Dove again for prey
BZ095	Breeding 2024	3	09/05/2024	1125	2	964	30	20-100	F&M	A	Breeding/Territorial	Circling, diving together, M chasing F
BZ096	Breeding 2024	3	09/05/2024	1131	1	329	25	15-40	F	A	Circling	
BZ097	Breeding 2024	3	17/05/2024	1336	2	178	25	20-40	F&M	A	Circling	
BZ098	Breeding 2024	3	17/05/2024	1353	1	94	30	20-40	M	A	Circling	
BZ099	Breeding 2024	1	27/05/2024	1400	1	176	20	20-110	M	A	Circling	
BZ100	Breeding 2024	1	27/05/2024	1400	1	95	20	20-50	F	A	Circling	
BZ101	Breeding 2024	7	20/06/2024	1304	1	20	200			J	Circling	Circling high, moving east
BZ102	Breeding 2024	5	21/06/2024	903	1	6	3				Flying	Flying S past VP, fast.
BZ103	Breeding 2024	7	22/06/2024	929	1	20	100				Flying	Flying fast and high to NE
BZ104	Breeding 2024	4	22/06/2024	1535	1	35	100				Flying	Flying south high
BZ105	Breeding 2024	1	28/06/2024	1413	1	15	150				Circling	Buzzard Circling and calling
BZ106	Breeding 2024	1	28/06/2024	1540	1	15	150				Calling	Buzzard calling again, same area
BZ107	Breeding 2024	5	16/07/2024	1127	1	25	250				Circling	Buzzard circling high
BZ108	Breeding 2024	5	16/07/2024	1158	1	0	250				Circling	Buzzard Circling high

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
BZ109	Breeding 2024	5	16/07/2024	1214	1	80	500				Circling	Buzzard arriving from N, Circling high, moving back N
BZ110	Breeding 2024	6	16/07/2024	1313	1	50	100				Hunting	Buzzard Hunting and Hovering
BZ111	Breeding 2024	7	17/07/2024	1002	1	45	300				Circling	Fox seen. Buzzard Circling high, N of VP moving S.
BZ112	Breeding 2024	7	17/07/2024	1004	2	150	200				Circling	Joined by a 2nd BZ, closer to VP Circling near woodland
BZ113	Breeding 2024	7	17/07/2024	1044	1	50	10			J	Flying	Buzzard Flying W past VP, Hovering continuing west
BZ114	Breeding 2024	4	17/07/2024	1450	1	10	15			A	Circling	Circling and moving S
BZ115	Breeding 2024	4	17/07/2024	1508	1	30	2			A	Hunting	Hunting, hovering over fields - one strike
BZ116	Breeding 2024	5	21/08/2024	1040	1	15	10				Flying	Flying south past VP
BZ117	Breeding 2024	1	23/08/2024	1050	1	20					Calling	Buzzard calling from S of VP
BZ118	Breeding 2024	3	29/08/2024	1723	1	20	5				Flying	Flying SE, low, Mobbed by crows.
BZ120	Breeding 2024	2	13/09/2024	1859	2	150	100				Soaring	2 buzzards Soaring 1 km NW of VP

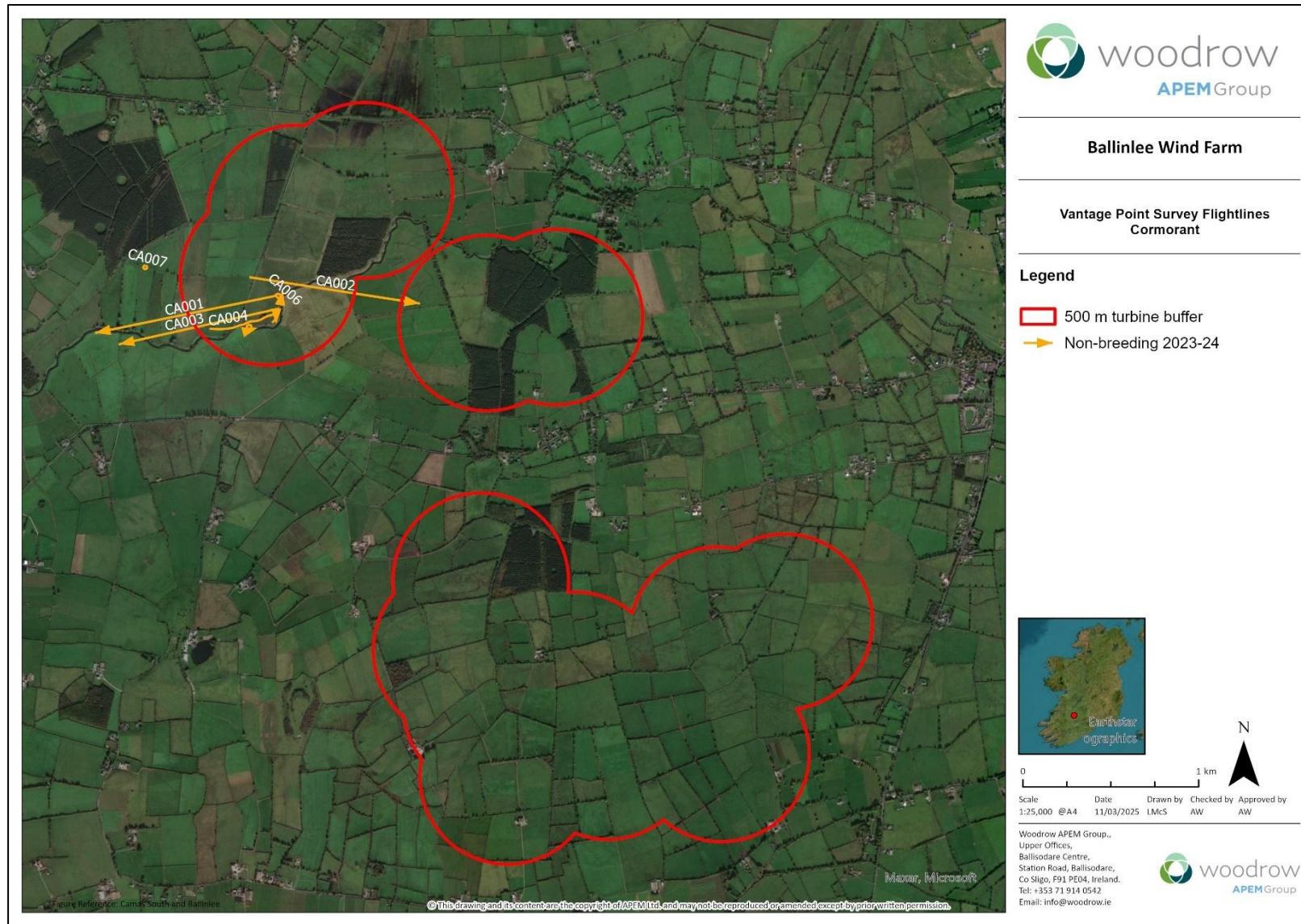


Figure A6.4842: Cormorant observations recorded during VP watches (non-breeding season 2023/2024)

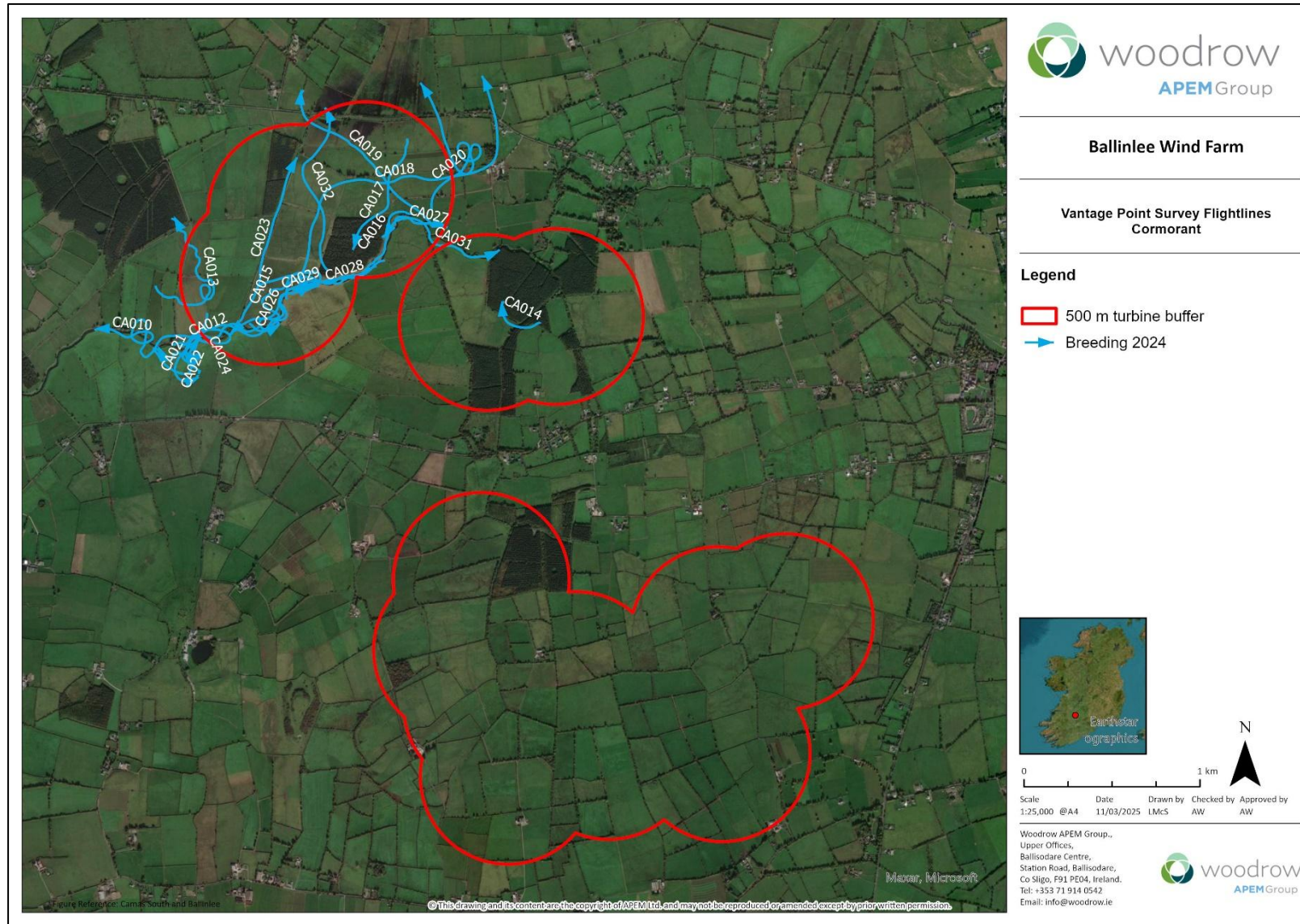


Figure A6.4943: Cormorant observations recorded during VP watches (breeding season 2024)

Table A6.267: Cormorant

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
CA001	Non-breeding 2023-24	2	26/10/2023	1134	1	20	15	15		A	Commuting	
CA002	Non-breeding 2023-24	2	26/10/2023	1335	1	35	20	20		A	Commuting	
CA003	Non-breeding 2023-24	2	26/10/2023	1411	1	18	5	5		A	Commuting	
CA004	Non-breeding 2023-24	2	04/01/2024	1058	1	15	5				Fly-land	Flying along river then Landed in river
CA008	Breeding 2024	2	22/03/2024	924	1	24	15	0-15		A	Fly-land	Landed in river
CA009	Breeding 2024	2	22/03/2024	933	1	19	10	0-10		A	Fly-land	
CA010	Breeding 2024	2	22/03/2024	947	1	22	10	0-25		A	Flying	Flew up from river
CA012	Breeding 2024	2	22/03/2024	1023	1	41	2	0-10		A	Flying	Flew from river
CA013	Breeding 2024	2	22/03/2024	1200	1	44	20	15-30		A	Flying	
CA014	Breeding 2024	3	28/03/2024	1000	1	12	20	15-20		A	Flying	
CA015	Breeding 2024	1	02/04/2024	1400	1	55	25	0-30		A	Fly-land	Landed in river.
CA016	Breeding 2024	1	02/04/2024	1402	1	11	20	15-20		A	Flying	
CA017	Breeding 2024	1	02/04/2024	1437	2	108	25	15-25	F&M	A	Flying	
CA018	Breeding 2024	1	02/04/2024	1443	1	100	20	20-50		A	Flying	
CA019	Breeding 2024	1	02/04/2024	1512	1	59	20	15-40		A	Flying	

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
CA020	Breeding 2024	1	02/04/2024	1514	2	46	30	25-50	F&M		Flying	Pair met in flight and circled together.
CA021	Breeding 2024	2	06/05/2024	1247	1	6	25	15-25		A	Flying / Perched	Perched on large electricity pole. Flew...
CA023	Breeding 2024	2	06/05/2024	1311	1	47	30	20-35		A	Flying	
CA024	Breeding 2024	2	06/05/2024	1358	1	0	25	0-25		A	Fly-land	Flew from pole & landed in river
CA025	Breeding 2024	2	06/05/2024	1500	1	0	20	0-20		A	Fly-land	
CA026	Breeding 2024	2	06/05/2024	1516	1	39	10	0-10		A	Fly-land	Landed in river
CA027	Breeding 2024	1	08/05/2024	1102	1	19	15	10-20		A	Flying	
CA028	Breeding 2024	2	13/05/2024	1125	1	72	3	3-25		A		
CA029	Breeding 2024	2	13/05/2024	1125	1	28	5	5-10		A		
CA030	Breeding 2024	2	13/05/2024	1321	1	0	5					
CA031	Breeding 2024	1	27/05/2024	1530	1	70	10	5-25		A	Flying	
CA032	Breeding 2024	1	27/05/2024	1552	1	51	15	15-25		A	Flying	

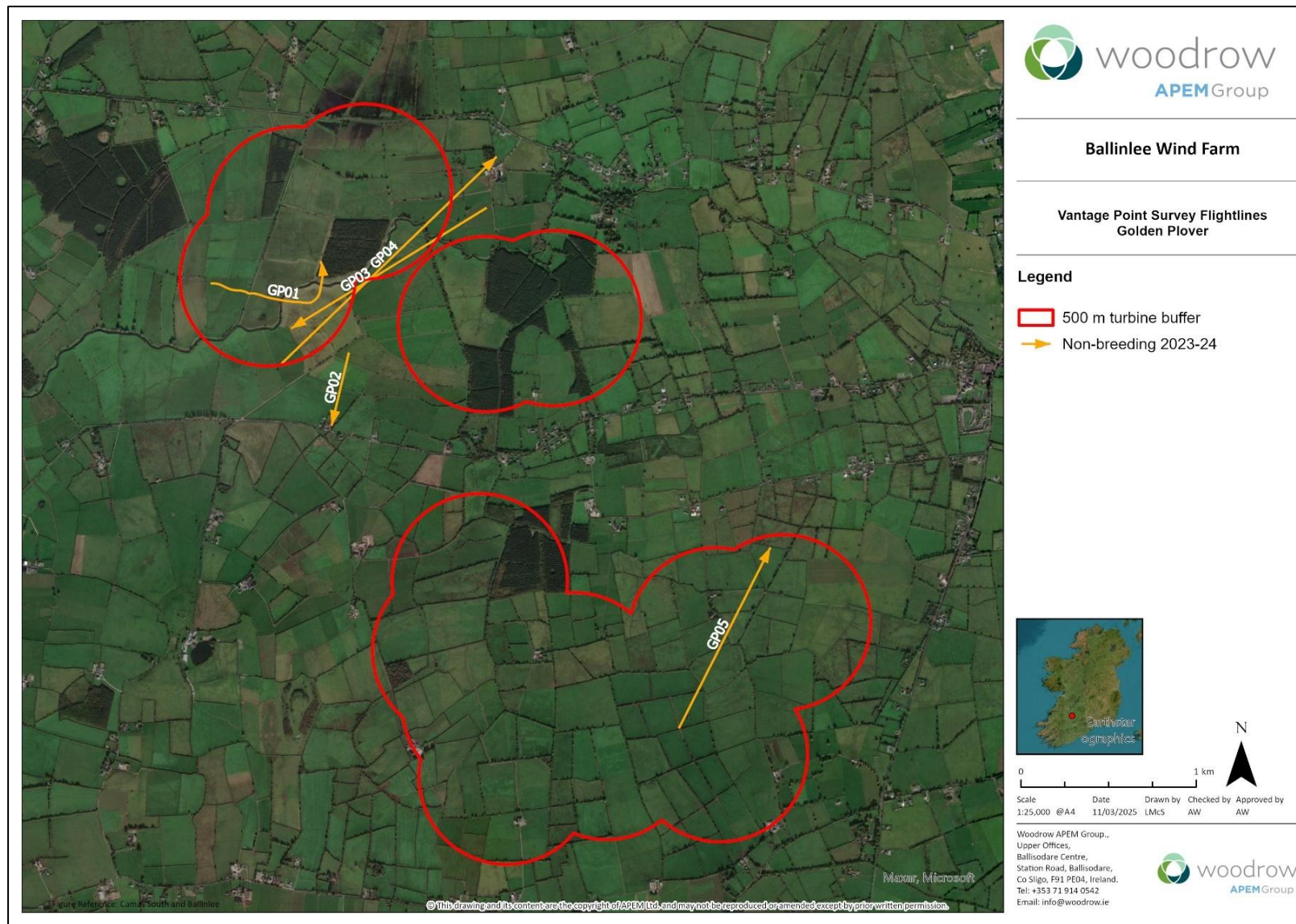


Figure A6.5044: Golden plover observations recorded during VP watches

Table A6.27: Golden Plover

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
GP01	Non-breeding 2023-24	2	26/10/2023	1534	26	1170	20	20		A	Commuting	
GP02	Non-breeding 2023-24	2	26/10/2023	1537	1	0	3	3		A	Commuting	
GP03	Non-breeding 2023-24	1	02/01/2024	1448	100	2000	300				Flying	Flock of c100 GP Flying W, high.
GP04	Non-breeding 2023-24	1	02/01/2024	1521	100	1500	300				Flying	Flying again, high, heading NE.
GP05	Non-breeding 2023-24	6	06/01/2024	1147	6	120	200				Flying	Flying NE

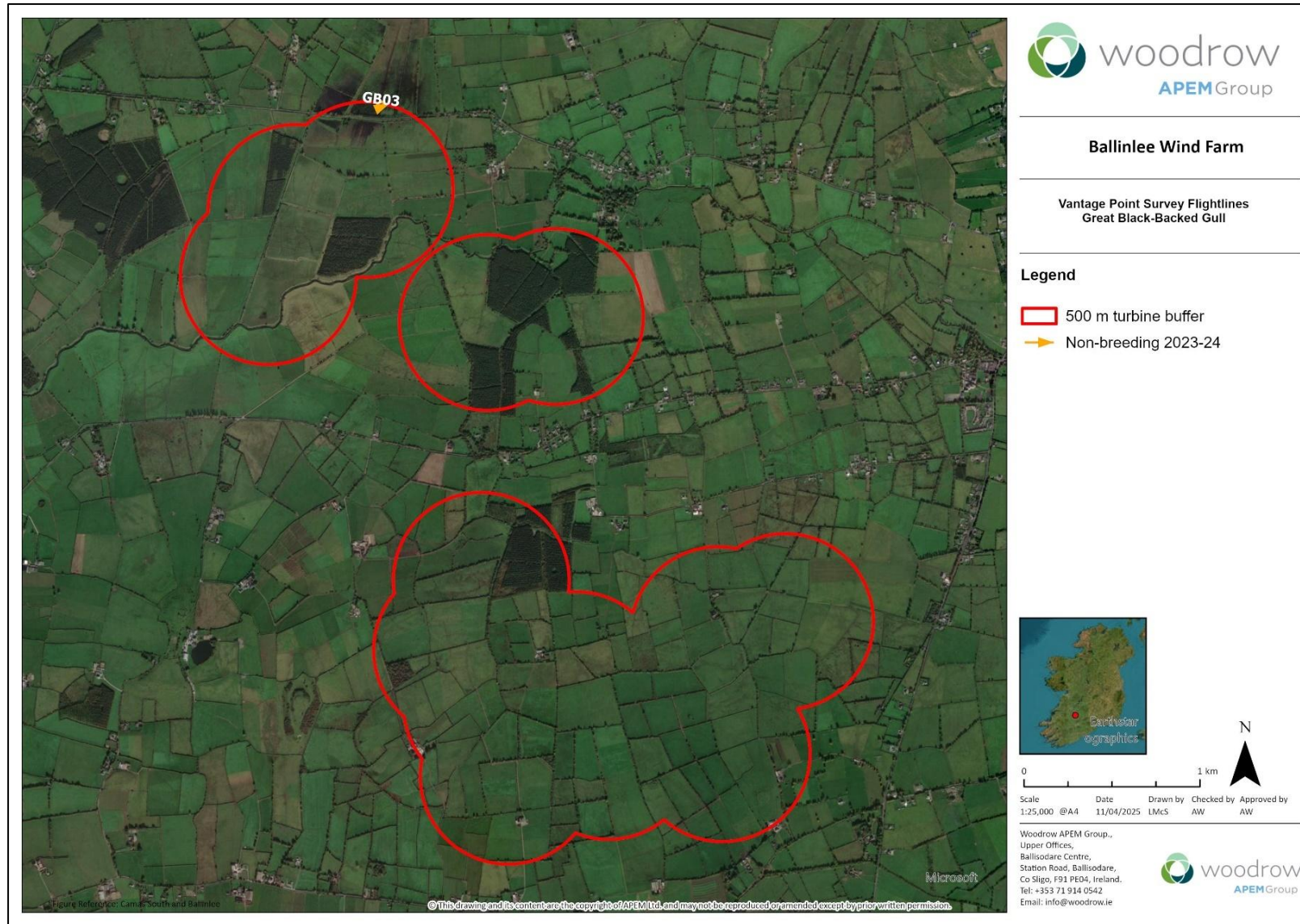


Figure A6.5145: Great black-backed gull observations recorded during VP watches

Table A6.28: **Great black backed gull**

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
GB01	Non-breeding 2023-24	4	26/10/2023	1142	1	0					Present	In flooded fields throughout VP watch.
GB02	Non-breeding 2023-24	4	26/10/2023	1427	15	0					Present	More arrived in flooded fields.

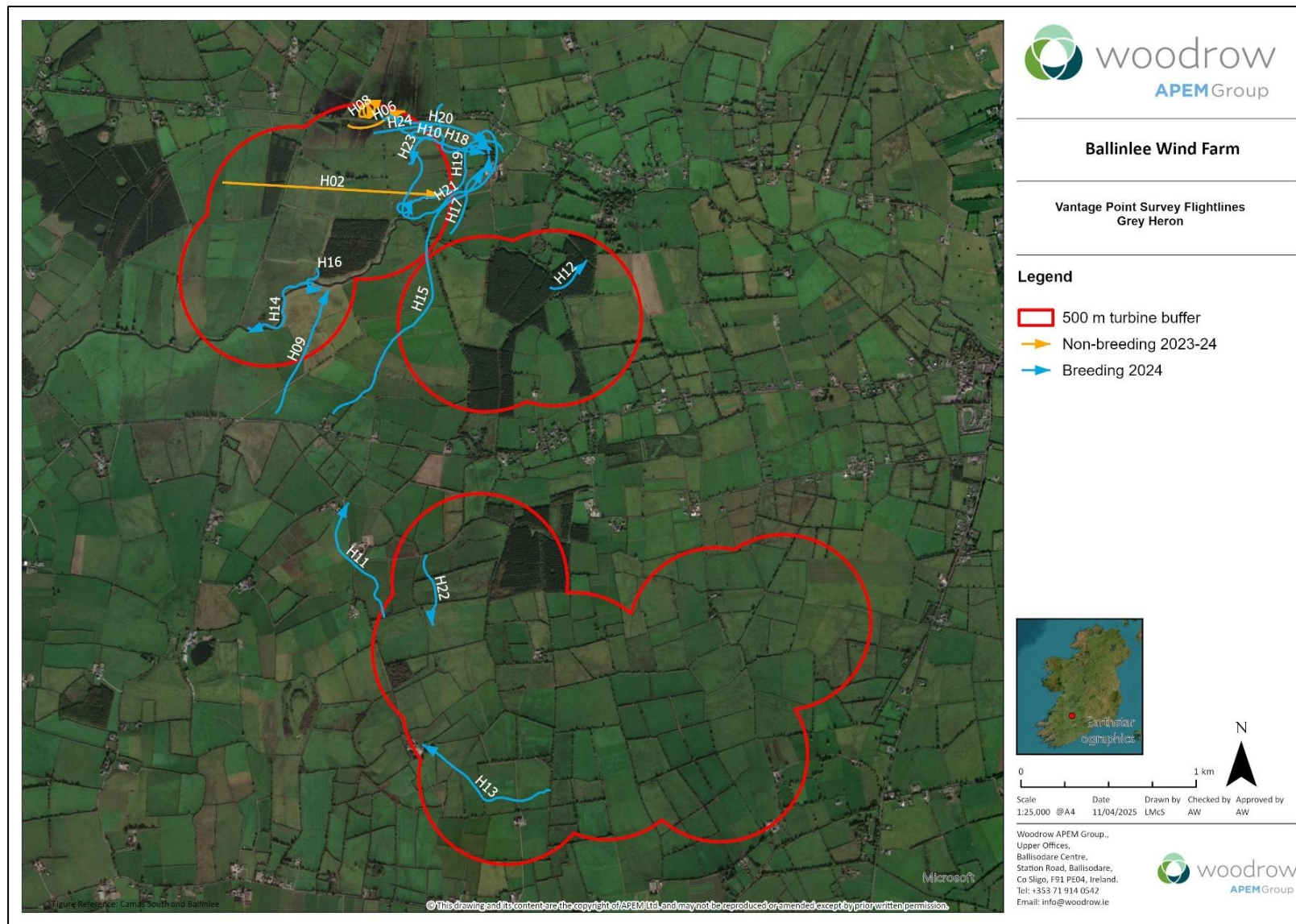


Figure A6.5246: Grey heron observations recorded during VP watches

Table A6.29: Grey Heron

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
H02	Non-breeding 2023-24	2	26/10/2023	1622	1	70	50	50		A	Commuting	
H06	Non-breeding 2023-24	1	24/11/2023	958	1	15	5				Flying	Flying low along stream, E, then across road to N
H09	Breeding 2024	2	22/03/2024	1135	1	21	20	0-20		A	Flying	Landed in field
H10	Breeding 2024	1	26/03/2024	1307	2	106	15	10-40		A	Flight call	Pair flew from flooded field & landed in larger conifers
H11	Breeding 2024	4	27/03/2024	1423	1	4	10	5-15		A	Flying	
H12	Breeding 2024	3	28/03/2024	1112	1	22	40	30-40		A	Flying	
H13	Breeding 2024	7	11/04/2024	950	1	53	10	2-10		A	Flying	
H14	Breeding 2024	2	06/05/2024	1251	1	45	2	1-3		A	Flying	Flying low over river then Landed in...
H15	Breeding 2024	2	06/05/2024	1445	1	32	2	1-5		A	Flying	
H16	Breeding 2024	2	13/05/2024	1216	1	16	10	0-10		A		
H17	Breeding 2024	1	27/05/2024	1420	1	0	10	1-30		A	Flying	
H18	Breeding 2024	1	27/05/2024	1455	1	4	5	5-25		A	Flying	
H19	Breeding 2024	1	27/05/2024	1549	2	84	25	0-30	F&M	A	Fly-land	
H20	Breeding 2024	1	27/05/2024	1600	1	15	20	20-30		A	Fly-land	Possible 2 pairs of H in wooded area
H21	Breeding 2024	1	27/05/2024	1602	1	49	15	15-30		A	Fly-land	
H22	Breeding 2024	4	22/06/2024	1657	1		5				Flying	Flying south along drain

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
H23	Breeding 2024	1	24/07/2024	1403	1	10	5				Flying	Heron Flying S across road
H24	Breeding 2024	1	24/08/2024	1105	1	15	5				Flying	Heron Flying along stream --> E

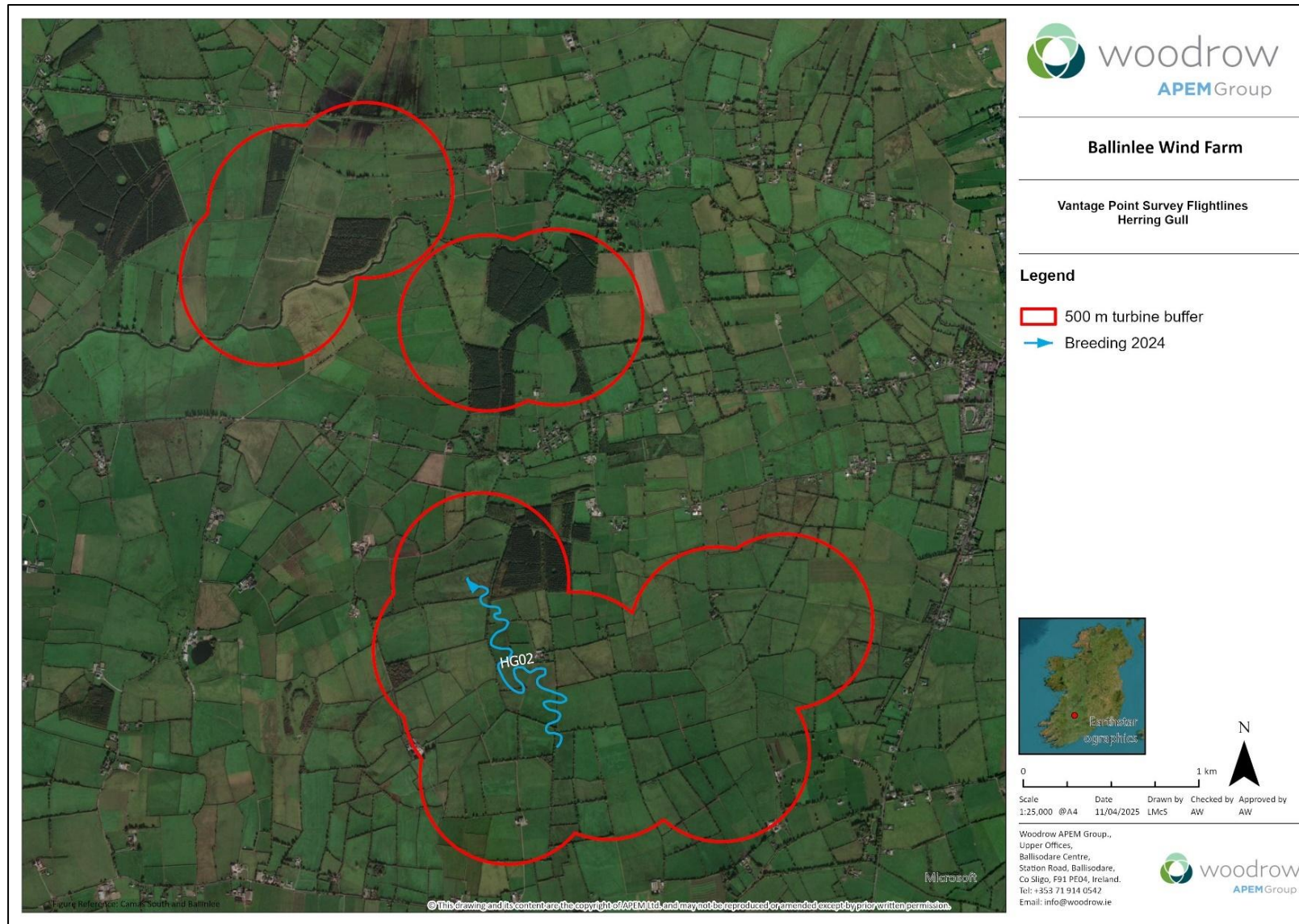


Figure A6.5347: Herring gull observations recorded during VP watches

Table A6.30: Herring gull

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
HG02	Breeding 2024	5	09/04/2024	1315	3	390	30	10-50		A	Flying	

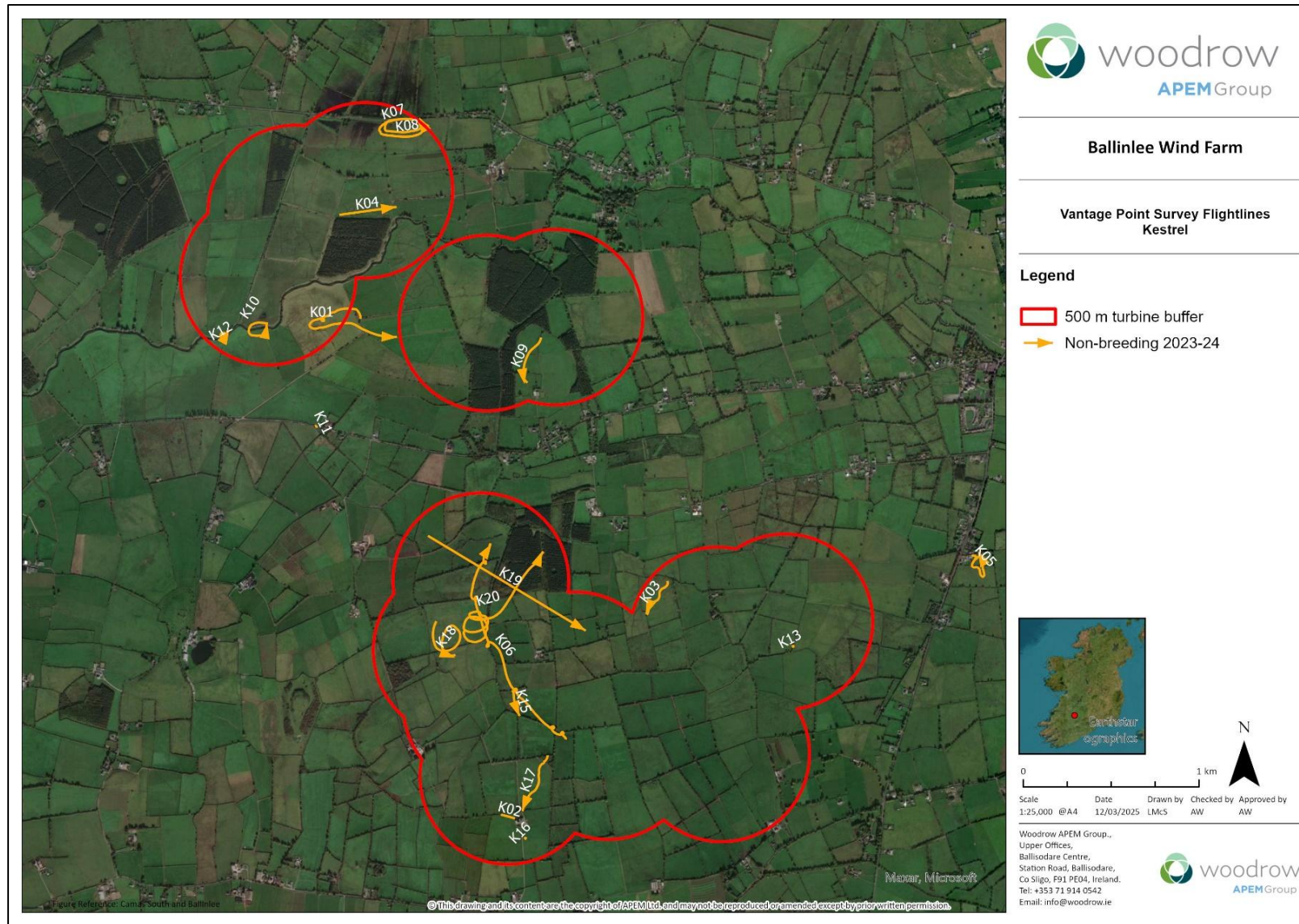


Figure A6.5448: Kestrel observations recorded during VP watches (non-breeding season 2023-24)

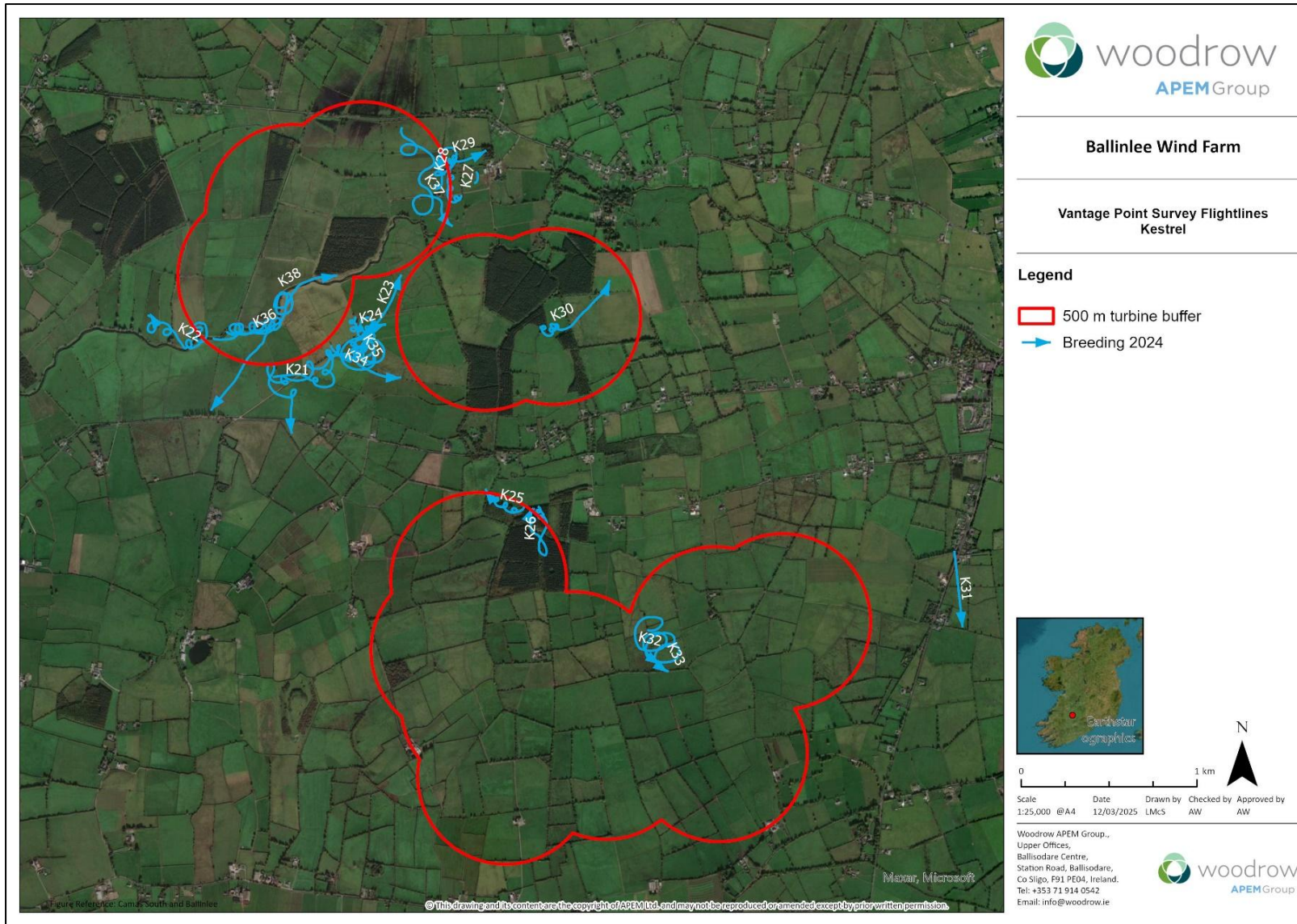


Figure A6.5549: Kestrel observations recorded during VP watches (breeding season 2024)

Table A6.31: Kestrel

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
K01	Non-breeding 2023-24	2	26/10/2023	1540	1	180	5	10-0	F	A	Hunting	Flew, then Perched for 9 minutes, then Flew again - 3 minutes flight in total
K02	Non-breeding 2023-24	7	27/10/2023	1127	1	20	10		M	A	Fly-land	Flying from farm to perch in tree
K03	Non-breeding 2023-24	5	27/10/2023	1442	1	20	10		M	A	Hunting	Hunting, then Perched in tree
K04	Non-breeding 2023-24	1	28/10/2023	1057	1	23	20	20	F	A	Present	Escaping mobbing HC
K05	Non-breeding 2023-24	6	20/11/2023	1352	1	0	10		M	A	Hunting	Male kestrel Hunting
K06	Non-breeding 2023-24	4	23/11/2023	1644	1	45	10				Hunting	Moving N, stopped and Hovered 6 times
K07	Non-breeding 2023-24	1	24/11/2023	1133	1	15	10		F		Hunting	Hunting beside road
K08	Non-breeding 2023-24	1	24/11/2023	1149	1	0					Hunting	Same place. Successful strike and Flew to post. Then Flew S.
K09	Non-breeding 2023-24	3	24/11/2023	1537	1	15	7				Flying	Kestrel Flying fast, Mobbed by Rook
K10	Non-breeding 2023-24	2	25/11/2023	1414	1	480	10				Hunting	Hunting near river
N/A	Non-breeding 2023-24	5	09/12/2023	1625	1	0	10				Hunting	Kestrel Hunting on leaving site

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
K15	Non-breeding 2023-24	4	07/02/2024	1452	1	25	10		F		Hunting	Female K Flying S through site, Hunting for a while, then continuing S
K17	Non-breeding 2023-24	7	08/02/2024	1437	1	0	10		M	A	Fly-land	Male K Flying SW, then Landed on telegraph pole
K18	Non-breeding 2023-24	4	10/02/2024	1420	1	20	10		F	A	Hunting	Hunting over fields
K19	Non-breeding 2023-24	4	10/02/2024	1516	1	25	10				Flying	K Flying fast through site SE
K20	Non-breeding 2023-24	4	10/02/2024	1629	1	35	10				Present	K Hunting SE of VP, then Mobbed by JD, Flew off NE
K21	Breeding 2024	2	22/03/2024	1134	1	0	15	2-20	F	A	Hunting	Perch for a minute in tree
K22	Breeding 2024	2	22/03/2024	1207	1	14	15	10-25	F	A	Hunting	Prob same bird as ID 9
K23	Breeding 2024	2	26/03/2024	1054	1	0	15	1-20	F	A	Hunting	
K24	Breeding 2024	2	26/03/2024	1105	1	0	15	10-20	F	A	Hunting	
K25	Breeding 2024	4	06/04/2024	1346	1	49	30	20-40		A	Hunting	Disappeared when Flew low
K26	Breeding 2024	4	06/04/2024	1356	1	53	30	25-40		A	Hunting	
K27	Breeding 2024	1	08/05/2024	1048	1	0	20	0-20	F	A	Hunting	Dove behind tree line
K28	Breeding 2024	1	08/05/2024	1112	1	357	25	0-30	F	A	Hunting	Dove on prey and Perched on fence post
K29	Breeding 2024	1	08/05/2024	1118	1	49	30	10-30	F	A	Hunting	
K30	Breeding 2024	3	09/05/2024	1236	2	144	80	70-90	F&M	A	Circling	Pair met SH in flight, Circled together then branched off
K31	Breeding 2024	6	27/05/2024	1316	1	0	10				Perched/Flying	Perched on a telegraph pole then Flying SE

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
K32	Breeding 2024	5	27/05/2024	1627	1	25		50-100	M	A	Hunting	Male Hunting
K33	Breeding 2024	5	29/05/2024	1504	1	25	15			A	Hunting	Hunting over fields
K34	Breeding 2024	2	24/07/2024	1714	2	90	10		M	J	Hunting	2 kestrels coming together, sparing, one went east one north - continued to hunt
K35	Breeding 2024	2	24/07/2024	1903	1	25	10				Hunting	Kestrel Hunting along riverside then coming closer, past VP --> 5
K36	Breeding 2024	1	24/08/2024	915	1	20	10				Flying	Flying SE, Mobbed by swallows, Hovered once and continued
K37	Breeding 2024	4	05/09/2024	1405	1	0	10		M	A	Flying	In transit from VP3 to VP4
K38	Breeding 2024	2	13/09/2024	1847	1	35	10	10			Hunting	Kestrel Hunting/ Hovering along river, 3 places --> the E

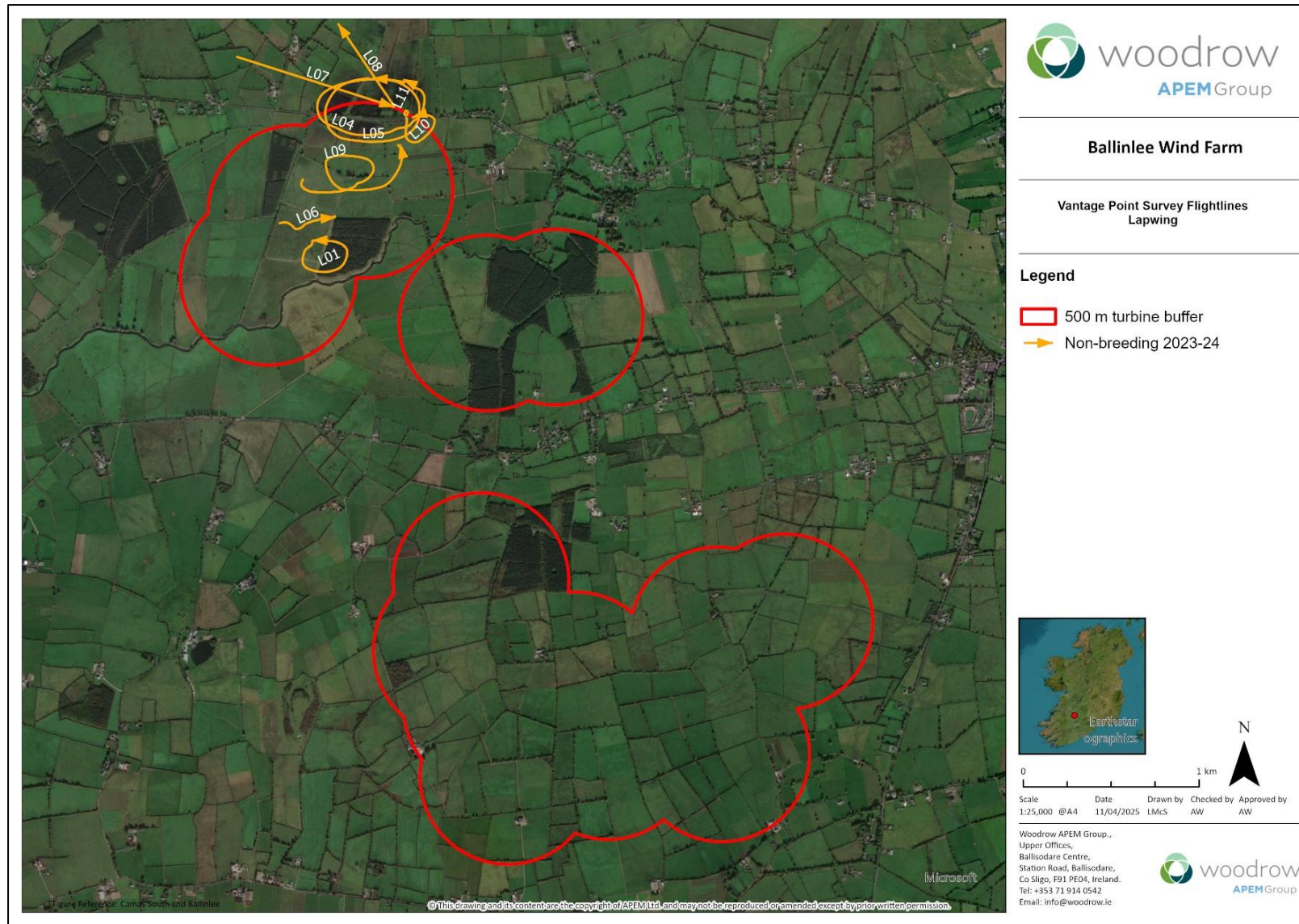


Figure A6.5650: Lapwing observations recorded during VP watches

Table A6.32: Lapwing

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
L01	Non-breeding 2023-24	2	26/10/2023	1050	45	4050	100	100-0		A	Fly-land	Had presumably been spooked
L04	Non-breeding 2023-24	1	28/10/2023	910	116	0	50	1-50			Present	Present throughout - variously landing & flying. Present in following survey as well.
L05	Non-breeding 2023-24	1	28/10/2023	1200	116	0		0-50			Present	Present as before - resting then Flying around flooded fields in groups/altogether.
L06	Non-breeding 2023-24	2	25/11/2023	1316	20	200	10				Flying	Small flock Flying E behind plantation. Approximately 20
L07	Non-breeding 2023-24	1	03/01/2024	1120	138	24840	150	150-0			Fly-land	Flock Flew in from W, settled. 2820 seconds on the ground.
L08	Non-breeding 2023-24	1	03/01/2024	1210	138	0	150				Flying	Flock Flew NW
L09	Non-breeding 2023-24	2	04/01/2024	1232	100	2500	200	0-50			Circling	Circling high NE of VP. Approximate number.

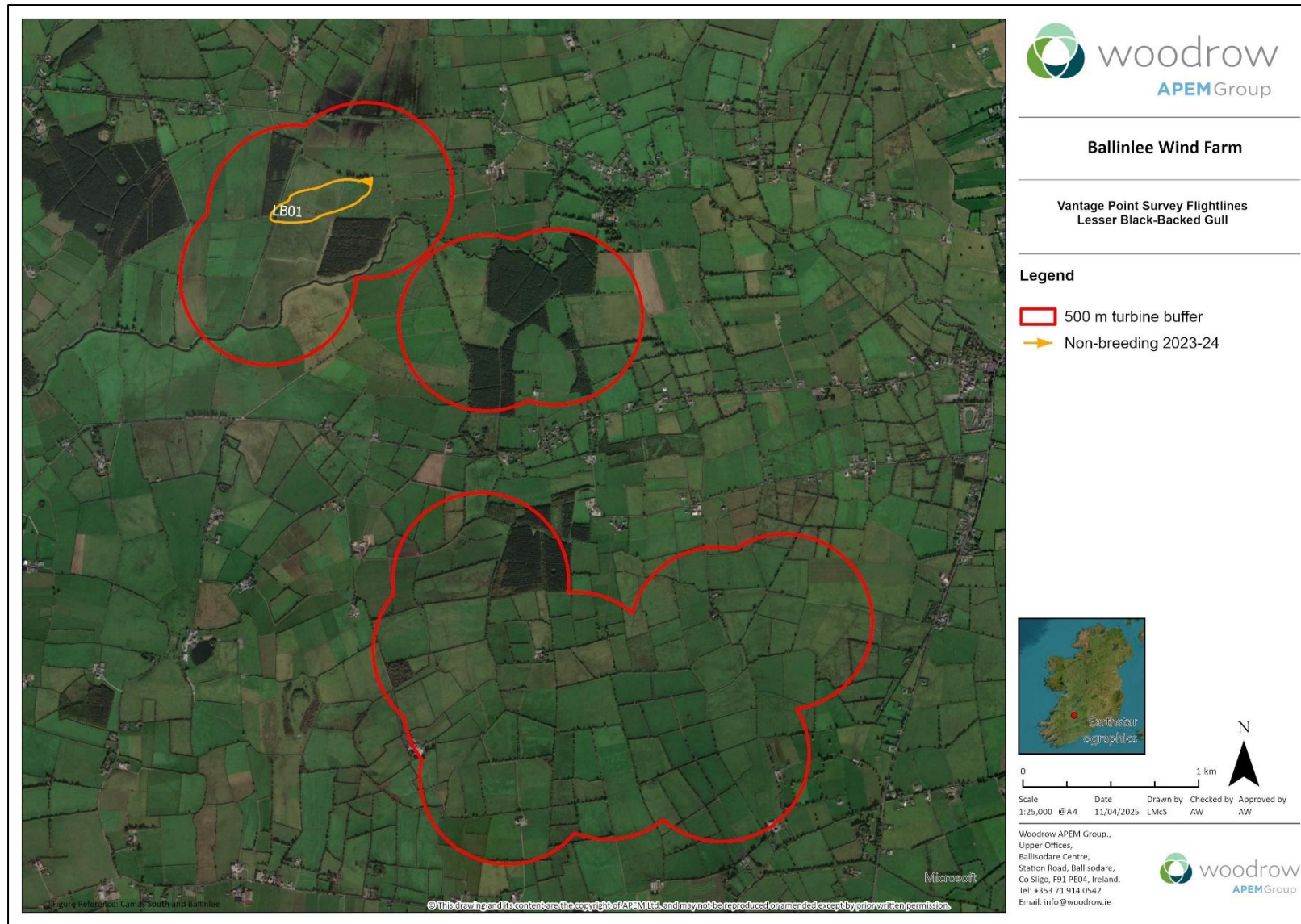


Figure A6.5751: Lesser black-backed gull observations recorded during VP watches

Table A6.33: Lesser black backed gull

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
LB01	Non-breeding 2023-24	2	26/10/2023	1045	10	0		0-50			Present	Present throughout, various heights (>10 LB in same area). Present for entire 3 hours, second spent in flight unknown.

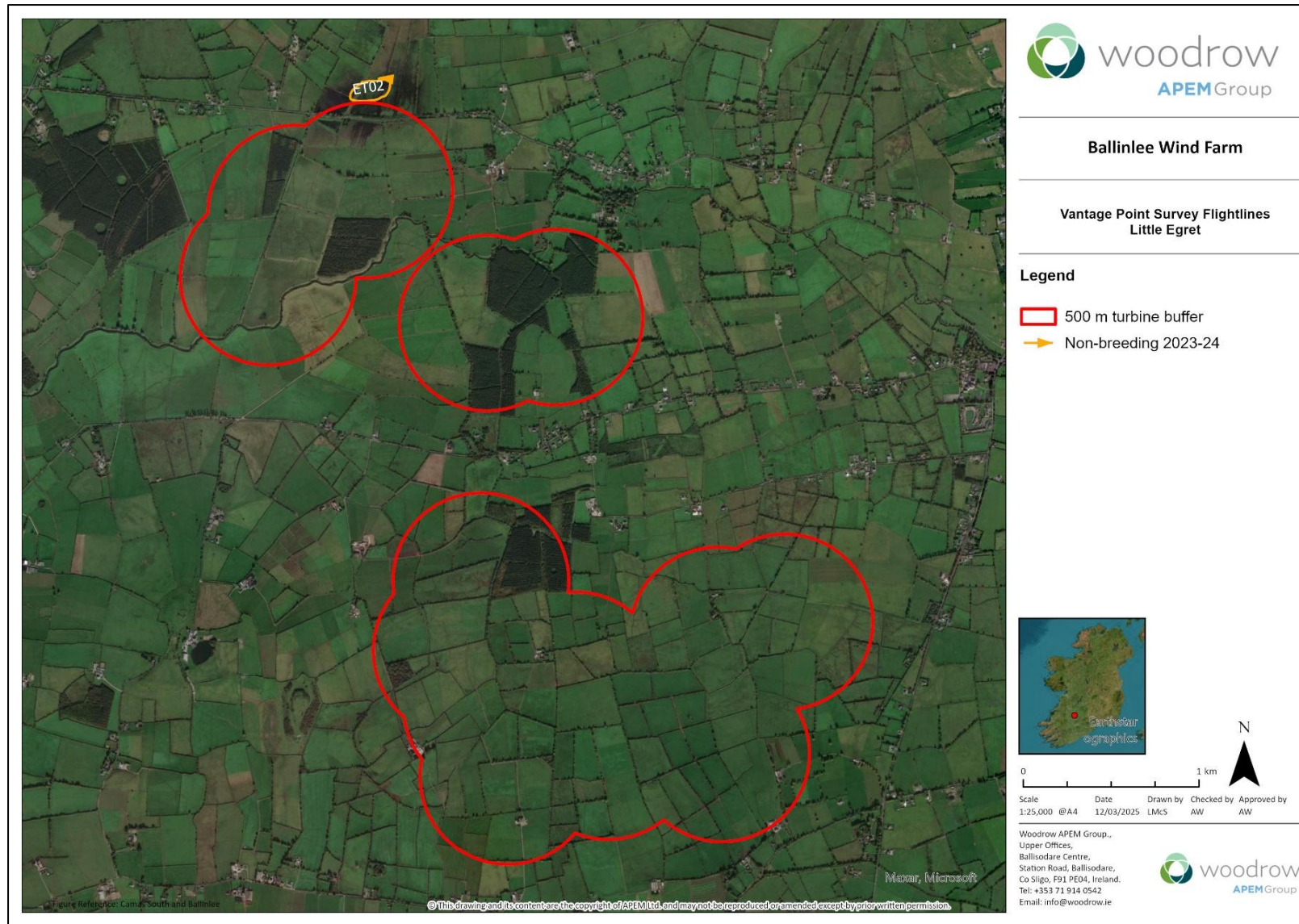


Figure A6.5852: Little egret observations recorded during VP watches

Table A6.34: Little Egret

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
ET02	Non-breeding 2023-24	1	18/12/2023	910	1	10					Feeding	On arrival, ET Feeding in field

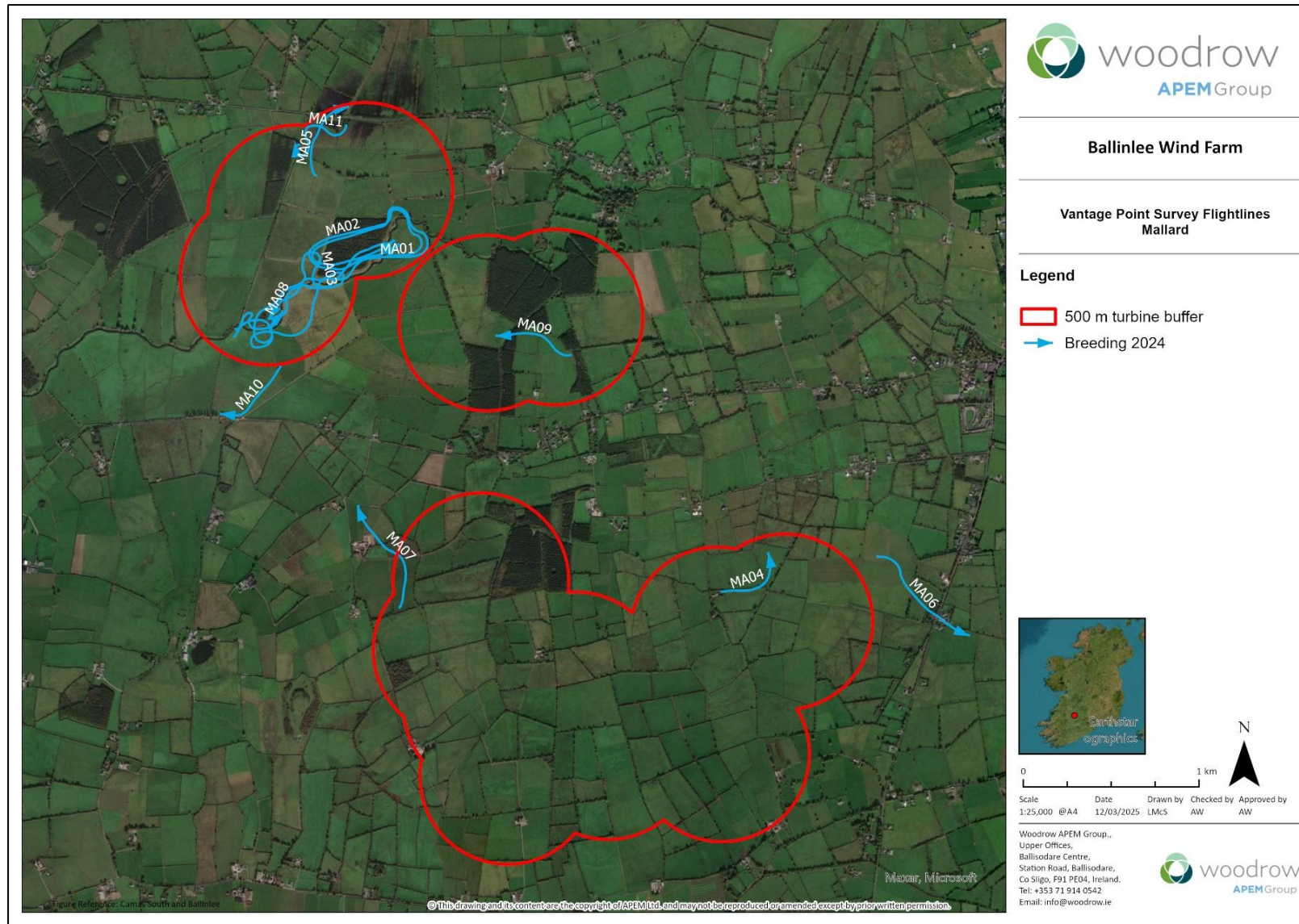


Figure A6.5953: Mallard observations recorded during VP watches

Table A6.35: Mallard

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
MA01	Breeding 2024	2	26/03/2024	941	3	573	20	0-40	F&M	A	Flying	Landed in river, 2M & 1F
MA02	Breeding 2024	2	26/03/2024	942	3	288	1	0-40	F&M	A	Flying	2M & 1F joined group ID 1 in river
MA03	Breeding 2024	2	26/03/2024	1008	3	222	10	0-25	F&M	A	Fly-land	2M & 1F
MA04	Breeding 2024	6	28/03/2024	1453	1	22	15	0-15	M	A	Flight call	Landed in field
MA05	Breeding 2024	1	02/04/2024	1322	1	29	20	15-30	M	A	Flying	
MA06	Breeding 2024	6	06/04/2024	1219	2	0	25	20-30	F&M	A	Flying	
MA07	Breeding 2024	4	06/04/2024	1429	1	21	2	0-25	M	A	Flying	Flew up from field
MA08	Breeding 2024	2	06/05/2024	1255	2	150	10	1-15	F&M	A	Fly-land	Landed in flooded area of field
MA09	Breeding 2024	3	09/05/2024	1209	1	22	20	15-25	M	A	Flying	
MA10	Breeding 2024	2	13/05/2024	1110	2	0	2	0-2	F&M	A		
MA11	Breeding 2024	1	27/05/2024	1457	2	46	15	0-15	F&M	A	Fly-land	

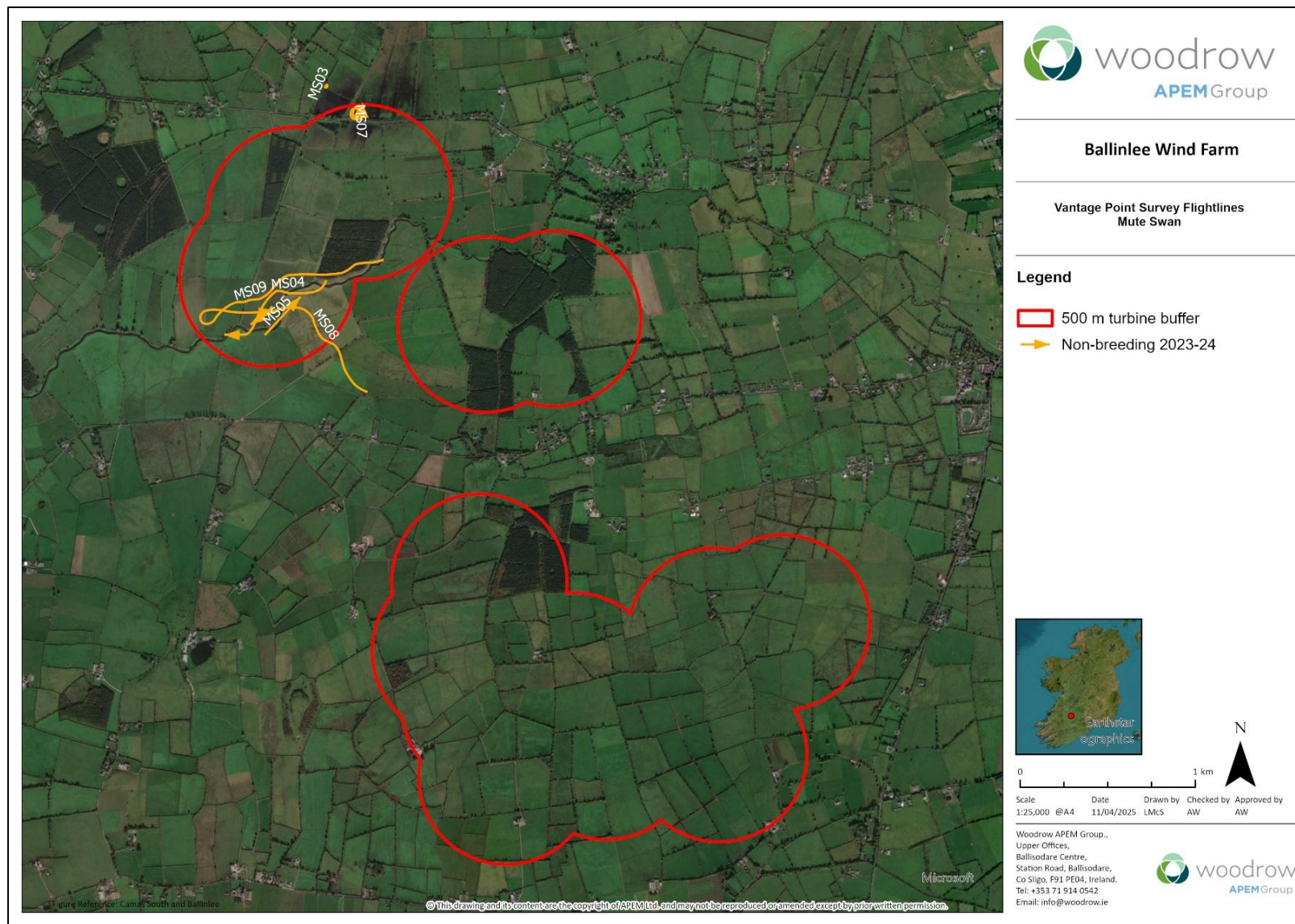


Figure A6.6054: Mute swan observations recorded during VP watches

Table A6.36: Mute swan

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
MS04	Non-breeding 2023-24	2	25/11/2023	1232	1	10	5				Flying	One swan Flying W along river
MS05	Non-breeding 2023-24	2	26/11/2023	1227	2	30					Flying	2 MS Flying NE fast
MS08	Non-breeding 2023-24	2	10/03/2024	1111	2	30					Fly-land	2 MS Flying in from SE, landing in river

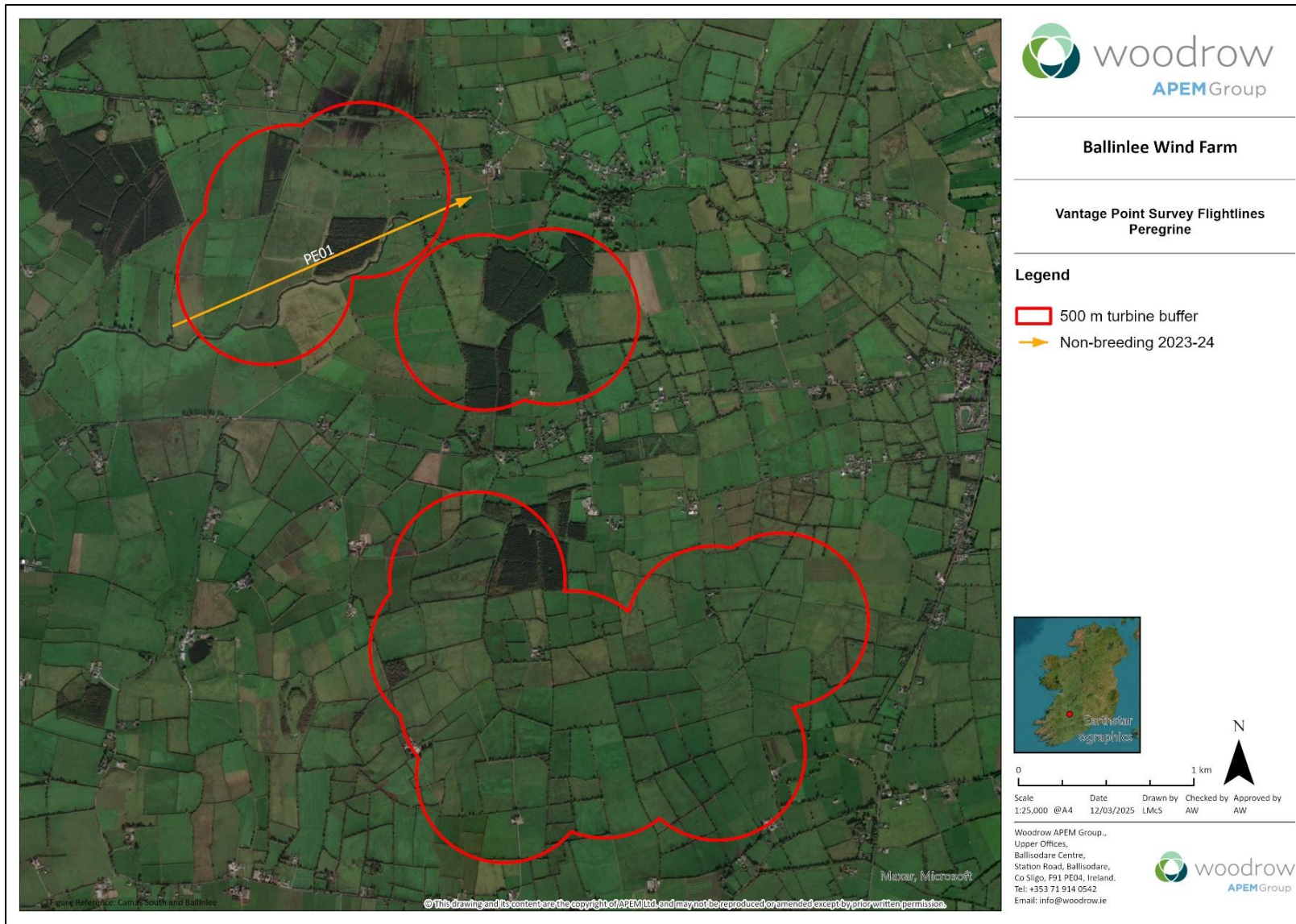


Figure A6.6155: Peregrine observations recorded during VP watches

Table A6.37: Peregrine

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
PE01	Non-breeding 2023-24	2	25/11/2023	1426	1	25	7				Flying	Flying along river, steady height and speed

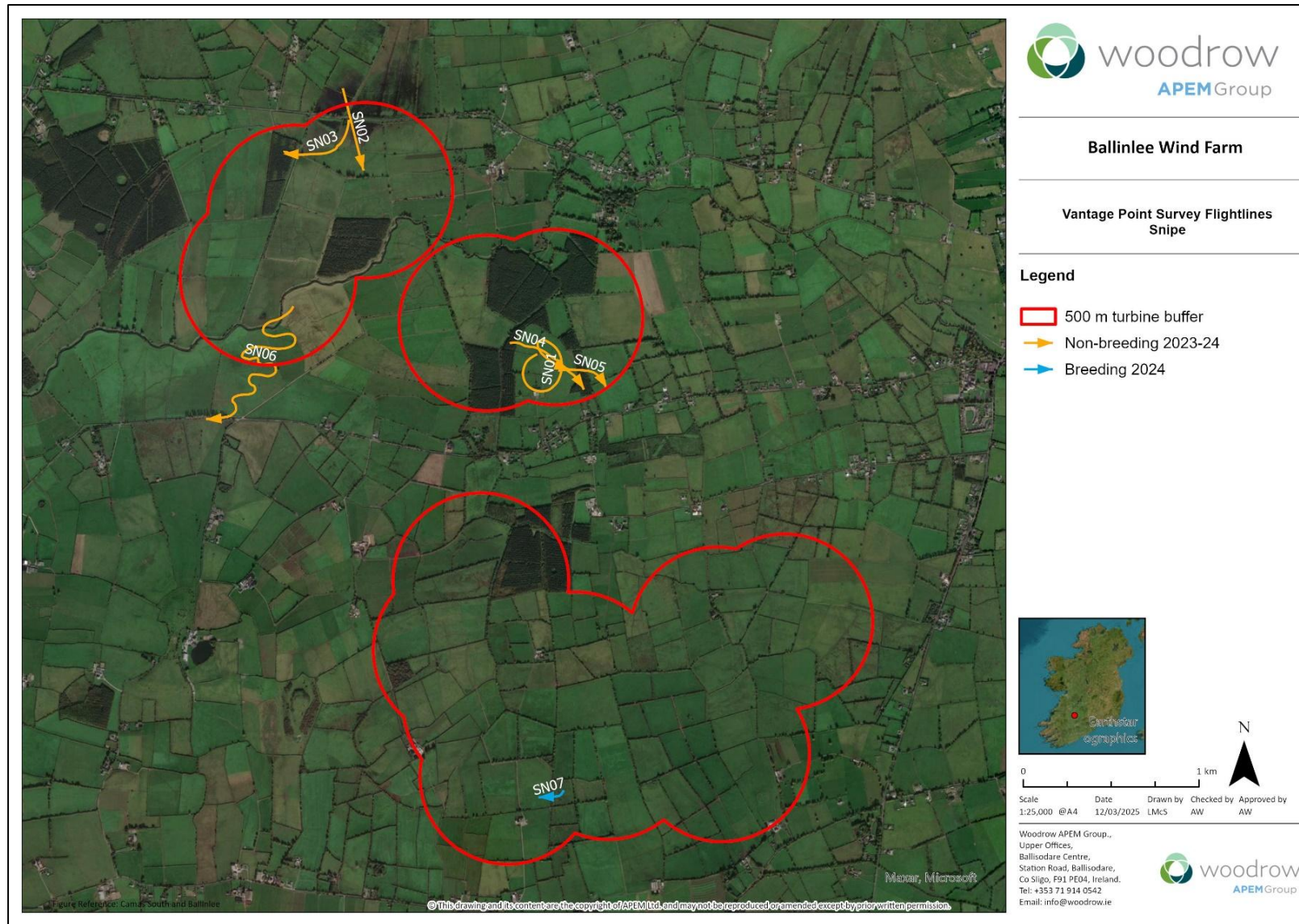


Figure A6.6256: Snipe observations recorded during VP watches

Table A6.38: Snipe

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
SN01	Non-breeding 2023-24	3	27/10/2023	1325	1	46	30	0-30-0		A	Fly-Land	Flushed, then Landed at X
SN02	Non-breeding 2023-24	1	27/10/2023	1616	2	20	45	40-50		A	Commuting	
SN03	Non-breeding 2023-24	1	28/10/2023	1005	2	30	10	0-10		A	Flushed	
SN04	Non-breeding 2023-24	3	28/10/2023	1421	1	25	30	20-40		A	Commuting	Descending when lost sight
SN05	Non-breeding 2023-24	3	28/10/2023	1426	1	15	30	10-40		A	Flushed	Descending when lost sight
SN06	Non-breeding 2023-24	2	26/11/2023	1414	1	5	75	0-100			Flying	Snipe rising from river, heading S
SN07	Breeding 2024	7	27/03/2024	1121	1	11	1	0-5		A	Flushed	Flushed from roost

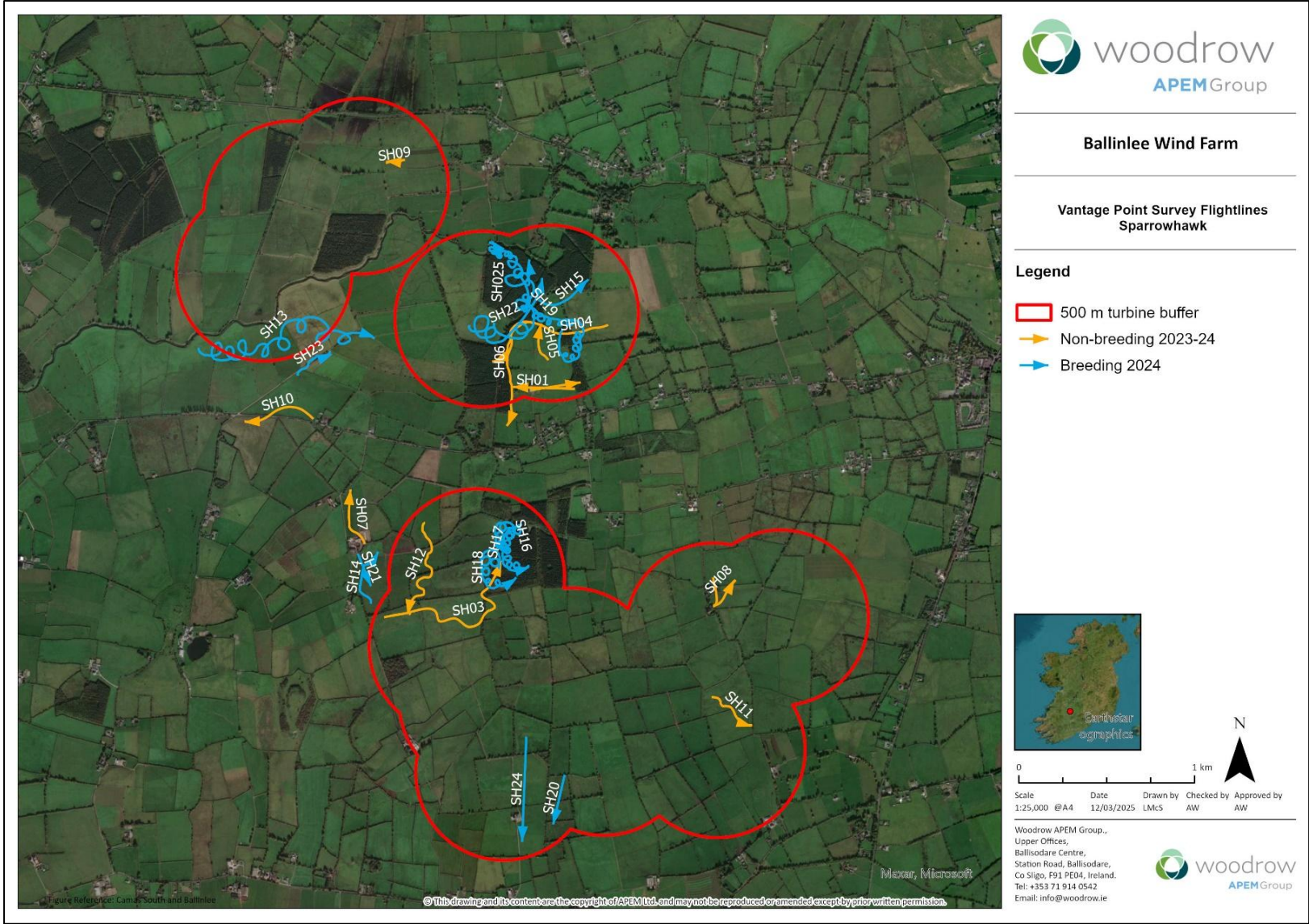


Figure A6.6357: Sparrowhawk observations recorded during VP watches

Table A6 39: Sparrowhawk

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
SH01	Non-breeding 2023-24	3	27/10/2023	1358	1	21	15	15	M	A	Commuting	
SH02	Non-breeding 2023-24	3	28/10/2023	1634	1	6	4	6	M	A	Hunting	Went for flock of GO, without success
SH03	Non-breeding 2023-24	4	23/11/2023	1623	1	25	5		F		Flying	Flying E, then along edge of plantation, heading N
SH04	Non-breeding 2023-24	3	24/11/2023	1441	1	35	7		M		Hunting	Flying/gliding, Hunting along edge of plantation, then southwest over the top
SH05	Non-breeding 2023-24	3	25/11/2023	952	1	15	7		M	A	Flying	Flying north into plantation
SH06	Non-breeding 2023-24	3	25/11/2023	1106	1	10	7		F		Flying	Flying southwest along plantation
SH07	Non-breeding 2023-24	4	15/12/2023	1415	1	0	5				Hunting	On arrival, SH Hunting to N
SH08	Non-breeding 2023-24	5	16/12/2023	1207	1	40	10			A	Fly-land	SH Flew in, Perched closed to VP, then Flew back N
SH09	Non-breeding 2023-24	1	17/12/2023	1452	1	5			F		Hunting	Brief view of SH Hunting
SH10	Non-breeding 2023-24	2	19/12/2023	1351	1	0	2		M	J	Hunting	Young male Hunting along drain, then across the road to W
SH11	Non-breeding 2023-24	5	08/01/2024	1102	1	15	5		F		Flying	Flying low, SE

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
SH12	Non-breeding 2023-24	4	08/03/2024	1201	1	15	5		M		Flying	Flying fast, Mobbed by HC
SH13	Breeding 2024	2	22/03/2024	944	1	84	25	20-90	F	A	Circling	Flushed from perch by BZ
SH14	Breeding 2024	4	27/03/2024	1402	1	0	1	1-2	F	A	Hunting	
SH15	Breeding 2024	3	28/03/2024	1143	1	23	25	20-30	M	A	Flying	
SH16	Breeding 2024	4	06/04/2024	1252	1	128	50	20-80		A	Circling	Got Mobbed by HC
SH17	Breeding 2024	4	06/04/2024	1301	1	52	60	40-60		A	Circling	
SH18	Breeding 2024	4	06/04/2024	1339	2	140	50	30-60	F&M	A	Mobbed	Pair in flight Mobbed by pair
SH19	Breeding 2024	3	09/05/2024	1234	1	264	25	20-130	F	A	Circling	
SH20	Breeding 2024	7	30/05/2024	1506	1	8	2		M	A	Hunting	Male Hunting along hedgerow
SH21	Breeding 2024	4	17/07/2024	1443	1	0	2		F	A	Flying	Adult carrying prey S along road
SH22	Breeding 2024	3	24/07/2024	1046	1	45	300	100-500	F		Flying	Flying in from S, circling high --> Flying NE. Mobbed by swallows
SH23	Breeding 2024	2	24/07/2024	1720	1	15	5		F		Flying	Flying along hedgerow, Hunting
SH24	Breeding 2024	7	22/08/2024	944	1	15	10		F	J	Flying	Flying south, fast, past VP
SH25	Breeding 2024	3	14/09/2024	944	2	100	50		F&M		Circling	Circling, flying together, sparring.

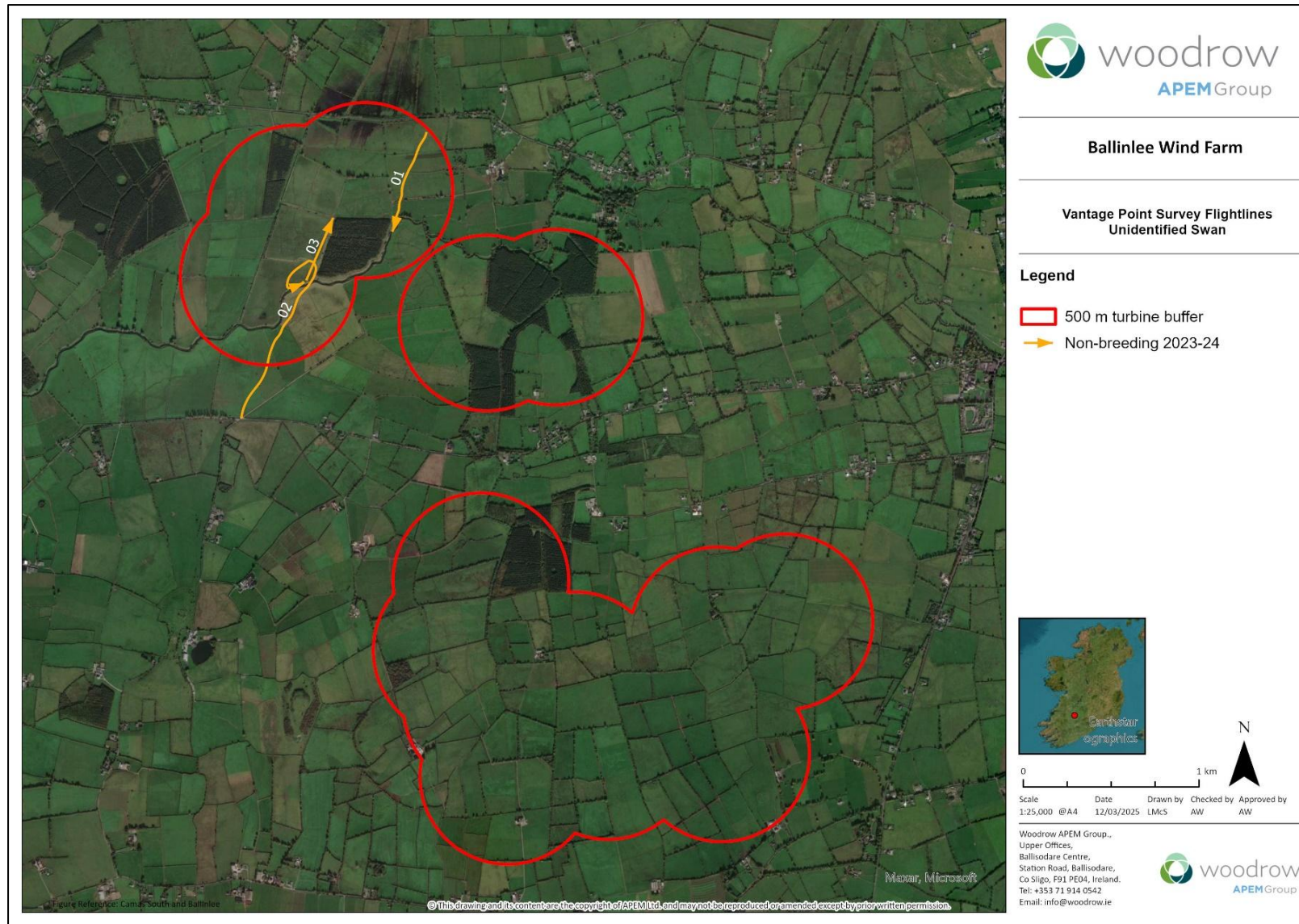


Figure A6.6458: Unidentified swan observations recorded during VP watches

Table A6.40: Unidentified Swan

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
01	Non-breeding 2023-24	1	24/11/2023	1036	2	20	10				Flying	2 swans Flying S. Unclear if MS or WS
02	Non-breeding 2023-24	2	26/11/2023	1316	2	20	7			A/J	Fly-land	2 swans (probably WS) Flying in from S, landing near river
03	Non-breeding 2023-24	2	11/02/2024	1545	2	30	5				Flying	2 swans Flying N, probably MS

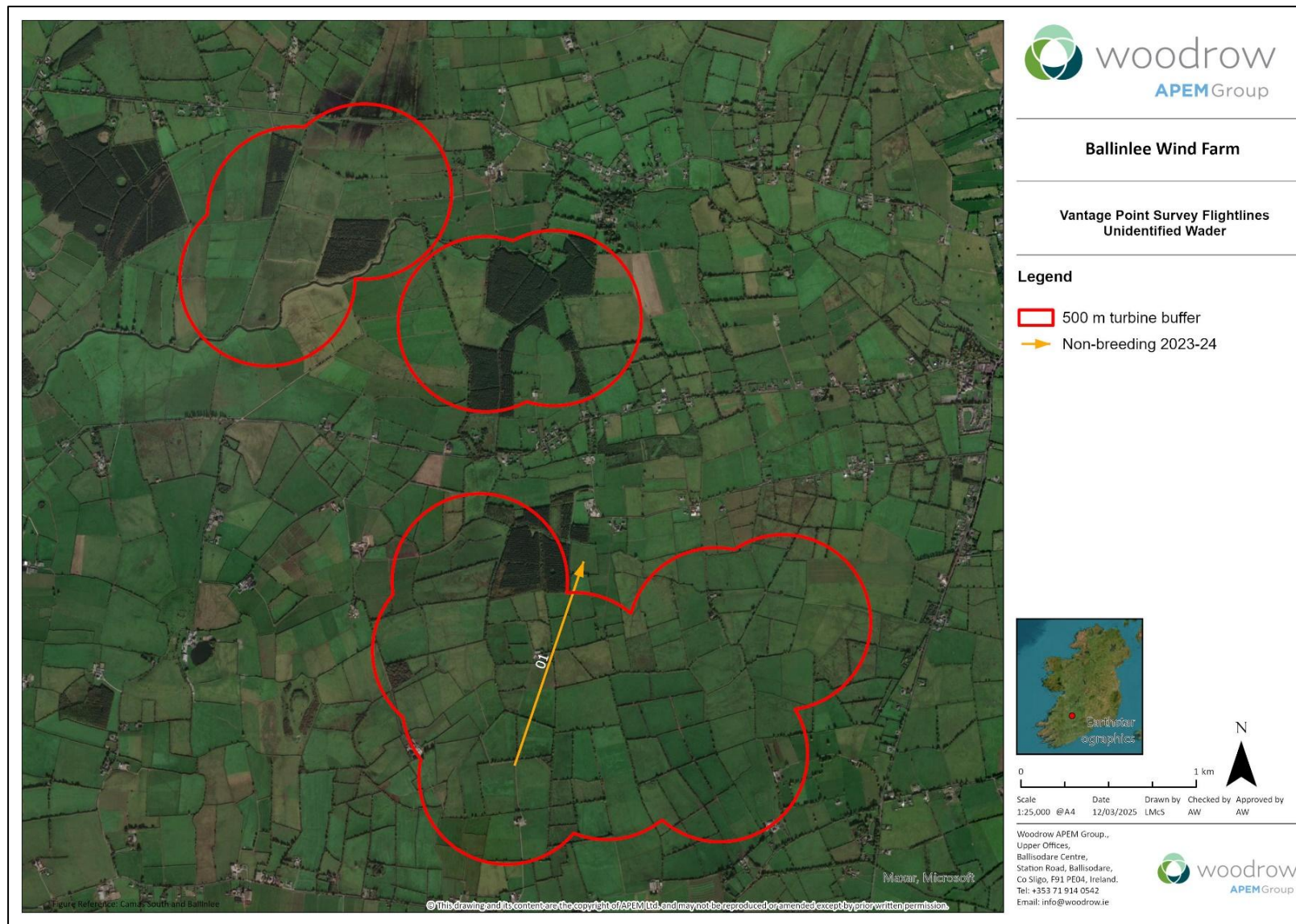


Figure A6.6559: Unidentified wader observations recorded during VP watches

Table A6.41: Unidentified Wader

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
01	Non-breeding 2023-24	6	28/10/2023	1042	50	750	100				Present	Distant flock of probable Golden Plover

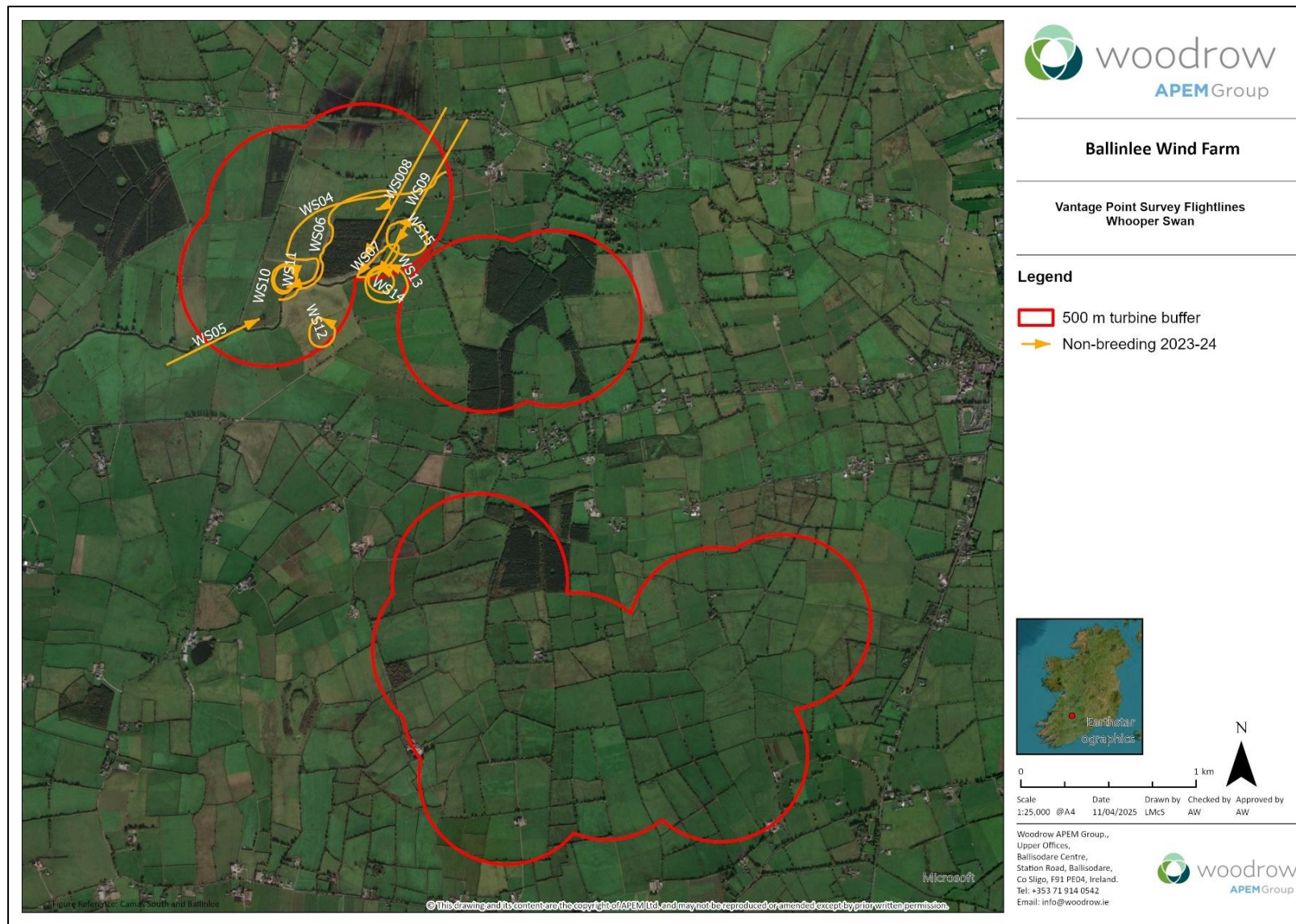


Figure A6.6660: Whooper swan observations recorded during VP watches

Table A6 42: Whooper swan

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
WS04	Non-breeding 2023-24	1	26/11/2023	1034	7	245	10				Fly-land	Flying SW past VP, landing in fields near river
WS05	Non-breeding 2023-24	2	26/11/2023	1224	7	70					Fly-land	7 Whoopers Flying NE, landing in fields
WS06	Non-breeding 2023-24	2	26/11/2023	1423	2	50				A	Fly-land	2 swans Flying NE, landing again
WS08	Non-breeding 2023-24	1	18/12/2023	951	6	120	15				Flying	6 WS Flying SW along river
WS09	Non-breeding 2023-24	1	18/12/2023	1004	4	80	15				Flying	4 WS Flying SW along river (Lough Gur 10 mins NE)

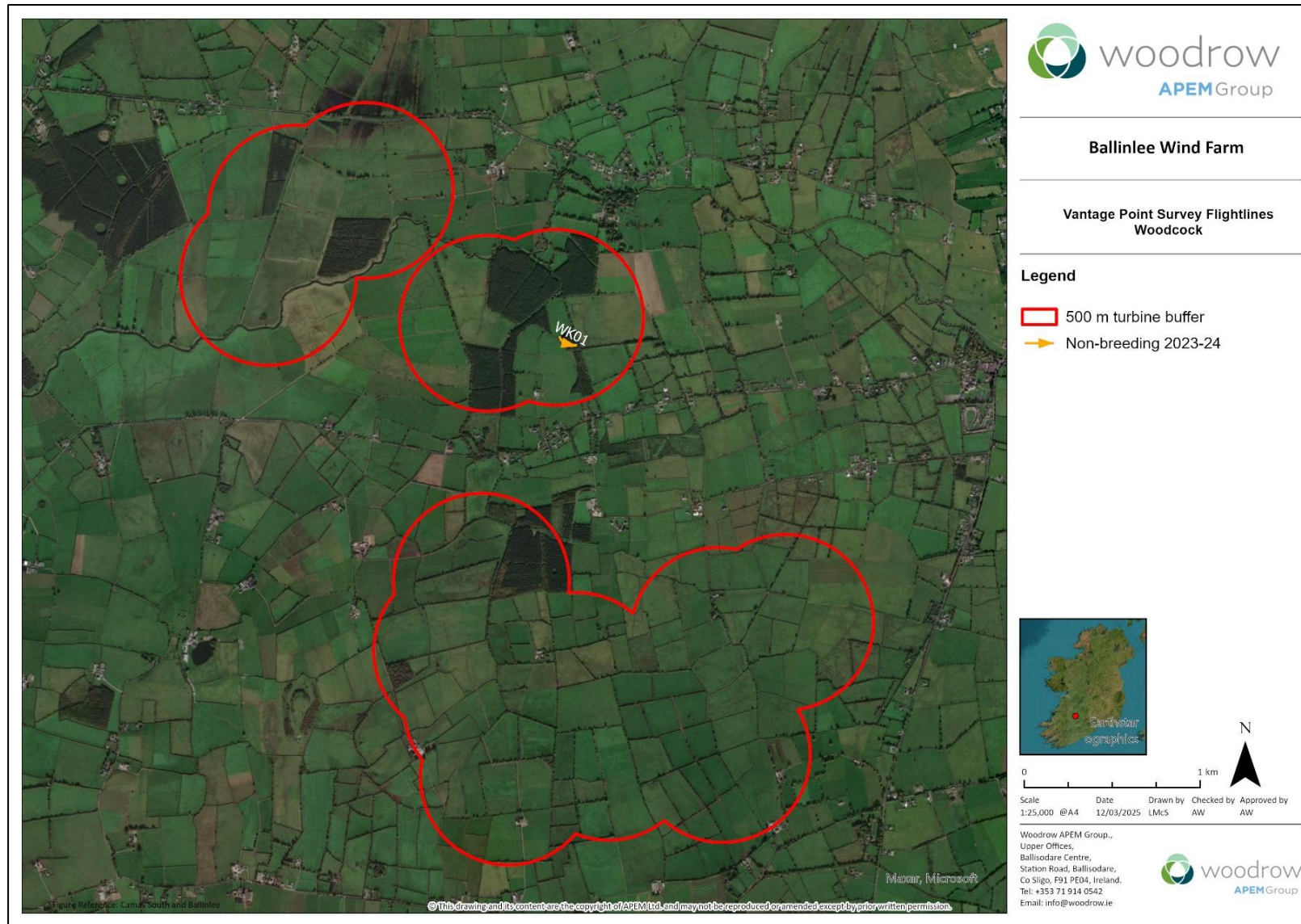


Figure A6.6761: Woodcock observations recorded during VP watches

Table A6.43: Woodcock

Map ID	Season	VP No	Date	Time	No of birds	Total seconds recorded	Flight height (m)	Flight range	Sex	Age	Behaviour	Comments
WK01	Non-breeding 2023-24	3	28/10/2023	1506	1	5	2	2		A	Fly-land	Flew into trees

Table A6.445: Incidental Sightings Year 3

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Species	Sex	Age	Behaviour	Comments
BZ01	Non-breeding 2023-24	6	20/10/2023	1511	1	10	Buzzard			Perched	Perched on tree along hedgerow (inside buffer) 50 mins - still there at end of VP watch
BZ05	Non-breeding 2023-24	7	27/10/2023	1142	1		Buzzard			Calling	BZ calling from SE of VP. Flightline also drawn
BZ15	Non-breeding 2023-24	2	25/11/2023	1356	1	2	Buzzard		J	Fly-land	Flew in and perched on post for 1050 seconds.
BZ16	Non-breeding 2023-24	5	16/12/2023	946	1	10	Buzzard			Perched	BZ Perched in tree for 66 minutes
BZ18	Non-breeding 2023-24	6	06/01/2024	1123	1	10	Buzzard			Perched	BZ sat in tree. 120 seconds.
BZ19	Non-breeding 2023-24	6	06/01/2024	1230	1	3	Buzzard			Perched	BZ Perched on fence post. 300 seconds.
BZ20	Non-breeding 2023-24	4	09/01/2024	1050	1	5	Buzzard			Perched	BZ Perched on pole, then Flew S
BZ22	Non-breeding 2023-24	5	07/02/2024	1213	1	10	Buzzard			Perched	BZ Perched on telegraph pole, calling
BZ23	Non-breeding 2023-24	5	09/02/2024	1317	1	30	Buzzard			Perched	BZ Perched on top of tree beside telegraph pole for 53 mins
BZ24	Non-breeding 2023-24	5	09/02/2024	1322	1	30	Buzzard			Perched	2nd BZ on telegraph pole 50m SE for 51 min
BZ27	Non-breeding 2023-24	5	05/03/2024	1153	1		Buzzard			Perched	BZ sitting in treetop, calling
BZ070	Breeding 2024	3	28/03/2024	951	2	15	Buzzard	F&M	A	Perched	Perched in large tree the Circled off.
BZ089	Breeding 2024	1	08/05/2024	1101	1	10	Buzzard	M	A	Perched	Mobbed by HC from perch
BZ119	Breeding 2024	1	06/09/2024	1140	1	10	Buzzard			Perched	Perched on telegraph pole. In transit. (554 353)
CA005	Non-breeding 2023-24	2	11/02/2024	1245	1	1	Cormorant		A	Perched	CA Perched beside river
CA006	Non-breeding 2023-24	2	04/03/2024	1447	1	1	Cormorant			Perched	Perched by river
CA007	Non-breeding 2023-24	2	10/03/2024	1256	1	25	Cormorant			Perched	Perched on top of pylon
CA011	Breeding 2024	2	22/03/2024	1015	1	1	Cormorant		A	Perched	Flew onto perch from river then back
CA022	Breeding 2024	2	06/05/2024	1249	2	25	Cormorant		A	Perched	Perched on large electricity pole.

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Species	Sex	Age	Behaviour	Comments
CU01	Non-breeding 2023-24	1	28/10/2023		10		Curlew			Present	In flooded fields N of road.
GB03	Non-breeding 2023-24	1	04/01/2024	1350	3		Greater Black-backed Gull			Roosting	
H01	Non-breeding 2023-24	4	26/10/2023	1148	1		Grey Heron			Present	In flooded fields throughout VP watch.
H03	Non-breeding 2023-24	1	27/10/2023		1	0	Grey Heron			Present	Present S of road
H04	Non-breeding 2023-24	1	27/10/2023		4	0	Grey Heron			Present	Present in flooded fields N of road
H05	Non-breeding 2023-24	1	28/10/2023		9		Grey Heron			Present	In flooded fields N of road.
H07	Non-breeding 2023-24	1	03/01/2024	1010	2		Grey Heron			Feeding	2 Feeding N of road
H08	Non-breeding 2023-24	1	04/01/2024	1350	2		Grey Heron			Feeding	2 H Feeding throughout watch
K11	Non-breeding 2023-24	2	17/12/2023	845	1	7	Kestrel	M	A	Perched	On arrival, Perched on telegraph pole
K12	Non-breeding 2023-24	2	17/12/2023	928	1	7	Kestrel			Perched	K Perched in tree beside river, inside buffer. Observed for 1200 seconds.
K13	Non-breeding 2023-24	6	06/01/2024	1143	1	10	Kestrel			Perched	K Perched in tree. 60 seconds.
K14	Non-breeding 2023-24	6	06/01/2024	1204	1	15	Kestrel			Perched	K Perched in tree again. 120 seconds.
K16	Non-breeding 2023-24	7	08/02/2024	1305	1	10	Kestrel	F		Perched	K on telegraph pole on arrival
L02	Non-breeding 2023-24	1	27/10/2023		1	0	Lapwing			Present	Present S of road
L03	Non-breeding 2023-24	1	27/10/2023		21	0	Lapwing			Present	Present in flooded fields N of road
L10	Non-breeding 2023-24	1	04/01/2024	1350	100		Lapwing			Present	Flock of L roosting & Circling. Approximate number.
L11	Non-breeding 2023-24	1	11/02/2024	907	15		Lapwing			Feeding	Small flock of L Feeding in flooded field

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Species	Sex	Age	Behaviour	Comments
L12	Non-breeding 2023-24	1	12/02/2024	1335	4		Lapwing			Roosting	
LB02	Non-breeding 2023-24	4	26/10/2023	1148	27		Lesser Black-backed Gull			Present	In flooded fields throughout VP watch.
LB03	Non-breeding 2023-24	1	28/10/2023		10		Lesser Black-backed Gull			Present	In flooded fields N of road.
ET01	Non-breeding 2023-24	1	24/11/2023	1038	2		Little Egret			Feeding	2x ET Feeding in field
MS01	Non-breeding 2023-24	1	27/10/2023		6	No flight	Mute Swan			Present	Present in flooded fields N of road
MS02	Non-breeding 2023-24	1	28/10/2023		6		Mute Swan			Present	In flooded fields N of road.
MS03	Non-breeding 2023-24	1	24/11/2023	1038	2		Mute Swan			Feeding	2 MS Feeding in field
MS06	Non-breeding 2023-24	1	02/01/2024	1405	2		Mute Swan			Feeding	2 MS Feeding N of road
MS07	Non-breeding 2023-24	1	04/01/2024	1350	2		Mute Swan			Feeding	2 MS Feeding throughout watch
MS09	Non-breeding 2023-24	2	10/03/2024	1201	1		Mute Swan			Fly-land	One swan Flying along river, landing in field
MS10	Breeding 2024	1	06/09/2024	1405		No flight	Mute Swan			Swimming	Family of mute swans in stream, 4 juvs
WS01	Non-breeding 2023-24	1	27/10/2023		6	0	Whooper Swan			Present	Present in flooded fields N of road
WS02	Non-breeding 2023-24	1	28/10/2023		7		Whooper Swan			Present	In flooded fields N of road.
WS03	Non-breeding 2023-24	2	25/11/2023	1251	4		Whooper Swan			Present	4 Whoopers Feeding, Flew in & Landed. Flushed by dog walkers.
WS07	Non-breeding 2023-24	2	17/12/2023	850	30		Whooper Swan			Feeding	Flock Feeding throughout VP watch. Observed for 10800 seconds.

Map ID	Season	VP No	Date	Time	No of birds	Flight height (m)	Species	Sex	Age	Behaviour	Comments
WS10	Non-breeding 2023-24	1	11/02/2024	1117	7		Whooper Swan			Present	Small flock Feeding in fields. Calling SW of VP
WS11	Non-breeding 2023-24	1	12/02/2024	1035	10		Whooper Swan			Feeding	Distant swans Feeding. Approximately 10
WS12	Non-breeding 2023-24	2	13/02/2024	935	42	0	Whooper Swan			Feeding	Flock Feeding throughout VP watch (3h)
WS13	Non-breeding 2023-24	2	04/03/2024	1335	6		Whooper Swan			Feeding	Throughout watch, small flock of about 6. Distant and surveyor did not want to disturb them.
WS14	Non-breeding 2023-24	1	09/03/2024	1010	22		Whooper Swan			Feeding	Feeding in fields S of river, seen from VP2 on arrival.
N/A	Non-breeding 2023-24	1	09/03/2024	1328			Whooper Swan			Feeding	Swans still Feeding in transit to VP3
WS15	Non-breeding 2023-24	2	10/03/2024	1111	17		Whooper Swan			Feeding	WS alerted by MS Feeding in fields. Approximately 17.

Appendix VI – All Survey Results

Table 1: Summary of dusk survey results during the 2023 breeding season

Species	BTO code	No. individuals		BoCCI 2020-2026
		04-Apr	17-Apr	
Snipe	SN	1	-	Red

Table 2: Summary of dusk survey results during the 2024 breeding season

Species	BTO code	No. individuals		BoCCI 2020-2026
		15-Jul	24-Jul	
Kestrel	K	1	-	Red
Buzzard	BZ	1	1	Green

Table 3: Summary of breeding bird walkover survey results during the 2022 breeding season

Date	19-Apr	27-May	17-Jun	25-Jul	26-Aug
Species					
BoCCI (2020-2026) Red listed					
Kestrel	1	2			1
Meadow pipit	28	40	25	10	10
BoCCI (2020-2026) Amber listed					
Cormorant	1	1	1		
Hen Harrier					1
House Martin					70
Lesser Black-backed Gull			15		
Linnet	8		12		8
Mallard	2				
Sand Martin			40		
Skylark	10	17	6	4	
Starling	200	210	3	280	200
Swallow	0	60	60	200	220
Willow Warbler	10	4	4	5	4
BoCCI (2020-2026) Green listed					
Blackbird	11	10	7	19	16
Blue Tit	6	3			
Buzzard	1	4			4
Chaffinch	18		18	20	45
Chiffchaff	6	1	1	2	

Date	19-Apr	27-May	17-Jun	25-Jul	26-Aug
Collared Dove	3	2	2	5	
Duncock	2	13	2	5	6
Goldfinch	8	10		8	21
Great Tit	4	3			4
Grey Heron	1			1	
Hooded Crow	16		21	7	35
Jackdaw	100	200	36	150	120
Little Egret			1		
Magpie		35	52		40
Mistle Thrush	5	10	5	7	5
Pheasant	2	5	2	3	
Pied Wagtail	6	10	3	7	12
Raven	7	4			3
Reed Bunting	2		1		
Robin	15	7	4	5	13
Rook	300	500	100	200	450
Sedge Warbler			1		
Song Thrush		3	4	6	
Stonechat	4	13	4	11	13
Woodpigeon	38	135		40	50
Wren	5	6	5	4	5

Table 4: Summary of breeding bird walkover survey results during the 2023 breeding season

Date	09-May	22-May	17-Jul	04-Sep	05-Sep
Species					
BoCCI (2020-2026) Red listed					
Kestrel		1		2	2
Lapwing				1	
Meadow pipit	6	5	10	14	
Swift			2		
Woodcock			2		
BoCCI (2020-2026) Amber listed					
Cormorant		1			
Goldcrest	2		6	7	
Hen Harrier					1
House Martin		4	4	2	
House sparrow				16	
Linnet	7	3	70	38	4
Mallard		1			
Skylark	11	7	5	2	
Starling	16		93	24	7
Swallow	30	7	33	18	12
Willow Warbler	11	7	6	1	

Date	09-May	22-May	17-Jul	04-Sep	05-Sep
BoCCI (2020-2026) Green listed					
Blackbird	48	7	11		
Blackcap	4	1			
Blue Tit	8		9		3
Bullfinch	3				3
Buzzard	2	1	1	5	1
Chaffinch	15	13	23	14	
Chiffchaff	8	1		5	1
Coal tit				2	
Collared dove			1		
Duncock	4			7	
Goldfinch	8		19	70	
Great Tit	5	1	9	7	
Greenfinch				4	
Hooded Crow	34	5	6	16	17
Jackdaw	11		10	1	
Little egret			1		
Long-tailed Tit	8		6	8	
Magpie	5		3	2	2
Mistle Thrush		3			
Pheasant	6		1		
Pied Wagtail		1	6	5	
Raven	1		1		
Redpoll			1		
Reed Bunting		2			
Robin	21		12	33	3
Rook	21	39	49	81	34
Sedge Warbler	2	3	1		
Siskin				3	
Song Thrush	2	1	1		
Stonechat	6	6	2	5	1
Woodpigeon	21	19	22	52	1
Wren	27	5	26	17	5

Table 5: Summary of breeding bird walkover survey results during the 2024 breeding season

Date	02-Apr	09-Apr	15-Apr	06-May	08-May	09-May	17-May	17-Jul	29-Jul
Species									
BoCCI (2020-2026) Red listed									
Kestrel		1		1	1			2	1
Meadow pipit		7	14						
Snipe	1	5	1						
BoCCI (2020-2026) Amber listed									
Cormorant			3	1	1		2		
Goldcrest		1	3	2		2		8	13

Date	02-Apr	09-Apr	15-Apr	06-May	08-May	09-May	17-May	17-Jul	29-Jul
Herring gull		1							
House martin								5	
House sparrow		2						3	
Lesser Black-backed Gull			3					3	1
Linnet		3						6	29
Mallard			5	4	2				
Merlin		1							
Mute swan	2		2		2				
Skylark	2	9	11	28	5	2	2		
Starling	8	8	7	2		12	27	22	
Swallow	3		6	4	6	2	20	70	71
Whooper swan									
Willow warbler	2	8	11	5	5	6	6	12	12
BoCCI (2020-2026) Green listed									
Blackbird	13	12	12	9	2	14	21	3	8
Blackcap	2	2	1						
Blue tit	14	4	12	11	2	8	9	4	8
Bullfinch	5						2		
Buzzard	4	2	4	2	2	7		10	8
Chaffinch	12	13	21	10	18	20	18	12	17
Chiffchaff	9	6	9	3	4	11	10		2
Coal tit	8		2		2			23	14
Collared dove									
Dunnoek	3		2	1		4	6	6	5
Fieldfare									
Goldfinch		17	5	2	1		3	16	12
Great tit	4	4	11	4	4	9	5	6	12
Grey heron			3	2		2		1	1
Hooded crow	12	72	58	7	7	9	11	29	12
Jay	10		1	1		5			
Jackdaw	5	13	11	4	5		8	9	
Long-tailed tit	2	9	2				24		
Mistle thrush	7		3						
Magpie	2		2				1		2
Pheasant		2	1	1			1		
Pied wagtail				1					
Raven	1		1	1	1	1	4	2	2
Reed bunting				2			1		
Reed warbler								3	
Robin	15	6	11	9	6	16	15	4	11
Rook	5	34	38	8	2	2	4	21	8
Sedge warbler				3	2	1	2		
Siskin									
Song thrush	3	4	3	1	5	2	1	4	5
Sparrowhawk		1	1			2			

Date	02-Apr	09-Apr	15-Apr	06-May	08-May	09-May	17-May	17-Jul	29-Jul
Stonechat		2	3	4	3			12	
Woodpigeon	25	25	25	14	14	25	27	18	30
Wren	10	20	16	5	4	16	29	35	19

Table 6: Summary of winter walkover survey results during non-breeding season 2021-22

Date	14-Oct	19-Nov	23-Dec	21-Jan	21-Feb	16-Mar
Species						
BoCCI (2020-2026) Red listed						
Kestrel	1	1	3	1	1	1
Meadow pipit		17	17	27	24	18
Redwing		180	180	450		
BoCCI (2020-2026) Amber listed						
Cormorant		1		2		
Goldcrest			10			7
Lesser Black-backed Gull	7					
Mallard		3			4	
Mute swan						7
Skylark						4
Starling	205	150	80	100	220	350
Whooper swan		25		50	10	
BoCCI (2020-2026) Green listed						
Blackbird	9	26	11	11	26	2
Blue Tit		8	5	7	11	11
Bullfinch				5	4	4
Buzzard					4	
Chaffinch	20	16	18	38	19	17
Coal tit					5	4
Collared Dove				2		
Duncock		2		6	7	11
Fieldfare		18	100	60		
Goldfinch	25	30	18	30		24
Great Tit		2	5	5	9	80
Grey Heron		1	1			
Hooded Crow	40	12	14	26	26	12
Jackdaw	100	80	100	180	100	104
Little Egret			2	2	3	2
Long-tailed tit		20			6	
Mistle Thrush	7	5	3	4	2	2
Pheasant		3	1	3		3
Pied Wagtail	8	5			18	12
Raven	2		5			102
Reed Bunting	2		2			
Robin	3	6	5	6	19	
Rook	230	200	350	250	200	500

Date	14-Oct	19-Nov	23-Dec	21-Jan	21-Feb	16-Mar
Siskin						10
Song Thrush	1			2		2
Stonechat	5	4	3	9	8	6
Wren	8	4	11	8	6	11

Table 7: Summary of winter walkover survey results during non-breeding season 2022-23

Date	09-Nov	11-Nov	11-Jan	12-Jan	06-Mar	21-Mar-23
Species						
BoCCI (2020-2026) Red listed						
Curlew		2				
Kestrel					1	4
Meadow pipit	10		12	2		5
Redwing	211		74			93
Snipe	6		16			
BoCCI (2020-2026) Amber listed						
Goldcrest	5		3		1	3
Black-headed gull	27		11			
Lesser black-backed gull		1				
Linnet	15					
Skylark					2	1
Starling	241	50	17	70	22	10
Mute swan					3	
Whooper swan		2		13	9	
BoCCI (2020-2026) Green listed						
Blackbird	29		12	1		17
Blue Tit	4		1			4
Bullfinch			1			1
Buzzard		1	1			
Chaffinch	18		28	3	2	27
Dunnock	11				1	13
Fieldfare	466	15	27		1	81
Goldfinch	10					4
Great Tit	12		3			9
Hooded Crow	11	1	5	5		11
Jackdaw	17		8			6
Long-tailed Tit	14		7			5
Magpie	4		2			3
Mistle Thrush	56					
Peregrine			1			
Pheasant	2					1
Pied Wagtail	3		3			
Raven	2		6		2	1
Redpoll	3		1			
Robin	21		6	1		18

Date	09-Nov	11-Nov	11-Jan	12-Jan	06-Mar	21-Mar-23
Rook	61	20	113	35	3	6
Sparrowhawk					1	
Song Thrush	59		2			4
Stonechat	6					
Woodpigeon	19		7			31

Table 8: Summary of winter walkover survey results during non-breeding season 2023-24

Date	03-Jan	04-Jan	15-Mar
Species			
BoCCI (2020-2026) Red listed			
Kestrel	1	1	1
Meadow pipit	14	16	4
Grey wagtail	1		
Snipe	17	14	10
Stock dove		1	
Redwing	207	330	
BoCCI (2020-2026) Amber listed			
Cormorant			1
Goldcrest	1	3	
Greenfinch	2		
House sparrow	10	4	
Linnet		5	
Mallard			4
Mute swan			4
Skylark	1	3	15
Starling	273	69	2
Teal			6
Whooper swan			12
BoCCI (2020-2026) Green listed			
Blackbird	32	29	17
Blue Tit	2	4	7
Bullfinch	2	2	
Buzzard	4		4
Chaffinch	9	12	31
Dunnock	6	5	6
Fieldfare	263	157	
Goldfinch		7	35
Great Tit	5	4	4
Hooded Crow	16	9	59
Jackdaw	21	18	13
Jay		1	2
Long-tailed tit		9	
Magpie	7	9	2
Mistle Thrush	8	2	2

Date	03-Jan	04-Jan	15-Mar
Pheasant	1		1
Pied Wagtail	3	3	1
Raven	3	4	3
Reed Bunting		1	7
Robin	22	21	28
Rook	104	104	25
Siskin		4	7
Song Thrush	8	7	5
Stonechat	3	1	
Woodpigeon	53	25	17
Wren	13	4	40

Table 9: Summary of incidental records during all survey seasons

Species	BTO code	No. of Individuals	Date	Survey	Behaviour
Non-breeding season 2021-22					
Greylag goose	GJ	1	01/11/2021	VP	Present
White-tailed eagle *	WE	1	03/11/2021	VP	Flying
Breeding season 2022					
Greylag goose	GJ	1	20/04/2022	Raptor	Present
Mallard	MA	1	20/04/2022	Raptor	Present
Non-breeding season 2022-23					
Curlew	CU	1	15/02/2023	Raptor	Present
Mute swan	MS	1	15/02/2023	Raptor	Present
Whooper swan *	WS	1	15/02/2023	Raptor	Present
Breeding season 2023					
Cormorant	CA	1	08/05/2023	Wader	Present
Mallard	MA	1	09/05/2023	Wader	Present
Non-breeding season 2023-24					
Black-headed gull	BH	2	27/10/2023	VP	Present
Black-headed gull	BH	1	28/10/2023	VP	Present
Curlew	CU	1	28/10/2023	VP	Present
Kestrel	K	1	03/11/2024	Waterbird	Perched
Kestrel	K	1	18/01/2024	Waterbird	Perched
Kestrel	K	1	18/01/2024	Waterbird	Hunting
Kestrel	K	1	18/01/2024	Waterbird	Flying
Kestrel	K	1	21/03/2024	Waterbird	Hunting
Kestrel	K	1	21/03/2024	Waterbird	Hunting
Lapwing	L	2	27/10/2023	VP	Present
Lesser black-backed gull	LB	1	28/10/2023	VP	Present
Raven	RN	1	22/12/2023	Waterbird	Feeding
Raven	RN	2	18/01/2024	Waterbird	Calling
Raven	RN	1	18/01/2024	Waterbird	Flying
Breeding season 2024					
Kestrel	K	1	15/07/2024	Dusk	Present

APPENDIX VII: SURVEY ROUTES

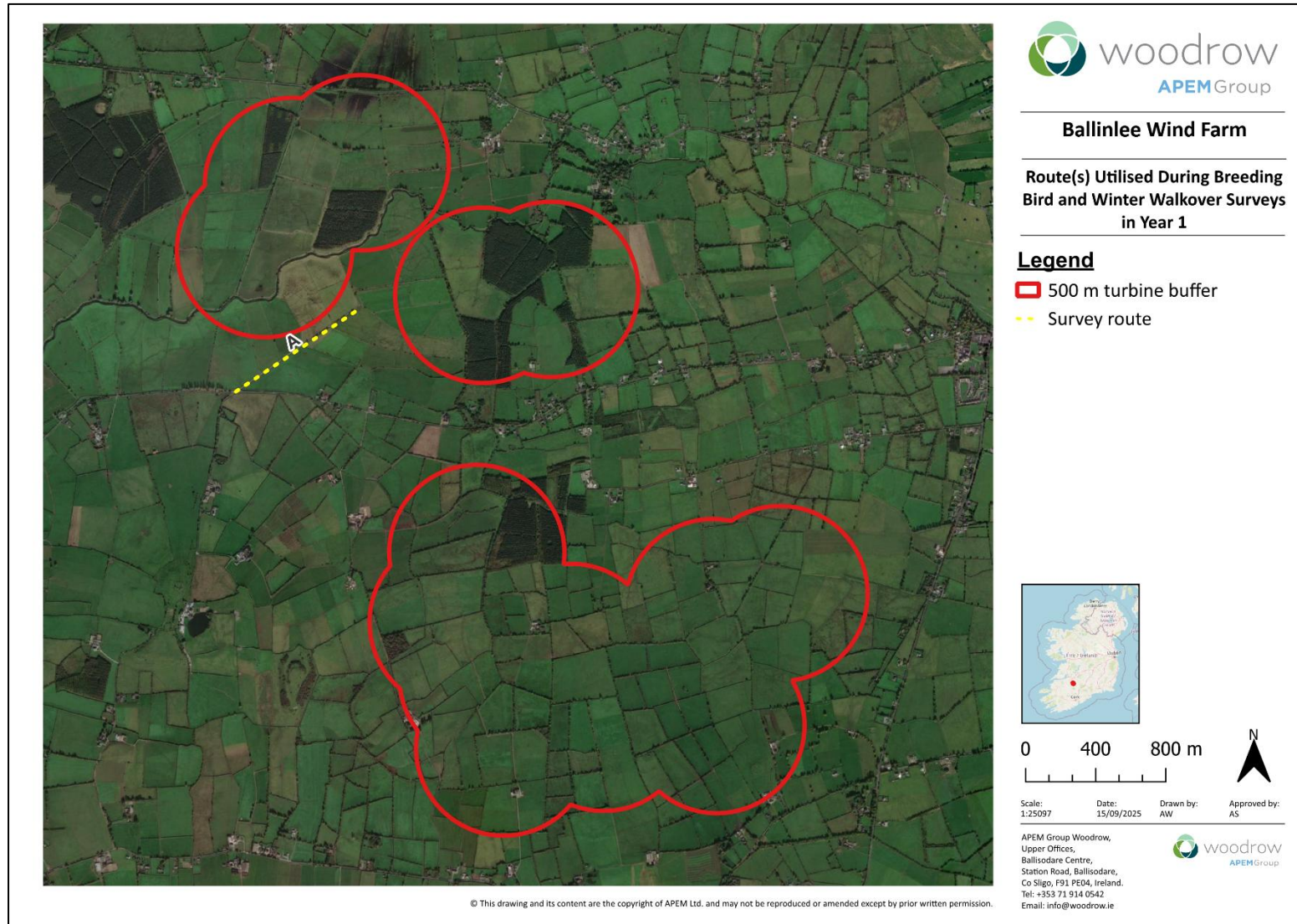


Figure A8.1: Breeding bird and winter walkover survey route used during Year 1

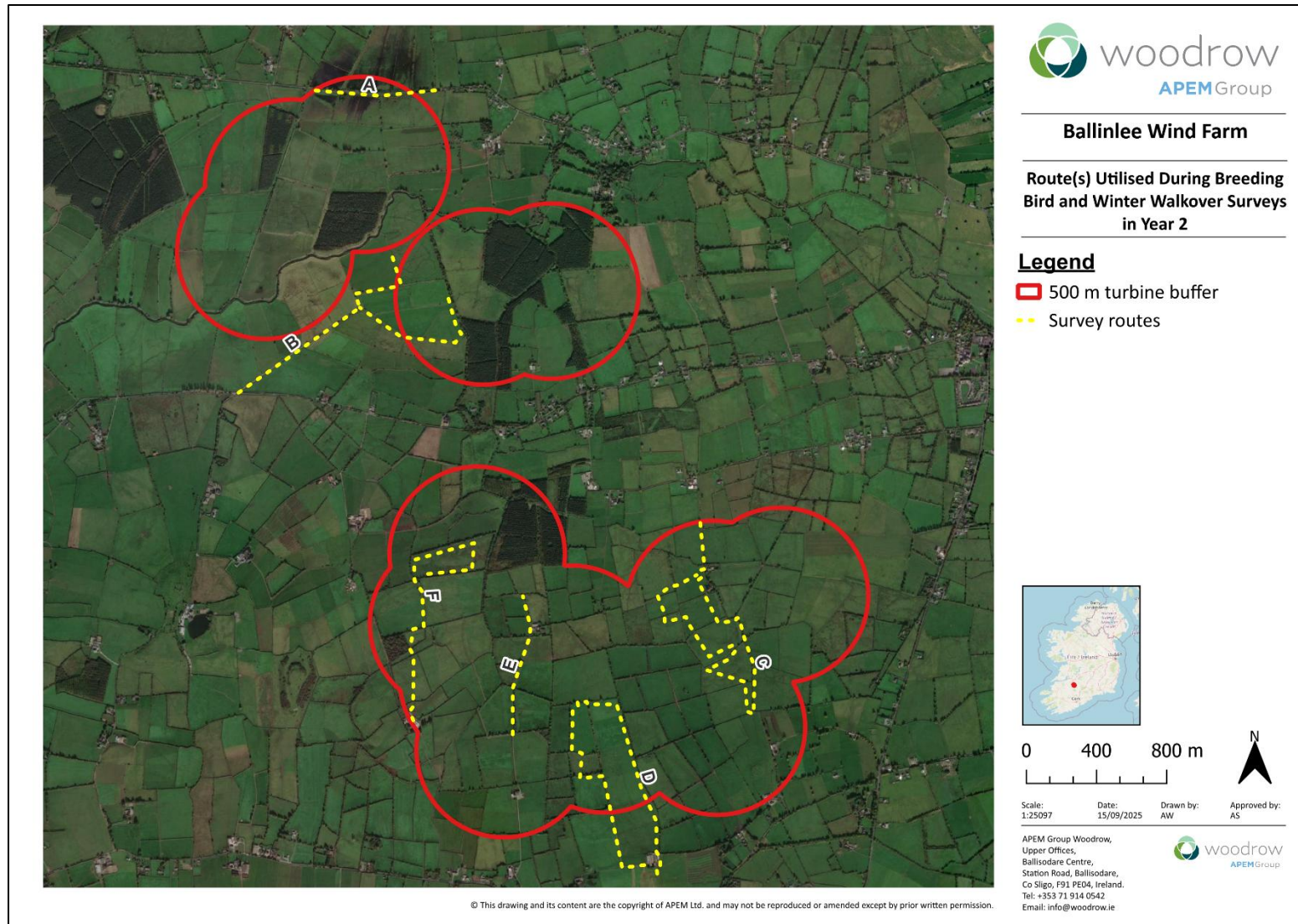


Figure A8.2: Breeding bird and winter walkover survey routes used during Year 2

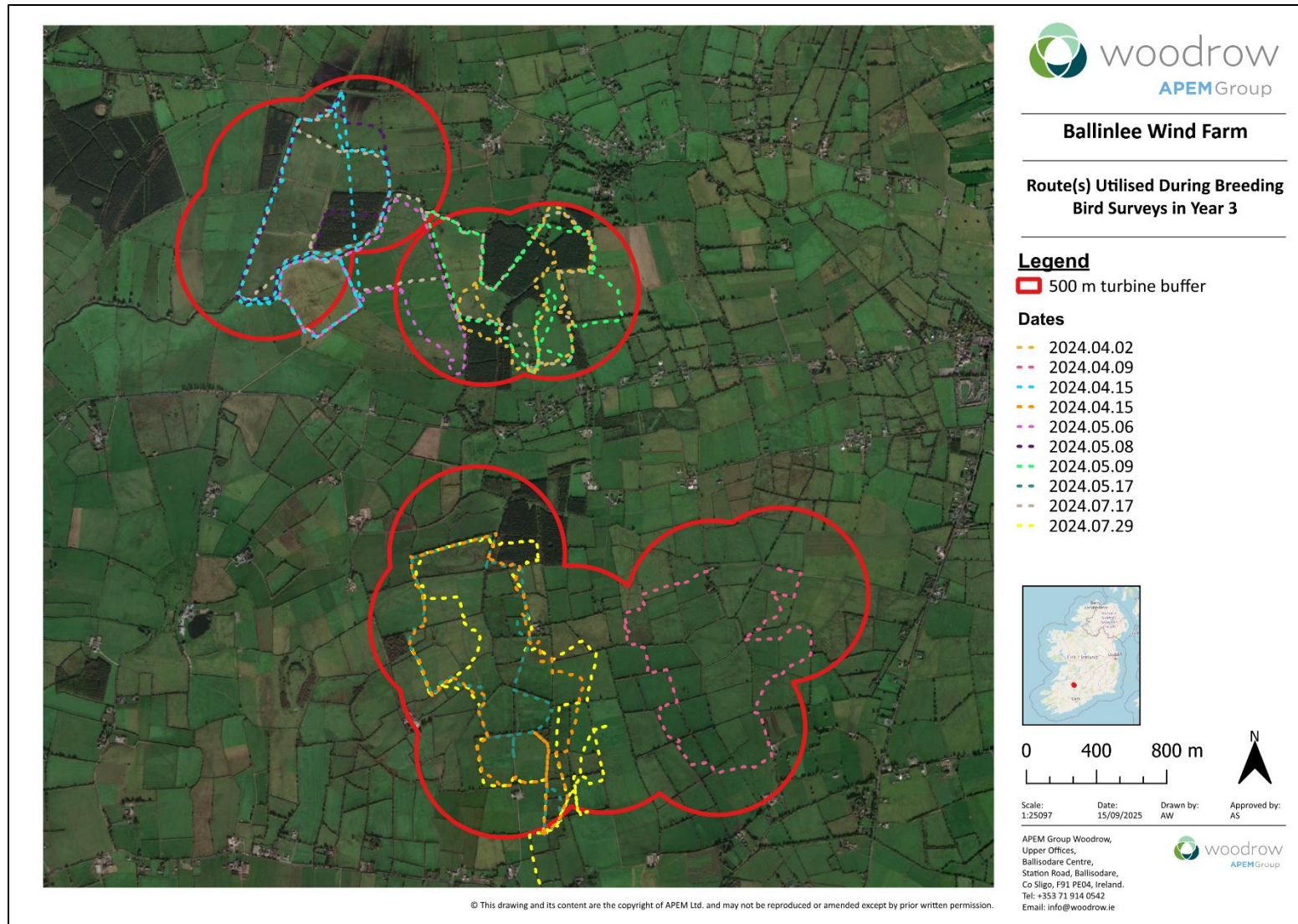


Figure A8.3: Breeding bird survey routes used during Year 3