

Manogate Ltd

Ballyfasy Wind Farm:

Baseline Ornithology Report

APPENDIX 7-1

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COMMERCIAL IN CONFIDENCE



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Executive Summary

APEM were commissioned by Art Generation Ltd to produce the ornithological chapter of the Environmental Impact Assessment Report (EIAR) for the proposed Ballyfasy Wind Farm (the Wind Farm Site). This report describes the baseline surveys undertaken to support the impact assessment and should be read in conjunction with the EIAR. The Wind Farm Site is located approximately 3.5km north-east of Mullinavat in County Kilkenny.

Surveys were undertaken by Doherty Environmental between May 2020 and March 2025 to determine the ornithological baseline and to inform any future assessment of potential effects arising from the Proposed Project. The main potential risks to birds arising from wind farms are direct habitat loss, disturbance and displacement, collision risk, and barrier effects. The results of the most recent two years of ornithological surveys are presented in full here.

The survey scope included Vantage Point Surveys (VPS) from three Vantage Points (VPs), hinterland surveys from three hinterland vantage points (HVPs), transect surveys and nocturnal surveys. During the VPS programme, a total of 449 flights were recorded by 13 identified target species. Lesser black-backed gull was the most frequently recorded species with 190 flights, followed by buzzard (162 flights) and kestrel (41 flights). A total of 14 golden plover flights consisting of flocks of up to 26 individuals were recorded. There were also seven records of hen harrier and five records of merlin.

Three target species were recorded during transect surveys: mallard (two records), lesser black-backed gull (52 records) and buzzard (30 records).

No target species were recorded during hinterland surveys or nocturnal surveys.

1. Introduction

1.1 Background

APEM Ltd (APEM) were commissioned by Art Generation Ltd to draft the ornithological chapter of the Environmental Impact Assessment Report (EIAR) for the proposed Ballyfasy Wind Farm (the Wind Farm Site) including the technical appendices. This report details the methods and results of surveys undertaken at the Wind Farm Site by Doherty Environmental between May 2020 and February 2025 to establish the ornithological baseline, focusing on the last two years of surveys with supplementary information for earlier surveys.

The Wind Farm Site is located approximately 3.5km north-east of Mullinavat in County Kilkenny. The Wind Farm Site Boundary is presented in **Figure 1**. Habitats within the lands under applicant control (hereafter the Wind Farm Site Boundary) consist of arable agricultural land as well as coniferous and deciduous plantation woodlands. These habitats are representative of the wider area around the Wind Farm Site. The M9 motorway Junction 11 is located approximately 3.2km west of the Wind Farm Site Boundary.

Surveys were undertaken based on the Site Boundary and proposed turbine locations at the time surveys commenced. Survey Areas for each method are presented within **Section 2**.

1.2 Purpose of the Report

Ornithology surveys were conducted to determine the ornithological baseline and to inform an assessment of potential effects arising from the Proposed Project. The main potential impact pathways arising from onshore wind farms are direct habitat loss, disturbance and displacement, collision risk, and barrier effects. (NatureScot, 2025).

A number of guidance documents have been produced relating to the assessment of impacts on birds from onshore wind farms. The key guidance used to inform the scope of surveys and reporting was published by NatureScot (2017¹) and is considered best practice for wind farm developments in Ireland. NatureScot guidance recommends that surveys should focus on a suite of 'target species' which are of higher importance (due to legislative protection or conservation status) and are more susceptible to potential impacts from wind farms. Target species for each survey are detailed within the **Methods** section.

¹ Although an updated version of the guidance was published during 2025, this was after the conclusion of baseline surveys, which were undertaken in line with 2017 guidance current at the time of surveys.

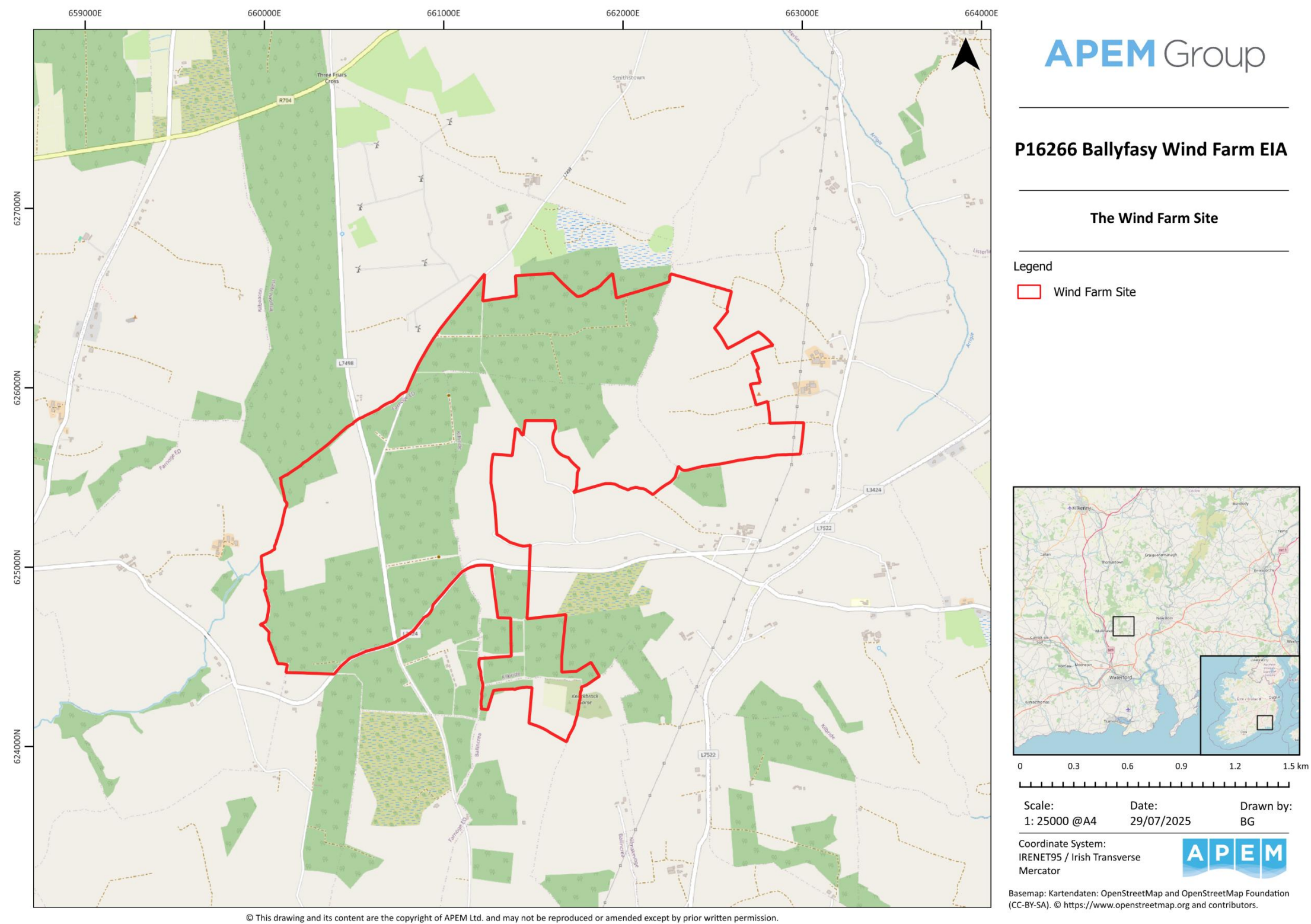


Figure 1 Ballyfasy Wind Farm Site

1.3 Nearby Sites Designated for Ornithological Features

A desk-study has been undertaken to identify statutory designated sites designated for ornithological features with potential connectivity to the Wind Farm Site. The desk-study searched for:

- Internationally important sites - Special Protection Areas (SPAs) and Ramsar sites within 20km² of the nearest turbine location;
- Nationally important sites – Natural Heritage Areas (NHAs) within 20km of the nearest turbine location; and
- Nature Reserves within 10km of the nearest turbine location.

During the desk study, one designated site was identified within 20km of the Wind Farm Site.

Table 1. Statutory designated sites with ornithological features within 20 km of the Wind Farm Site

Name	Designation	Species of Conservation Interest	Distance & Direction from Wind Farm Site
River Nore SPA*	SPA	Kingfisher (<i>Alcedo atthis</i>)	9.1km north/north-east of the Wind Farm Site
* River Nore SPA Site Synopsis https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004233.pdf			

2. Methods

The target species selected for surveys are outlined in the following sections. Species names used in this report follow the List of Ireland's Birds maintained by BirdWatch Ireland. A list of scientific names, as well as details of relevant legislation and conservation status of all bird species mentioned in this report are provided in **Appendix 1**.

All survey areas used as part of this programme of works were based upon the Ballyfasy Wind Farm Site boundary provided to Doherty Environmental (subcontracted to undertake surveys on behalf of Art Generation) prior to the commencement of surveys. All figures henceforth present both the final Ballyfasy Wind Farm Site Boundary along with the initial Site Boundary.

² 20 km is the zone of potential connectivity for statutory designated sites with non-breeding swan and goose qualifying interests, whilst other non-breeding wildfowl and waders are limited to 15 km. This has therefore been used as the basis for the area of search.

2.1 Vantage Point Surveys

Vantage Point Surveys (VPS) were carried out between May 2020 and March 2025 (inclusive) from three Vantage Point (VP) locations. No surveys were completed between August 2021 and April 2022 (inclusive). There were initially two VPs (VP1 and VP2). The third (VP3) was added to the survey schedule from January 2023 onwards. The Vantage Points were selected to provide coverage of the proposed turbine locations at the commencement of surveys and a surrounding 500m buffer (the VP Survey Area) in line with NatureScot (2017) guidance.

VPS were undertaken to record the flight activity of target bird species following NatureScot (2017) guidance. VPS survey dates, times and weather conditions are detailed in **Appendix 3**. A summary of survey effort for each VP by season is presented in **Table 2**.

Table 2 Summary of survey effort for VPS

Season	Breeding/non-breeding	Year of survey	Survey hours		
			VP1	VP2	VP3
1	Breeding	2020	32	32	N/A
2	Non-breeding	2020/2021	39	33	N/A
3	Breeding	2021/2022	46	50.5	N/A
4	Non-breeding	2022/2023	36	36	27
5	Breeding	2023	36	39	39
6	Non-breeding	2023/2024	37	37.5	38
7	Breeding	2024	36	36	36
8	Non-breeding	2024/2025	39	36	36.5
Total			301	300	176.5

VPs were selected using viewshed analysis of the Wind Farm Site, turbine locations and a 500m buffer, undertaken using Geographic Information Systems (GIS) software. Viewsheds were calculated at an observer height of 1.6m showing the visible area from the VP at a height of 25m. This analysis was originally completed for a smaller proposed layout in May 2020. Following this, VP1 and VP2 were selected for the completion of vantage point surveys.

The proposed turbine layout for the Wind Farm Site was revised in December 2022 with the addition of two turbines west of the original eight turbines. A revised viewshed analysis was then completed and the additional VP location (VP3) was selected to provide coverage of these turbines. The layout of the Wind Farm Site was revised again in April 2024 with an 11-turbine design. Viewshed analysis was repeated following this and it was determined that the additional turbine fell within the viewshed of VP3, and there was no requirement to add a further VP. In June 2025, the layout was revised again to a ten-turbine design. The locations of the VPs and viewsheds are shown in **Figure 2**.

In line with NatureScot (2017) guidance, VPS focused on 'target species'. These are species which are afforded a higher level of legislative protection, are of particular conservation concern, or are at particular risk from onshore wind developments. Target species during VPS were as follows:

- All gull species;
- Any species listed on Annex 1 of the EU Birds Directive;
- Any species listed as Red or Amber on the Birds of Conservation Concern Ireland (BoCCI) 2020-26 (Gilbert *et al.*, 2021), where collision risk presents potential for population level effects; and
- Species with potential connectivity to nearby designated sites.

Each recorded flight path was numbered and cross-referenced, with the following data recorded:

- Number of birds;
- Behaviour where applicable (e.g. foraging, commuting, display etc);
- Duration of flight within the VP viewshed; and
- The height band that the flight was in when first recorded, and at 15 second intervals.

During the breeding season VPS were completed at varying times during the day, ranging from early morning to late evening, so that any diurnal variation in flight activity would be recorded. The height bands used to estimate flight height were:

- 1 - <20m
- 2 – 20m to 40m
- 3 – 40m to 120m
- 4 - >120m

During the non-breeding season of 2020/2021 and 2022/2023, watches were completed throughout the day, ranging from dawn to dusk. During the 2023/2024 and the 2024/2025 non-breeding season, VPS were completed throughout the day, with at least one three-hour watch per vantage point per month commencing 30 minutes prior to sunrise or terminating at least 30 minutes after sunset. Surveys during these times facilitated the potential recording of any flight activity associated with certain key species, such as commuting flights of wetland birds and hen harrier roost flights.

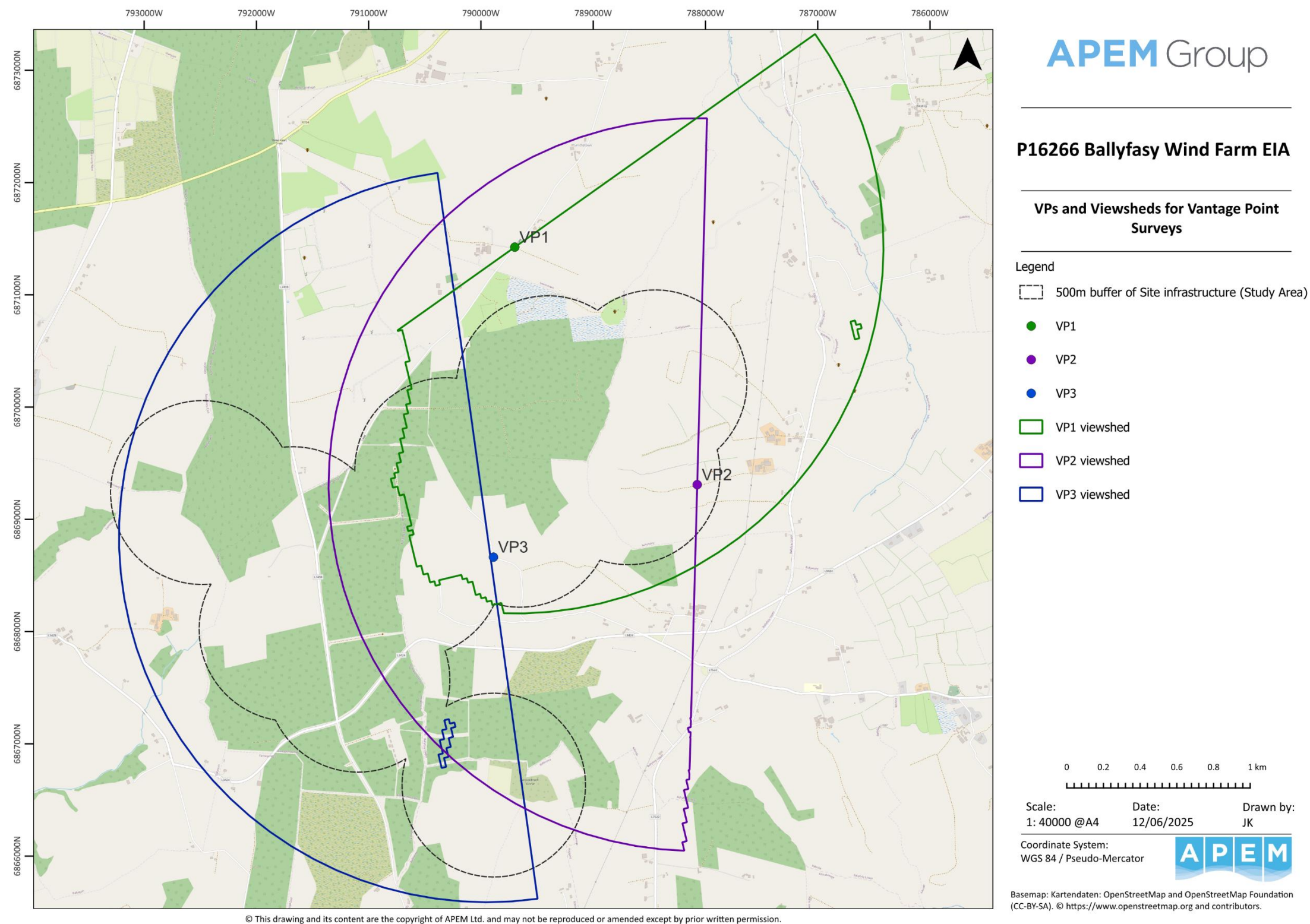


Figure 2 Locations of VPs and viewsheds for VPS

2.2 Breeding Bird Surveys

Breeding Bird Surveys (BBS) were conducted during the 2020, 2023 and 2024 breeding seasons and. Five transects (T1 to T5) were selected to provide coverage of the Wind Farm Site at the commencement of surveys, plus a 500m buffer (the BBS Survey Area). Surveys were undertaken using an adapted British Trust for Ornithology (BTO) Breeding Bird Survey methodology with all species seen or heard recorded. Habitats present within the BBS Survey Area consisted of open grassland, grassland margins, hedgerows, conifer plantation, and heath. The locations of these transects are shown in **Figure 3**.

During the breeding seasons, the transect surveys were completed between April and July inclusive. There were three visits during the 2020 breeding season, covering T1 and T2, four visits in 2023, covering T1 to T4, and five visits in 2024, covering T1 to T5. Surveys were undertaken in suitable weather conditions. Survey data collected during transect surveys is detailed within **Appendix 4**.

2.3 Nocturnal Surveys

To supplement the BBS, additional dusk visits were undertaken during the 2023 and 2024 breeding seasons to record crepuscular or nocturnal species which are difficult to detect during standard surveys. Target species included all owl species, woodcock and nightjar. Nocturnal surveys were undertaken along two transects within the BBS Survey Area.

Surveys were undertaken on 16th April 2023, 17th May 2024 and 19th June 2024. The locations of the transects are provided in **Figure 3**. Surveys commenced between 21:20 and 21:50 and terminated between 22:20 and 23:15. The location of any target species seen or heard during the transect surveys were recorded using ArcGIS Field Maps. Survey data collected during transect surveys is detailed within **Appendix 4**.

2.4 Wintering Bird Surveys

Additional Wintering Bird Surveys were undertaken during the 2020/2021, 2023/2024 and 2024/2025 non-breeding seasons. Surveys were completed over one visit in November and another in February during each non-breeding season. The Survey Area and transects utilized in these surveys are identical to those employed during the breeding season surveys and are presented in **Figure 3**.

T1 and T2 were surveyed in the non-breeding season of 2020-2021, T1 to T4 were surveyed in 2023-24, though T4 was not surveyed in February 2024, and all five transects were surveyed in 2024-2025.

The survey method used was the 'look-see' methodology outlined by Bibby *et al.* (2000), with transects walked at a steady pace and the number of birds seen or heard tallied for each transect. Throughout the survey programme, all species seen or heard were recorded. The species and number of individuals were recorded to establish the species assemblage and abundance along each transect. Surveys were undertaken in suitable weather conditions and is detailed within **Appendix 4** .

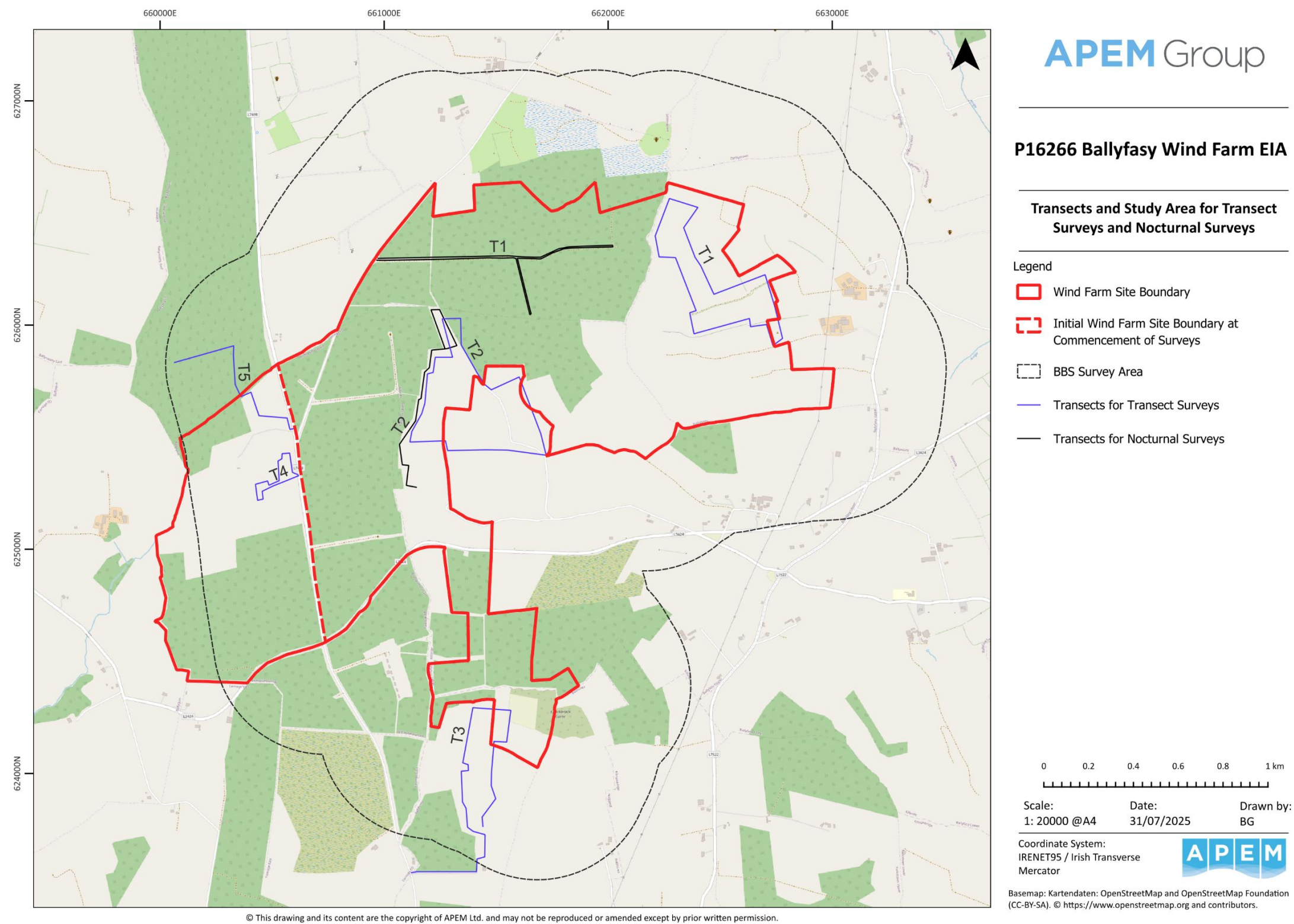


Figure 3 Locations of transects for transect surveys and nocturnal surveys

2.5 Hinterland Surveys

Hinterland Surveys were completed from three Hinterland VP locations (HVP1, HVP2 and HVP3) providing coverage of the Wider Survey Area. These surveys were designed to determine the presence of breeding raptors, as well as roosting hen harrier during the non-breeding season, within the within the Wind Farm Site at the commencement of surveys, plus a 2 km buffer in line with NatureScot (2017) guidance. The locations of the HVPs, viewsheds and the Wider Survey Area are shown in **Figure 4**.

HVP1 is located to the south of the Wind Farm Site. Surveys of the Kent Quarry, approximately 700m to southeast of HVP1, were completed during the breeding season to determine the presence of peregrine. Surveys were also completed from this HVP looking north towards the Wind Farm Site. HVP2 is north-east of the Wind Farm Site and HVP3 lies to the south-east. Surveys from HVP3 were undertaken looking northwards and south-west, therefore two viewsheds are shown.

During the breeding season, Hinterland Surveys were completed during daylight hours. During the non-breeding season, these surveys were timed to commence 30 minutes before sunrise or finish 30 minutes after sunset to survey for roosting hen harrier in line with guidance from Hardey (2013). All Hinterland Surveys were completed in one to two hour watches. Survey data collected during Hinterland surveys is detailed within **Appendix 5**.

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P16266 Ballyfasy Wind Farm EIA

HVPs and Viewsheds for Hinterland Surveys

Legend

- Wind Farm Site Boundary
- Initial Wind Farm Site Boundary at Commencement of Surveys
- Wider Survey Area
- HVP1
- HVP2
- HVP3
- HVP1 Viewshed
- HVP2 Viewshed
- HVP3 viewshed (north-west)
- HVP3 Viewshed (south-west)

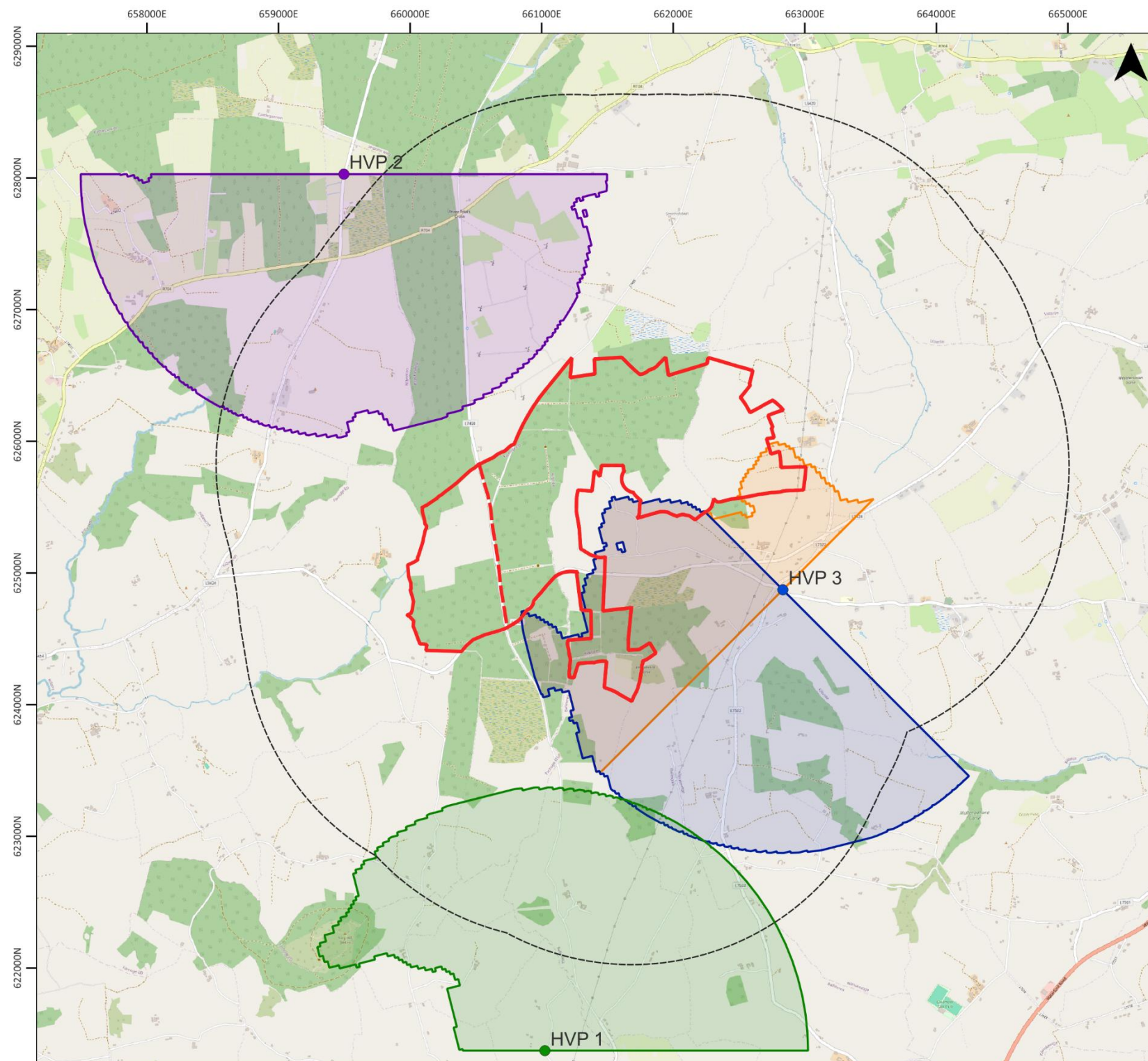
0 0.4 0.8 1.2 1.6 2 km

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Basemap: Kartendaten: OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.



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Figure 4 Locations of HVPs and viewsheds for Hinterland Surveys

2.6 Survey Limitations

The total VPS effort for VP1 and VP2 during the 2020 breeding season, and for VP2 during the 2020/21 non-breeding season, fell below the recommendation of 36 survey hours (NatureScot, 2025). The reason for this during the 2020 breeding season was the late start of the survey programme in May of that year, as Doherty Environmental were originally contracted to complete one year of surveys from May 2020 to May/June 2021. Further to this, a total of 72 survey hours were completed from VP1 and VP2 in the 2020/21 non-breeding season. VP3 was added part-way through the 2022/23 non-breeding season, and as such only 27 hours of survey were completed from this location, during this season.

Limitations encountered during field surveys relate to changing weather conditions and the presence of livestock. VP and HVP surveys were scheduled ahead of time following a review of weather forecasting in advance of the survey. Whilst the majority of surveys were completed in conditions suitable for surveys, survey days of poor weather conditions with less than good visibility were encountered. The presence of livestock in fields during breeding season transect surveys resulted in localised deviations along transects. Also, no spatial or behavioural data were recorded during the transect surveys, therefore territory analysis could not be completed. Despite the limitations outlined, the surveys were representative of the Wind Farm Site's avifauna and provide a robust baseline.

3. Survey Results

3.1 Vantage Point Surveys

3.1.1 Target species flights

A total of 258 flights by ten identified target species were recorded during VPS during the most recent two years of surveys between April 2023 and March 2025. The species recorded most frequently was lesser black-backed gull with a total of 180 flights, followed by kestrel (41 flights) and golden plover (14 flights). A summary of all target species flights recorded during each season of VPS, broken down by species, is presented in **Table 3**. Full details of target species flights are provided in **Appendix 2** and flight lines are presented in **Figure 5** to **Figure 14**.

Flight activity was low for all species other than lesser black-backed gull and kestrel. Peak flight activity occurred in the 2024 breeding season, with 109 flights, whereas the lowest flight activity was recorded in the 2023 breeding season, with 42 flights. Kestrel was regularly recorded hunting within the VP Survey Area. This species appeared to favour the eastern, northern and central parts of the Survey Area. Eight kestrel flights were also recorded in the south-west during the 2023 breeding season.

A total of 14 golden plover flights were recorded near the centre of the Survey Area in the 2024-2025 non-breeding season. Most were recorded on 28th October 2024, in flocks of two to 26 individuals. Some of these were commuting flights and others involved birds circling and landing. As the other species were recorded in very low numbers, there was limited evidence of areas favoured by these species. Hen harrier was recorded seven times throughout the survey programme, with one observed hunting in the centre of the Survey Area in October 2023. This flight is shown in **Figure 12** with a unique identification (UID) number of 450. Merlin was recorded five times, with no observations of hunting behaviour. A non-target red-listed species (swift) was recorded within the Survey Area twice during the 2024 breeding season.

During the previous seasons of VPS between the 2020 breeding season and the 2022-23 non-breeding season, a total of 72 flights by five target species were recorded. The most frequently recorded species was buzzard, with 51 flights, followed by lesser black-backed gull, with 11 flights. A summary of all target species flights recorded by season is provided in **Table 4**.

3.1.2 Incidental records

Lesser black-backed gull was recorded once incidentally in April 2023, north of the Survey Area, beyond the VP viewsheds. This flight has not been included in **Table 3**, however it has been shown in **Figure 6** to provide context to species activity, with a UID of 1001.

Table 3 Summary of target species flights recorded during each season of the two most recent years of VPS (2023 – 2025)

Species*	Conservation Status BoCCI (Ireland)	Season				Total Flights	No. of birds per flight
		2023 breeding	2023/2024 non-breeding	2024 breeding	2024/2025 non-breeding		
Golden plover	Ann1, Red	0	0	0	14	14	2 to 26
Curlew	Red	0	0	1	0	1	1
Snipe	Red	0	0	1	0	1	2
Black-headed gull	Amber	0	0	6	0	6	1 to 6
Great black-backed gull	Green	1	0	0	0	1	1 to 3
Lesser black-backed gull	Amber	21	41	90	28	180	1 to 250
Hen harrier	Ann 1, Amber	0	3	1	3	7	1 to 2
Kestrel	Red	21	6	7	7	41	1
Merlin	Ann 1, Amber	0	0	1	4	5	1
Total		49	51	110	57	267	
* Species names and order follow the List of Ireland's Birds maintained by BirdWatch Ireland. **Ann 1 = listed on Annex 1 of the Bird's Directive; Green= BoCCI Green-listed species; Amber = BoCCI Amber-listed species; Red = BoCCI Red-listed species							

Table 4 Summary of target species flights recorded during previous VPS seasons

Species*	Conservation Status BoCCI (Ireland)	Season			Total Flights	No. of birds per flight
		2020/21 non-breeding	2021/22 breeding	2022/2023 non-breeding		
Great black-backed gull	Green	0	1	1	2	1 to 3
Lesser black-backed gull	Amber	0	7	4	11	1 to 27
Kestrel	Red	2	0	2	4	1
Total		2	8	7	16	
* Species names and order follow the List of Ireland's Birds maintained by BirdWatch Ireland. **Ann 1 = listed on Annex 1 of the Bird's Directive; Green= BoCCI Green-listed species; Amber = BoCCI Amber-listed species; Red = BoCCI Red-listed species						

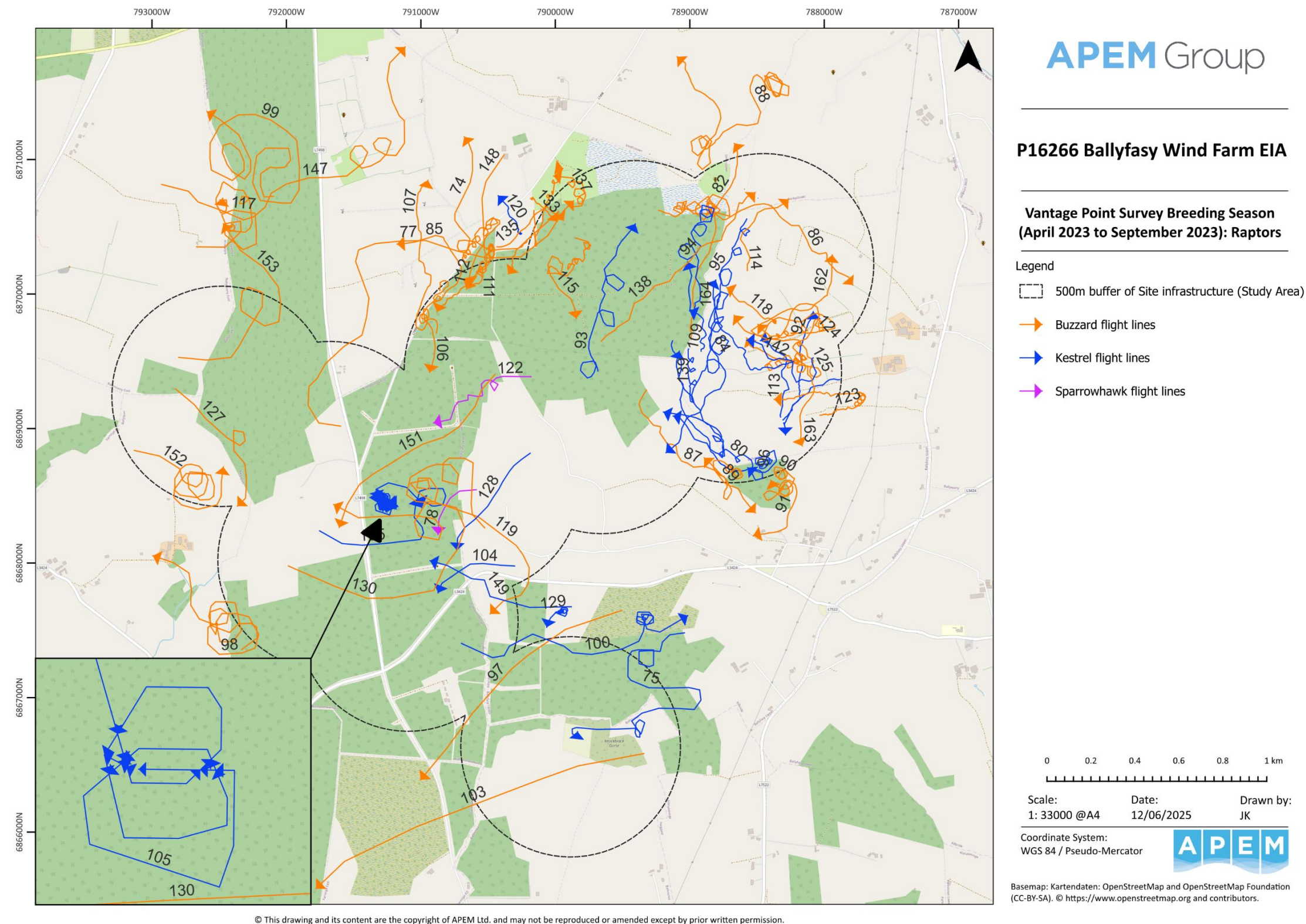


Figure 5 VPS results breeding season 2023: raptors

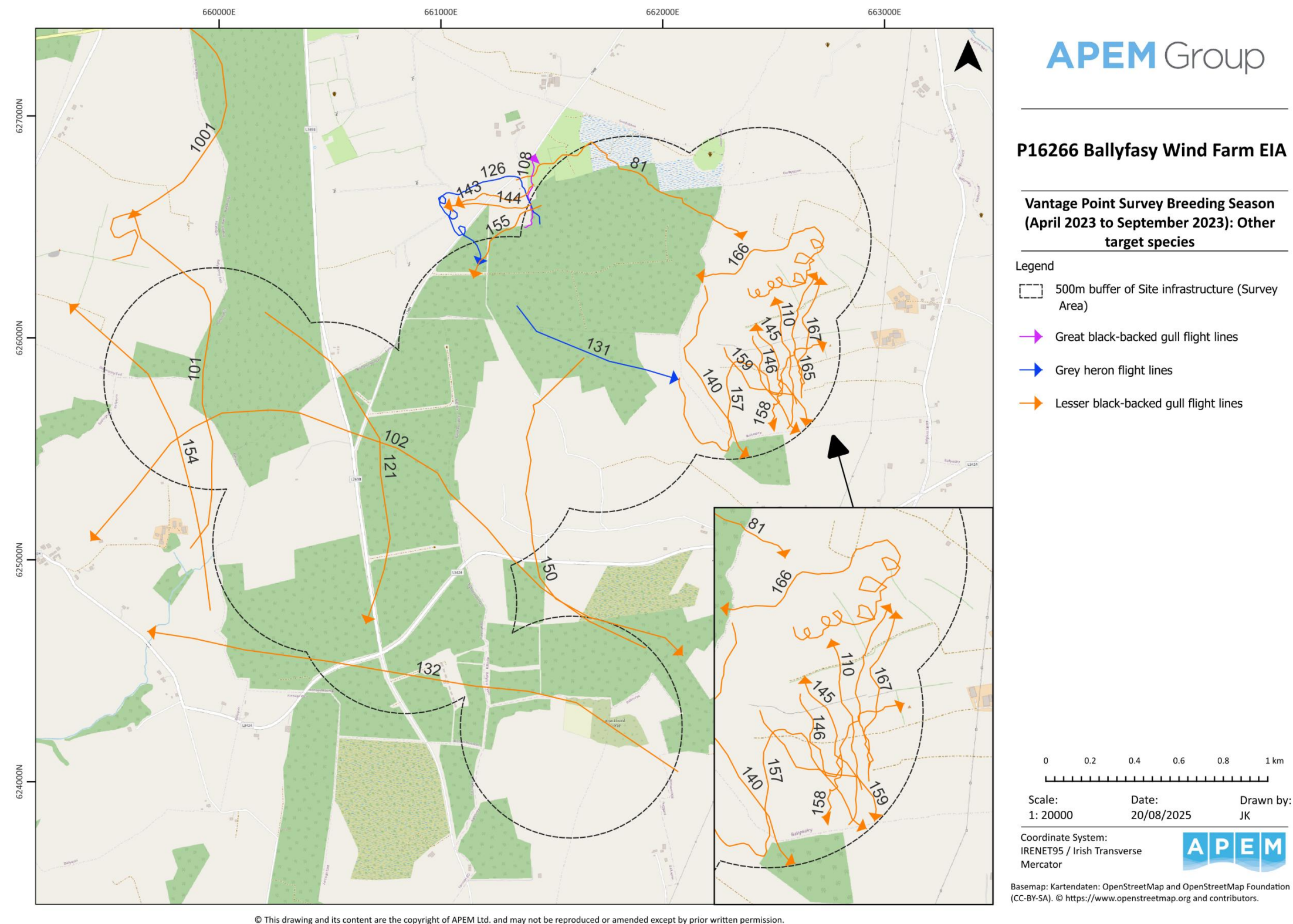


Figure 6 VPS results breeding season 2023: other target species

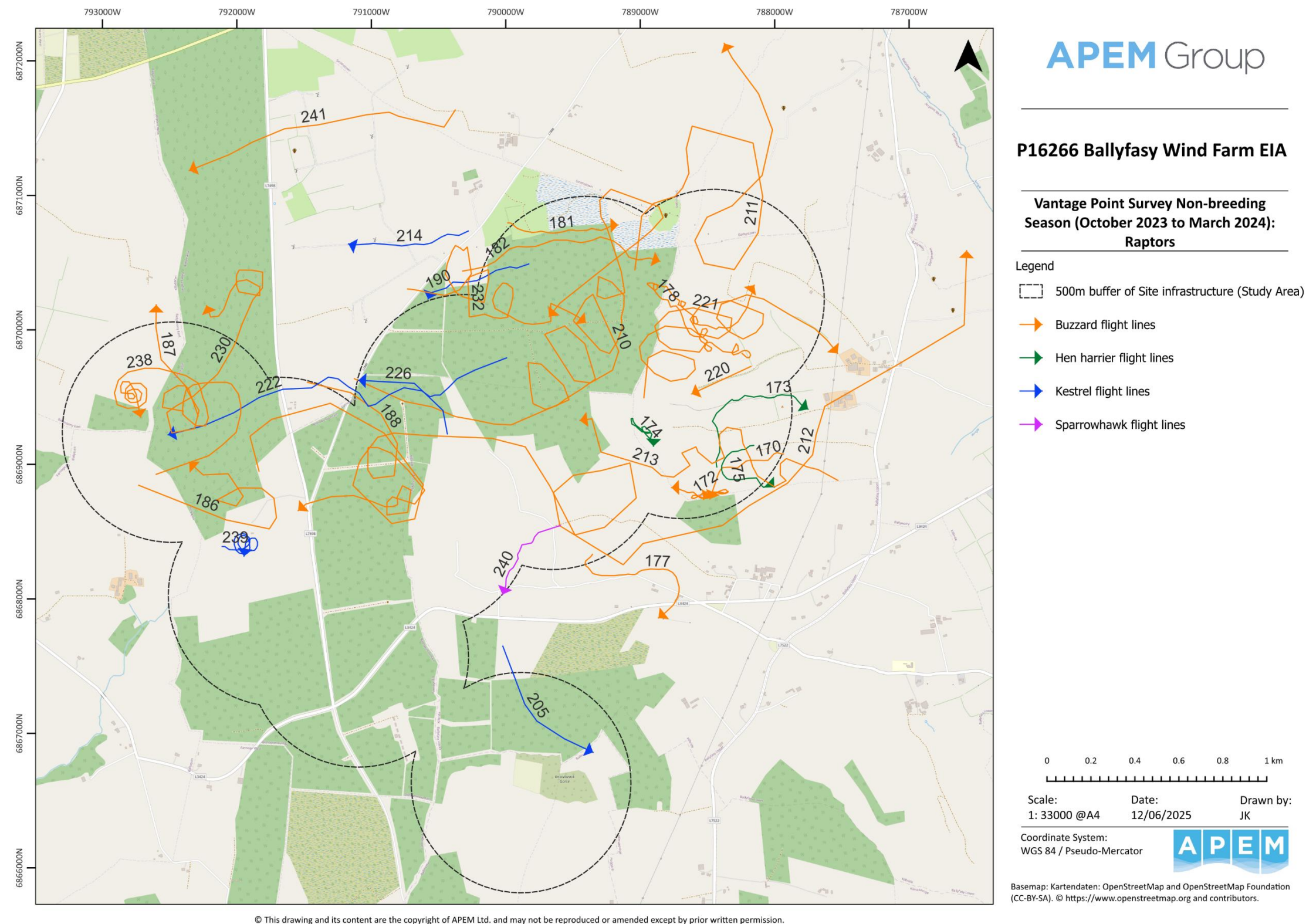


Figure 7 VPS results non-breeding season 2023-24: raptors

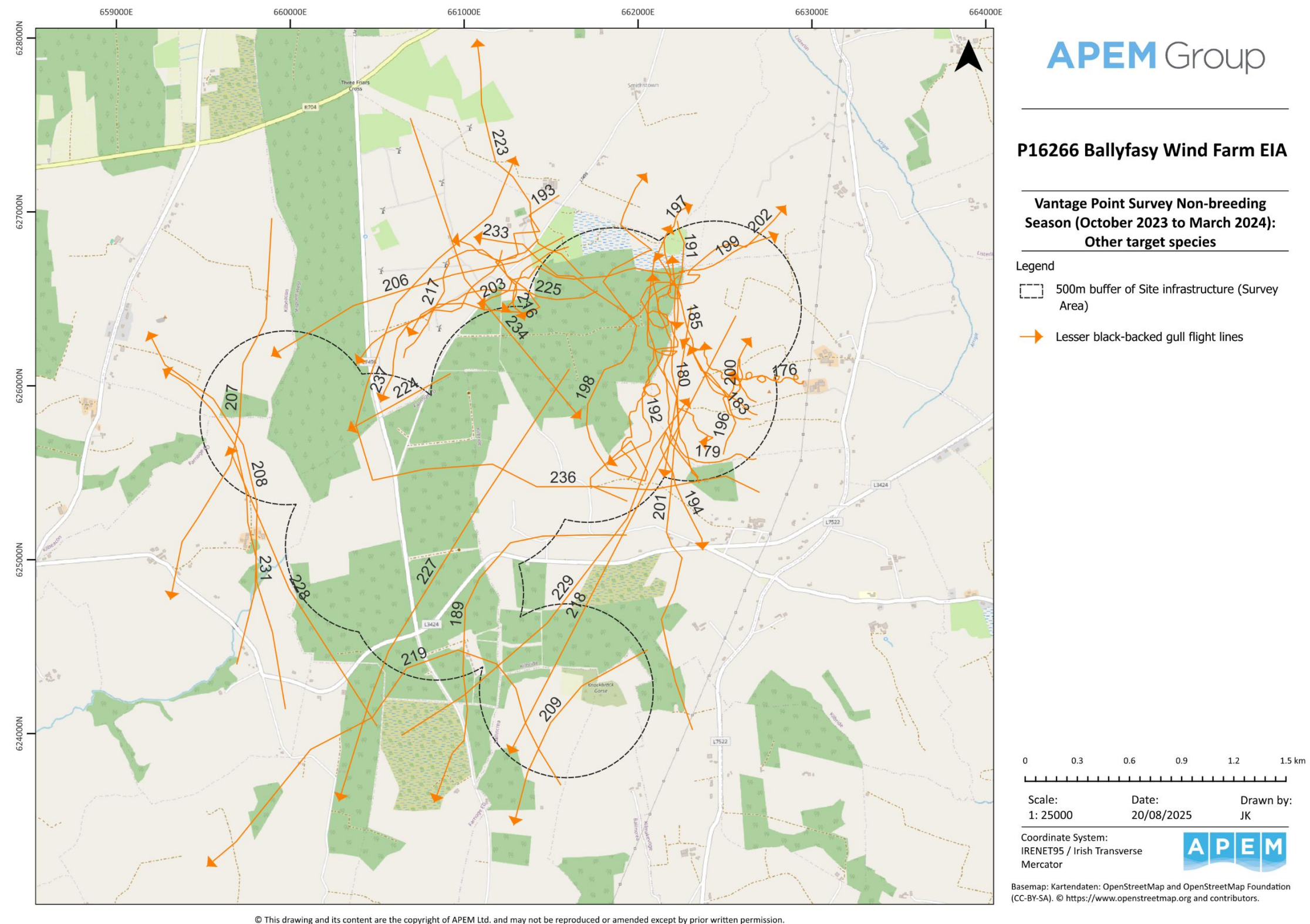


Figure 8 VPS results non-breeding season 2023-24: other target species

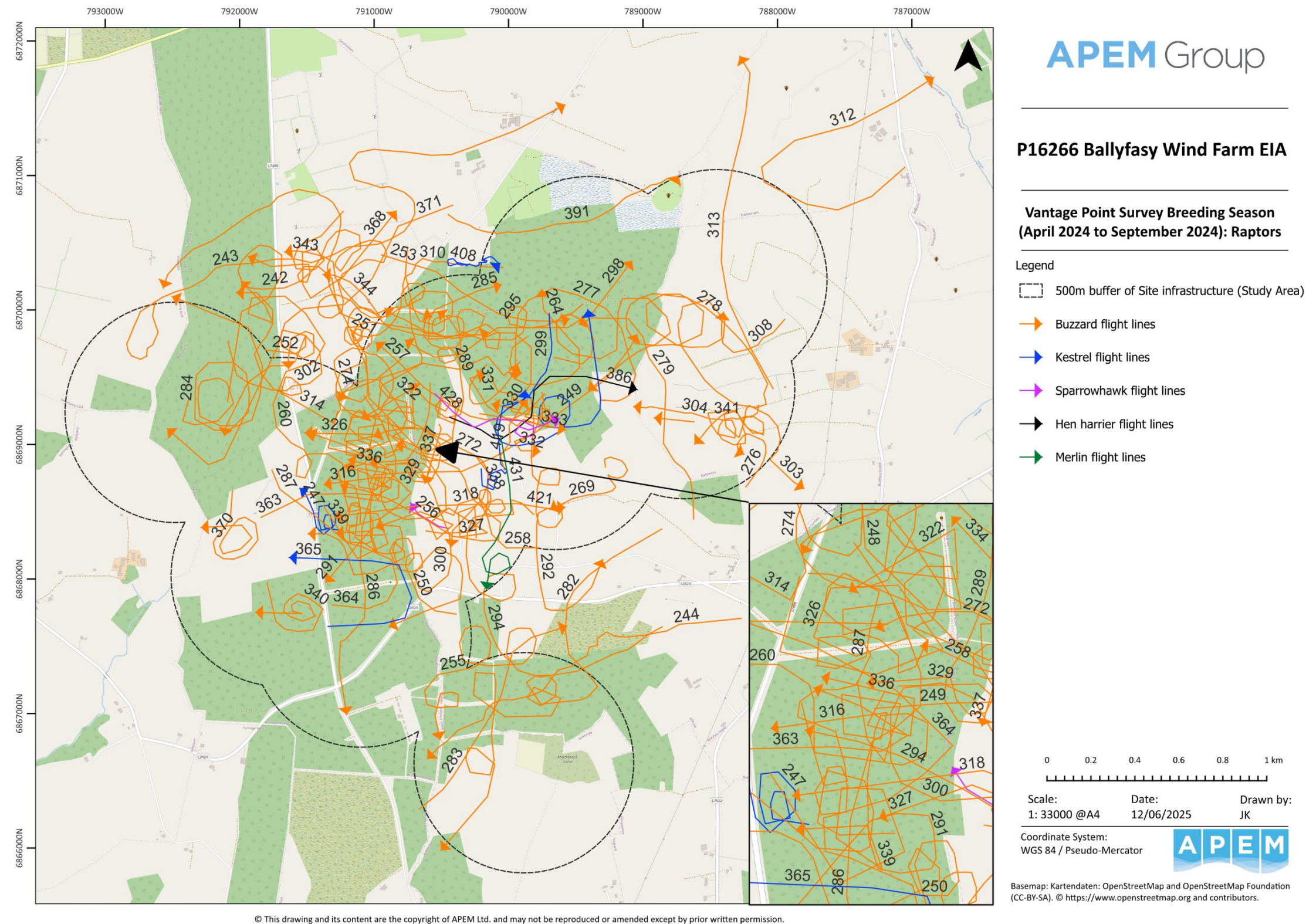


Figure 9 VPS results breeding season 2024: raptors

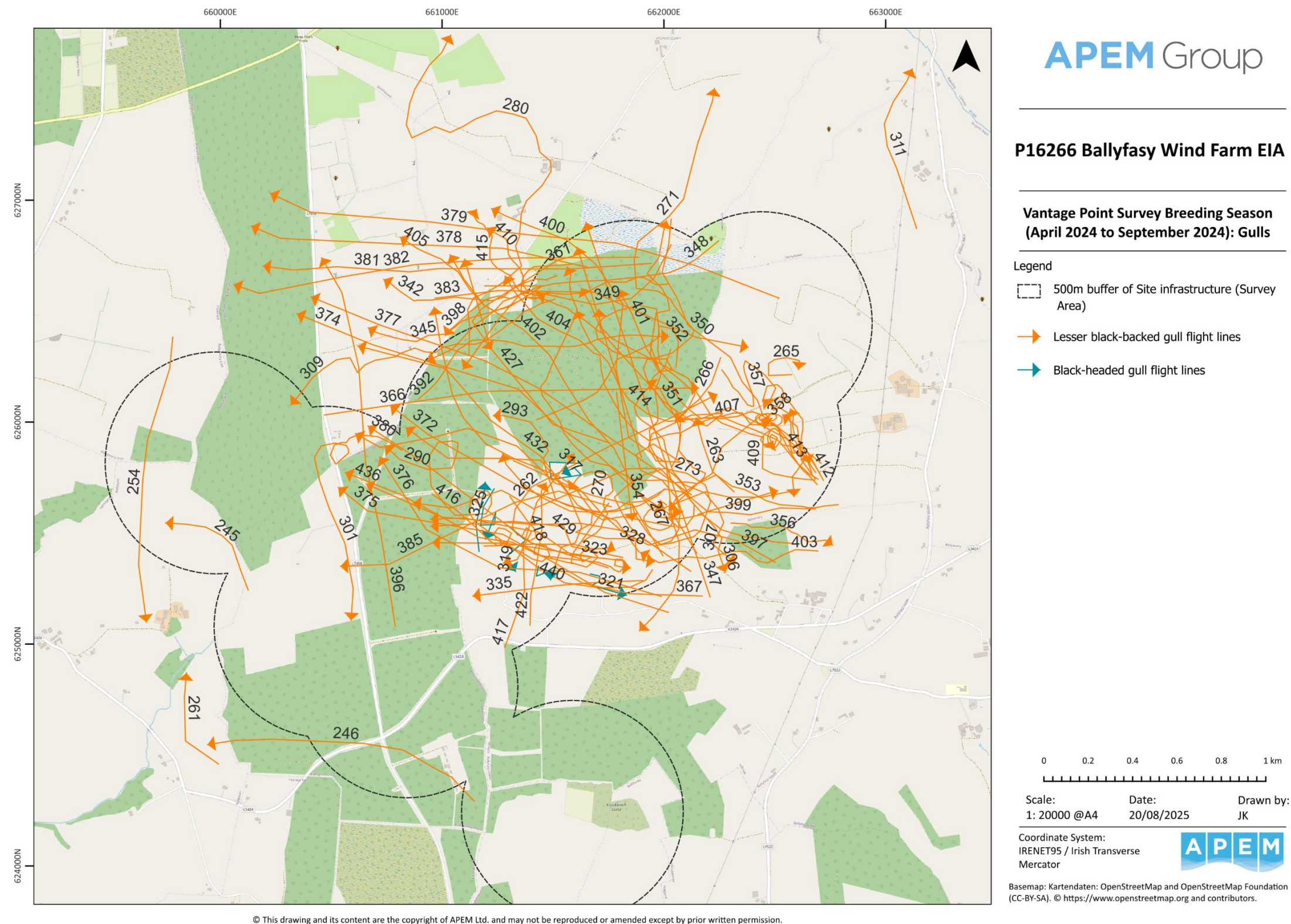


Figure 10 VPS results breeding season 2024: gulls

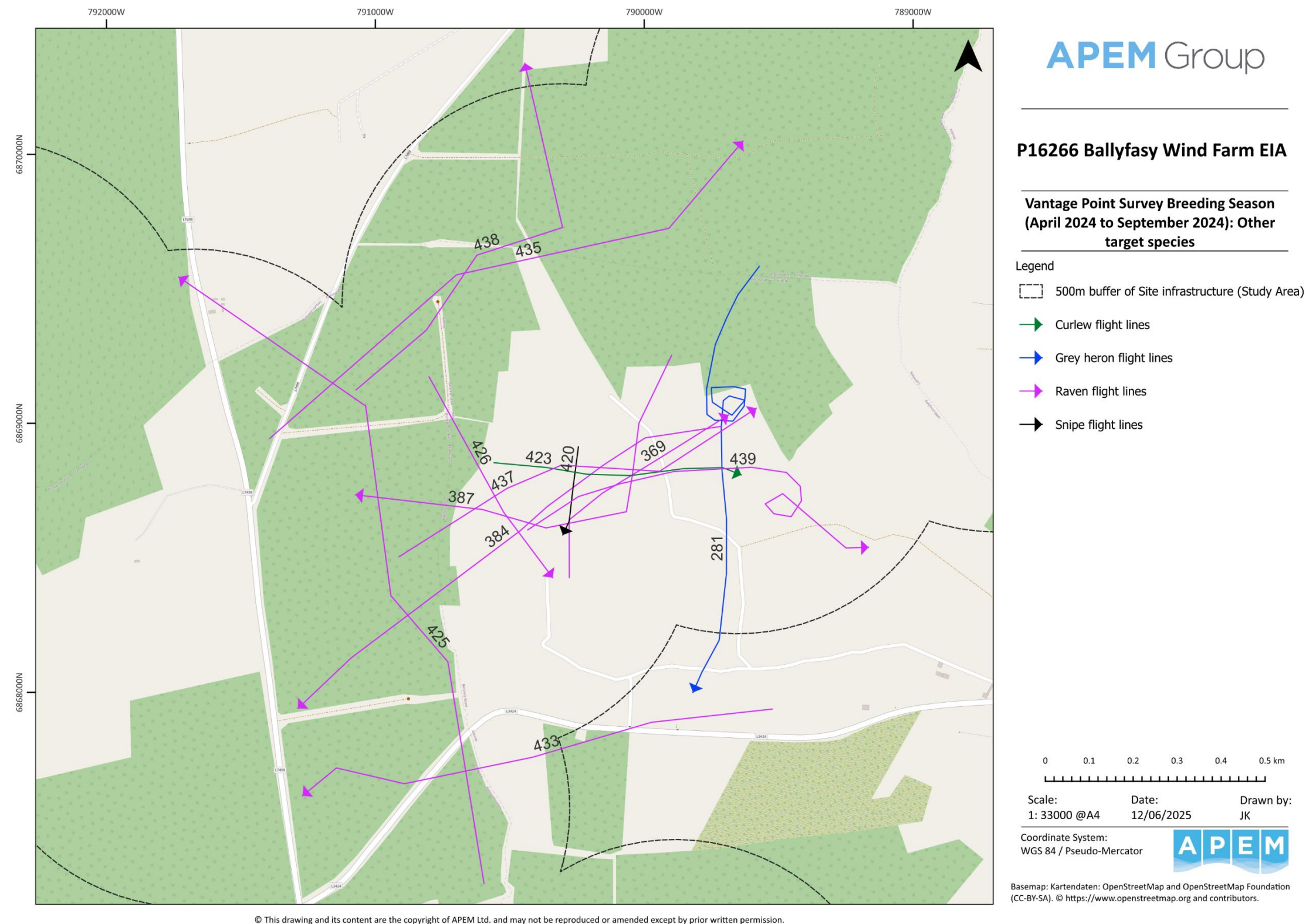


Figure 11 VPS results breeding season 2024: other target species

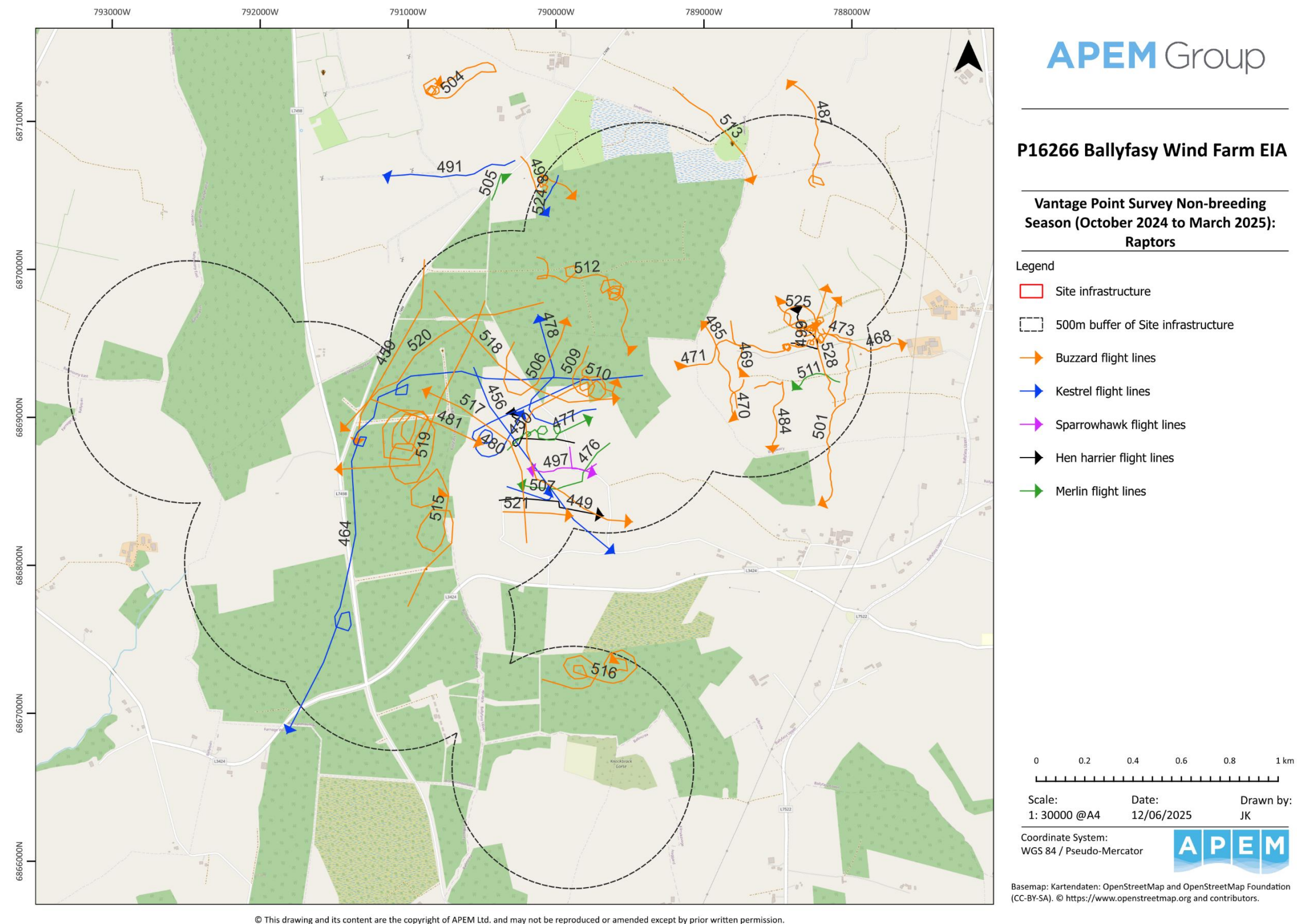
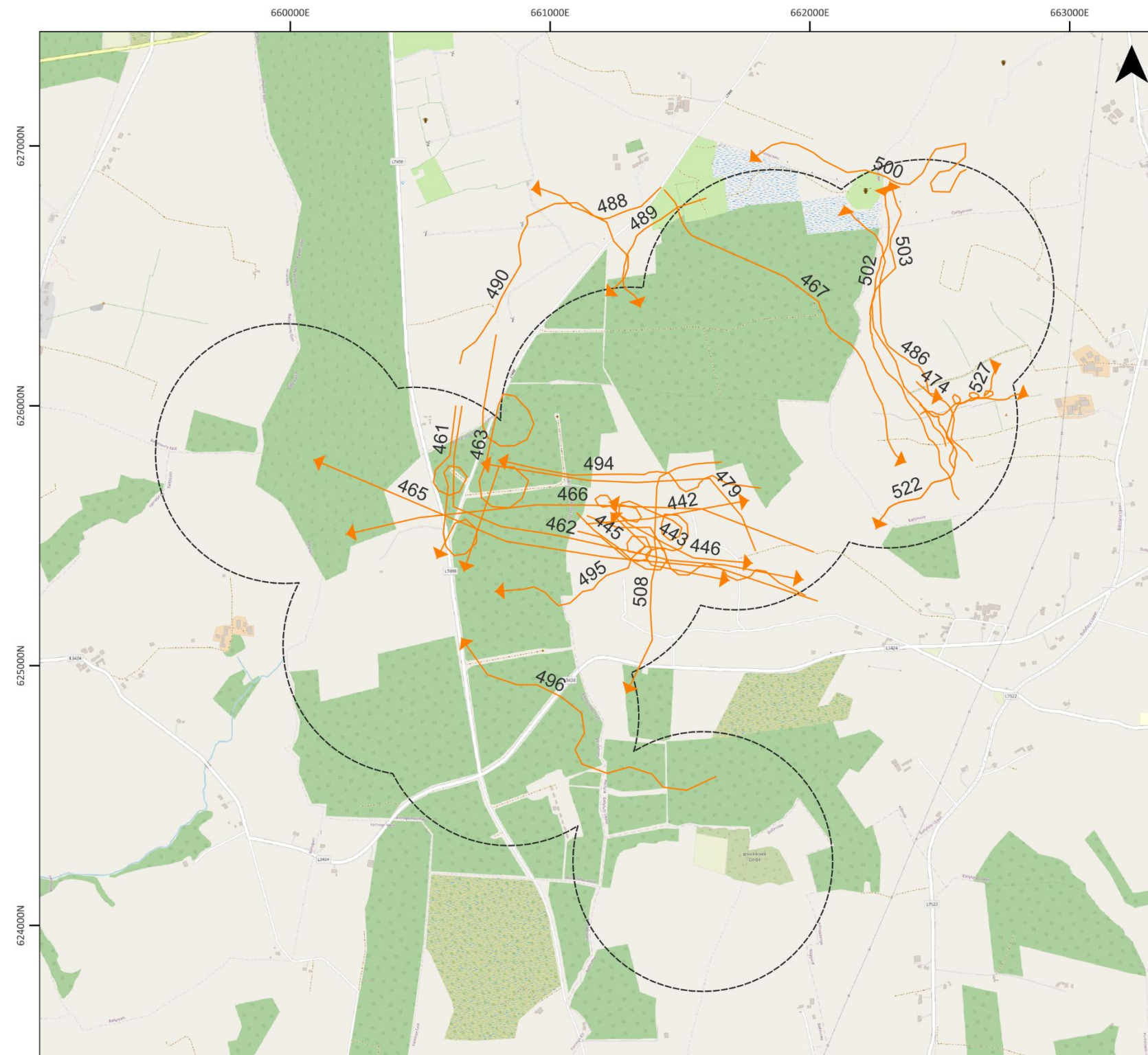


Figure 12 VPS results non-breeding season 2024-25: raptors

**Vantage Point Survey Non-breeding
Season (October 2024 to March 2025):
Gulls**

 500m buffer of Site infrastructure (Survey Area)

→ Lesser black-backed gull flight lines



A horizontal scale bar with major tick marks at 0, 0.2, 0.4, 0.6, 0.8, and 1 km. Below the bar are numerous smaller tick marks indicating intervals of 0.05 km.

Scale: 1: 20000 @A4 Date: 20/08/2025 Drawn by: JK

Coordinate System:
IRENET95 / Irish Transverse
Mercator



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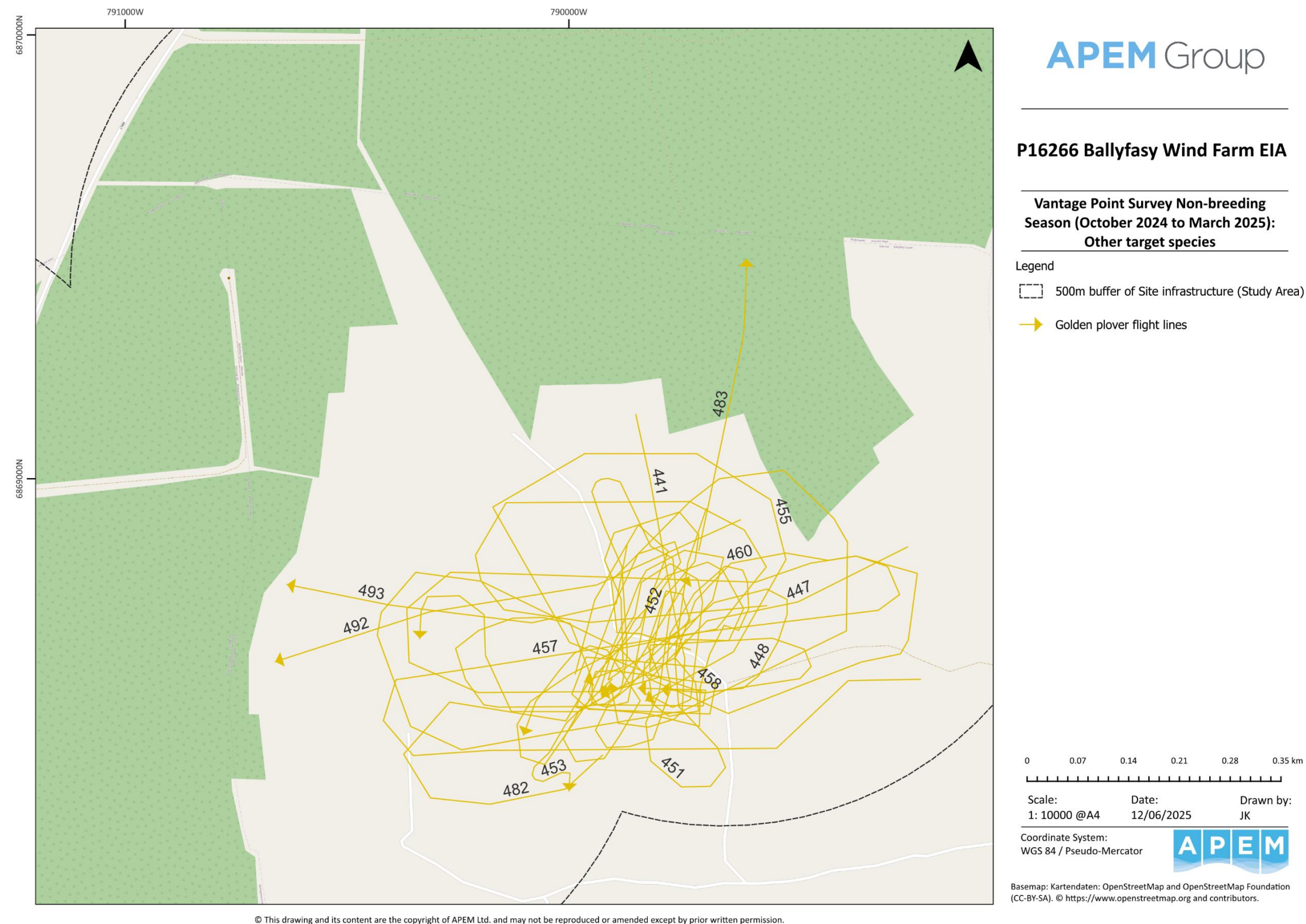


Figure 14 VPS results non-breeding season 2024-25: other target species

3.2 Breeding Bird Survey Results

A total of 48 species were recorded during the programme of transect surveys. However, the majority of these species were passerines and in line with NatureScot (2017) guidance which states that passerines are not readily impacted by wind farms, these records have been omitted from the results.

Only three non-passerine were recorded during the survey programme: mallard, lesser black-backed gull and buzzard. No breeding non-passerines were recorded during BBS. Total counts for each of these target species by transect and survey month are presented below in **Table 5** to **Table 7**.

3.3 Wintering Bird Surveys

A total of 39 species were recorded during the programme of transect surveys. However, the majority of these species were passerines and in line with NatureScot (2017) guidance, which states that passerines are not readily impacted by wind farms, these records have been omitted from the results.

Only two non-passerine species were recorded during the survey programme: lesser black-backed gull and buzzard. Total counts for each of these target species by transect and survey month are presented below in **Table 8** to **Table 10**.

Table 5 BBS results for the 2020 breeding season

Species	Conservation status (BoCCI)	Counts by month and transect							
		April		May		June		July	
		T1	T2	T1	T2	T1	T2	T1	T2
Mallard	Amber	-	1	-	-	-	-	-	-
Buzzard	Green	-	1	-	-	1	-	-	-

Table 6 BBS results for the 2023 breeding season

Species	Conservation status (BoCCI)	Counts by month and transect															
		April				May				June				July			
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
Lesser black-backed gull	Amber	-	11	-	-	-	-	-	-	16	-	-	-	2	5	-	-
Buzzard	Green	-	2	-	-	2	-	1	-	-	2	-	1	-	-	2	1

Table 7 BBS results for the 2024 breeding season

Species	Conservation status (BoCCI)	Counts by month and transect																			
		April					May					June					July				
		T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Mallard	Amber	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lesser black-backed gull	Amber	22	5	-	-	-	3	-	-	-	-	-	-	-	-	-	28	6	-	-	-
Buzzard	Green	1	-	1	-	-	1	-	1	1	1	-	-	-	1	-	-	2	-	-	1

Table 8 Wintering Bird Survey results for the 2020/21 non-breeding season

Species	Conservation status (BoCCI)	Counts by month and transect			
		November		February	
		T1	T2	T1	T2
Buzzard	Green	1	-	-	-

Table 9 Wintering Bird Survey results for the 2023/24 non-breeding season

Species	Conservation status (BoCCI)	Counts by month and transect							
		November				February			
		T1	T2	T3	T4	T1	T2	T3	T4
Lesser black-backed gull	Amber	6	-	-	-	-	-	-	-
Buzzard	Green	1	-	-	-	-	1	-	-

Table 10 Wintering Bird Survey results for the 2024/25 non-breeding season

Species	Conservation status (BoCCI)	Counts by month and transect									
		November					February				
		T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Lesser black-backed gull	Amber	6	-	-	2	-	4	-	-	-	-
Buzzard	Green	-	1	1	-	-	-	1	2	-	-

3.4 Nocturnal Survey Results

There were no records of any target species during the three nocturnal survey visits.

3.5 Hinterland Survey Results

A total of four kestrel flights were recorded, however there was no evidence of breeding activity.

In addition, flights by four non-target species were recorded during hinterland surveys: mallard, black-headed gull, lesser black-backed gull and buzzard . Full details of these flights are provided in **Appendix 5** .

4. Summary of Key Findings

During the most recent two years of VPS, a total of 449 flights were recorded, consisting of 13 target species: golden plover, curlew, snipe, black-headed gull, great black-backed gull, lesser black-backed gull, grey heron, sparrowhawk, hen harrier, buzzard, kestrel, merlin and raven. Lesser black-backed gull and buzzard accounted for the majority of records, with totals of 190 and 162 flights, respectively. Peak flight activity occurred in the 2024 breeding season with 195 flights recorded.

Lesser black-backed gull was recorded throughout the VP Survey Area, with records centred on the eastern side. Buzzard and kestrel occurred most regularly in the east, north and centre of the VP Survey Area, and both species were regularly observed hunting. Seven hen harrier flights were recorded, with one observed hunting in the centre of the VP Survey Area in the 2023-2024 non-breeding season. Five merlin flights were recorded, with no observations of hunting behaviour. Flocks of up to 26 golden plover were also observed close to the centre of the VP Survey Area in the autumn of 2024, with a total of 14 flights recorded, and some of these flocks landed within the VP Survey Area. Given the low number of records for the other species, there is limited evidence of areas favoured by these species.

Throughout the transect survey programme, 50 species were recorded, however the vast majority of these species are not considered in assessments for onshore wind farms. Only three target species were observed: mallard (two records), lesser black-backed gull (52 records) and buzzard (30 records).

During Hinterland Surveys, kestrel was the only target species recorded, however there was no evidence of breeding. No target species were recorded during Nocturnal Surveys.

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Appendix 1 List of species recorded during surveys or mentioned within report

Common name	Scientific name	BTO Code	Conservation status (BoCCI, Birds Directive)
Mallard	<i>Anas platyrhynchos</i>	MA	Amber
Pheasant	<i>Phasianus colchicus</i>	PH	Green
Cuckoo	<i>Cuculus canorus</i>	CK	Green
Nightjar	<i>Caprimulgus Europaeus</i>	NJ	Annex 1, Red
Woodpigeon	<i>Columba palumbus</i>	WP	Green
Golden plover	<i>Pluvialis apricaria</i>	GP	Annex 1, Red
Curlew	<i>Numenius arquata</i>	CU	Red
Woodcock	<i>Scolopax rusticola</i>	WK	Red
Snipe	<i>Gallinago gallinago</i>	SN	Red
Black-headed gull	<i>Chroicephalus ridibundus</i>	BH	Amber
Great black-backed gull	<i>Larus marinus</i>	GB	Green
Lesser black-backed gull	<i>Larus fuscus</i>	LB	Amber
Grey heron	<i>Ardea cinerea</i>	H.	Green
Sparrowhawk	<i>Accipiter nisus</i>	SH	Amber
Hen harrier	<i>Circus cyaneus</i>	HH	Amber, Annex 1
Buzzard	<i>Buteo buteo</i>	BZ	Green
Kestrel	<i>Falco tinnunculus</i>	K.	Red
Merlin	<i>Falco columbarius</i>	ML	Amber, Annex 1
Jay	<i>Garrulus glandarius</i>	J.	Green
Magpie	<i>Pica pica</i>	MG	Green
Jackdaw	<i>Coloeus monedula</i>	JD	Green
Rook	<i>Corvus frugilegus</i>	RO	Green
Hooded crow	<i>Corvus cornix</i>	HC	Green
Raven	<i>Corvus corax</i>	RN	Green
Coal tit	<i>Periparus ater</i>	CT	Green
Blue tit	<i>Cyanistes caeruleus</i>	BT	Green
Great tit	<i>Parus major</i>	GT	Green
Skylark	<i>Alauda arvensis</i>	S.	Amber
Swallow	<i>Hirundo rustica</i>	SL	Amber
House martin	<i>Delichon urbicum</i>	HM	Amber
Long-tailed tit	<i>Aegithalos caudatus</i>	LT	Green
Willow warbler	<i>Phylloscopus trochilus</i>	WW	Amber
Chiffchaff	<i>Phylloscopus collybita</i>	CC	Green

Blackcap	<i>Sylvia atricapilla</i>	BC	Green
Whitethroat	<i>Curruca communis</i>	WH	Green
Goldcrest	<i>Regulus regulus</i>	GC	Amber
Wren	<i>Troglodytes troglodytes</i>	WR	Green
Treecreeper	<i>Certhia familiaris</i>	TC	Green
Starling	<i>Sturnus vulgaris</i>	SG	Amber
Song thrush	<i>Turdus philomelos</i>	ST	Green
Mistle thrush	<i>Turdus viscivorus</i>	M.	Green
Redwing	<i>Turdus iliacus</i>	RW	Red
Blackbird	<i>Turdus merula</i>	RE	Green
Fieldfare	<i>Turdus pilaris</i>	FF	Green
Robin	<i>Erithacus rubecula</i>	R.	Green
Stonechat	<i>Saxicola rubicola</i>	SC	Green
House sparrow	<i>Passer domesticus</i>	HS	Amber
Dunnock	<i>Prunella modularis</i>	D.	Green
Pied wagtail	<i>Motacilla alba</i>	PW	Green
Meadow pipit	<i>Anthus pratensis</i>	MP	Red
Chaffinch	<i>Fringilla coelebs</i>	CH	Green
Bullfinch	<i>Pyrrhula pyrrhula</i>	BF	Green
Greenfinch	<i>Chloris chloris</i>	GR	Green
Linnet	<i>Linaria cannabina</i>	LI	Amber
Redpoll	<i>Acanthis flammea</i>	RD	Green
Crossbill	<i>Loxia curvirostra</i>	CR	Green
Goldfinch	<i>Carduelis carduelis</i>	GO	Green
Siskin	<i>Spinus spinus</i>	SK	Green
Reed bunting	<i>Emberiza schoeniclus</i>	RB	Green

Appendix 2 VP Survey Results

Date	Vantage Point	Species	No. of Birds	Flight Description	Conditions	UID
16/04/2023	3	BZ	1	BZ. flying near operational turbines. foraging	NA	74
16/04/2023	3	K.	1	K. foraging over forestry and grassland	hunting	75
16/04/2023	3	LB	3	LB commuting at height	commuting	1001
17/04/2023	3	BZ	1	BZ commuting flew at 20 - 40 for 30 sec; 40 - 120 for 30 and >120 for 15 sec.	NA	77
17/04/2023	3	SH	1	Short SH flight. Low height 20- 40m for 30 seconds	hunting	78
27/04/2023	2	K.	1	Flight of 30sec below 20m	K. flying low and fast	79
27/04/2023	2	K.	1	Flight of 180sec with 60sec at a height of 20 to 40m then 120sec at a height of 40 to 120m.	K. hunting	80
27/04/2023	1	LB	1	Flight of 120sec above 120m.	Some tree felling taking place in forestry opposite VP	81
28/04/2023	1	BZ	1	Flight of 90sec at a height of 20 to 40m.	NA	82
28/04/2023	1	K.	1	Flight of 150sec with 120sec at a height of above 120m then 30sec at a height of 20 to 40m.	NA	84
11/05/2023	2	BZ	1	Flight of 60sec at a height of 20 to 40m.	Forestry work taking place.	85
11/05/2023	2	BZ	1	Flight 240sec with 120sec at a height of 40 to 120m, then 120sec above 120m.	NA	86
11/05/2023	1	BZ	1	Flight of 60sec at a height of 20 to 40m.	NA	87
11/05/2023	1	BZ	2	Flight of 240sec above 120m.	2 BZ soaring very high.	88
12/05/2023	1	BZ	1	Flight of 120sec with 90sec above 120m then 30sec at a height of 20 to 40m.	NA	89
12/05/2023	1	BZ	1	Flight of 90sec with 60sec at a height of 40 to 120m then 30sec at 20 to 40m.	NA	90
12/05/2023	1	BZ	1	Flight of 90sec above 120m.	NA	91
12/05/2023	1	K.	1	Flight of 45sec below 20m.	NA	92
12/05/2023	1	K.	1	Flight of 105sec with 90sec above 120m then 15sec at 20 to 40m.	NA	93
12/05/2023	1	K.	1	Flight of 150sec with 120sec at a height of 40 to 120m then 30sec at a height of 20 to 40m.	NA	94
12/05/2023	1	K.	1	Flight of 240sec above 120m.	NA	95
12/05/2023	1	K.	1	Flight of 60sec at a height of 20 to 40m.	K. hunting.	96
23/05/2023	3	BZ	1	BZ commuting SE over grassland and forestry	NA	97
23/05/2023	3	BZ	1	BZ hunting over grassland and forestry edge	NA	98
23/05/2023	3	BZ	2	BZ hunting	NA	99
23/05/2023	3	K.	1	K. foraging low over ground. Hovering at 20 - 40m.	NA	100
23/05/2023	3	LB	2	" Birds flying high commuting north	NA	101
23/05/2023	3	LB	1	LB commuting from east to west to the south of VP	NA	102
08/06/2023	3	BZ	1	BZ commuting	NA	103
08/06/2023	3	K.	1	Brief K. flight low over ground c. 20m.	NA	104
08/06/2023	3	K.	1	K. hunting over immature forestry and grassland	NA	105
28/06/2023	2	BZ	1	Flight of 60sec at a height of 40 to 120m.	NA	106
28/06/2023	2	BZ	1	Flight of 120sec at a height of 40 to 120m.	NA	107
28/06/2023	2	GB	1	Flight of 75sec at a height of 40 to 120m.	NA	108
28/06/2023	1	K.	1	Flight of 90sec with 60sec at a height of 40 to 120m then 15sec at 20 to 40m then 15sec below 20m.	NA	109

28/06/2023	1	LB	1	Flight of 45sec above 120m.	NA	110
29/06/2023	2	BZ	3	Flight of 120sec with 60sec at a height of 40 to 120m then 60sec above 120m.	NA	111
29/06/2023	2	BZ	1	Flight of 120sec at a height of 40 to 120m	NA	112
29/06/2023	1	K.	1	Flight of 60sec at a height of 20 to 40m.	NA	113
20/07/2023	2	BZ	1	Flight of 90sec with 45sec above 120m then 45sec at a height of 20 to 40m.	NA	114
20/07/2023	2	BZ	1	Flight of 105sec with 60sec above 120m then 45sec at a height of 20 to 40m.	NA	115
20/07/2023	1	BZ	3	Flight of 150sec at a height of 20 to 40m.	NA	116
20/07/2023	3	BZ	1	BZ hunting over forestry and grassland edge	NA	117
20/07/2023	1	BZ	1	Flight of 120sec above 120m.	NA	118
20/07/2023	3	BZ	1	Flight of 30sec at 40 to 120m then at over 120m for 30sec, descending to 40 - 120 for 15 before descending to 20 to 40m.	NA	119
20/07/2023	2	K.	1	Flight of 45sec at a height of 20 to 40m.	NA	120
20/07/2023	3	LB	4	Flight of 120sec at over 120m	NA	121
20/07/2023	3	SH	1	Flight of 30sec at 20 to 40m	NA	122
21/07/2023	1	BZ	1	Flight of 180sec above 120m.	NA	123
21/07/2023	1	BZ	1	Flight of 120sec above 120m.	NA	124
21/07/2023	1	BZ	2	Flight of 240sec above 120m.	2 BZ soaring, calling	125
21/07/2023	2	H.	1	Flight of 90sec at a height of 40 to 120m.	Unusual flight from Herron soaring and looping	126
02/08/2023	3	BZ	1	BZ hunting along forestry edge	NA	127
02/08/2023	3	K.	1	K. hunting low at c. 20m over grassland	NA	128
02/08/2023	3	K.	1	K. hunting over grassland	NA	129
04/08/2023	3	BZ	1	BZ foraging low over the site at height of 20 to 50m	NA	130
04/08/2023	3	H.	1	Heron commuting through the site	NA	131
04/08/2023	3	LB	1	LB commuting at height over the site	NA	132
17/08/2023	2	BZ	1	Flight of 75sec with 45sec at 40 to 120m then 30sec under 20m	NA	133
17/08/2023	2	BZ	1	Flight of 90sec at a height of 40 to 120m.	NA	134
17/08/2023	2	BZ	1	Flight of 90sec below 20m.	Low flight by BZ, stopping in a tree for 30sec before continuing.	135
17/08/2023	2	BZ	1	Flight of 120sec with 15sec below 20m then 45sec at a height of 20 to 40m then 60sec above 120m.	BZ took short flight from ESB pole to trees perched for 10mins then continued flight.	136
17/08/2023	2	BZ	1	Flight of 60sec with 45sec above 120m then 15sec below 20m.	BZ soaring getting mobbed by HC then dropping rapidly to tree	137
17/08/2023	1	BZ	1	Flight of 180sec above 120m.	NA	138
17/08/2023	1	K.	1	Flight of 150sec at a height of 20 to 40m.	K. hunting	139
17/08/2023	1	LB	14	Flight of 120sec above 120m.	NA	140
18/08/2023	1	K.	1	Flight of 75sec at a height of 20 to 40m.	NA	142
18/08/2023	2	LB	1	Flight of 60sec at a height of 20 to 40m.	NA	143
18/08/2023	2	LB	3	Flight of 75sec at a height of 20 to 40m.	Constant presence of LBs due to grass cutting in surrounding fields.	144
18/08/2023	1	LB	1	Flight of 45sec at a height of 20 to 40m.	NA	145
18/08/2023	1	LB	3	Flight of 60sec at a height of 20 to 40m.	NA	146

03/09/2023	3	BZ	1	BZ foraging towards northwest over the neighbouring wind farm	NA	147
03/09/2023	3	BZ	1	Flying low	NA	148
03/09/2023	3	K.	1	Short and low K. flight over forestry	NA	149
03/09/2023	3	LB	1	LB commuting south through the site	NA	150
22/09/2023	3	BZ	1	BZ. commuting over the site	NA	151
22/09/2023	3	BZ	1	BZ hunting over grassland, hovering and circling	NA	152
22/09/2023	3	BZ	1	NA	NA	153
22/09/2023	3	LB	7	Small flock of LB commuting north at height, descending over grassland	NA	154
28/09/2023	2	LB	1	Flight 9f 60sec at a height of 40 to 120m.	NA	155
28/09/2023	1	LB	5	Flight of 180sec with 120sec at a height of 40 to 120m then 60sec at a height of 20 to 40m.	Persistent LBs in the area	157
28/09/2023	1	LB	12	Flight of 90sec at a height of 40 to 120m.	Constant presence of up to 80+ LB in area so far during watch	158
28/09/2023	1	LB	2	Flight of 60sec at a height of 20 to 40m.	NA	159
29/09/2023	1	BZ	3	Flight of 210sec above 120m.	NA	162
29/09/2023	1	BZ	1	Flight of 45sec at a height of 20 to 40m.	NA	163
29/09/2023	1	K.	1	Flight of 120sec at a height of 20 to 40m.	NA	164
29/09/2023	1	LB	9	Flight of 180sec with 30sec below 20m then 30sec at a height of 20 to 40m, then 30sec at 40 to 120m, then 90sec above 120m.	NA	165
29/09/2023	1	LB	1	Flight of 240sec above 120m.	NA	166
29/09/2023	1	LB	4	Flight of 45sec at a height of 20 to 40m.	NA	167
19/10/2023	1	BZ	1	Flight of 45sec at a height of 20 to 40m.	BZ getting mobbed by multiple HC	170
19/10/2023	1	BZ	1	Flight of 30sec at a height of 20 to 40m.	NA	171
19/10/2023	1	BZ	1	Flight of 90sec at a height of 20 to 40m.	BZ getting mobbed by HCs	172
19/10/2023	1	HH	1	Flight of 75sec below 20m.	Male HH	173
19/10/2023	1	HH	2	Flight of 45sec at a height of 20 to 40m.	2 HH flying swooping together on edge of forestry	174
19/10/2023	1	HH	1	Flight of 60sec with 30sec below 20m then 30sec at a height of 20 to 40m.	HH in field took flight	175
19/10/2023	1	LB	4	Flight of 120sec above 120m.	NA	176
20/10/2023	1	BZ	2	Flight of 120sec with 30sec below 20m then 30sec at a height of 20 to 40m, then 60sec at a height of 40 to 120m.	Two BZ starting flight from tree being mobbed by HC.	177
20/10/2023	1	BZ	1	Flight of 180sec above 120m.	BZ high in the sky calling	178
20/10/2023	1	LB	8	Flight of 150sec above 120m.	NA	179
20/10/2023	1	LB	2	Flight of 120sec above 120m.	NA	180
17/11/2023	2	BZ	1	Flight of 60sec at a height of 20 to 40m.	NA	181
17/11/2023	2	BZ	1	Flight of 60sec with 30sec at a height of 20 to 40m then 30sec at 40 to 120m.	NA	182
17/11/2023	1	LB	31	Flight of 90sec at a height of 40 to 120m.	NA	183
17/11/2023	1	LB	14	Flight of 75sec at a height of 40 to 120m.	NA	184
17/11/2023	1	LB	2	Flight of 120sec above 120m.	NA	185
30/11/2023	3	BZ	1	NA	NA	186
30/11/2023	3	BZ	1	NA	NA	187
30/11/2023	3	BZ	1	BZ hunting and circling over site.	NA	188

30/11/2023	3	LB	3	LB commuting west then south to south of VP	NA	189
04/12/2023	2	K.	1	Flight of 30sec at a height of 20 to 40m.	NA	190
04/12/2023	2	LB	2	Flight of 45sec at a height of 40 to 120m.	NA	191
04/12/2023	1	LB	2	Flight of 60 seconds at greater than 120m	NA	192
07/12/2023	2	LB	8	Flight of 45 seconds at over 120m	NA	193
07/12/2023	2	LB	8	Flight of 15 seconds at 20 to 40m.	8 birds rising in the windy conditions and then disappearing again from view.	194
07/12/2023	2	LB	1	Flight of 15 seconds at less than 20m rising to 40 to 120m.	NA	195
07/12/2023	2	LB	12	Flight of 15 seconds at 40 to 120m.	NA	196
07/12/2023	2	LB	9	Flight of 30 seconds at 40 to 120m.	NA	197
07/12/2023	2	LB	4	Flight of 30 seconds of over 120m.	NA	198
07/12/2023	1	LB	1	Flight of 45sec above 120m.	NA	199
07/12/2023	2	LB	6	Flight of 15 seconds of 20 to 40m.	NA	200
07/12/2023	2	LB	6	Flight of 30 seconds of over 120m.	NA	201
07/12/2023	1	LB	1	Flight of 60sec above 120m.	NA	202
07/12/2023	1	LB	5	Flight of 90sec with 30sec above 120m then 30sec at a height of 40 to 120m then 30sec at 20 to 40m	NA	203
11/12/2023	3	K.	1	K. commuting low over forestry	NA	205
11/12/2023	3	LB	4	NA	NA	206
11/12/2023	3	LB	3	LB commuting south at height to the west of site	NA	207
19/12/2023	3	LB	2	NA	NA	208
19/12/2023	3	LB	6	NA	NA	209
02/01/2024	2	BZ	1	Flight of over 240 seconds starting at over 120m for 30 seconds before dropping to 20 to 40m for 210 seconds	Hunting	210
02/01/2024	2	BZ	1	Flight of 30 seconds starting at 20 to 40m.	Hunting	211
02/01/2024	2	BZ	1	Flight of 30 seconds starting at greater than 120m	Hunting	212
02/01/2024	2	BZ	1	Flight of 30 seconds starting at less than 20m	Hunting	213
02/01/2024	1	K.	1	Flight of 15 seconds below 20m	NA	214
02/01/2024	1	LB	1	Flight of 15 seconds at 40m to 120m	NA	215
02/01/2024	1	LB	1	Flight of 15 seconds at 20m to 40m at	NA	216
02/01/2024	1	LB	1	Flight of 35 seconds at 20 to 40m	NA	217
02/01/2024	2	LB	3	Flight of 30 seconds starting at 20 to 40m	NA	218
02/01/2024	2	LB	8	Flight of 45 seconds of greater than 120m	NA	219
03/01/2024	2	BZ	1	Flight of 15 seconds at less than 20m.	Startled by observer	220
03/01/2024	2	BZ	2	Flight of over 240 seconds between 40 and 120m.	Hunting	221
05/01/2024	1	K.	1	Flight of 45 seconds at greater than 120m	Foraging flight	222
05/01/2024	1	LB	1	Flight of 30 seconds at 40 to 120m.	NA	223
05/01/2024	1	LB	1	Flight of 30 seconds at greater than 120m.	NA	224
05/01/2024	1	LB	3	Flight of 30 seconds at 40m to 120m.	NA	225
25/01/2024	3	K.	1	Short K. flight over forestry	NA	226
25/01/2024	3	LB	1	NA	NA	227
25/01/2024	3	LB	4	LB commuting south	NA	228

25/01/2024	3	LB	3	LB commuting over site at variable height	NA	229
30/01/2024	3	BZ	1	NA	NA	230
30/01/2024	3	LB	1	LB commuting north to the west of the site	NA	231
27/02/2024	1	BZ	2	Flight of over 240mseconds starting at 40 to 120m and rising after 180 seconds to over 120m	NA	232
27/02/2024	1	LB	1	Flight of 45 seconds at greater than 120m.	NA	233
27/02/2024	1	LB	27	Flight of 75 seconds at greater than 120m	NA	234
29/02/2024	2	LB	1	Flight of 45 seconds at 20 to 40m.	NA	235
29/02/2024	2	LB	3	Flight of 90 seconds; 30 seconds at 40 to 120m rising to greater than 12pm over the valley floor for 30 seconds and lowering to 40 to 120m again for 30 seconds.	NA	236
12/03/2024	1	LB	1	Flight of 30 seconds at 40 to 120m.	Actively avoided turbine blades.	237
13/03/2024	3	BZ	1	NA	NA	238
13/03/2024	3	K.	1	K. hunting - hovering - over grassland	NA	239
13/03/2024	3	SH	1	NA	NA	240
28/03/2024	3	BZ	2	pair flying low under rotor sweep through existing wind farm	NA	241
16/04/2024	3	BZ	1	BZ being mobbed by hooded crow. flew high. Finally descended low to ground	BZ being mobbed	242
16/04/2024	3	BZ	2	Pair rose up from behind WD4. flew east being mobbed by crows	NA	243
16/04/2024	3	BZ	1	lone BZ hunting low over WD4	NA	244
16/04/2024	3	LB	1	commuting	NA	245
16/04/2024	3	LB	1	commuting	NA	246
16/04/2024	3	K.	1	foraging	NA	247
16/04/2024	3	BZ	1	foraging	NA	248
16/04/2024	3	BZ	1	commuting	NA	249
16/04/2024	3	BZ	1	foraging	NA	250
30/04/2024	3	BZ	1	foraging	NA	251
30/04/2024	3	BZ	1	foraging	NA	252
17/05/2024	3	BZ	1	commuting	NA	253
17/05/2024	3	LB	2	commuting	NA	254
17/05/2024	3	BZ	1	foraging	NA	255
17/05/2024	3	SH	1	foraging	NA	256
17/05/2024	3	BZ	1	commuting	NA	257
17/05/2024	3	BZ	1	foraging	NA	258
20/05/2024	3	BZ	1	foraging	NA	260
20/05/2024	3	LB	3	commuting	NA	261
20/05/2024	3	LB	3	commuting	NA	262
20/05/2024	3	LB	2	commuting	NA	263
20/05/2024	3	BZ	1	commuting	NA	264
20/05/2024	3	LB	4	NA	on ground loafing and flying low over field	265
30/05/2024	1	LB	1	Flight of 30 seconds at 40 to 120m.	Silage cutting at landing point	266
30/05/2024	1	LB	2	Flight of 30 seconds at less than 20m.	Silage cutting at landing point	267
30/05/2024	1	LB	12	Flight of 30 seconds at less than 20m.	Silage cutting at landing point. Continually present.	268

30/05/2024	1	BZ	1	Flight of over 240 seconds; 105 seconds at 20 to 40m, 105 seconds at 40 to 120m, 30 seconds at over 240 seconds	Foraging over silage cut fields.	269
30/05/2024	1	LB	7	Flight of 30 seconds at 40 to 120m.	NA	270
30/05/2024	1	LB	3	Flight of 135 seconds at 40 to 120m.	NA	271
30/05/2024	1	BZ	1	Flight of over 165 seconds at over 120m	Foraging over silage cut fields.	272
31/05/2024	2	LB	37	Flight of over 249 seconds of 37 LB at varying heights from 20 to over 120m	too varied a flock to put typical heights all heights covered for all 240 seconds	273
31/05/2024	1	BZ	1	Flight of over 240 seconds at greater than 120m	Foraging flight	274
11/06/2024	2	BZ	1	Flight of 30 seconds at less than 20m	Perched in field boundary	276
11/06/2024	2	BZ	1	Flight of 30 seconds at more than 120m	NA	277
11/06/2024	2	BZ	4	Flight of over 240 seconds with 135 seconds at 40 to 120m and 105 seconds greater than 120m	4 birds, very vocal and interacting.	278
11/06/2024	2	BZ	1	Flight of over 90 seconds at 20 to 40m	Flying just over treetops along valley floor	279
11/06/2024	1	LB	1	Flight of 30 seconds at 40m to 120m.	Juvenile	280
25/06/2024	3	H.	2	Circling	NA	281
25/06/2024	3	BZ	1	commuting	NA	282
25/06/2024	3	BZ	1	commuting	NA	283
25/06/2024	3	BZ	1	circling	NA	284
25/06/2024	3	BZ	1	hunting	NA	285
25/06/2024	3	BZ	1	NA	NA	286
25/06/2024	3	BZ	1	NA	NA	287
25/06/2024	3	BZ	1	NA	NA	288
26/06/2024	3	BZ	1	NA	NA	289
26/06/2024	3	LB	2	NA	NA	290
26/06/2024	3	BZ	1	NA	NA	291
26/06/2024	3	BZ	1	NA	NA	292
26/06/2024	3	LB	1	NA	NA	293
26/06/2024	3	BZ	1	NA	NA	294
26/06/2024	3	BZ	1	NA	NA	295
26/06/2024	3	LB	1	NA	NA	296
26/06/2024	3	SI	1	NA	NA	297
26/06/2024	3	BZ	1	NA	NA	298
26/06/2024	3	K.	1	NA	NA	299
26/06/2024	3	BZ	1	NA	NA	300
30/06/2024	1	LB	3	Flight of 45 seconds at 40 to 120m	NA	301
30/06/2024	1	BZ	1	Flight of 45 seconds at 40 to 120m	NA	302
04/07/2024	2	BZ	2	Flight of over 240 seconds at 40 to 120m	NA	303
04/07/2024	2	BZ	1	Flight of over 240 seconds at less than 20m	Hunting flight	304
04/07/2024	2	BZ	1	Flight of over 120 seconds at less than 20m	Hunting flight	305
04/07/2024	2	LB	1	Flight of 45 seconds at 20 to 40m	NA	306
04/07/2024	2	LB	2	Flight of 45 seconds at 40 to 120m.	NA	307

04/07/2024	2	BZ	1	Flight of over 30 seconds at less than 20m	Hunting flight	308
05/07/2024	1	LB	6	Flight of 105 seconds above 120m.	NA	309
05/07/2024	1	BZ	2	Flight of 105 seconds; 30 seconds at 20 to 40m, 60 seconds at 40 to 120m and 30 seconds above 120m.	NA	310
20/07/2024	1	LB	7	Flight of 39 seconds at 40 to 120m.	NA	311
20/07/2024	1	BZ	1	Flight of over 240 seconds at 40 to 120m	Foraging flight	312
20/07/2024	1	BZ	1	Flight of 60 seconds; 30 seconds at 20 to 40m and 30 seconds at less than 20m	Roosted in hedge line	313
20/07/2024	1	BZ	1	Flight of 240 seconds at 40 to 120m	Foraging flight at hub height through spinning turbines	314
29/07/2024	3	BZ	1	NA	Commuting	315
29/07/2024	3	BZ	2	NA	Circling	316
29/07/2024	3	BH	4	NA	Circling	317
29/07/2024	3	BZ	1	NA	Circling/commuting	318
29/07/2024	3	BH	1	NA	Commuting	319
29/07/2024	3	SI	1	NA	Foraging	320
29/07/2024	3	BH	6	NA	Commuting	321
29/07/2024	3	BZ	1	NA	Commuting/circling	322
29/07/2024	3	LB	1	NA	Circling/commuting	323
29/07/2024	3	BH	1	NA	Commuting	324
29/07/2024	3	BH	1	NA	Commuting	325
29/07/2024	3	BZ	2	NA	Circling	326
29/07/2024	3	BZ	1	NA	Circling/Hunting	327
29/07/2024	3	LB	2	NA	Commuting	328
29/07/2024	3	BZ	1	NA	Circling/commuting	329
29/07/2024	3	BZ	1	NA	Circling	330
29/07/2024	3	BZ	1	NA	Hunting	331
29/07/2024	3	BZ	1	NA	Hunting	332
29/07/2024	3	BZ	1	NA	Commuting	333
29/07/2024	3	BZ	1	NA	Circling	334
29/07/2024	3	LB	1	NA	Commuting	335
29/07/2024	3	BZ	1	NA	Circling/commuting	336
29/07/2024	3	BZ	1	NA	Commuting	337
29/07/2024	3	K.	1	NA	Hunting	338
29/07/2024	3	BZ	1	NA	Circling	339
29/07/2024	3	BZ	2	NA	Circling Pair	340
29/07/2024	3	BH	6	NA	Circling	440
09/08/2024	2	BZ	1	Flight of 15 seconds at less than 20m.	NA	341
09/08/2024	1	LB	2	Flight of 45 seconds at 20 to 40m.	NA	342
09/08/2024	1	BZ	1	Flight of over 240 seconds at 20m to 40m	Low foraging flight	343
09/08/2024	1	BZ	1	Flight of 90 seconds at 20m to 40m	Low foraging flight	344
09/08/2024	1	LB	7	Flight of 90 seconds at 20m to 40m	NA	345
21/08/2024	2	LB	2	Flight of 30 seconds at 40 to 120m	NA	347
21/08/2024	2	LB	3	Flight of 30 seconds at 40 to 120m	NA	348

21/08/2024	2	LB	4	Flight of 30 seconds at 40 to 120m	NA	349
21/08/2024	2	LB	1	Flight of 30 seconds at 20 to 40m	NA	350
21/08/2024	2	LB	1	Flight of 15 seconds at less than 20m	NA	351
21/08/2024	2	LB	2	Flight of 30 seconds at 20m to 40m	NA	352
21/08/2024	2	LB	4	Flight of 45 seconds at 40m to 120m	NA	353
26/08/2024	2	LB	1	Flight of 15 seconds at 20m to 40m.	NA	354
26/08/2024	2	LB	1	Flight of 15 seconds at 20m to 40m.	NA	355
26/08/2024	2	LB	1	Flight of 15 seconds at 20m to 40m.	NA	356
26/08/2024	2	LB	7	Flight of 105 seconds at less than 20m	NA	357
26/08/2024	2	LB	33	Flight of over 240 seconds at less than 20m	Resting in field for more than 20 minutes	358
26/08/2024	2	LB	33	Flight of over 240 seconds at less than 20m	Resting in field for more than 30 minutes	359
26/08/2024	2	LB	33	Flight of over 15 seconds at less than 20m	NA	360
26/08/2024	1	LB	1	Flight of 30 seconds at 20m to 40m	NA	361
26/08/2024	1	LB	1	Flight of 15 seconds at 20m to 40m	NA	362
29/08/2024	3	BZ	1	NA	Hunting	363
29/08/2024	3	BZ	1	NA	Commuting	364
29/08/2024	3	K.	1	NA	Hunting	365
29/08/2024	3	LB	1	NA	Commuting	366
29/08/2024	3	LB	1	NA	Commuting	367
29/08/2024	3	BZ	2	NA	Circling/Commuting	368
29/08/2024	3	RN	1	NA	Commuting	369
29/08/2024	3	BZ	1	NA	Soaring/Circling	370
29/08/2024	3	BZ	1	NA	Hunting/Circling	371
30/08/2024	3	LB	7	NA	Commuting	372
30/08/2024	3	LB	7	NA	Commuting	373
30/08/2024	3	LB	18	NA	Commuting	374
30/08/2024	3	LB	1	NA	Commuting	375
30/08/2024	3	LB	1	NA	Commuting	376
30/08/2024	3	LB	1	NA	Commuting	377
30/08/2024	3	LB	2	NA	Commuting	378
30/08/2024	3	LB	4	NA	Commuting	379
30/08/2024	3	LB	1	NA	Commuting	380
30/08/2024	3	LB	1	NA	Commuting	381
30/08/2024	3	LB	4	NA	Commuting	382
30/08/2024	3	LB	1	NA	Commuting	383
30/08/2024	3	RN	1	NA	Commuting	384
30/08/2024	3	LB	1	NA	Commuting	385
30/08/2024	3	HH	1	NA	Commuting	386
30/08/2024	3	RN	1	NA	Commuting	387
05/09/2024	1	K.	1	Flight of 90sec above 120m.	NA	388
05/09/2024	1	BZ	1	Flight of 240sec above 120m.	NA	389

05/09/2024	1	K.	1	Flight of 120sec with 105sec above 120m then 15sec at 20 to 40m.	K. soaring high with rapid drop to ground.	390
24/09/2024	1	BZ	1	Flight of 90sec at a height of 40 to 120m	NA	391
24/09/2024	1	LB	6	Flight of 120sec at a height of 40 to 120m	NA	392
26/09/2024	2	LB	4	Flight of 30 seconds at 20 to 40m	NA	395
26/09/2024	2	LB	3	Flight of 30 seconds at 20 to 40m	NA	396
26/09/2024	2	LB	68	Flight of 60 seconds at 40 to 120m	Large flock at various heights following same flightpath	397
26/09/2024	1	LB	11	Flight of 180sec with 90sec at 40 to 120m then 90sec above 120m.	NA	398
26/09/2024	2	LB	37	Flight of 60 seconds at 40 to 120m	Large flock at various heights following same flightpath	399
26/09/2024	2	LB	79	Flight of 90 seconds at 40 to 120m	Large flock at various heights following same flightpath	400
26/09/2024	2	LB	139	Flight of 90 seconds at 40 to 120m	Large flock at various heights following same flightpath	401
26/09/2024	2	LB	59	Flight of 90 seconds at 40 to 120m	Large flock at various heights following same flightpath	402
26/09/2024	2	LB	38	Flight of 90 seconds at 40 to 120m	Large flock at various heights following same flightpath	403
26/09/2024	2	LB	9	Flight of 30 seconds at 90 seconds at less than 20m then 60 seconds at 40 to 120m	Large flock at various heights following same flightpath	404
26/09/2024	1	LB	13	Flight of 120sec at a height of 40 to 120m.	NA	405
26/09/2024	2	LB	11	Flight of 60 seconds at 40 to 120m	Large flock at various heights following same flightpath	406
26/09/2024	2	LB	27	Flight of 30 seconds at less than 20m	Large flock at various heights following same flightpath	407
26/09/2024	1	K.	1	Flight of 75sec with 60sec at 20 to 40m then 15sec at 40 to 120m.	NA	408
26/09/2024	2	LB	79	Flight of 75 seconds, 30 seconds at less than 20m, 45 seconds at 40 to 120m	Large flock at various heights following same flightpath	409
26/09/2024	1	LB	6	Flight of 60sec at a height of 40 to 120m.	NA	410
26/09/2024	2	LB	12	Flight of 30 seconds at less than 20m.	Large flock at various heights following same flightpath	411
26/09/2024	2	LB	19	Flight of 30 seconds at less than 20m.	Large flock at various heights following same flightpath	412
26/09/2024	2	LB	5	Flight of 30 seconds at less than 20m.	Large flock at various heights following same flightpath	413
26/09/2024	2	LB	187	Flight of 60 seconds at less than 20m and 180 seconds at 40 to 120m.	Large flock at various heights following same flightpath	414
26/09/2024	1	LB	8	Flight of 90sec at a height of 40 to 120m.	NA	415
26/09/2024	3	LB	1	NA	Circling/Commuting	416
26/09/2024	3	LB	1	NA	commuting	417
26/09/2024	3	LB	1	NA	commuting	418
26/09/2024	3	BZ	1	NA	Commuting/ Flushed	419
26/09/2024	3	SN	2	NA	Commuting	420

26/09/2024	3	BZ	1	NA	commuting/calling	421
26/09/2024	3	LB	1	NA	commuting	422
26/09/2024	3	CU	1	NA	Commuting	423
26/09/2024	3	LB	1	NA	Commuting	424
27/09/2024	3	RN	2	NA	Commuting	425
27/09/2024	3	RN	1	NA	Commuting to perch	426
27/09/2024	3	LB	4	NA	Commuting	427
27/09/2024	3	SH	1	NA	Commuting/mobbed by HC	428
27/09/2024	3	LB	3	NA	Commuting	429
27/09/2024	3	LB	8	NA	Commuting	430
27/09/2024	3	ML	1	NA	Commuting	431
27/09/2024	3	LB	3	NA	Commuting	432
27/09/2024	3	RN	2	NA	Commuting	433
27/09/2024	3	LB	4	NA	Commuting	434
27/09/2024	3	RN	1	NA	Commuting	435
27/09/2024	3	LB	2	NA	Commuting	436
27/09/2024	3	RN	1	NA	Commuting	437
27/09/2024	3	RN	1	NA	Commuting	438
27/09/2024	3	RN	1	NA	Commuting	439
28/10/2024	3	GP	2	commuting and calling	NA	441
28/10/2024	3	LB	1	commuting	NA	442
28/10/2024	3	LB	2	commuting and landed in field	NA	443
28/10/2024	3	LB	5	commuting and landed in field	NA	444
28/10/2024	3	LB	7	flushed from flied and commuting	NA	445
28/10/2024	3	LB	9	flushed from flied and commuting	NA	446
28/10/2024	3	GP	7	commuting and landed in field within another GP	NA	447
28/10/2024	3	GP	18	commuting	NA	448
28/10/2024	3	HH	1	commuting	NA	449
28/10/2024	3	HH	1	hunting	NA	450
28/10/2024	3	GP	8	circling and calling	NA	451
28/10/2024	3	GP	24	flushed circled and land back in field	NA	452
28/10/2024	3	GP	26	flushed by SH, circled and left the area	NA	453
28/10/2024	3	SH	1	commuting/hunting	NA	454
28/10/2024	3	GP	17	circling	NA	455
28/10/2024	3	K.	1	commuting	NA	456
28/10/2024	3	GP	17	flushed	NA	457
28/10/2024	3	GP	4	circling	NA	458
28/10/2024	3	BZ	1	commuting	NA	459
29/10/2024	3	GP	4	circling and calling	NA	460
29/10/2024	3	LB	5	circling and commuting	NA	461
29/10/2024	3	LB	1	commuting	NA	462
29/10/2024	3	LB	2	circling and commuting	NA	463
29/10/2024	3	K.	1	commuting/hunting	NA	464

29/10/2024	3	LB	1	commuting	NA	465
29/10/2024	3	LB	4	commuting	NA	466
30/10/2024	1	LB	5	Flight of 120sec above 120m.	NA	467
30/10/2024	2	BZ	1	Flight of 60sec at a height of 20 to 40m.	NA	468
30/10/2024	2	BZ	1	Flight of 30 below 20m.	Short flight from BZ landing in tree on fence line	469
30/10/2024	2	BZ	1	Flight of 45sec below 20m.	NA	470
30/10/2024	2	BZ	1	Flight of 75sec at a height of 20 to 40m.	NA	471
31/10/2024	2	LB	1	Flight of 45sec at a height of 20 to 40m.	NA	472
31/10/2024	2	BZ	1	Flight of 60sec with 15sec below 20m then 45sec at 20 to 40m.	BZ flight starting from tree	473
31/10/2024	2	LB	2	Flight of 30sec at a height of 20 to 40m.	2 LB landing in field	474
27/11/2024	3	ML	1	mobbed by HC	NA	476
27/11/2024	3	ML	1	mobbed by MG	NA	477
27/11/2024	3	K.	1	commuting, mobbed by HC & MG	NA	478
27/11/2024	3	LB	1	commuting	NA	479
27/11/2024	3	K.	1	commuting and circling foraging	NA	480
27/11/2024	3	BZ	1	commuting	NA	481
27/11/2024	3	GP	2	flushed, circled and landed back in field	NA	482
27/11/2024	3	GP	2	flushed	NA	483
27/11/2024	2	BZ	1	Flight of 60sec below 20m	BZ briefly landed in tree before continuing flight	484
29/11/2024	2	BZ	1	Flight of 45sec at a height of 20 to 40m.	NA	485
20/12/2024	2	LB	5	Flight of 90sec at a height of 40 to 120m.	NA	486
20/12/2024	1	BZ	1	Flight of 60sec with 30sec at 40 to 120m then 30sec at 20 to 40m.	NA	487
02/01/2025	1	LB	1	Flight of 15 seconds at 40m to 120m	NA	488
02/01/2025	1	LB	1	Flight of 15 seconds at 20m to 40m at	NA	489
02/01/2025	1	LB	1	Flight of 35 seconds at 20 to 40m	NA	490
02/01/2025	1	K.	1	Flight of 15 seconds below 20m	NA	491
27/01/2025	3	GP	2	total flight 60s starting at band 2 and for 15s then gained height for 45s to band 3	GP flying sw direction coming from east, lost due to low clouds	492
27/01/2025	3	GP	8	60s total all band 2 GP	flock flew over vp heading w	493
28/01/2025	3	LB	14	LB Flock total flight 90s started in band 3 and all flight within height band 3	LB Flock flying over heading NW	494
28/01/2025	3	LB	1	LB total flight 210s started band 3 and continued all within band 3	immature LB Slow flight ambling into wind, heading W	495
28/01/2025	3	LB	3	LB total flight 135s start band 3 with all flight time in band 3	LB with ambling flight into wind heading NW	496
28/01/2025	3	SH	1	SH total flight 15s all band 1	Male SH flying low over and between hedgerows, heading W	497
29/01/2025	1	BZ	1	Flight of 45sec with 30sec at 20 to 40m then 15sec at 40 to 120m.	BZ getting mobbed by 2 HC	498
29/01/2025	2	HH	1	Flight of 45sec below 20m.	Low flight of male HH losing sight of it down a hill to right of vp	499
29/01/2025	2	LB	66	Flight of 90sec with 60sec above 120m then 30sec at a height of 40 to 120m	Big flock of LB lost sight of them below hill	500

31/01/2025	2	BZ	1	Flight of 60sec with 30sec below 20m then 30sec at 20 to 40m.	From perched BZ in tree getting mobbed by 2 HC	501
31/01/2025	2	LB	3	Flight 9f 120sec at 40 to 120m.	NA	502
31/01/2025	2	LB	1	Flight of 90sec at a height of 40 to 120m.	NA	503
31/01/2025	1	BZ	2	Flight of 90sec with 30sec at 40 to 120m then 30sec at 20 to 40m then 30sec below 20m.	2 BZ directly behind vp in ballymartin/ smithstown windfarm	504
31/01/2025	1	ML	1	Flight of 15sec below 20m.	ML crossed roar into trees	505
24/02/2025	3	BZ	1	BZ total flight 30s all in band 2	bz flying NE	506
24/02/2025	3	K.	1	K. total flight 30s all in band 2	Hunting but lost sight of bird potentially flew into cover	507
24/02/2025	3	LB	1	LB total flight 105s, started at band 2, 30s at band 2, and 75s in band 3	Ambling flight over site partly gliding heading SW	508
25/02/2025	3	BZ	1	BZ total flight 135s, started at band 1 for 30s with 75s in band 2 and 30s in band 3	Vocalising and interacting with other bz, ambling flight heading SE	509
25/02/2025	3	BZ	1	BZ total flight 60s, started in band 1 with 45s here and 15s at band 2	BZ interacting with other bz [Bout 4] ambling flight circling around plantation before landing into plantation	510
26/02/2025	2	ML	1	Flight of 30sec below 20m.	NA	511
28/02/2025	1	BZ	1	Flight of 180sec above 120m.	NA	512
28/02/2025	1	BZ	1	Flight of 45sec above 120m.	NA	513
24/03/2025	3	BZ	2	total flight 45s starting at band 3 for 30s with 15s at band 2	Bz x2 circling and both suddenly dropped into conifer plantation	515
24/03/2025	3	BZ	2	total flight 120s, all band 2	BZx2 circling over conifers before losing sight of them	516
24/03/2025	3	BZ	1	Total flight 60s started at band 1 with 60s in band 2	BZ flew from perch, direct fast flight heading NW	517
24/03/2025	3	BZ	1	total flight 45s all at band 2	BZ flying and gliding heading eastwards	518
24/03/2025	3	BZ	1	total flight 135s started at band 2 with 15s, then 60s in band 3 and 30s in band 4	BZ circling over conifers before heading w	519
24/03/2025	3	BZ	1	total flight 90s, started at band 2 with 30s, then 30s at band 3 and 30s at band 4	BZ flying SW direction	520
24/03/2025	3	BZ	1	total flight 15s at band 1	BZ hunting short low flight heading eastwards	521
26/03/2025	2	LB	2	Flight of 90sec at a height of 20 to 40m.	NA	523
28/03/2025	1	K.	1	Flight of 30sec at a height of 20 to 40m.	NA	524
28/03/2025	2	BZ	1	Flight of 180sec above 120m.	BZ soaring high in sky.	525
28/03/2025	2	BZ	1	Flight of 150sec above 120m.	BZ soaring high in sky	526
28/03/2025	2	LB	1	Flight of 90sec at a height of 40 to 120m.	NA	527
28/03/2025	2	BZ	1	Flight of 60sec at a height of 40 to 120m.	NA	528

Appendix 3 VP Survey Data

Date	VANTAGE POINT	Start Time	Finish time	Hours	Surveyor	Conditions
14/05/2020	VP1	12.00	16.00	4	JW	Dry sunny light wind good vis
14/05/2020	VP2	15.45	19.45	4	JW	Dry sunny light wind good visibility
28/05/2020	VP1	7.50	11.50	4	JW	Sunny, dry, warm, breezy, excellent visibility
28/05/2020	VP2	11.15	15.15	4	JW	Sunny, dry, warm, breezy, excellent visibility
26/06/2020	VP1	6.45	10.45	4	JW	Dry, rolling mist, l breeze, vis poor in mist good in clearance
26/06/2020	VP2	10.00	14.00	4	JW	Dry, sunny, mod breeze, good visibility
30/07/2020	VP1	17.10	21.10	4	JW	Sunny, Windy, excellent visibility
30/07/2020	VP2	10.10	14.10	4	JW	Sunny, Windy, excellent visibility
31/07/2020	VP1	14.20	17.20	4	JW	Mod breeze, good visibility, showery, overcast
31/07/2020	VP2	17.30	20.30	4	JW	Overcast, moderate breeze, showery, good visibility
06/08/2020	VP1	17.30	20.30	3	JW	Dry, warm, low cloud, SW light breeze. Excellent visibility
06/08/2020	VP2	17.30	20.30	3	GG	Dry, warm, low cloud, SW light breeze. Excellent visibility
08/08/2020	VP1	8.00	11.00	3	GG	Cloudy, calm, warm 20C, dry, excellent visibility
08/08/2020	VP2	8.00	11.00	3	JW	Cloudy, calm, warm 20C, dry, excellent visibility
07/09/2020	VP1	17.00	20.00	3	JW	Dry, moderate cloud, light breeze, excellent visibility
07/09/2020	VP2	17.00	20.00	3	GG	Dry, moderate cloud, light breeze, excellent visibility
08/09/2020	VP1	8.00	11.00	3	GG	Dry, moderate cloud, light breeze, excellent visibility
08/09/2020	VP2	8.00	11.00	3	JW	Dry, moderate cloud, light breeze, excellent visibility
22/10/2020	VP1	12.00	15.00	3	JW	Dry sunny light wind good visibility
22/10/2020	VP1	12.00	15.00	3	GG	Dry sunny light wind good visibility
22/10/2020	VP1	8.45	11.45	3	GG	Dry sunny light wind good visibility
22/10/2020	VP2	8.45	11.45	3	JW	Dry sunny light wind good visibility
12/11/2020	VP1	8.30	11.30	3	JW	Showers, windy, good visibility
12/11/2020	VP2	11.30	14.30	3	JW	Showers, windy, good visibility
13/11/2020	VP1	8.30	11.30	3	JW	Showers, windy, good visibility
13/11/2020	VP2	11.30	14.30	3	JW	Showers, windy, good visibility
19/11/2020	VP1	10.30	13.30	3	PD	Dry, clam, mild 10C. Okta 7 high cloud. Excellent visibility
19/11/2020	VP2	14.00	17.00	3	PD	Dry, clam, mild 10C. Okta 7 high cloud. Excellent visibility
02/12/2020	VP1	13.30	16.30	3	PD	Cold, dry, cloudy, Okta 6, good visibility
02/12/2020	VP2	13.30	16.30	3	JW	Cold, dry, cloudy, Okta 6, good visibility
03/12/2020	VP1	8.30	11.30	3	JW	Cold, dry, cloudy, Okta 6, good visibility
03/12/2020	VP2	8.30	11.30	3	PD	Cold, dry, cloudy, Okta 6, good visibility
19/12/2020	VP1	9.15	12.15	3	PD	Bright, Okta 2, Calm, Mild 10C, excellent visibility
19/12/2020	VP2	12.30	15.30	3	PD	Bright, Okta 2, Calm, Mild 10C, excellent visibility
14/01/2021	VP1	8.00	11.00	3	JW	Drizzle, cloudy, moderate to good visibility
14/01/2021	VP2	12.00	15.00	3	JW	Dry, cloudy, good visibility
22/01/2021	VP1	14.00	17.00	3	GG	Dry, cloudy, good visibility
22/01/2021	VP2	14.00	17.00	3	JW	Dry, cloudy, good visibility

10/02/2021	VP1	14.30	17.30	3	GG	Cold, showers (Snow), good visibility
10/02/2021	VP2	14.30	17.30	3	JW	Cold, showers (Snow), good visibility
05/03/2021	VP1	11.00	14.00	3	GG	Dry, good visibility,
05/03/2021	VP2	11.00	14.00	3	JK	Overcast, moderate breeze, good visibility
07/04/2021	VP1	16.30	19.30	3	JW	Overcast, showers, light breeze, good visibility
07/04/2021	VP2	16.30	19.30	3	GG	Cloudy, good visibility
12/05/2021	VP1	17.15	20.15	3	JW	Sunny, dry, low cloud cover, warm 19C
12/05/2021	VP2	17.00	20.30	3.5	GG	Sunny, dry, low cloud cover, warm 19C
13/05/2021	VP1	8.00	11.00	3	GG	Fog mist, poor visibility, clearing later to sunny and clear conditions with excellent visibility
13/05/2021	VP2	9.00	12.00	3	JW	Fog mist, poor visibility, clearing later to sunny and clear conditions with excellent visibility
30/05/2021	VP1	9.00	12.00	3	JW	Dry, SW wind, moderate cloud cover excellent visibility 16C
30/05/2021	VP2	9.00	12.00	3	GG	Dry, SW wind, moderate cloud cover excellent visibility 16C
25/06/2021	VP1	9.00	12.00	3	JW	North Wind, good visibility, moderate cloud cover
25/06/2021	VP1	12.00	15.00	3	GG	North Wind, good visibility, moderate cloud cover
25/06/2021	VP2	9.00	12.00	3	GG	North Wind, good visibility, moderate cloud cover
25/06/2021	VP2	12.00	15.00	3	JW	North Wind, good visibility, moderate cloud cover
30/05/2022	VP1	10.00	14.00	4	GG	Dry W wind excellent visibility 14dg
30/05/2022	VP2	14.00	18.00	4	GG	Dry , W wind 14dg excellent visibility.
31/05/2022	VP1	8.00	12.30	4.5	GG	Dry, SW wind, 15dg, cloudy, excellent visibility
31/05/2022	VP2	8.15	12.15	4	JW	Dry, SW wind, 15dg, cloudy, excellent visibility
10/06/2022	VP1	11.00	14.00	3	JW	Dry W wind excellent visibility 14dg
10/06/2022	VP2	14.00	17.00	3	JW	Dry , W wind 14dg excellent visibility.
11/06/2022	VP1	8.15	11.30	3.5	GG	Sunny, dry, low cloud cover, breeze. Excellent visibility
11/06/2022	VP2	8.00	11.00	3	JW	Sunny, dry, low cloud cover, breeze. Excellent visibility
28/07/2022	VP1	13.00	16.30	3.5	GG	High cloud, light breeze, dry, excellent visibility
28/07/2022	VP2	13.15	16.15	3	JW	High cloud, light breeze, dry, excellent visibility
31/08/2022	VP1	13.30	16.30	3	JW	Sunny, Clear, moderate breeze, excellent visibility
31/08/2022	VP2	13.15	16.45	3.5	JW	Sunny, Clear, moderate breeze, excellent visibility
31/08/2022	VP2	17.00	20.00	3	JW	Sunny, Clear, moderate breeze, excellent visibility
31/08/2022	VP2	20.00	22.00	2	GG	Sunny, Clear, moderate breeze, excellent visibility
01/09/2022	VP1	7.00	10.30	3.5	GG	Sunny, Clear, mod breeze, exc. visibility.
01/09/2022	VP1	11.15	14.15	3	JW	Sunny, Clear, mod breeze, exc. visibility.
01/09/2022	VP2	7.15	10.15	3	JW	Sunny, Clear, mod breeze, exc. visibility.
01/09/2022	VP2	11.00	14.30	3.5	GG	Sunny, Clear, mod breeze, exc. visibility.
14/10/2022	VP1	10.30	13.30	3	PD	Breeze SW, cloudy Okta 7, dry, mild 12C, excellent visibility
14/10/2022	VP2	14.00	17.00	3	PD	Breeze SW, cloudy Okta 7, dry, mild 12C, excellent visibility
15/10/2022	VP1	9.00	12.00	3	PD	Breeze SW, cloudy Okta 7, rain, mild 12C, moderate visibility
15/10/2022	VP2	9.00	12.00	3	JW	Breeze SW, cloudy Okta 7, rain, mild 12C, moderate visibility

16/11/2022	VP1	10.30	13.30	3	GG	Dry light cloud 7° light SW excellent visibility.
16/11/2022	VP2	13.45	16.45	3	GG	Dry light cloud 8° light SW excellent visibility.
17/11/2022	VP1	8.30	11.30	3	GG	Bright dry morning 4° light SW wind good visibility.
17/11/2022	VP2	11.45	14.45	3	GG	Dry with light SW wind 7° excellent visibility.
21/12/2022	VP1	0.44	0.56	3	GG	Dry 5° moderate SW wind excellent visibility.
21/12/2022	VP2	13.30	16.30	3	GG	Dry 7° moderate SW wind excellent visibility.
22/12/2022	VP1	8.00	11.00	3	GG	Dry 8° fog very light S wind poor visibility.
22/12/2022	VP2	11.30	14.30	3	GG	Dry 7° heavy fog light, SW wind poor visibility.
06/01/2023	VP3	8.00	11.00	3	PD	Light showers. Overcast. 7C. Light Breeze SW. Good Visibility
06/01/2023	VP3	13.45	16.45	3	PD	Light showers. Overcast. 7C. Light Breeze SW. Good Visibility
25/01/2023	VP1	10.15	13.15	3	GG	Overcast light NW wind light drizzle 8° good visibility.
25/01/2023	VP2	13.15	16.15	3	GG	Overcast occasional very light drizzle 8° light NW wind excellent visibility.
26/01/2023	VP1	8.45	11.45	3	GG	Some cloud 6° light NW wind excellent visibility
26/01/2023	VP2	8.45	11.45	3	JW	Some cloud 6° light NW wind excellent visibility
09/02/2023	VP3	8.00	11.00	3	PD	Overcast. Okta 8..Dry. Light breeze S. 10C.High cloud. Excellent Visibility
09/02/2023	VP3	14.00	17.00	3	PD	Overcast. Okta 8..Dry. Light breeze S. 10C.High cloud. Excellent Visibility
15/02/2023	VP1	14.00	17.00	3	GG	Dry with some cloud 8° with light SW wind excellent visibility.
15/02/2023	VP2	11.00	14.00	3	GG	Dry with some cloud light SW wind 9° excellent visibility.
16/02/2023	VP1	8.00	11.00	3	GG	Dry bright morning light SW wind 8°excellent visibility.
16/02/2023	VP2	11.00	14.00	3	GG	Dry bright day with light SW wind 11° excellent visibility.
27/02/2023	VP3	15.00	18.00	3	PD	Dry. Bright. WSW Light Breeze. Okta 6. Excellent visibility
01/03/2023	VP3	7.00	10.00	3	PD	Overcast. No rain, dry. Mild 11C.Okta 8. Breeze SSW
01/03/2023	VP3	15.30	18.30	3	PD	Overcast. No rain, dry. Mild 11C.Okta 8. Breeze SSW
16/03/2023	VP3	7.00	10.00	3	PD	Dry. Cloudy Okta 5. Light air SW.
16/03/2023	VP3	15.30	18.30	3	PD	Dry. Cloudy Okta 5. Light air SW.
30/03/2023	VP1	10.00	13.00	3	GG	Full cloud cover 12° moderate SW wind heavy showers poor visibility.
30/03/2023	VP2	13.00	16.00	3	GG	Full cloud cover frequency of showers decreasing from above 12dg moderate SW wind good visibility.
31/03/2023	VP1	8.00	11.00	3	GG	Heavy rain 12dg moderate NW wind pool visibility.
31/03/2023	VP2	11.00	14.00	3	GG	Persistent rain 12dg moderate NW wind poor to moderate visibility.
16/04/2023	VP3	10.30	13.30	3	PD	Dry. Okta 4. Bright. Light Breeze SW. Excellent Visibility
16/04/2023	VP3	10.00	13.00	3	PD	Dry. Okta 4. Bright. Light Breeze SW. Excellent Visibility
17/04/2023	VP3	8.00	11.00	3	PD	Dry. Bright. Okta 4. Light air. Excellent Visibility/
27/04/2023	VP1	10.00	13.00	3	GG	Full cloud cover persistent drizzle poor visibility light SE wind 10dg.
27/04/2023	VP2	13.00	16.00	3	GG	Full cloud cover moderate SE wind 10dg intermittent showers of drizzle, poor to moderate visibility
28/04/2023	VP1	7.50	10.50	3	GG	80% cloud cover 12dg light SE wind dry with excellent visibility.
28/04/2023	VP2	10.50	13.50	3	GG	80% cloud cover 13dg dry light SE wind excellent visibility.
11/05/2023	VP1	13.10	16.10	3	GG	Dry with occasional showers 14dg moderate NW wind excellent visibility.
11/05/2023	VP2	10.00	13.00	3	GG	Dry with full cloud cover 12dg moderate NW wind excellent visibility.
12/05/2023	VP1	11.00	14.00	3	GG	Dry day with some cloud 15dg light to moderate NW wind excellent visibility.

12/05/2023	VP2	8.00	11.00	3	GG	Dry with some fog which is burning off very light NW wind poor to moderate visibility but expecting improvement.
23/05/2023	VP3	11.00	17.00	6	PD	Dry. Okta 3. Calm. Excellent visibility
08/06/2023	VP3	18.30	21.30	3	PD	Dy. Okta 3. Calm. Sunny. Excellent Visibility
09/06/2023	VP3	9.15	12.15	3	PD	Dry, sunny, 22C, Okta 2, calm, excellent visibility
28/06/2023	VP1	12.40	15.40	3	GG	Overcast morning cloud starting to clear 15dg moderate W wind excellent visibility.
28/06/2023	VP2	9.40	12.40	3	GG	Overcast day with moderate W wind 16dg light drizzle at times good visibility.
29/06/2023	VP1	8.00	11.00	3	GG	Dry bright day with light W wind 15dg excellent visibility.
29/06/2023	VP2	11.00	14.00	3	GG	Dry day with cloud increasing 18dg moderate W wind excellent visibility.
20/07/2023	VP1	14.00	17.00	3	GG	Dry day with some cloud moderate W wind 20dg excellent visibility.
20/07/2023	VP2	13.30	13.30	3	GG	Dry day with some cloud 20dg with moderate W wind excellent visibility.
20/07/2023	VP3	8.00	11.00	3	PD	Dry with moderate W wind. 20
20/07/2023	VP3	17.30	20.30	3	PD	Dry, cloudy, Okta 6 - 7, light air SW, 19C, excellent visibility
21/07/2023	VP1	11.30	14.30	3	GG	Dry day with some cloud moderate SW wind 14dg excellent visibility.
21/07/2023	VP2	8.00	11.00	3	GG	Dry day with some cloud light SW wind 14dg excellent visibility.
02/08/2023	VP3	14.00	17.00	3	PD	Dry. Okta 8. high Cloud. Calm. Excellent Visibility.
04/08/2023	VP3	10.30	13.30	3	PD	Dry. Okta 7. Light breeze. Excellent Visibility
17/08/2023	VP1	14.00	17.00	3	GG	Dry bright day with some cloud 22dg moderate SE wind excellent visibility.
17/08/2023	VP2	10.30	13.30	3	GG	Dr6 bright day with some cloud 20dg light to moderate SE wind excellent visibility.
18/08/2023	VP1	11.30	14.30	3	GG	Overcast light showers moderate SE wind 17dg poor visibility.
18/08/2023	VP2	8.00	11.00	3	GG	Overcast with frequent showers 17dg moderate SE wind poor visibility.
03/09/2023	VP3	15.00	18.00	3	PD	Dry. Okta 5. S. Breeze. Excellent Visibility
18/09/2023	VP2	8.30	11.30	3	GG	Overcast with occasional drizzle 13dg good visibility
22/09/2023	VP3	10.00	13.00	3	PD	Dry. Bright. Okta 2. Ligh Breeze NW
28/09/2023	VP1	12.00	15.00	3	GG	Overcast with occasional drizzle 13dg good visibility
28/09/2023	VP2	8.30	11.30	3	GG	Overcast 13dg dry with occasional drizzle good visibility
29/09/2023	VP1	11.30	14.30	3	GG	Dry bright day with light W wind 14dg excellent visibility.
29/09/2023	VP2	8.00	11.00	3	GG	Dry bright day with light W wind 14dg excellent visibility.
19/10/2023	VP1	12.30	15.30	3	GG	Overcast with moderate SE wind 16dg some showers good visibility.
19/10/2023	VP2	9.00	12.00	3	GG	Overcast with moderate SE wind 14dg frequent showers moderate visibility.
20/10/2023	VP1	11.30	14.30	3	GG	Heavy fog visibility limited to 200mtrs13dg no wind
20/10/2023	VP2	8.00	11.00	3	GG	Heavy fog no wind 8dg poor visibility.
27/10/2023	VP3	7.45	10.45	3	PD	Dry, high cloud Okta 5, 3C, breeze W, excellent visibility
27/10/2023	VP3	12.30	15.30	3	PD	Dry, high cloud Okta 5, 3C, breeze W, excellent visibility
16/11/2023	VP1	14.30	17.30	3	GG	Persistent showers 8dg light NNW wind good visibility. At 14.50 showers turning heavy visibility worsening, visibility now poor
16/11/2023	VP2	11.00	14.00	3	GG	Overcast but dry 9dg 15km NNW wind excellent visibility
17/11/2023	VP1	7.00	10.00	3	GG	Light cloud 5dg light WSW wind excellent visibility

17/11/2023	VP2	10.30	13.30	3	GG	Light cloud 6dg light WSW wind excellent visibility.
23/11/2023	VP3	14:00	17:00	3	JW	Overcast, dry, excellent visibility
30/11/2023	VP3	9.30	13.30	4	PD	Dry. Bright Okta 2 -3. N Light Breeze. Excellent visibility
04/12/2023	VP1	11.15	14.15	3	JW	Sunny, cold, windy, excellent visibility
04/12/2023	VP2	11.00	14.30	3.5	GG	Dry bright day with moderate NW wind 4dg excellent visibility.
07/12/2023	VP1	11.15	14.15	3	JW	Persistent rain 9dg strong SE wind poor visibility
07/12/2023	VP2	11.00	14.30	3.5	GG	Raining, poor visibility, warm, windy
11/12/2023	VP3	7.45	11.15	3.5	PD	Dry early, with showers later. Okta 8. S. Breeze. Good visibility
20/12/2023	VP3	10.30	14.00	3.5	PD	Dry. Okta 1. NW Light Breeze. Clear bright excellent visibility.
02/01/2024	VP1	11.00	14.00	3	JW	Raining, breezy, average visibility
02/01/2024	VP2	14.30	17.30	3	JW	Overcast, breezy, excellent visibility
03/01/2024	VP2	12.00	15.00	3	JW	Broken cloud, breezy, excellent visibility
05/01/2024	VP1	8.00	11.00	3	JW	Sunny, breezy, cold, excellent visibility
25/01/2024	VP3	9.15	12.15	3	PD	Dry. Overcast. Okta 8. high cloud. Light air SURFACE WATER, excellent visibility.
30/01/2024	VP3	7.30	10.30	3	PD	Dry. Low cloud, sunny spells, Okta 2. Calm. Excellent visibility
10/02/2024	VP1	11.15	14.15	3	JW	Overcast, breezy, drizzle, 14dg, WSW wind average visibility
10/02/2024	VP2	11.00	14.30	3.5	GG	Overcast, breezy, drizzle, 14dg, WSW wind average visibility
27/02/2024	VP1	14.00	18.00	4	JW	Dry, sunny, breezy, clear, excellent visibility
27/02/2024	VP3	9.30	12.30	3	PD	Dry, high broken cloud Okta 3, sunny, calm, excellent visibility
29/02/2024	VP2	8.00	11.00	3	JW	Sunny, excellent visibility, breezy, cool, broken cloud
01/03/2024	VP3	7.15	10.15	3	PD	Cold 0 - 2C, drizzle and sleet, breeze SW, Okta 8 medium cloud height, good visibility
12/03/2024	VP1	14.00	17.00	3	JW	Overcast, occasional light drizzle, moderate breeze, good visibility, rolling fog banks during survey
12/03/2024	VP2	10.30	13.30	3	JW	Good vis for 1hr the rolling fog banks. vis poor
13/03/2024	VP1	8.30	11.30	3	JW	Overcast, light showers, poor visibility
13/03/2024	VP3	15.00	18.00	3	PD	Overcast. Light drizzle - occasional. Okta 8. high cloud. SW breeze. Good visibility.
14/03/2024	VP2	8.00	11.00	3	JW	Foggy, poor visibility
28/03/2024	VP3	16.00	19.00	3	PD	calm 12C Okta 6 DRY sunny spells excellent visibility
10/04/2024	VP1	8.00	11.00	3	JW	Overcast dry, good visibility, except last 20min in fog, moderate breeze
11/04/2024	VP2	15.00	18.00	3	JW	Foggy again, poor visibility
12/04/2024	VP1	8.00	11.00	3	JW	Low cloud, poor aerial vis good to 30m only
12/04/2024	VP2	11.30	14.30	3	JW	Fog from 9 to 11AM clearing for last hour. Moderate breeze, dry
16/04/2024	VP3	13.00	16.00	3	PD	Dry, Wind light breeze, cloud cover Okta 4, temp. 13C
30/04/2024	VP3	12.00	15.00	3	PD	Dry, cloudy Okta 6 high cloud, 15C, light breeze S, excellent visibility
17/05/2024	VP3	18.30	21.30	3	PD	Overcast, dry, high cloud, mild 17C, light air, excellent visibility
20/05/2024	VP3	8.00	11.00	3	PD	Sunny, broken cloud, Okta 3, 19C, calm, excellent visibility
30/05/2024	VP1	17.15	18.15	3	JW	Broken cloud, mod breeze, warm, excellent visibility
30/05/2024	VP2	14.00	17.00	3	JW	Broken cloud, mod breeze, warm, excellent visibility
31/05/2024	VP1	10.15	13.15	3	JW	Broken cloud, mod breeze, warm, excellent visibility

31/05/2024	VP2	7.00	10.00	3	JW	Broken cloud, mod breeze, warm, excellent visibility
11/06/2024	VP1	15.00	18.00	3	JW	Broken cloud, mod breeze, warm, excellent visibility
11/06/2024	VP2	12.00	15.00	3	JW	Broken cloud, mod breeze, warm, excellent visibility
25/06/2024	VP3	8.10	11.10	3	LP	Dry, 16C, Okta 3, light breeze, excellent visibility
26/06/2024	VP3	11.40	14.40	3	LP	Dry 21C, Okta 2, light air, excellent visibility
30/06/2024	VP1	12.00	15.00	3	JW	Broken cloud, mod to fresh breeze, warm, excellent visibility
30/06/2024	VP2	15.00	18.00	3	JW	Broken cloud, mod breeze, warm, excellent visibility
05/07/2024	VP1	7.00	10.00	3	JW	Broken cloud, mod breeze, warm, excellent visibility
05/07/2024	VP2	10.00	13.00	3	JW	Broken cloud, mod breeze, warm, excellent visibility
20/07/2024	VP1	15.00	18.00	3	JW	O.cast, showery, rain earlier, mod breeze, avg vis
20/07/2024	VP2	18.00	21.00	3	JW	O.cast, showery, rain earlier, mod breeze, avg vis
29/07/2024	VP3	11.40	14.40	3	LP	Drizzle, wind S, Okta 7, good visibility
30/07/2024	VP3	15.10	18.10	3	LP	Dry, Okta 6, good visibility, mild 17C.
09/08/2024	VP1	11.00	14.00	3	JW	Bright, broken cloud, windy, excellent visibility
21/08/2024	VP2	7.00	10.00	3	JW	Overcast, light breeze, excellent visibility
26/08/2024	VP1	18.00	21.00	3	JW	Overcast the drizzle, good vis, light breeze
26/08/2024	VP2	15.00	18.00	3	JW	Overcast, drizzle, good visibility, light breeze
29/08/2024	VP3	14.40	17.40	3	LP	Dry, Okta 2, excellent visibility, mild 20C.
30/08/2024	VP3	7.40	10.40	3	LP	Dry, Okta 2, excellent visibility, mild 20C.
24/09/2024	VP1	14.00	17.00	3	GG	Dry bright day with some cloud moderate W wind 13dg excellent visibility.
24/09/2024	VP2	17.00	20.00	3	JW	Overcast, light breeze, excellent visibility
26/09/2024	VP1	8.30	11.30	3	GG	Overcast with light NW wind 10dg persistent rain moderate visibility
26/09/2024	VP2	7.30	10.30	3	JW	Overcast, drizzle, windy, moderate visibility
26/09/2024	VP3	14.50	17.50	3	LP	NW wind light breeze, 10C, Okta 8, drizzle. Good visibility
27/09/2024	VP3	8.20	11.20	3	LP	NW wind light breeze, 10C, Okta 2, dry. Excellent visibility
28/10/2024	VP3	14:30	17:30	3	PD	Dry, 14C, Light breeze northwest, Okta 3
29/10/2024	VP3	08:10	11:40	3.5	PD	Dry, 11C, light breeze northwest, Okta 6 - 8, cloud high, good visibility
30/10/2024	VP1	11:00	14:00	3	GG	Dry overcast day with light S wind 12dg excellent visibility.
30/10/2024	VP2	14:30	17:30	3	GG	Dry overcast day with light S wind 12dg excellent visibility.
31/10/2024	VP1	12:00	15:00	3	GG	Dry overcast day with light S wind 12dg excellent visibility.
31/10/2024	VP2	08:30	11:30	3	GG	Dry overcast day with light S wind 12dg excellent visibility.
27/11/2024	VP1	10:15	13:15	3	GG	Dry, 4C, light breeze northeast, Okta 0, excellent visibility
27/11/2024	VP2	14:00	17:00	3	GG	Dry, 4C, light breeze northeast, Okta 0, excellent visibility
27/11/2024	VP3	10:00	13:00	3	LP	Dry, 4C, light breeze northeast, Okta 0, excellent visibility
27/11/2024	VP3	13:30	14:30	3	LP	Dry, 4C, light breeze northeast, Okta 0, excellent visibility
28/11/2024	VP1	12:00	15:00	3	GG	Persistent rain moderate S wind 7dg poor visibility.
28/11/2024	VP2	08:30	11:30	3	GG	Persistent rain moderate S wind 7dg poor visibility.
17/12/2024	VP3	08:30	11:30	3	LP	Persistent drizzle moderate W wind 9dg moderate visibility.
18/12/2024	VP1	13:30	16:30	3	GG	Persistent drizzle moderate W wind 9dg moderate visibility.
18/12/2024	VP2	10:00	13:00	3	GG	Persistent rain and low cloud/fog 9dg light W wind poor visibility.
20/12/2024	VP1	12:00	15:00	3	GG	Cloud and rain clearing moderate SW wind 8dg good to excellent visibility.

20/12/2024	VP2	08:30	11:30	3	GG	Full cloud cover heavy rain moderate SW wind 6dg poor to moderate visibility.
29/12/2024	VP3	13:15	16:15	3	PD	Dry with showers light breeze SW, Okta 5, good visibility.
02/01/2025	VP1	12:00	15:00	3	JW	Raining, average vis, breezy
27/01/2025	VP3	14:00	17:00	3	LP	F5/6 South winds, 7 degrees, rain, visibility OK 500m or so, 100 cloud
28/01/2025	VP3	08:30	11:30	3	LP	6 degrees, light rain, F5/6 NW wind, 100% cloud, dawn-08:15 & dusk- 17.08, visibility good
29/01/2025	VP1	10:30	13:30	3	GG	Dry bright day with cloud clearing moderate NW wind 7dg excellent visibility.
29/01/2025	VP2	14:30	17:30	3	GG	Dry bright day with moderate NW wind 7dg excellent visibility.
31/01/2025	VP1	11:00	14:00	3	GG	Dry bright day with light WSW wind 6dg excellent visibility.
31/01/2025	VP2	07:30	10:30	3	GG	Dry bright morning with light WSW wind 2dg excellent visibility.
24/02/2025	VP3	14:00	17:00	3	LP	Dry, F4 SW, 9 degrees, 60% cloud, visibility good, dawn- 07.25 dusk-17.59
25/02/2025	VP3	08:30	11:30	3	LP	Dry, 9Cs, F2 NW, 100% cloud, drizzle, visibility moderate dawn-06:18, dusk-18.50
26/02/2025	VP1	08:00	11:00	3	GG	Dry bright day with moderate NW wind 5dg excellent visibility
26/02/2025	VP2	15:00	18:00	3	GG	Dry bright day with moderate NW wind occasional showers good to excellent visibility.
28/02/2025	VP1	10:00	13:00	3	GG	Dry bright day with light S wind 7dg excellent visibility.
28/02/2025	VP2	15:00	18:00	3	GG	Dry bright morning with light S wind 2dg excellent visibility.
24/03/2025	VP3	15:30	18:30	3	LP	11C, Sunny, dry,20% cloud, F2 NW winds, visibility good,
24/03/2025	VP3	08:20	11:20	3	LP	9 degrees, F2 NW, 100% cloud, drizzle, visibility moderate dawn-06:18, dusk-18.50
26/03/2025	VP2	15:30	18:30	3	GG	Dry overcast day with moderate SW wind 12dg excellent visibility.
26/03/2025	VP1	08:00	11:00	3	GG	Dry overcast day with moderate SW wind 12dg excellent visibility.
28/03/2025	VP2	10:40	13:40	3	GG	Dry bright day with moderate SW wind 12dg excellent visibility.
28/03/2025	VP1	07:00	10:00	3	GG	Dry bright day with moderate SW wind 12dg excellent visibility.

Appendix 4 Transect Survey Data

Breeding season:

Date	Transect	Surveyor	Start Time	Conditions
14/05/2020	T2	JW	10.00	Dry sunny light wind good visibility
14/05/2020	T1	JW	19.50	Dry sunny light wind good visibility
26/06/2020	T1	JW	14.05	Dry, sunny, moderate breeze, good visibility
26/06/2020	T2	JW	16.30	Dry, sunny, moderate breeze, good visibility
31/07/2020	T2	JW	12.30	Mod breeze, good visibility, showery, overcast
31/07/2020	T1	JW	20.35	Overcast, moderate breeze, showery, good visibility
16/04/2023	T2	PD	12.50	Dry, sunny spells, light breeze, Okta 5
16/04/2023	T1	PD	15.10	Dry, sunny spells, light breeze, Okta 5
16/04/2023	T4	PD	17.05	Dry, sunny spells, light breeze, Okta 5
16/04/2023	T3	PD	18.05	Dry, sunny spells, light breeze, Okta 5
11/05/2023	T1	GG	8.45	Dry with full cloud cover 12dg moderate NW wind excellent visibility.
12/05/2023	T4	GG	14.05	Dry day with some cloud 15dg light to moderate NW wind excellent visibility.
12/05/2023	T3	GG	15.20	Dry day with some cloud 15dg light to moderate NW wind excellent visibility.
23/05/2023	T2	PD	17.05	Dry. Okta 3. Calm. Excellent visibility
09/06/2023	T2	PD	12.20	Dry. Okta 3. Calm. Sunny. Excellent Visibility
09/06/2023	T1	PD	15.10	Dry. Okta 3. Calm. Sunny. Excellent Visibility
28/06/2023	T4	GG	12.00	Overcast morning cloud starting to clear 15dg moderate W wind excellent visibility.
29/06/2023	T3	GG	14.25	Dry day with cloud increasing 18dg moderate W wind excellent visibility.
20/07/2023	T4	GG	17.05	Dry day with some cloud moderate W wind 20dg excellent visibility.
20/07/2023	T3	GG	17.50	Dry day with some cloud moderate W wind 20dg excellent visibility.
20/07/2023	T1	PD	15.45	Dry day with some cloud moderate W wind 20dg excellent visibility.
20/07/2023	T2	PD	20.35	Dry day with some cloud moderate W wind 20dg excellent visibility.
10/04/2024	T4	JW	11.10	Overcast dry, good visibility, except last 20min in fog, moderate breeze
11/04/2024	T3	JW	18.20	Cloudy, dry, moderate visibility
12/04/2024	T1	JW	14.30	Moderate breeze, dry, moderate cloud cover
16/04/2024	T2	PD	10.30	Dry, Wind light breeze, cloud cover Okta 4, temp. 13C

Date	Transect	Surveyor	Start Time	Conditions
16/04/2024	T5	PD	16.15	Dry, Wind light breeze, cloud cover Okta 4, temp. 13C
17/05/2024	T2	PD	17.20	Overcast, dry, high cloud, mild 17C, light air, excellent visibility
20/05/2024	T3	PD	11.15	Sunny, broken cloud, Okta 3, 19C, calm, excellent visibility
20/05/2024	T5	PD	12.45	Sunny, broken cloud, Okta 3, 19C, calm, excellent visibility
20/05/2024	T4	PD	13.45	Sunny, broken cloud, Okta 3, 19C, calm, excellent visibility
30/05/2024	T1	JW	17.05	Broken cloud, mod breeze, warm, excellent visibility
19/06/2024	T1	PD	12.00	Dry, Okta 6, 20C, light air excellent visibility
19/06/2024	T3	PD	14.10	Dry, Okta 6, 20C, light air excellent visibility
19/06/2024	T4	PD	15.35	Dry, Okta 6, 20C, light air excellent visibility
19/06/2024	T5	PD	16.05	Dry, Okta 6, 20C, light air excellent visibility
26/06/2024	T2	LP	14.45	Dry 21C, Okta 2, light air, excellent visibility
20/07/2024	T4	JW	13.20	Overcast, showery, rain earlier, mod breeze, avg visibility
20/07/2024	T5	JW	13.50	Overcast, showery, rain earlier, mod breeze, avg visibility
30/07/2024	T1	PD	17.30	Dry, Okta 6, good visibility, mild 17C.
30/07/2024	T4	PD	19.10	Dry, Okta 6, good visibility, mild 17C.
30/07/2024	T5	PD	19.40	Dry, Okta 6, good visibility, mild 17C.
30/07/2024	T3	PD	20.50	Dry, Okta 6, good visibility, mild 17C.
06/08/2024	T2	PD	12.30	Overcast, Okta 8. dry, 21C, Light breeze

Non-breeding season:

Date	Transect	Surveyor	Start Time	Conditions
12/11/2020	T1	JW	14.35	Showers, windy, good visibility
13/11/2020	T2	JW	14.55	Showers, windy, good visibility
10/02/2021	T1	JW	13.00	Cold, showers (Snow), good visibility
10/02/2021	T2	GG	12.30	Cold, showers (Snow), good visibility
16/11/2023	T1	GG	9.30	Overcast but dry 9dg 15km NNW wind excellent visibility
17/11/2023	T3	GG	14.00	Light cloud 6dg light WSW wind excellent visibility.
17/11/2023	T4	GG	15.40	Light cloud 6dg light WSW wind excellent visibility.
30/11/2023	T2	PD	13.35	Dry. Bright Okta 2 -3. N Light Breeze. Excellent visibility
27/02/2024	T3	JW	12.40	Dry, sunny, breezy, clear, excellent visibility
27/02/2024	T2	PD	12.35	Dry, high broken cloud Okta 3, sunny, calm, excellent visibility
29/02/2024	T1	JW	11.05	Sunny, excellent visibility, breezy, cool, broken cloud
19/11/2024	T3	PD	8.15	Overcast, light breeze, dry, excellent visibility
19/11/2024	T4	PD	9.40	Overcast, light breeze, dry, excellent visibility
19/11/2024	T5	PD	10.15	Overcast, light breeze, dry, excellent visibility

Date	Transect	Surveyor	Start Time	Conditions
19/11/2024	T2	PD	13.35	Overcast, light breeze, dry, excellent visibility
27/11/2024	T1	GG	9.10	Dry, cold, light breeze northeast, excellent visibility
19/02/2025	T3	PD	8.00	Dry, sunny, breezy, clear, excellent visibility
19/02/2025	T2	PD	14.50	Dry, calm, high cloud, excellent visibility
19/02/2025	T1	PD	10.15	Dry, calm, high cloud, excellent visibility
19/02/2025	T4	JW	8.00	Dry, calm, high cloud, excellent visibility



Appendix 5 Hinterland Survey Results

UID	Date	HVP	Observer	Weather	Species	No. Birds	Time	Zero_Sec	Secs_15	Secs_30	Secs_45	Secs_60	Secs_75	Secs_90	Secs_105	Secs_120	Secs_135	Secs_150	Secs_165	Secs_180	Secs_195	Secs_210	Secs_225	Secs_240	Flight Description
1	17/04/2023	1	PD	Dry. Brlight. Okta 3/4. Light air. Excellent Vis	NFL (No flight line)																				
2	17/04/2023	2	PD	Dry. Bright. Okta 3/4. Light air. Excellent Vis	BZ	1	14:23	3	4	3	2														
4	17/04/2023	2																							
5	21/05/2023	3	JW	Dry, Breeze SW, Excellent Visibility	LB	1	16:53	4	4	4															
6	08/06/2023	1	PD	Dry. Calm. Sunny. excellent Visibility	K.	1	1724	2	1	1	1														
7	09/06/2023	2	PD	Dry. Calm. Sunny. excellent Visibility	NFL																				
8	26/06/2023	2	JW	Dry, overcast, excellent visibility	BZ	1	10:16	3	3	3	2	2													
9	26/06/2023	2	JW	Dry, overcast, excellent visibility	BZ	1	11:42	2	3	3	2	1													
10	20/07/2023	3	JW	Dry mod wind W wind warm excellent visibility.	NFL																				
11	20/07/2023	1	JW	Dry mod wind W wind warm excellent visibility.	NFL																				
13	02/08/2023	3	PD	Dry. Cloudy. Calm. excellent Visibility.	LB		17:36	4																	
14	02/08/2023	3	PD	Dry. Cloudy. Calm. excellent Visibility.	K.		18:02																		
15	02/08/2023	3	PD	Dry. Cloudy. Calm. excellent Visibility.	LB		18:23	4	4																
16	30/11/2023	1	PD	Dry, bright, breezy, excellent visibility	NFL																				
17	04/12/2023	2	GG	Dry, bright, mod. breeze NW	LB	4	09:08	4	4	4															
18	04/12/2023	2	GG	Dry, bright, mod. breeze NW	LB	1	09:52	3	3	4	4														
19	07/12/2023	2	GG	Rain, poor visibility	BZ	1	10:02	1																	
20	30/01/2024	1	PD	Dry, Okta 3, excellent visibility	NFL																				
21	27/02/2024	1	JW	Dry, sunny, breezy, clear, excellent visibility	NFL																				
22	27/02/2024	2	PD	Dry, Okta 3, excellent vis	NFL																				
23	10/04/2024	3	JW	Dry, fog spreading, vis decreased during watch	NFL																				

24	11/04/2024	2	JW	Dry, low cloud, fog, low visibility	NFL																				
25	16/04/2024	1	PD	Dry, light breeze, excellent visibility	K.	1	12:18	2	1																
26	26/04/2024	2	PD	Dry, breeze, excellent visibility	NFL																				
27	30/04/2024	3	PD	Dry light breeze, cloudy, excellent visibility	NFL																				
28	19/06/2024	1	PD	Dry, calm, sunny, low cloud, excellent visibility	MA	1	10:48																		
29	19/06/2024	1	PD	Dry, calm, sunny, low cloud, excellent visibility	BZ	1	11:41																		
30	30/06/2024	3	JW	Dry, breezy, sunny spells, excellent visibility	NFL																				
31	30/07/2024	1	PD	Dry, high cloud cover, good visibility,	K.	1	16:09	2	2	1															
32	30/07/2024	1	PD	Dry, high cloud cover, good visibility,	BH	5	16:15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Small flock loafing
33	30/07/2024	1	PD	Dry, high cloud cover, good visibility,	LB	12	16:20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Small flock loafing
35	30/07/2024	2	PD	Dry, high cloud cover, good visibility,	LB	3	18:46	4	4	4	4	4	4	4											
36	30/07/2024	2	PD	Dry, high cloud cover, good visibility,	BZ	2	18:51	3	3	2	1														
37	30/07/2024	2	PD	Dry, high cloud cover, good visibility,	LB	1	19:12	2	2	3	3	2													
38	30/07/2024	2	PD	Dry, high cloud cover, good visibility,	BH	8	19:42	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Small flock landed in field
39	30/07/2024		PD																						