



## **APPENDIX 7-6**

**BIRD SURVEY RESULTS –  
BREEDING SEASON 2021**

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## APPENDIX 7-6

### Bird Survey Report Breeding Season 2021

# BIRD SURVEY REPORT BREEDING SEASON 2021

**Seven Hills Wind Farm I and II**  
Prepared for: Seven Hills Wind Farm Ltd

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SLR 



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## 1.0 Introduction

SLR Consulting Ireland (SLR) was commissioned by Seven Hills Wind Farm Ltd in March 2021 to carry out a breeding bird survey programme for the proposed Seven Hills Wind Farm, Co. Roscommon during the breeding bird period in 2021. There are two phases within the current iteration of the wind farm design, hereafter referred to as Wind Farm I and Wind Farm II.

### 1.1 Background to the Commission

Planning permission was originally granted by An Bord Pleanála (ABP) for both developments (Phase 1 ABP Planning Ref: PL 20.244346 / 20.239759 and Phase 2 ABP Planning Ref: PL 20.244347 / 20.241069) but was subsequently refused following the appeal process in 2016 and 2017. The main reasons for refusal cited by ABP were issues relating to the lack of certainty in relation to the impact of the proposed development on European Sites in the vicinity of the proposed developments and the qualifying interests for which those European Sites are designated.

### 1.2 Site Description

The dominant habitat within the boundaries of the proposed Seven Hills Wind Farm I development site is improved agricultural grassland and the proposed site is not designated for nature conservation.

The proposed Seven Hills Wind Farm II development site is a slightly more diverse area in terms of habitat composition with dominant habitats present being improved agricultural grassland, dry calcareous grassland and scrub. The proposed site also does not hold any designations for nature conservation.

There are several Natura 2000 designated sites relating to birds of conservation concern located within 15 km of both wind farms. Please see Table 3-1 for further details of these.

### 1.3 Purpose of the Report

The aim of this report is to provide robust baseline ornithological survey data for the breeding period 2021 at both phases of the wind farm. These data will be used to inform a separate ecological impact assessment and appropriate assessment for the proposed wind farm. The assessment of potential impacts is beyond the scope of this report.

This report follows on from the bird survey reports for the breeding period in 2019<sup>1</sup> and 2020<sup>2</sup>. As such, in order to obtain a comprehensive representation of breeding bird activity at both proposed wind farm sites across the three breeding seasons, the two previous reports should be read alongside this report.

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<sup>1</sup> SLR Consulting. 2021a. Seven Hills Wind Farm Bird Survey Report Breeding Season 2019.

<sup>2</sup> SLR Consulting. 2021b. Seven Hills Wind Farm Bird Survey Report Breeding Season 2020.

## 2.0 Methodology

### 2.1 Desk-based Review

The desk-based review collated available information collected to date on the breeding bird movements in and around the proposed wind farm development sites. This included a review of the following documents submitted as part of the previous planning applications in 2010 and 2012:

- FERS (2010) Proposed Seven Hills Wind Farm Site (Phase I): Ornithological Assessment Report June 2010. Appendix 8.1 of IWCM (2010) Proposed Seven Hills Wind Farm Phase I EIS Chapter 8 – Ornithology;
- FERS (2011) Proposed Seven Hills Wind Farm (Phase II): Ornithological Assessment Report July 2011. Appendix 8.1 of IWCM (2011) Proposed Seven Hills Wind Farm Phase II EIS Chapter 8 – Ornithology;
- Moore Group, FERS and IWCM (2010) Natura Impact Statement and Appropriate Assessment as required under Article 6(3) of the Habitats Directive (Council Directive 92/43/EEC) of Seven Hills Wind Farm Co. Roscommon (Phase I);
- FERS (2010) Response to issues arising from item (5) of a Request for Further Information (RFI) from Roscommon Co. Council (Planning Reference no. 10/541);
- Moore Group, FERS and IWCM (2011) Natura Impact Statement and Appropriate Assessment as required under Article 6(3) of the Habitats Directive (Council Directive 92/43/EEC) of Seven Hills Wind Farm Co. Roscommon (Phase II);
- EcoFact Environmental Consultants Ltd (2012) Seven Hills Wind Farm (Phase I) Co. Roscommon Report to inform the Appropriate Assessment Process; and
- EcoFact Environmental Consultants Ltd (2012) Seven Hills Wind Farm (Phase II) Co. Roscommon Report to inform the Appropriate Assessment Process.

The websites of the National Parks and Wildlife Service (NPWS) [www.npws.ie](http://www.npws.ie) and the National Biodiversity Data Centre (NBDC) <http://maps.biodiversityireland.ie/#/Map> were also accessed for information on sites designated for nature conservation in the vicinity of the site.

### 2.2 Field Surveys

The scope of breeding bird surveys for the proposed wind farm is based on recommendations given in Scottish Natural Heritage (SNH; now NatureScot) 2017 guidance<sup>3</sup>. This survey methods guidance is recognised as standard best practice guidance throughout the UK and Ireland for surveying birds to inform impact assessment for onshore wind farms.

The scope of survey work was the same as that conducted in 2020. Further details are provided in Sections 2.2.2 to 2.2.4.

#### 2.2.1 Field Survey Team: Evidence of Technical Competence and Experience

##### **Sarah Ingham (SI) – Project Manager and Bird Surveyor**

Sarah was a Senior Ecologist with SLR and holds a BSc in Zoology from Anglia Ruskin University, Cambridge, UK and an MSc in Biodiversity and Conservation from Trinity College Dublin. She is an Associate member of the Chartered Institute of Ecology and Environmental Management (ACIEEM). Sarah is a highly skilled and

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<sup>3</sup> NatureScot (formerly SNH). (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2. SNH Guidance. SNH, Battleby.

experienced bird surveyor with 11 years' post graduate experience as a professional consultant ecologist/ornithologist.

Sarah managed this project and carried out various bird surveys onsite in April 2021.

#### **Jason Cahill (JC) – Bird Surveyor**

Jason was a Graduate Ecologist with SLR. Jason holds a BSc (Hon) in Field Biology with Wildlife Tourism from Institute of Technology Tralee. Jason has experience with bird surveys, involving vantage point and transect surveys, data collection and input. Supervised by Sarah Ingham, Jason also assisted with bird surveys at Seven Hills Wind Farm in May 2021.

#### **Aisling Kinsella (AK) – Bird Surveyor**

Aisling is a Senior Field Ecologist who joined SLR in September 2020. Aisling holds a BSc in Biological, Earth and Environmental Sciences (Zoology) from University College Cork and an MSc in Wildlife Management and Conservation from University College Dublin. Aisling's main interest is in ornithology. Since joining SLR, Aisling's field experience includes acting as ECoW on a large national road scheme, habitat survey mapping and classification, mammal survey, bird surveys, data collection and data input. Aisling has also helped prepare EIAR Biodiversity chapters and AA screening reports and Natura Impact Statements for a range of different projects and plans. Aisling carried out the breeding bird surveys at Seven Hills Wind Farm in June 2021.

#### **Jonathon Dunn (JD) – Project Manager and Lead Ornithologist**

Jonathon is a Senior Ecologist with SLR and holds a BA (Hons) in Natural Sciences from the University of Cambridge, an MSc in Ecology Evolution and Conservation from Imperial College London and a PhD in Avian Ecology from Newcastle University. He is a Full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Jonathon is a highly skilled and experienced bird surveyor with six years' post graduate experience as a professional consultant ecologist. Jonathon managed this project through liaison with the client, coordination of the survey team, supervision of the health and safety of the team, carrying out various bird surveys onsite from July to September 2021, collating, quality controlling and assessing the survey data and writing this report.

### **2.2.2 Flight Activity Surveys**

Vantage point (VP) locations were the same as those used in breeding seasons 2019 and 2020, which were initially chosen based on locations used during previous surveys (see Section 3.1). The adequacy of these VPs was checked by carrying out a desk-based viewshed analysis using a bespoke GIS tool for calculating the visible area from each vantage point (VP). The Zones of Theoretical Visibility (ZTV) from each VP were calculated using ArcMAP 10.5.1 Spatial Analyst using a terrain model derived from EU-DEM data with a vertical accuracy of  $\pm 7$  m. In previous years, when proposed turbine dimensions were unknown, the ZTVs were calculated with a surface offset of 30 m. However, now that the proposed turbine dimensions are known the ZTVs have been re-calculated using a surface offset of 18 m, to match the lowest point swept by the rotors of the proposed turbines. As in previous years the ZTVs are based in a viewing height of 1.8 m above ground level. VP locations and viewing arcs are shown in **Figure 1** and the updated VP viewsheds are shown in **Figure 2**.

A total of 36 hours of watches were undertaken at each of six vantage point (VP) locations during the breeding season (monthly visits April – September inclusive). This equates to a total of six hours per VP per month. The VP survey effort undertaken during the breeding season of 2021 is summarised in Table 2-1 with full details of survey dates, times and observers provided in Appendix 01 and details of weather conditions during the surveys provided in Appendix 02.

**Table 2-1**  
**VP survey effort undertaken at the Seven Hills Wind Farms I and II sites April 2021 to September 2021.**

Month	WFI (hours)	VP1	WFI (hours)	VP2	WFII (hours)	VP1	WFII (hours)	VP2	WFII (hours)	VP3	WFII (hours)	VP4
April	6:00		6:00		6:00		6:00		6:00		6:00	
May	6:00		6:00		6:00		6:00		6:00		6:00	
June	6:00		6:00		6:00		6:00		6:00		6:00	
July	6:00		6:00		6:00		6:00		6:00		6:00	
August	6:00		6:00		6:00		6:00		6:00		6:00	
September	6:00		6:00		6:00		6:00		6:00		6:00	
<b>Total hrs</b>	<b>36:00</b>											
VP locations ITM (Figure 1)	587337 E 748665 N		585834 E 746017 N		588967 E 745061 N		587372 E 743512 N		590643 E 743279 N		592160 E 743701 N	

It is good practice to ensure that where possible each monthly six-hour survey period is split over more than a single day. As such, the six-hour survey periods were divided into three-hour blocks which were alternated across consecutive days e.g., on day 1, VP1 would be completed in the morning and VP2 would be completed in the afternoon and on day 2, VP2 would be completed in the morning and VP1 in the afternoon. Breaks of at least 30 minutes were taken between watches to minimise observer fatigue.

VP watches aimed to quantify the flight activity of primary and secondary target species (as defined in Section 2.2.2.1) within the study area.

The main purpose of VP watches is to collect data on primary target species that will enable estimates to be made of:

- The time spent flying over the site;
- The relative use by birds of different parts of the site;
- The proportion of flying time spent within the provisional upper and lower risk height limits as determined by the potential rotor diameter and rotor hub height; and
- Ultimately, the analysis of the potential risk of collision of birds with rotating turbines.

For each primary target species observation, the following details were recorded:

- Time of observation;
- Duration of flying bout;
- Species, age and sex (where determinable);
- Time spent within each height band and;
- Notes on observation.

Recording height bands were determined based on the likely turbine specifications under consideration at the time of survey (upper tip height 180 m and lower tip height 18 m). Flight heights were attributed to five distinct height bands as follows:

- 1 = < 15 m (below the likely rotor swept area);
- 2 = 15 m to 30 m (potentially within the likely rotor swept area, at least in part);
- 3 = 30 m to 150 m (within the likely rotor swept area);
- 4 = 150 m to 200 m (potentially within the likely rotor swept area, at least in part); and
- 5 = >200 m (above the likely rotor swept area).

These height bands did not match the proposed turbine specification exactly in order to provide some flexibility in case the turbine model changed and to provide consistency with previous surveys.

In addition, a summary of observations of secondary target species was recorded at the end of each five-minute period during each VP watch to provide an index of flight activity for secondary target species within the site, in accordance with current NatureScot guidance. Data collected on secondary species included:

- The five-minute period start and end time;
- Species;
- Number of birds observed;
- If flying, the height band in which birds were observed flying;
- Whether birds were observed onsite, in the 500 m buffer or beyond;
- Flight behaviour; and
- Notes on observation.

### Target Species

Target species for the surveys were defined by legal and/or conservation status and vulnerability to impacts caused by wind turbines, as defined in NatureScot (2017) Guidance.

#### *Primary Target Species*

The list of primary target species was limited to species upon which effects are most likely to be potentially significant in EIA terms, thereby enabling recording to focus on the species of greatest importance without the distraction of having to record detailed flight data for a larger number of more common species.

NatureScot (2017) guidelines state that “*in most circumstances the target species will be limited to those species which are afforded a higher level of legislative protection.*” Buzzard and sparrowhawk are not subject to a higher level of legislative protection than any other bird species and were therefore not recorded as primary target species during the breeding season 2021 surveys.

Primary target species were therefore specifically limited to species forming qualifying features for nearby SPAs and those other species upon which effects could be potentially significant in EIA terms, e.g. Annex I raptor and owl species.

As such, the primary target species for these VP surveys included the following bird species:

- Black-headed gull *Chroicocephalus ridibundus*;
- Curlew *Numenius arquata*;
- Golden plover *Pluvialis apricaria*;
- Hen harrier *Circus cyaneus*;
- Kestrel *Falco tinnunculus*;
- Lapwing *Vanellus vanellus*;

- Peregrine falcon *Falco peregrinus*;
- Snipe *Gallinago gallinago*; and
- Tufted duck *Aythya fuligula*.

Although lapwing, curlew, kestrel and snipe are not listed under Annex I of the Birds Directive, the breeding populations of these species are red-listed under the Birds of Conservation Concern in Ireland (BoCCI) 2020-2026<sup>4</sup> scheme, as numbers of breeding pairs within the Irish landscape have suffered a serious decline in recent years. As such, any observations of these four species were also recorded as primary target species during the summer months.

Black-headed gull and tufted duck are not listed under Annex I of the Birds Directive and are amber-listed under the BoCCI scheme. Tufted duck is however a qualifying feature for nearby SPAs and so were included as primary target species. Black-headed gull is a qualifying feature for nearby SPAs but not in the breeding season. There is however, an important breeding colony of >100 individuals at Lough Ree, so this species was included as a primary target species.

### Secondary Species

Local circumstances may indicate that survey information should also be acquired on other species, especially those of regional conservation concern. Such species are termed secondary species (NatureScot, 2017). Recording of secondary species is subsidiary to recording of primary target species.

Secondary target species included:

- Any other wildfowl, wader and gull species;
- Buzzard *Buteo buteo*;
- Sparrowhawk *Accipiter nisus*;
- Raven *Corvus corax*;
- Mallard *Anas platyrhynchos*;
- Grey heron *Ardea cinerea*; and
- Cormorant *Phalacrocorax carbo*.

### 2.2.3 Breeding Wader Surveys

Breeding wader surveys followed the methodology described in O'Brien and Smith (1992)<sup>5</sup>. The survey involved a walked transect which covered all habitat potentially suitable for breeding waders within the wind farm site.

Following a desktop assessment, it was determined that given that Wind Farm I is dominated by improved agricultural grassland habitat, Wind Farm I is not suitable for breeding waders and breeding wader surveys were therefore not undertaken there. Conversely, parts of Wind Farm II comprise a mosaic of wet grassland and rough, semi-improved agricultural grassland which is more suited to breeding waders. As such, a walked transect was undertaken covering potentially suitable habitat within the Wind Farm II site and a 500 m buffer zone. The same transect route was repeated three times across the 2021 breeding season on 27 April, 27 May and 23 June.

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<sup>4</sup> Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 4: 2020–2026. Irish Birds 43: 1–22

<sup>5</sup> O'Brien, M. and Smith, K. W. (1992) Changes in the status of waders breeding on wet lowland grasslands in England and Wales between 1982 and 1989, Bird Study, 39:3, 165-176

The location, movement and behaviour of all wader species were recorded onto field maps using standard BTO species codes. The following criteria was recorded for each species:

- Lapwing – the total numbers of birds seen from the transect;
- Snipe – the number of drumming plus chipping birds heard or seen from the transect; and
- Other species – the number of pairs (where 'pairs' = (paired individuals/2), displaying birds, nests or broods and other single birds not in flocks).

Birds were considered to be confirmed breeding if:

- They were observed displaying or singing on more than one visit;
- Nests, eggs, or young were located;
- Adults repeatedly alarm called;
- Distraction displays were seen; and/ or
- Territorial disputes were observed.

Birds were considered to be probably or possibly (i.e. unconfirmed) breeding if:

- They were observed displaying or singing on one visit (i.e. possibly breeding) or more than one visit (i.e. probably breeding) (with the exception of obvious passage migrants in spring); or
- A pair of birds was observed in suitable habitat for nesting.

Other records were considered to be of non-breeding birds, failed breeders, birds loafing, feeding or on passage to other areas.

Please see **Figure 6** for an outline of the walked transect and Appendices I and II for metadata relating to these surveys.

#### 2.2.4 Breeding Raptor Surveys

The survey methodology for breeding raptors used a driven transect with regular stops, to carry out watches of suitable habitat from appropriate viewpoints to identify potential nesting territories. A total of seven stops were made along the driven transect around both wind farm sites overlooking potentially suitable breeding habitat. The locations of these viewpoints are presented in **Figure 7** together with the outline of the driven survey route and the results of the surveys.

A driven survey was used due to limitations to access to third party land within the 2 km buffer zone and the availability of a good road network in the vicinity of the site. It is also noted that suitable breeding habitat for Annex 1 raptors within the sites and 2 km buffer is very limited and visibility from the survey route was sufficient to cover the vast majority of potentially suitable breeding habitat within the survey area.

Suitable breeding habitat differs for each raptor species<sup>6</sup> and was limited within the survey area. Table 2-2 provides a summary of the potentially suitable raptor habitats within the 2 km buffer zone of the sites and the approximate locations of these in relation to the viewpoints used during the survey.

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<sup>6</sup> Hardey, J., Crick, H.Q.P., Wernham, C., Riley, H., Etheridge, B., Thompson, D. (2013). Raptors: A field guide for surveys and monitoring (3rd Edition). The Stationery Office Edinburgh.

**Table 2-2**

**Potentially suitable habitats for breeding raptors within the study area, the viewpoints the habitats can be seen from and the target raptor species which could be expected within these habitats.**

Raptor Viewpoint No. (RVP)	Habitat Type	Target Raptor Species
RVP1	Mixed deciduous woodland	Buzzard, sparrowhawk
RVP2; RVP3	Lowland heather moor	Hen harrier, merlin
RVP3; RVP5	Wet grassland with dense rush or bracken cover	Hen harrier
RVP6	Mature forestry plantation	Buzzard, sparrowhawk
RVP4	Quarries	Peregrine falcon, kestrel
RVP7	Rocky outcrops	Peregrine falcon, merlin, kestrel, buzzard

In addition to the driven transects, access was obtained to a nearby quarry because it represented suitable breeding habitat for peregrine falcon.

Survey timings followed those in Hardey *et al.* (2013)<sup>6</sup>, as per NatureScot guidelines. This survey was repeated along the same route monthly from April to July inclusive. Please see Appendices I and II for metadata relating to these surveys.

The location, movement and behaviour of all raptor species observed were recorded onto the field maps using standard BTO species codes.

## 2.3 Survey Limitations

The majority of vantage point surveys were undertaken in optimal weather conditions. However, during such an extensive series of surveys carried out it was inevitable that some surveys were completed in suboptimal conditions. There were 21 hours out of the total of 216 during which the visibility was recorded as “moderate”, i.e. 1-3 km. This comprises 10% of the total survey effort but in almost all cases all of the relevant 2 km viewing arc was visible and this is not considered to significantly affect the validity of the data collected. There were also three non-consecutive hours (c.1% of the total survey effort) in which the visibility was recorded as “poor”, i.e. less than 1 km, at some point. However, in no cases did visibility fall below 500 m (when survey would have been suspended) and in many cases visibility was better than this for part of the relevant hour. As such, given the low proportion of surveys affected this is not considered to significantly affect the validity of the data collected. Further details regarding weather conditions during surveys are provided in Appendix 02.

As shown in **Figure 2**, due to local topographical conditions a small area at the western end of Wind Farm I and a very small area within the 500 m buffer zone for Wind Farm II were not within the 2 km viewsheds from any of the VPs. All turbine locations and the vast majority of the 500 m buffer were visible from at least one VP however and the gaps in coverage are therefore not considered to represent a significant limitation.

## 3.0 Results

### 3.1 Desk-based Review

#### 3.1.1 Natura 2000 Sites

There are no Special Protection Areas (SPA) within the proposed wind farm sites. However, there are a total of five SPAs within a 15 km<sup>7</sup> radius of the survey area.

The five SPAs within 15 km are shown in Table 3-1, which also shows the qualifying interests for each site. For the purposes of this report, which deals specifically with breeding birds, qualifying interests which are only present during the non-breeding season have been excluded from Table 3-1.

Corncrake *Crex crex* is a SSSI of the Middle Shannon Callows SPA. Upon their arrival to suitable breeding habitat in Ireland following migration from sub-Saharan Africa, corncrake, a site faithful species, then become sedentary, rarely if ever, moving from the habitat they have chosen for breeding once they find a mate<sup>8</sup>. As such, given that the Middle Shannon Callows SPA is at a distance of 11.4 km from the proposed wind farm sites, dedicated corncrake surveys were not deemed necessary. There is also a lack of suitable habitat for corncrake (hay meadows) within the proposed wind farm sites.

**Table 3-1**

**SPAs within 15 km of Seven Hills Wind Farms I and II and their qualifying interests (species present during the breeding season period only).**

Site Name	Site Code	Distance/ Direction from Site Boundary	Species of Special Conservation Interest Relevant to the Breeding Season
Lough Croan Turlough SPA	004139	1.5 km north	Shoveler <i>Anas clypeata</i> Wetland and Waterbirds
River Suck Callows SPA	004097	1.7 km west	Wetland and Waterbirds
Four Roads Turlough SPA	004140	1.9 km north	Wetland and Waterbirds
Lough Ree SPA	004064	8 km east	Tufted duck <i>Aythya fuligula</i> Common scoter <i>Melanitta nigra</i> Common tern <i>Sterna hirundo</i> Black-headed gull <i>Chroicocephalus ridibundus</i> Wetland and Waterbirds

<sup>7</sup> 15 km is the distance typically applied when considering wildfowl ranging from roost sites to foraging sites.

<sup>8</sup> Duffy, M. (2018) The Corncrake Conservation Project Annual Report 2018. NPWS.

Site Name	Site Code	Distance/ Direction from Site Boundary	Species of Special Conservation Interest Relevant to the Breeding Season
Middle Shannon Callows SPA	004096	11.4 km southeast	Corncrake <i>Crex crex</i> Lapwing <i>Vanellus vanellus</i> Black-tailed godwit <i>Limosa limosa</i> Wetland and Waterbirds

### 3.1.2 Previous Survey Data

To our knowledge, prior to the SLR surveys in 2019 and 2020, the only breeding season bird survey data available relating to the two proposed wind farm sites were collected on six site visits during the period April to June 2009<sup>9</sup>. Surveys involved a walkover survey on each date, although precise survey area boundaries are unclear. The ornithological assessment for Phase I reports that 28 species were recorded within the (Phase I) wind farm site and buffer zone (the size of the buffer zone is not stated), of which 21 showed evidence of breeding. These included four species defined as 'important' species<sup>10</sup>, namely black-headed gull (red-listed), swallow *Hirundo rustica*, house sparrow *Passer domesticus* and starling *Sturnus vulgaris* (each amber-listed). Black-headed gull was not recorded as breeding within the site or buffer zone.

The ornithological assessment for Phase II reports that 57 species were recorded within the 'greater survey area', of which 53 showed evidence of breeding. The greater survey area is not defined but is thought to include both wind farm sites plus some of the surrounding area. 18 'important' species were recorded within the greater survey area including the red-listed species curlew, redshank *Tringa totanus* and black-headed gull and the amber listed mute swan *Cygnus olor*, teal *Anas crecca*, tufted duck, coot *Fulica atra*, snipe and kestrel. Of these, mute swan, teal, coot, curlew, snipe and redshank (a pair at Lough Feacle) showed evidence of breeding. A further nine amber listed passerine species were also recorded within the greater survey area.

## 3.2 Flight Activity Surveys

Flight lines of primary target species recorded at both wind farm sites throughout the 2021 breeding season are presented in **Figures 3-5** and a summary of the survey findings are provided in Sections 3.2.1 and 3.2.2 for primary and secondary target species, respectively. Flight data for both primary and secondary target species are provided in Appendix 03.

### 3.2.1 Primary Target Species

#### Wind Farm I

In total, five primary target species were recorded flying within the study area on and around Wind Farm I during the six-month survey period. Flight activity recorded from Wind Farm I VP1 and VP2 by primary target species is

<sup>9</sup> Forest, Environmental Research and Services Ltd. (2010) Proposed Seven Hills Windfarm Ornithological Assessment Report June 2010; Forest, Environmental Research and Services Ltd. (2011) Proposed Seven Hills Wind-farm (Phase II): Ornithological Assessment July 2011.

<sup>10</sup> i.e. species listed on the red or amber lists of birds of conservation concern (Birdwatch Ireland) in place at that time.

summarised in Table 3-2. Primary target species flights from both VPs are shown on **Figures 3 to 5**. Detailed survey data are provided in Appendix 03.

**Table 3-2**  
**Number of Primary Target Species Flights from Wind Farm I VP1 and VP2 Combined – April 2021 – September 2021**

Species	Number of flights and birds by month*						Total number of flights	Total number of flights potentially at-risk height**	Total number of birds recorded in flight	Total number of birds potentially at-risk height**
	Apr	May	Jun	Jul	Aug	Sep				
Black-headed gull	8 (28)	0	9 (10)	4 (8)	1 (5)	0	22	10	42	15
Curlew	1 (4)	0	0	0	0	0	1	1	4	4
Kestrel	0	0	1 (1)	2 (2)	0	1 (1)	4	1	4	1
Peregrine falcon	0	0	0	0	1 (1)	0	1	0	1	0
Tufted duck	0	0	1 (1)	0	0	0	1	0	1	0
Total	9 (32)	0	11 (12)	6 (10)	2 (6)	1 (1)	29	11	52	19

\* numbers in parentheses represent the total number of birds observed that month  
\*\* precautionary risk height assumed to be between 15 m – 200 m

A total of 29 flights by five primary target species were recorded during flight activity surveys at Wind Farm I between April and September 2021. A summary of flight activity by species is presented below.

#### *Black-headed gull*

22 flights of black-headed gull were recorded at Wind Farm I during the flight activity surveys (**Figure 3**). Flights were approximately equally split between the Thomas Street Turlough and south of VP1 within the 500 m site infrastructure buffer. The maximum number of flights was recorded in June (n=9) but the maximum number of individuals was recorded in April (n=28). Nine flights were observed at potential collision risk heights, with most of the flights of short durations (around 60 seconds or less).

#### *Curlew*

A single curlew flight was recorded at Wind Farm I during the flight activity surveys in April (**Figure 4**). This was to the east of the Thomas Street Turlough and consisted of four individuals flying at potential collision risk heights for 45 seconds; however, the flight was outside the 500 m site infrastructure buffer.

#### *Kestrel*

Four flights of kestrel were recorded at Wind Farm I during the flight activity surveys (**Figure 5**). All of the flights were recorded outside of the 500 m site infrastructure buffer north of Dysart near the Thomas Street Turlough.

Two of the flights were at potential collision risk heights but were of short durations (around 60 seconds or less). Only adult birds were recorded (two males and two of unknown sex).

#### *Peregrine falcon*

A single peregrine falcon flight was recorded at Wind Farm I during the flight activity surveys (**Figure 5**). The flight was recorded north of the Thomas Street Turlough just along the edge of the 500 m site infrastructure buffer, below potential collision heights. The bird was an adult of unknown sex and was flying rapidly for approximately 60 seconds duration.

#### *Tufted duck*

A single tufted duck flight was recorded at Wind Farm I during the flight activity surveys (**Figure 4**). The bird was recorded within the 500 m site infrastructure buffer but below potential collision risk heights. The flight was of 15 seconds duration and was south of VP1.

### Wind Farm II

In total, five primary target species were recorded flying within the study area on and around Wind Farm II during the breeding season survey period. Flight activity recorded from Wind Farm II VP1 to VP4 by primary target species is summarised in Table 3-3. Primary target species flights from all VPs are shown on **Figures 3 to 5**. Detailed survey data are provided in Appendix 03.

**Table 3-3**  
**Number of Primary Target Species Flights from Wind Farm II VP1-VP4 Combined – April 2021 – September 2021**

Species	Number of flights and birds by month*						Total number of flights	Total number of flights potentially at-risk height**	Total number of birds recorded in flight	Total number of birds potentially at-risk height**
	Apr	May	Jun	Jul	Aug	Sep				
Black-headed gull	3 (9)	8 (13)	40 (67)	5 (8)	0	0	56	22	97	34
Curlew	2 (3)	0	0	0	4 (21)	3 (41)	9	2	65	3
Kestrel	5 (5)	2 (2)	2 (2)	0	0	0	9	9	9	9
Lapwing	0	0	5 (60)	0	0	0	5	1	60	34
Peregrine falcon	0	0	3 (4)	0	1 (1)	1 (2)	5	4	7	6
Total	10 (17)	10 (15)	50 (133)	5 (8)	5 (22)	4 (43)	84	39	238	87

\* numbers in parentheses represent the total number of birds observed that month  
\*\* precautionary risk height assumed to be between 15 m – 200 m

A total of 84 flights by five primary target species were recorded during flight activity surveys at Wind Farm II between April 2021 and September 2021. A summary of flight activity by species is presented below.

#### *Black-headed gull*

56 black-headed gull flights were recorded at Wind Farm II during the flight activity surveys (**Figure 3**). The birds were recorded almost entirely at Feacle Turlough or to the south of Brideswell and on the boundary of the 500 m site infrastructure buffer between April to July. Just under half of all flights for this species were recorded below potential collision risk heights. Most flights were under 60 seconds in duration, consisting of single or small groups (less than four individuals) birds commuting to and from Feacle Turlough.

#### *Curlew*

Nine curlew flights were recorded at Wind Farm II during the flight activity surveys (**Figure 4**) across April, August and September. All flights were recorded at or in the vicinity of Feacle Turlough on the boundary of the 500 m site infrastructure buffer. Approximately 20% of all flights and 5% of birds were recorded at potential collision risk heights. Observations ranged from single individuals up to small flock of 16 birds. All flights were 60 seconds or less in duration.

#### *Kestrel*

Nine kestrel flights were recorded at Wind Farm II during the flight activity surveys (**Figure 5**) across April to June. The majority of flights were recorded near VP1 and all flights were recorded within the 500 m site infrastructure buffer. All flights were recorded at potential collision risk heights and were of single birds, typically hovering or hunting for 2-3 minutes.

#### *Lapwing*

Five lapwing flights were recorded at Wind Farm II during the flight activity surveys (**Figure 4**). All flights were recorded at or in the vicinity of Feacle Turlough on the boundary of the 500 m site infrastructure buffer in June. Approximately 20% of all flights and 56% of birds were recorded at potential collision risk heights. Observations ranged from single individuals up to small flock of 34 birds. Both adults and immature birds were recorded. All flights were 60 seconds or less in duration.

#### *Peregrine Falcon*

Five peregrine flights were recorded at Wind Farm II during the flight activity surveys (**Figure 5**) in June, August and September. The majority flights were recorded at or in the vicinity of the breeding site within the 500 m site infrastructure buffer (see Section 3.4.2). Approximately 80% of all flights were recorded at potential collision risk heights. Observations were all of adults and ranged from single individuals to pairs of birds (male and female). Most flights were around 3 minutes in duration.

### 3.2.2 Secondary Species

#### Wind Farm I

Secondary species activity at Wind Farm I is summarised in Table 3-4. There were eight secondary species recorded throughout the season at Wind Farm I. Lesser black-backed gull was the most frequently recorded secondary species (in 30 five-minute periods out of a possible 864), and the most numerous (maximum flock size 17).

**Table 3-4**

**Secondary Species Activity Summary for Wind Farm I VP1 and VP2 Combined – April 2021 – September 2021**

Species	Number of 5 min periods recorded *	Maximum number of birds recorded	Combined maximum total of birds recorded	Comments
Common buzzard	11	1	11	Activity in all months, within the wind farm site, survey buffer and off site.
Common gull	12	1	12	Activity in June only, within the wind farm site, survey buffer and beyond.
Great black-backed gull	5	1	5	Activity in June only, mainly within the wind farm site, but also survey buffer and off site.
Grey heron	1	1	1	Activity in June only, flew over the wind farm site, survey buffer and off site.
Herring gull	5	3	7	Recorded beyond the wind farm site and survey buffer.
Lesser black-backed gull	30	17	68	Activity in all months, within the wind farm site, survey buffer and off site. Although single birds were mainly observed, a few small flocks were observed in April and August.
Raven	29	5	47	Activity throughout all months, within the wind farm site, survey buffer and off site. Birds typically were recorded as single individuals or in small groups.
Sparrowhawk	3	1	3	Activity in August only. Recorded primarily off site outside the survey buffer immediately adjacent to VP2.
* total of 864 five-minute periods during surveys				

**Wind Farm II**

Secondary species activity at Wind Farm II is summarised in Table 3-5. There were 11 secondary species recorded throughout the season at Wind Farm II. Raven was the most frequently recorded secondary species (in 81 five-minute periods out of a possible 1,728), and mallard was the most numerous (27 individuals recorded in one five-minute period).

**Table 3-5**  
**Secondary Species Activity Summary for Wind Farm II VP1-VP4 Combined – April 2021 – September 2021**

Species	Number of 5 min periods recorded *	Maximum number of birds recorded	Combined maximum total of birds recorded	Comments
Common buzzard	42	3	55	Activity throughout all months, within the wind farm site and the survey buffer.
Cormorant	1	1	1	Activity in May only. Recorded beyond the survey buffer and outside the wind farm site.
Common gull	8	2	9	Recorded in June only. Mainly recorded in the survey buffer or beyond, with only one observation within the wind farm site.
Coot	2	4	6	Activity in May and July only. All records within the survey buffer associated with Feacle Lough and off site. Not recorded within the wind farm site.
Grey heron	12	7	19	Activity in May to August. Mainly recorded within the survey buffer but outside the wind farm site. Only a single observation was recorded within the wind farm site.
Herring gull	2	1	2	Recorded beyond the survey buffer.
Lesser black-backed gull	31	2	40	Recorded in all months except September. The majority of activity was recorded within the survey buffer of single birds.
Little egret	2	2	3	Activity recorded in June only, within the main wind farm, survey buffer and off site.
Mallard	22	27	123	Activity in all months, predominantly within the survey buffer and off site. There was one observation flying through the site.
Raven	81	10	137	Activity in all months within the main wind farm site, the survey buffer and off site.

Species	Number of 5 min periods recorded *	Maximum number of birds recorded	Combined maximum total of birds recorded	Comments
Sparrowhawk	6	2	7	Activity in August and September only, within the wind farm site, the survey buffer and beyond.
* total of 864 five-minute periods during surveys				

### 3.3 Breeding Wader Surveys

The wader walkover surveys at WFII during April, May and June yielded no records of waders, breeding or otherwise.

Please see **Figure 6** for transect route.

#### 3.3.1 Incidental records of other species

During the three survey visits the following incidental records were made of other (non-wader) species of conservation concern:

- Wildfowl: grey heron and mute swan (both inside the 500 m survey buffer);
- Raptors: kestrel and buzzard (both hunting inside the 500 m survey buffer);
- Gulls: black-headed gull and lesser black-backed gull (both inside the 500 m survey buffer); and
- Other: raven and sand martin (ravens foraging and an active colony of sand martins inside the 500 m survey buffer).

### 3.4 Breeding Raptor Surveys

A total of four species of raptor was recorded during the surveys. The following species accounts provide summary details of the primary raptor species encountered during the 2021 surveys (all surveys combined). The results of the breeding raptor surveys can be seen in **Figure 7**.

#### 3.4.1 Kestrel

Kestrel was occasionally recorded foraging over the site, but there was no evidence of breeding by this species within 2 km of the wind farm site in 2021.

#### 3.4.2 Peregrine falcon

A pair of breeding peregrine falcons were observed within the known breeding site (shown in confidential Appendix 04), which is inside the 2 km survey buffer. A nest with two chicks was recorded on the 28 May 2021, with both adults present at the time of survey. No further sightings of juvenile peregrines were made during other surveys, so it is not clear whether the chicks fledged successfully.

#### 3.4.3 Secondary target species

Buzzards were frequently observed within the 2 km survey buffer in 2021. While no nests were recorded, it is likely that a breeding territory was present to the northeast of Wind Farm I.

Sparrowhawk was recorded on a few occasions within the 2 km survey buffer north of Wind Farm I, but there was no evidence of breeding.

#### **3.4.4 Incidental records of other species**

During the four survey visits the following incidental records were made of other (non-raptor) species of conservation concern:

- Wildfowl: coot, grey heron, mallard and mute swan (all within or near waterbodies inside the 2 km survey buffer);
- Gulls: black-headed gull and lesser black-backed gull (both inside the 2 km survey buffer); and
- Other: raven and sand martin (ravens foraging and an active colony of sand martins inside the 2 km survey buffer).

## 4.0 Summary and Conclusions

A range of ornithology surveys were carried out at the site of the proposed Seven Hills Wind Farm during the 2021 breeding season. These were:

- Flight activity (VP) surveys;
- Breeding wader surveys; and
- Breeding raptor surveys.

The following primary target species were recorded during flight activity surveys at both proposed wind farm sites combined:

- Black-headed gull;
- Curlew;
- Herring gull;
- Kestrel;
- Lapwing;
- Peregrine falcon; and
- Tufted duck.

The most frequent flight activity was by black-headed gull (22 flights recorded at Wind Farm I and 56 at Wind Farm II), with other target species activity less frequent. The next most frequently recorded species was curlew (one at Wind Farm I and nine at Wind Farm II) and kestrel (four flights recorded at Wind Farm I and nine at Wind Farm II). All other target species were recorded five times or less.

Breeding wader surveys recorded no target species.

Breeding raptor surveys recorded two primary target species and two secondary species:

- Kestrel: non-breeding;
- Peregrine: confirmed breeding within the 500 m site infrastructure buffer;
- Buzzard: suspected breeding outside of the 500 m site infrastructure buffer; and
- Sparrowhawk: non-breeding.

Incidental records were made of other species of conservation concern including:

- Wildfowl: coot, mallard and mute swan;
- Passerines: skylark;
- Gulls: black-headed gull and lesser black-backed gull; and
- Sand martin, swallow and swift.

## 5.0 Legal and Conservation Status of Target Species Recorded

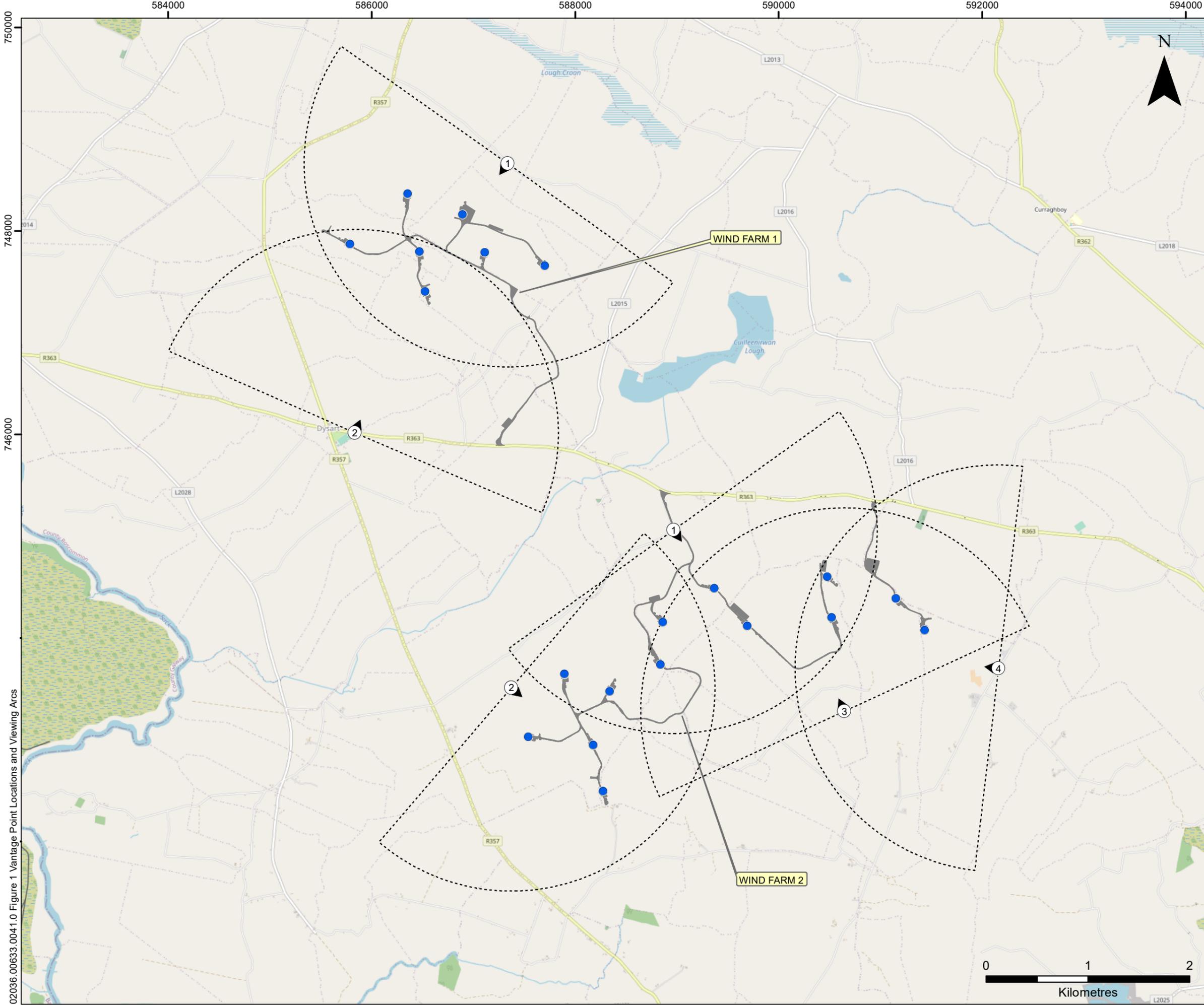
Table 5-1 summarises the legal and conservation status of the primary target species recorded during the range of ornithology surveys mentioned above.

**Table 5-1**  
**Legal and Conservation Status of Target Species**

Species	Legal & Conservation Status in Ireland
Black-headed gull	WA; BoCCI4 Amber
Curlew	WA; BoCCI4 Red
Herring gull	WA; BoCCI4 Amber
Kestrel	WA; BoCCI4 Red
Lapwing	WA; BoCCI4 Red
Peregrine falcon	WA; Annex 1; BoCCI4 Green
Tufted duck	WA; BoCCI4 Amber
Key	WA - the species is afforded general protection by the Wildlife Acts 2000 (as amended); Annex 1 – the species is listed in Annex 1 of the EC Birds Directive; and BoCCI4 status (green, amber or red) – indicates the current Birds of Conservation Concern in Ireland <sup>4</sup> status category.

---

## FIGURES



**LEGEND**

- Turbine Location
- Site Infrastructure
- Vantage Point
- Vantage Points 2km View Arc



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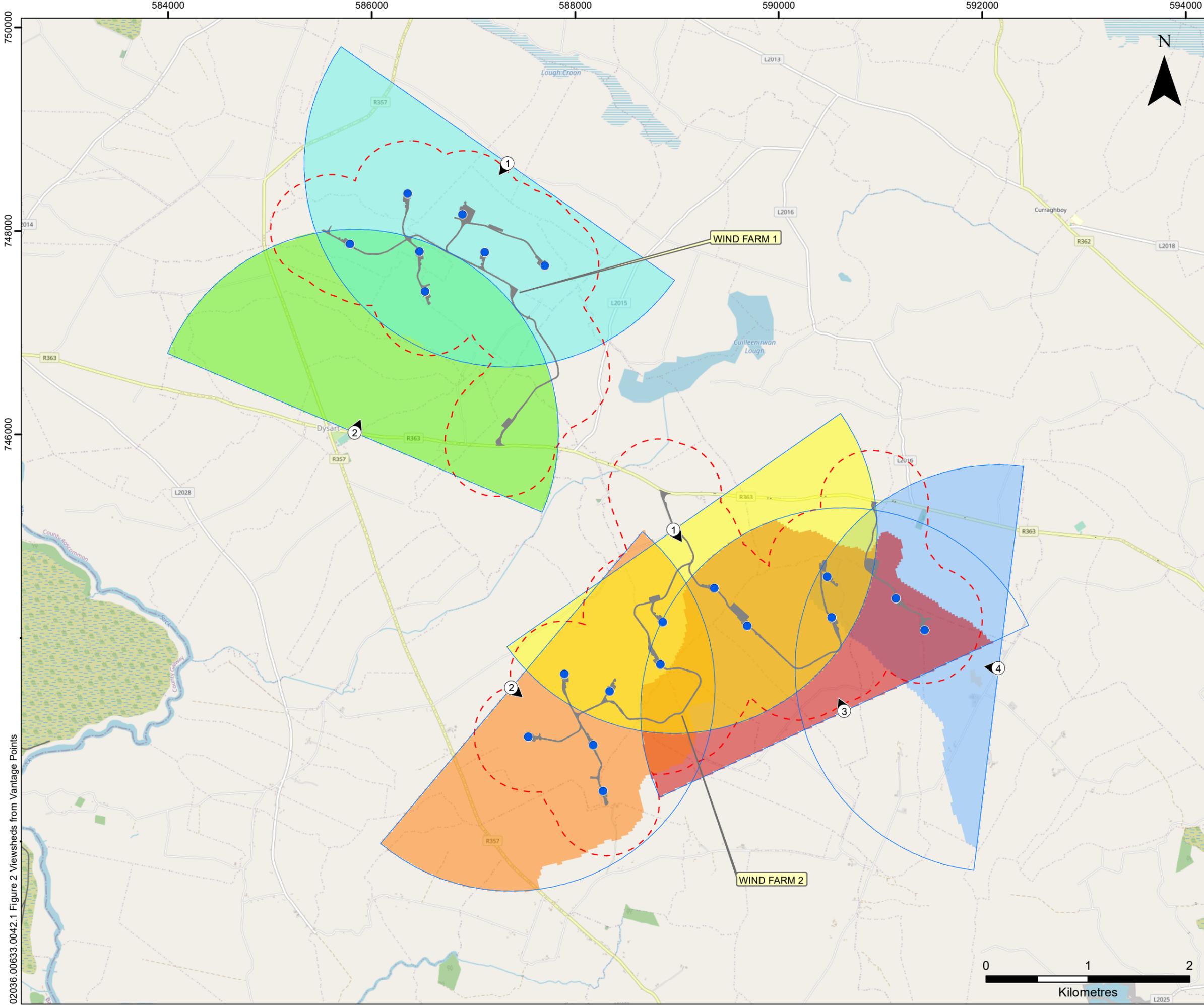
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**FIGURE 1 - VANTAGE POINT LOCATIONS  
AND VIEWING ARCS**



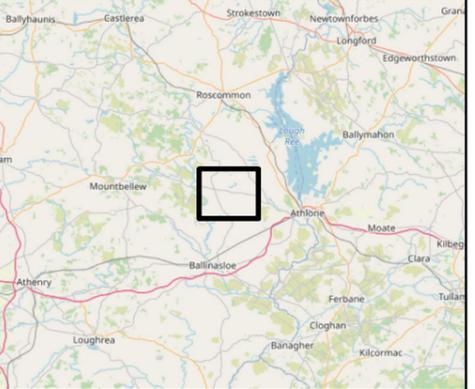
Scale 1:35,000 @ A3 Date MAY 2022

02036.00633.0041.0 Figure 1 Vantage Point Locations and Viewing Arcs



**NOTE**  
 1. The Zones of Theoretical Visibility (ZTV) was calculated using ArcMAP 10.5.1 Spatial Analyst. The ZTV is calculated with a surface offset 18m & from a viewing height of 1.8m above ground level. The terrain model is derived from EU-DEM data with a vertical accuracy of ± 7m.

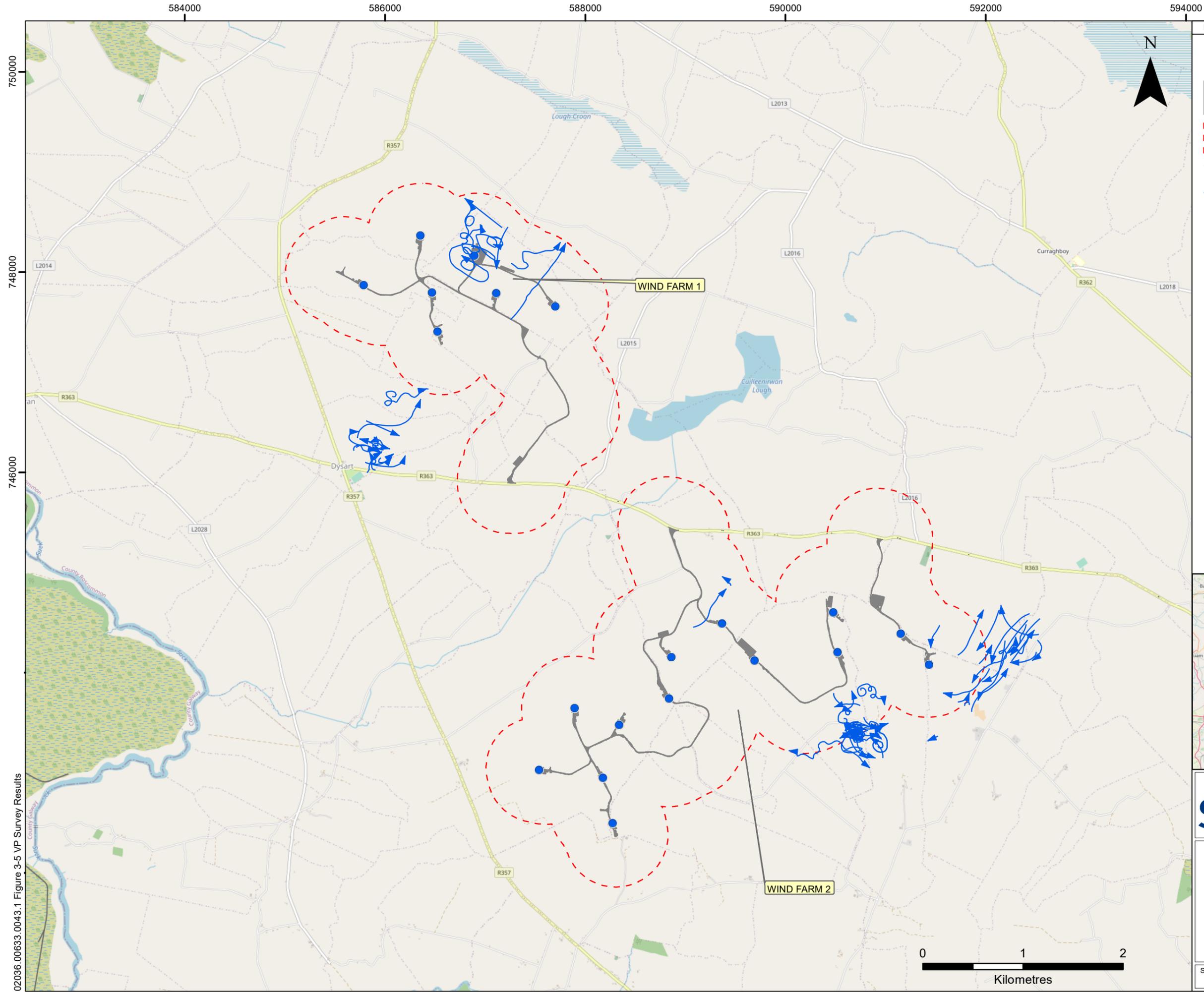
- LEGEND**
- Turbine Location
  - Site Infrastructure
  - Site Infrastructure 500 m Buffer
  - Vantage Point
  - Distance of Viewing Arc
  - Theoretical Visibility from Wind Farm 1 VP1
  - Theoretical Visibility from Wind Farm 1 VP2
  - Theoretical Visibility from Wind Farm 2 VP1
  - Theoretical Visibility from Wind Farm 2 VP2
  - Theoretical Visibility from Wind Farm 2 VP3
  - Theoretical Visibility from Wind Farm 2 VP4



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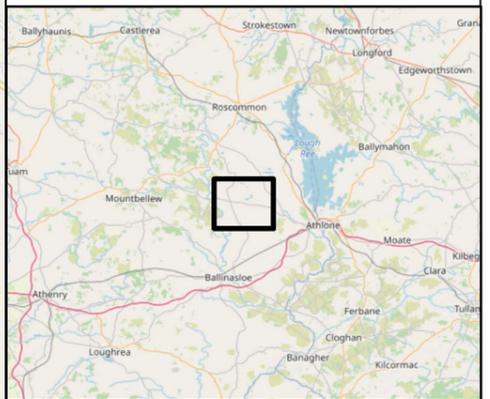
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**FIGURE 2 - VANTAGE POINTS OVERLOOKING WINDFARMS I AND II**  
 Scale: 1:35,000 @ A3      Date: MAY 2022

02036.00633.0042.1 Figure 2 Views from Vantage Points



**LEGEND**

- Turbine Location
- Site Infrastructure
- Site Infrastructure 500 m Buffer
- Species**
- Black-Headed Gull



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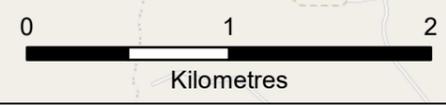
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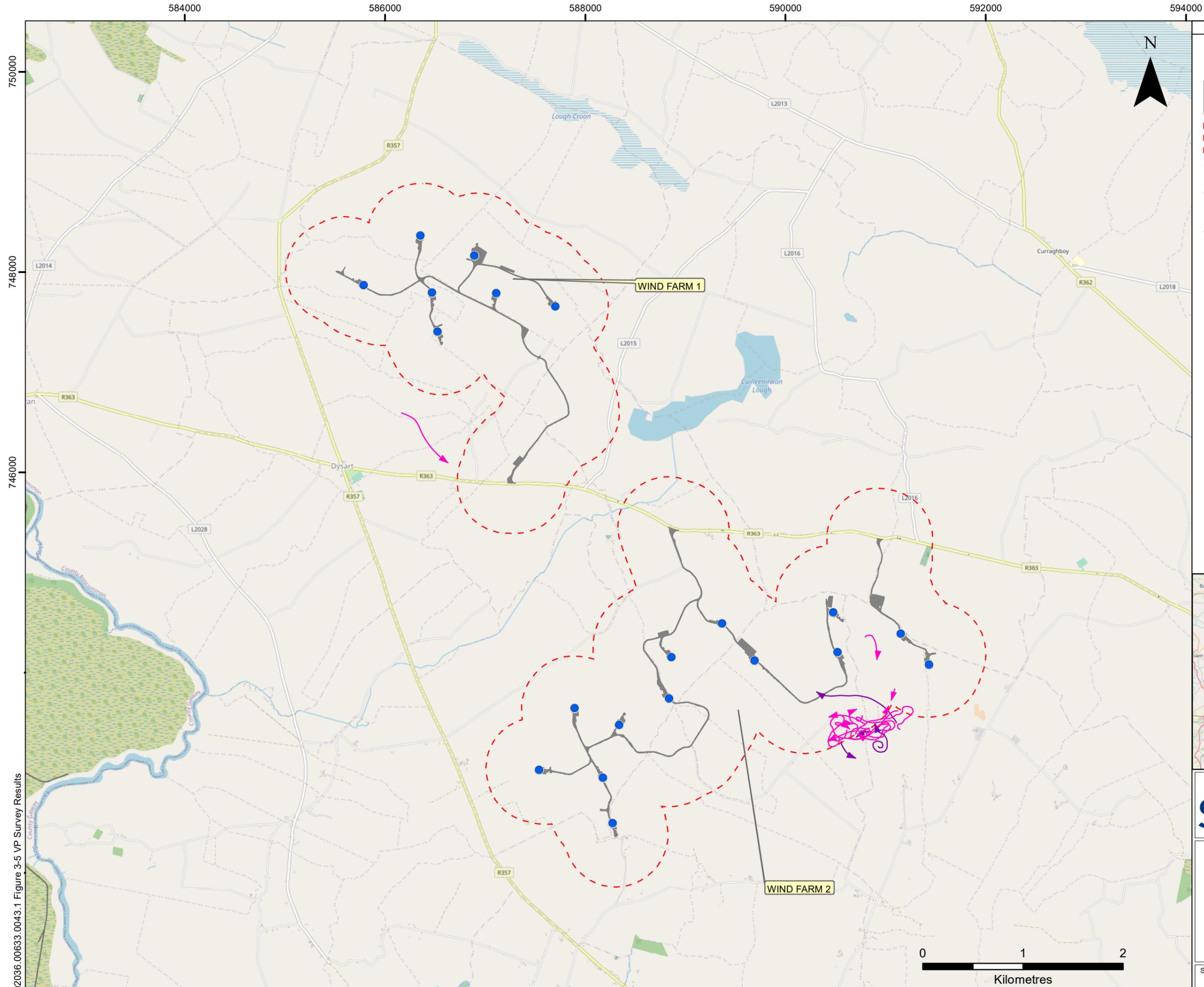
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**FIGURE 3 - FLIGHT-LINES BLACK-HEADED GULL**

Scale 1:35,000 @ A3      Date MAY 2022



02036.00633.0043.1 Figure 3-5 VP Survey Results

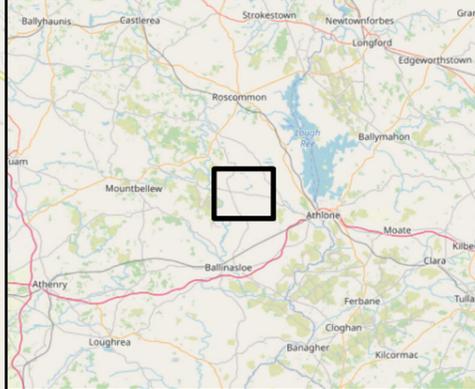


**LEGEND**

- Turbine Location
- Site Infrastructure
- Site Infrastructure 500 m Buffer

**Species**

- Curlew
- Lapwing



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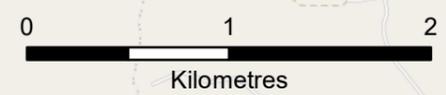
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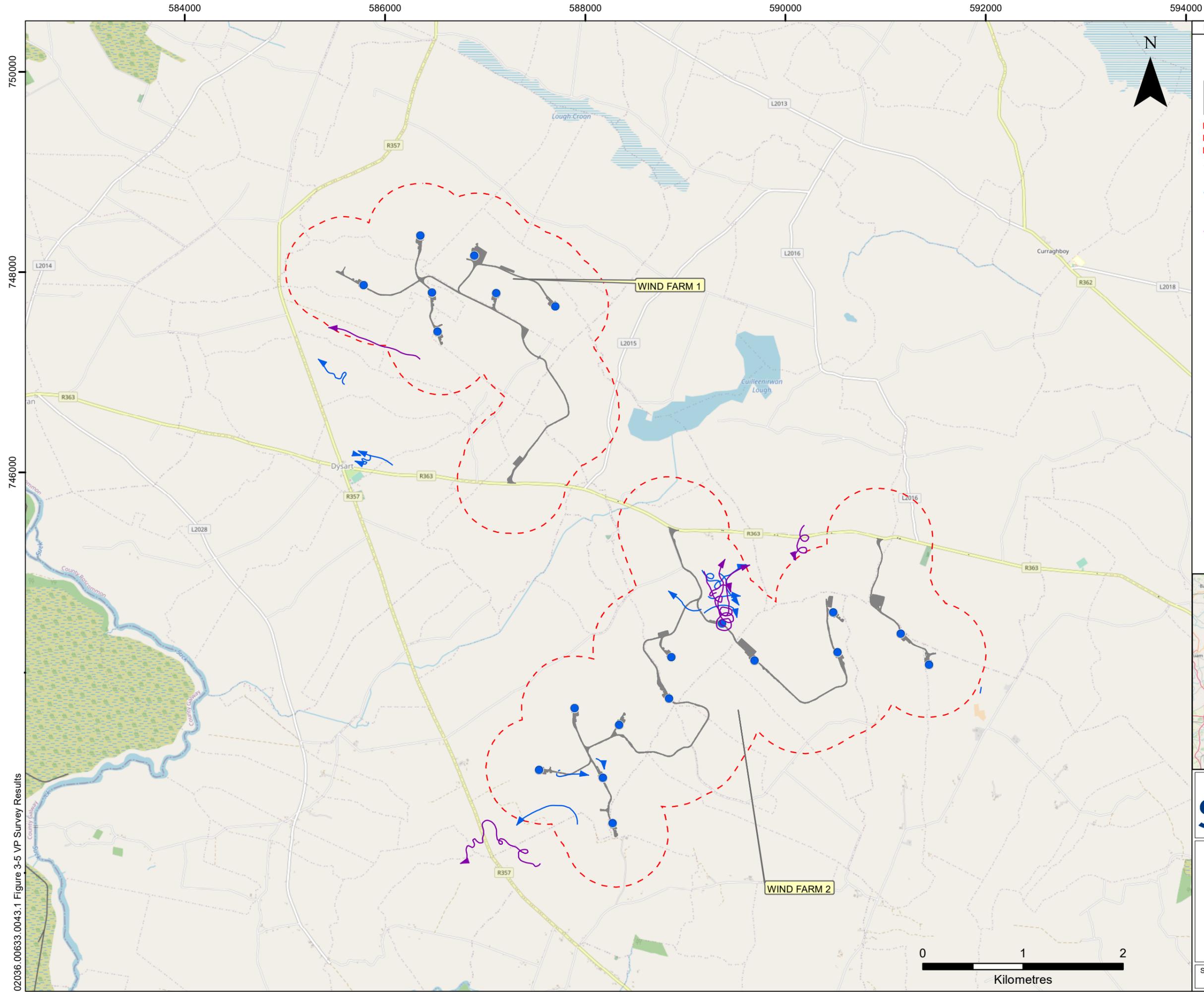
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**FIGURE 4 - FLIGHT-LINES WADERS, WATERFOWL AND GULLS**

Scale: 1:35,000 @ A3      Date: MAY 2022



02036.00633.0043.1 Figure 3-5 VP Survey Results

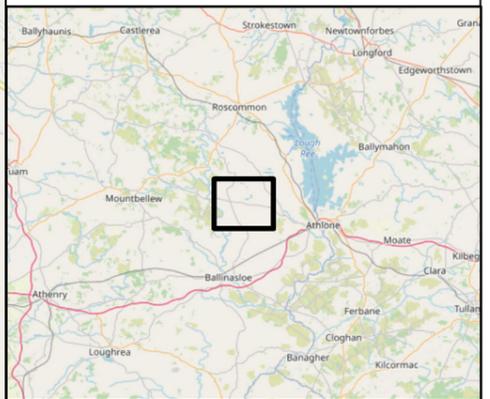


**LEGEND**

- Turbine Location
- Site Infrastructure
- Site Infrastructure 500 m Buffer

**Species**

- Kestrel
- Peregrine



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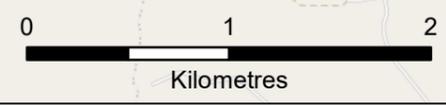
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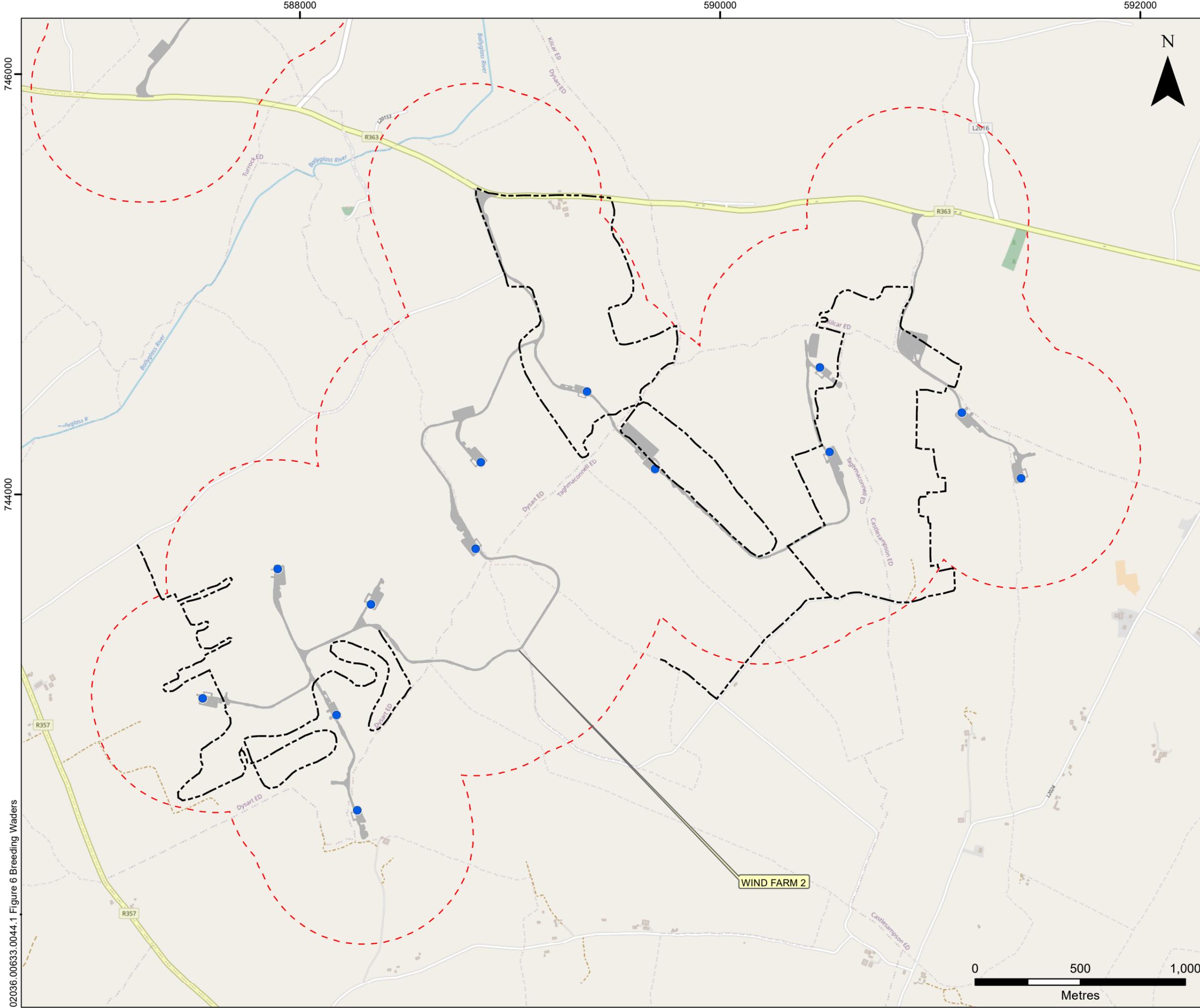
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**FIGURE 5 - FLIGHT-LINES RAPTORS**

Scale: 1:35,000 @ A3      Date: MAY 2022



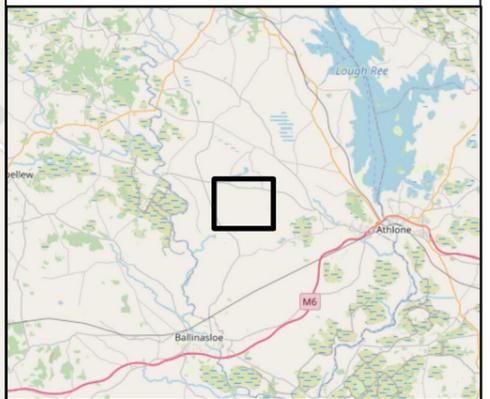
02036.00633.0043.1 Figure 3-5 VP Survey Results



**LEGEND**

- Turbine Location
- Site Infrastructure
- Site Infrastructure 500 m Buffer
- Walked Transect

**Note:**  
No breeding wader bird species recorded throughout the season.

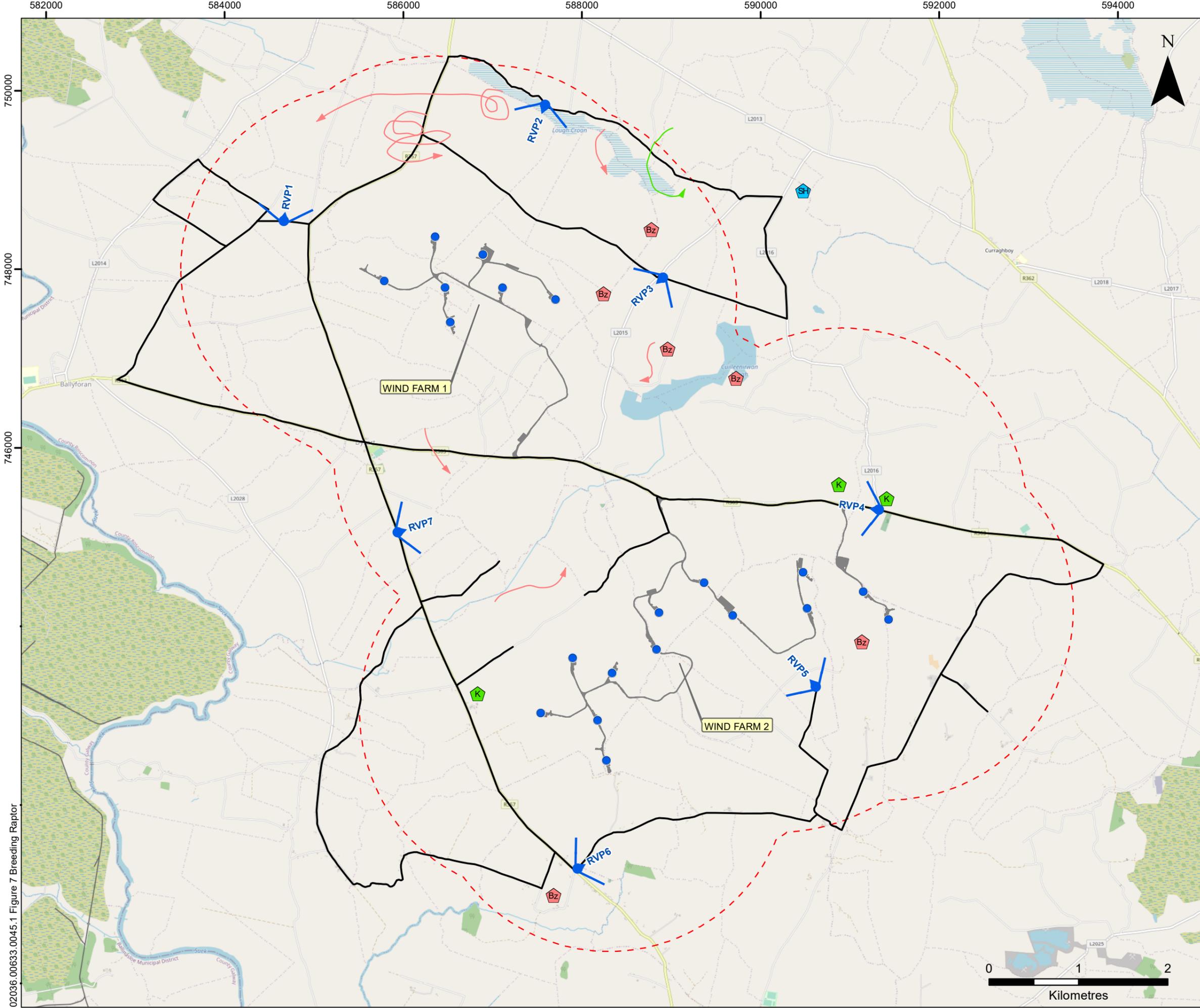


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**FIGURE 6 - BREEDING WADER WALKED TRANSECT RESULTS**

Scale 1:17,000 @ A3      Date MAY 2022

02036.00633.0044.1 Figure 6 Breeding Waders



**LEGEND**

- Turbine Location
- Site Infrastructure
- Site Infrastructure 2 km Buffer
- Driven transect
- ↙ Raptor Viewpoint Locations (Stopping Point)

**Raptor Species Record**

- ⬠ Buzzard
- ⬠ Kestrel
- ⬠ Sparrowhawk

**Raptor Species Flightline**

- Buzzard
- Kestrel

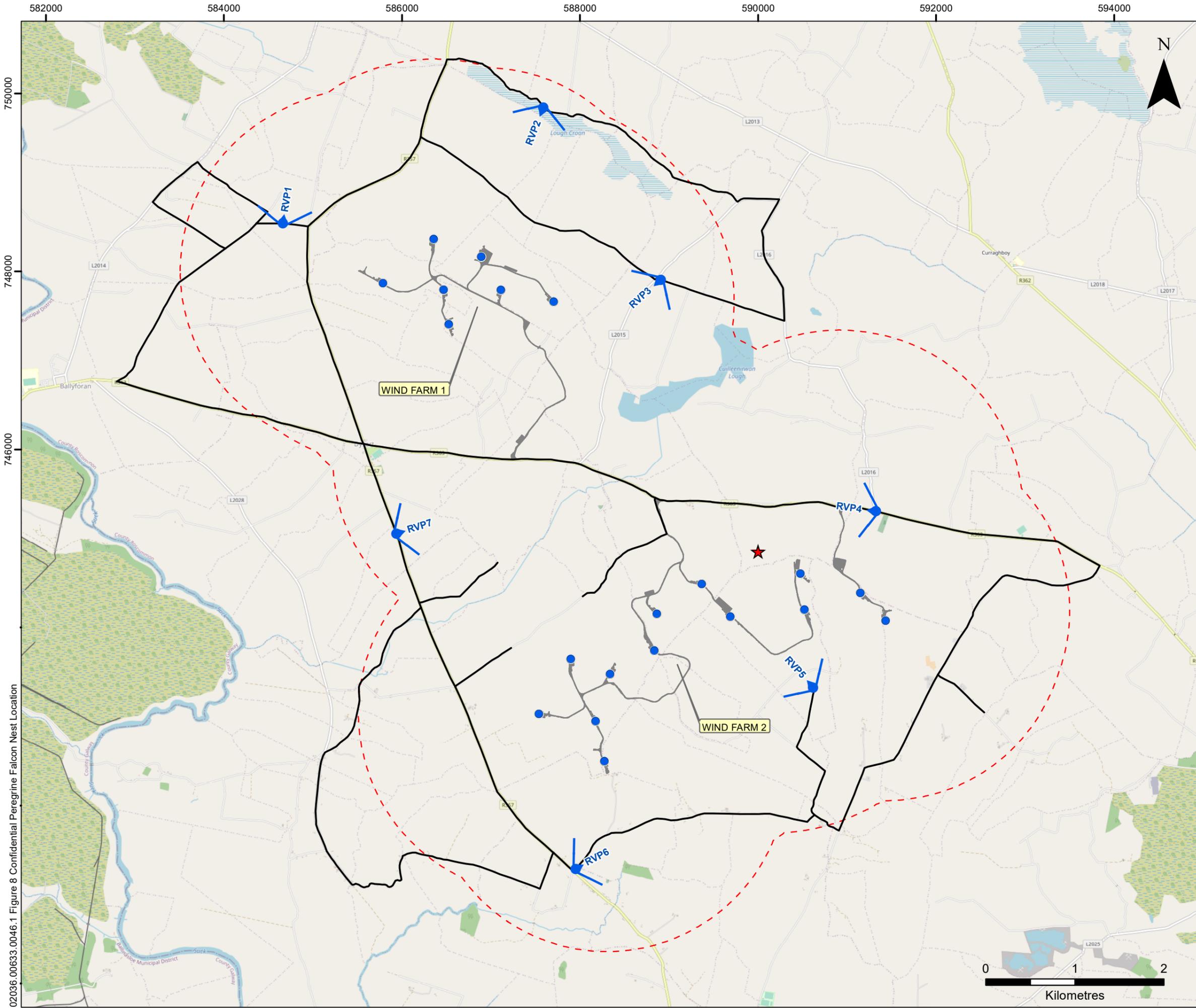


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**FIGURE 7 - BREEDING RAPTOR DRIVEN TRANSECT SURVEY RESULTS**

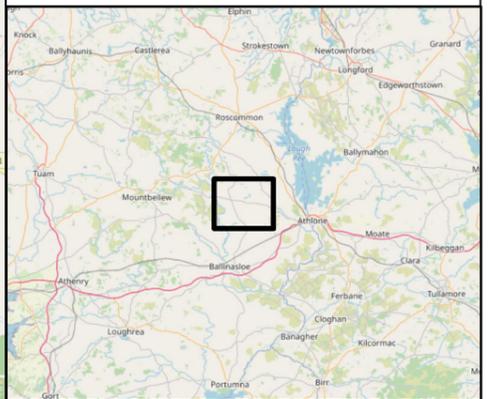
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02036.00633.0045.1 Figure 7 Breeding Raptor



**LEGEND**

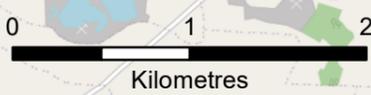
- Turbine Location
- Site Infrastructure
- Site Infrastructure 2 km Buffer
- Driven transect
- ↘ Raptor Viewpoint Locations (Stopping Point)
- ★ Peregrine Nest



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**FIGURE 8 - CONFIDENTIAL PEREGRINE FALCON NEST LOCATION**

Scale 1:40,000 @ A3 Date MAY 2022



02036.00633.0046.1 Figure 8 Confidential Peregrine Falcon Nest Location

---

## APPENDIX 01

### Survey dates, times and observers

**Table A1-1**  
**Details of VP surveys undertaken from Wind Farm I Vantage Point 1**

Date	Surveyor	Start	End	Survey Duration
14/04/2021	SI	09:30	12:30	03:00
15/04/2021	SI	12:30	15:30	03:00
21/05/2021	JC	12:30	15:30	03:00
24/05/2021	JC	14:40	17:40	03:00
21/06/2021	AK	18:00	21:00	03:00
22/06/2021	AK	06:45	09:45	03:00
19/07/2021	JD	14:10	17:10	03:00
20/07/2021	JD	07:15	10:15	03:00
12/08/2021	JD	14:30	17:30	03:00
18/08/2021	JD	14:00	17:00	03:00
08/09/2021	JD	17:30	20:30	03:00
10/09/2021	JD	07:15	10:15	03:00
<b>Total Hours</b>				<b>36</b>

**Table A1-2**  
**Details of VP surveys undertaken from Wind Farm I Vantage Point 2**

Date	Surveyor	Start	End	Survey Duration
14/04/2021	SI	13:00	16:00	03:00
15/04/2021	SI	09:00	12:00	03:00
21/05/2021	JC	17:25	20:25	03:00
24/05/2021	JC	10:55	13:55	03:00
21/06/2021	AK	14:30	17:30	03:00
22/06/2021	AK	15:45	18:45	03:00
26/07/2021	JD	10:45	13:45	03:00
27/07/2021	JD	09:10	12:10	03:00
11/08/2021	JD	10:15	13:15	03:00

Date	Surveyor	Start	End	Survey Duration
13/08/2021	JD	11:00	14:00	03:00
08/09/2021	JD	14:00	17:00	03:00
09/09/2021	JD	14:00	17:00	03:00
<b>Total Hours</b>				<b>36</b>

**Table A1-3**  
**Details of VP surveys undertaken from Wind Farm II Vantage Point 1**

Date	Surveyor	Start	End	Survey Duration
16/04/2021	SI	10:30	13:30	03:00
21/04/2021	SI	08:10	11:10	03:00
24/05/2021	JC	18:20	21:20	03:00
28/05/2021	JC	06:55	09:55	03:00
28/06/2021	AK	16:15	19:15	03:00
29/06/2021	AK	11:00	14:00	03:00
20/07/2021	JD	18:00	21:00	03:00
21/07/2021	JD	06:30	09:30	03:00
12/08/2021	JD	11:00	14:00	03:00
13/08/2021	JD	07:30	10:30	03:00
09/09/2021	JD	10:30	13:30	03:00
22/09/2021	JD	07:00	10:00	03:00
<b>Total Hours</b>				<b>36</b>

**Table A1-4**  
**Details of VP surveys undertaken from Wind Farm II Vantage Point 2**

Date	Surveyor	Start	End	Survey Duration
21/04/2021	SI	12:00	15:00	03:00
25/05/2021	SI	06:50	09:50	03:00
27/05/2021	JC	16:15	19:15	03:00
23/06/2021	JC	13:00	16:00	03:00

Date	Surveyor	Start	End	Survey Duration
28/06/2021	AK	12:30	15:30	03:00
19/07/2021	AK	10:40	13:40	03:00
21/07/2021	JD	10:00	13:00	03:00
12/08/2021	JD	07:30	10:30	03:00
18/08/2021	JD	17:30	20:30	03:00
09/09/2021	JD	07:00	10:00	03:00
21/09/2021	JD	12:45	15:45	03:00
21/04/2021	JD	12:00	15:00	03:00
<b>Total Hours</b>				<b>36</b>

**Table A1-5**  
**Details of VP surveys undertaken from Wind Farm II Vantage Point 3**

Date	Surveyor	Start	End	Survey Duration
19/04/2021	SI	13:00	16:00	03:00
20/04/2021	SI	14:50	17:50	03:00
25/05/2021	JC	14:40	17:40	03:00
26/05/2021	JC	18:20	21:20	03:00
24/06/2021	AK	09:45	12:45	03:00
25/06/2021	AK	11:05	14:05	03:00
27/07/2021	JD	14:30	17:30	03:00
28/07/2021	JD	07:00	10:00	03:00
19/08/2021	JD	09:00	12:00	03:00
20/08/2021	JD	12:30	15:30	03:00
21/09/2021	JD	09:15	12:15	03:00
22/09/2021	JD	12:10	15:10	03:00
<b>Total Hours</b>				<b>36</b>

**Table A1-6**  
**Details of VP surveys undertaken from Wind Farm II Vantage Point 4**

Date	Surveyor	Start	End	Survey Duration
19/04/2021	SI	09:30	12:30	03:00
20/04/2021	SI	11:20	14:20	03:00
25/05/2021	JC	18:15	21:15	03:00
26/05/2021	JC	06:55	09:55	03:00
24/06/2021	AK	13:45	16:45	03:00
25/06/2021	AK	07:10	10:10	03:00
26/07/2021	JD	14:15	17:15	03:00
28/07/2021	JD	10:45	13:45	03:00
19/08/2021	JD	12:30	15:30	03:00
20/08/2021	JD	09:00	12:00	03:00
08/09/2021	JD	10:30	13:30	03:00
10/09/2021	JD	10:45	13:45	03:00
<b>Total Hours</b>				<b>36</b>

**Table A1-7**  
**Details of breeding raptor surveys**

Date	Surveyor	Start	End	Survey Duration
26/04/2021	SI	10:00	20:00	10:00
27/05/2021	JC	13:25	15:25	02:00
22/06/2021	AK	10:30	15:30	05:00
20/07/2021	JD	10:28	15:15	04:47
<b>Total Hours</b>				<b>12:47</b>

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**Table A1-8**  
**Details of breeding wader surveys**

Date	Surveyor	Start	End	Survey Duration
27/04/2021	SI	07:20	14:00	06:40
27/05/2021	JC	07:30	11:50	04:20
23/06/2021	AK	06:45	09:15	02:30
<b>Total Hours</b>				<b>12:30</b>

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## APPENDIX 02

### Weather Data

**Table A2-1**  
**Weather data collected during flight activity surveys undertaken at WF1 VP1**

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
14/04/2021	SI	09:30	12:30	1	1	E	0	0	-	2	0	0	6
14/04/2021	SI	09:30	12:30	2	1	E	0	2	2	2	0	0	7
14/04/2021	SI	09:30	12:30	3	1	E	0	2	2	2	0	0	9
15/04/2021	SI	12:30	15:30	1	1	S	0	1	2	2	0	0	13
15/04/2021	SI	12:30	15:30	2	2	SE	0	1	2	2	0	0	13
15/04/2021	SI	12:30	15:30	3	2	SE	0	3	2	2	0	0	13
21/05/2021	JC	12:30	15:30	1	2	NW	0	8	1	1	0	0	7
21/05/2021	JC	12:30	15:30	2	3	NW	3	8	1	1	0	0	8
21/05/2021	JC	12:30	15:30	3	3	NW	3	8	1	1	0	0	8
24/05/2021	JC	14:40	17:40	1	2	NW	0	5	2	2	0	0	13
24/05/2021	JC	14:40	17:40	2	3	W	0	5	2	2	0	0	12
24/05/2021	JC	14:40	17:40	3	3	W	0	6	2	2	0	0	12
21/06/2021	AK	18:00	21:00	1	3	SE	0	5	2	2	0	0	16
21/06/2021	AK	18:00	21:00	2	2	SE	0	5	2	2	0	0	14
21/06/2021	AK	18:00	21:00	3	2	SE	0	4	2	2	0	0	14
22/06/2021	AK	06:45	09:45	1	1	SE	0	8	1	1	0	0	7
22/06/2021	AK	06:45	09:45	2	1	SE	0	7	1	2	0	0	8
22/06/2021	AK	06:45	09:45	3	1	SE	0	6	1	2	0	0	10

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
19/07/2021	JD	14:10	17:10	1	0	E	0	2	2	2	0	0	25
19/07/2021	JD	14:10	17:10	2	0	E	0	3	2	2	0	0	26
19/07/2021	JD	14:10	17:10	3	0	SE	0	3	2	2	0	0	28
20/07/2021	JD	07:15	10:15	1	1	E	0	1	2	2	0	0	16
20/07/2021	JD	07:15	10:15	2	1	E	0	1	2	2	0	0	17
20/07/2021	JD	07:15	10:15	3	1	E	0	0	2	2	0	0	19
12/08/2021	JD	14:30	17:30	1	4	SW	0	3	2	2	0	0	17
12/08/2021	JD	14:30	17:30	2	4	SW	0	3	2	2	0	0	18
12/08/2021	JD	14:30	17:30	3	4	SW	0	3	2	2	0	0	18
18/08/2021	JD	14:00	17:00	1	1	NW	0	7	2	2	0	0	17
18/08/2021	JD	14:00	17:00	2	1	N	0	7	2	2	0	0	18
18/08/2021	JD	14:00	17:00	3	1	NW	0	7	2	2	0	0	19
08/09/2021	JD	17:30	20:30	1	1	SE	1	8	2	2	0	0	22
08/09/2021	JD	17:30	20:30	2	1	SE	2	8	2	2	0	0	21
08/09/2021	JD	17:30	20:30	3	1	SE	1	8	2	2	0	0	20
10/09/2021	JD	07:15	10:15	1	0	W	0	8	1	1	0	0	16
10/09/2021	JD	07:15	10:15	2	0	W	0	8	1	1	0	0	16
10/09/2021	JD	07:15	10:15	3	0	W	0	8	1	1	0	0	16
<b>Rain/ Precipitation</b>				<b>Cloud Cover</b>		<b>Visibility</b>		<b>Lying Snow</b>		<b>Frost</b>			
None 0				Expressed in oktas (n/8)		Poor (<1km) 0		None 0		None 0			
Drizzle 1				<b>Cloud Height</b>		Moderate (1-3km) 1		On site 1		Ground 1			

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
Light showers/snow	2		Height of cloud above average height of viewshed <150m 150-500m >500m	0		Good (>3km)	2		On higher ground	2		All day	2
Heavy showers/snow	3	1											
Heavy rain/snow	4	2											

**Table A2-2**  
Weather data collected during flight activity surveys undertaken at WF1 VP2

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
14/04/2021	SI	13:00	16:00	1	1	E	0	5	2	2	0	0	13
14/04/2021	SI	13:00	16:00	2	1	E	0	3	2	2	0	0	14
14/04/2021	SI	13:00	16:00	3	1	E	0	4	2	2	0	0	15
15/04/2021	SI	09:00	12:00	1	1	S	0	0	-	2	0	0	9
15/04/2021	SI	09:00	12:00	2	1	S	0	0	-	2	0	0	10
15/04/2021	SI	09:00	12:00	3	1	S	0	1	2	2	0	0	10
21/05/2021	JC	17:25	20:25	1	3	NW	2	8	1	1	0	0	10
21/05/2021	JC	17:25	20:25	2	2	N	1	8	1	1	0	0	10
21/05/2021	JC	17:25	20:25	3	3	N	1	8	1	1	0	0	9
24/05/2021	JC	10:55	13:55	1	2	NW	0	4	2	2	0	0	10
24/05/2021	JC	10:55	13:55	2	3	NW	2	6	2	2	0	0	10

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
24/05/2021	JC	10:55	13:55	3	3	NW	0	6	2	2	0	0	12
21/06/2021	AK	14:30	17:30	1	3	SE	0	6	2	2	0	0	16
21/06/2021	AK	14:30	17:30	2	4	SE	0	7	1	2	0	0	16
21/06/2021	AK	14:30	17:30	3	4	SE	0	6	1	2	0	0	15
22/06/2021	AK	15:45	18:45	1	1	SE	1	8	2	2	0	0	14
22/06/2021	AK	15:45	18:45	2	1	SE	3	8	1	2	0	0	13
22/06/2021	AK	15:45	18:45	3	1	SE	1	8	2	2	0	0	12
26/07/2021	JD	10:45	13:45	1	2	NW	0	8	1	2	0	0	18
26/07/2021	JD	10:45	13:45	2	2	NW	0	8	1	2	0	0	19
26/07/2021	JD	10:45	13:45	3	2	NW	0	8	1	2	0	0	20
27/07/2021	JD	09:10	12:10	1	2	NW	1	8	1	2	0	0	15
27/07/2021	JD	09:10	12:10	2	2	NW	1	8	1	2	0	0	15
27/07/2021	JD	09:10	12:10	3	2	NW	1	8	1	2	0	0	15
11/08/2021	JD	10:15	13:15	1	1	W	0	7	2	2	0	0	15
11/08/2021	JD	10:15	13:15	2	1	SW	0	6	2	2	0	0	17
11/08/2021	JD	10:15	13:15	3	1	W	0	5	2	2	0	0	18
13/08/2021	JD	11:00	14:00	1	3	SW	0	8	2	2	0	0	16
13/08/2021	JD	11:00	14:00	2	3	SW	0	8	1	2	0	0	17
13/08/2021	JD	11:00	14:00	3	3	SW	0	8	2	2	0	0	17
08/09/2021	JD	14:00	17:00	1	1	SE	0	7	2	2	0	0	21
08/09/2021	JD	14:00	17:00	2	1	SE	1	7	2	2	0	0	22

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)	
08/09/2021	JD	14:00	17:00	3	1	SE	2	8	2	2	0	0	22	
09/09/2021	JD	14:00	17:00	1	2	SE	0	7	1	2	0	0	20	
09/09/2021	JD	14:00	17:00	2	2	SE	1	7	1	2	0	0	20	
09/09/2021	JD	14:00	17:00	3	2	SE	2	6	1	2	0	0	19	
<b>Rain/ Precipitation</b>				<b>Cloud Cover</b>				<b>Visibility</b>			<b>Lying Snow</b>		<b>Frost</b>	
None 0				Expressed in oktas (n/8)				Poor (<1km) 0			None 0		None 0	
Drizzle 1				<b>Cloud Height</b>				Moderate (1-3km) 1			On site 1		Ground 1	
Light showers/snow 2				Height of cloud above				Good (>3km) 2			On higher ground 2		All day 2	
Heavy showers/snow 3				average height of viewshed										
Heavy rain/snow 4				<150m 0										
				150-500m 1										
				>500m 2										

**Table A2-3**  
Weather data collected during flight activity surveys undertaken at WF2 VP1

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
16/04/2021	SI	10:30	13:30	1	4	S	0	4	2	2	0	0	9
16/04/2021	SI	10:30	13:30	2	4	S	0	6	2	2	0	0	10
16/04/2021	SI	10:30	13:30	3	4	S	0	7	2	2	0	0	11
21/04/2021	SI	08:10	11:10	1	1	E	0	8	2	2	0	0	10
21/04/2021	SI	08:10	11:10	2	1	E	0	8	2	2	0	0	1

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
21/04/2021	SI	08:10	11:10	3	1	E	0	8	2	2	0	0	13
24/05/2021	JC	18:20	21:20	1	3	NW	0	5	2	2	0	0	12
24/05/2021	JC	18:20	21:20	2	3	NW	0	6	2	2	0	0	11
24/05/2021	JC	18:20	21:20	3	2	NW	0	6	2	2	0	0	10
28/05/2021	JC	06:55	09:55	1	2	NW	0	8	1	2	0	0	7
28/05/2021	JC	06:55	09:55	2	1	NW	1	8	1	2	0	0	8
28/05/2021	JC	06:55	09:55	3	1	NW	0	8	1	2	0	0	10
28/06/2021	AK	16:15	19:15	1	0	na	6	2	2	2	0	0	19
28/06/2021	AK	16:15	19:15	2	1	E	4	2	2	2	0	0	19
28/06/2021	AK	16:15	19:15	3	1	E	4	2	2	2	0	0	19
29/06/2021	AK	11:00	14:00	1	3	NW	0	4	2	2	0	0	16
29/06/2021	AK	11:00	14:00	2	2	NW	0	2	2	2	0	0	16
29/06/2021	AK	11:00	14:00	3	0	NW	0	2	2	2	0	0	17
20/07/2021	JD	18:00	21:00	1	0	SE	0	3	2	2	0	0	27
20/07/2021	JD	18:00	21:00	2	0	SE	0	2	2	2	0	0	27
20/07/2021	JD	18:00	21:00	3	0	SE	0	1	2	2	0	0	26
21/07/2021	JD	06:30	09:30	1	1	SE	0	3	2	2	0	0	16
21/07/2021	JD	06:30	09:30	2	1	SE	0	4	2	2	0	0	17
21/07/2021	JD	06:30	09:30	3	1	SE	0	6	2	2	0	0	19
12/08/2021	JD	11:00	14:00	1	4	SW	0	7	2	0	0	0	16
12/08/2021	JD	11:00	14:00	2	3	SW	1	4	2	0	0	0	17

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
12/08/2021	JD	11:00	14:00	3	4	SW	1	5	2	0	0	0	17
13/08/2021	JD	07:30	10:30	1	3	SW	0	3	2	2	0	0	14
13/08/2021	JD	07:30	10:30	2	3	SW	0	5	2	2	0	0	14
13/08/2021	JD	07:30	10:30	3	3	SW	1	7	2	2	0	0	14
09/09/2021	JD	10:30	13:30	1	2	SE	0	7	2	2	0	0	18
09/09/2021	JD	10:30	13:30	2	2	SE	0	5	2	2	0	0	19
09/09/2021	JD	10:30	13:30	3	2	SE	0	7	2	2	0	0	20
22/09/2021	JD	07:00	10:00	1	3	SW	0	2	2	2	0	0	14
22/09/2021	JD	07:00	10:00	2	3	SW	0	3	2	2	0	0	15
22/09/2021	JD	07:00	10:00	3	3	SW	0	3	2	2	0	0	16
<b>Rain/ Precipitation</b>			<b>Cloud Cover</b>			<b>Visibility</b>			<b>Lying Snow</b>			<b>Frost</b>	
None	0	Expressed in oktas (n/8)			Poor (<1km)	0	None		0	None		0	
Drizzle	1	<b>Cloud Height</b>			Moderate (1-3km)	1	On site		1	Ground		1	
Light showers/snow	2	Height of cloud above			Good (>3km)	2	On higher ground		2	All day		2	
Heavy showers/snow	3	average height of viewshed											
Heavy rain/snow	4	<150m											
		150-500m											
		>500m											

**Table A2-4**  
**Weather data collected during flight activity surveys undertaken at WF2 VP2**

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°c)
16/04/2021	SI	07:00	10:00	1	2	S	0	1	2	2	0	0	8
16/04/2021	SI	07:00	10:00	2	2	S	0	1	2	2	0	0	8
16/04/2021	SI	07:00	10:00	3	2	S	0	2	2	2	0	0	9
21/04/2021	SI	12:00	15:00	1	2	SE	0	3	2	2	0	0	11
21/04/2021	SI	12:00	15:00	2	2	SE	0	4	2	2	0	0	11
21/04/2021	SI	12:00	15:00	3	3	SE	0	5	2	2	0	0	11
25/05/2021	JC	06:50	09:50	1	2	NW	0	8	2	2	0	0	7
25/05/2021	JC	06:50	09:50	2	2	NW	0	8	2	2	0	0	7
25/05/2021	JC	06:50	09:50	3	2	NW	0	7	2	2	0	0	8
27/05/2021	JC	16:15	19:15	1	3	SE	2	8	1	1	0	0	13
27/05/2021	JC	16:15	19:15	2	3	SE	2	8	1	1	0	0	12
27/05/2021	JC	16:15	19:15	3	4	S	1	8	1	1	0	0	12
23/06/2021	AK	13:00	16:00	1	1	SE	0	8	1	2	0	0	17
23/06/2021	AK	13:00	16:00	2	1	SE	0	8	1	2	0	0	17
23/06/2021	AK	13:00	16:00	3	2	SE	0	8	1	2	0	0	17
28/06/2021	AK	12:30	15:30	1	2	E	0	5	2	2	0	0	17
28/06/2021	AK	12:30	15:30	2	2	E	0	4	2	2	0	0	18
28/06/2021	AK	12:30	15:30	3	2	E	0	6	2	2	0	0	19

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°c)
19/07/2021	JD	10:40	13:40	1	1	SE	0	6	2	2	0	0	21
19/07/2021	JD	10:40	13:40	2	1	SE	0	3	2	2	0	0	22
19/07/2021	JD	10:40	13:40	3	1	SE	0	5	2	2	0	0	23
21/07/2021	JD	10:00	13:00	1	1	SE	0	2	2	2	0	0	23
21/07/2021	JD	10:00	13:00	2	2	SE	0	1	2	2	0	0	24
21/07/2021	JD	10:00	13:00	3	2	SE	0	2	2	2	0	0	25
12/08/2021	JD	07:30	10:30	1	4	S	0	5	2	2	0	0	13
12/08/2021	JD	07:30	10:30	2	4	S	0	7	2	2	0	0	14
12/08/2021	JD	07:30	10:30	3	4	S	1	8	2	2	0	0	15
18/08/2021	JD	17:30	20:30	1	1	W	0	6	2	2	0	0	19
18/08/2021	JD	17:30	20:30	2	1	W	0	6	2	2	0	0	18
18/08/2021	JD	17:30	20:30	3	2	W	0	5	2	2	0	0	16
09/09/2021	JD	07:00	10:00	1	1	SE	1	8	1	1	0	0	16
09/09/2021	JD	07:00	10:00	2	0	SE	0	6	2	2	0	0	17
09/09/2021	JD	07:00	10:00	3	1	SE	0	7	2	2	0	0	17
21/09/2021	JD	12:45	15:45	1	2	SW	0	7	2	2	0	0	17
21/09/2021	JD	12:45	15:45	2	2	SW	1	8	2	2	0	0	16
21/09/2021	JD	12:45	15:45	3	2	SW	1	8	2	2	0	0	16
<b>Rain/ Precipitation</b>			<b>Cloud Cover</b>			<b>Visibility</b>			<b>Lying Snow</b>			<b>Frost</b>	
None 0			Expressed in oktas (n/8)			Poor (<1km) 0			None 0			None 0	
Drizzle 1			<b>Cloud Height</b>			Moderate (1-3km) 1			On site 1			Ground 1	

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°c)
Light showers/snow	2												
Heavy showers/snow	3												
Heavy rain/snow	4												
			Height of cloud above average height of viewshed			Good (>3km)	2		On higher ground	2	All day	2	
			<150m	0									
			150-500m	1									
			>500m	2									

**Table A2-5**  
Weather data collected during flight activity surveys undertaken at WF2 VP3

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°c)
19/04/2021	SI	13:00	16:00	1	1	S	2	8	2	2	0	0	10
19/04/2021	SI	13:00	16:00	2	1	S	1	8	2	2	0	0	10
19/04/2021	SI	13:00	16:00	3	1	S	0	8	2	2	0	0	11
20/04/2021	SI	14:50	17:50	1	1	N	0	8	2	2	0	0	11
20/04/2021	SI	14:50	17:50	2	1	N	0	8	2	2	0	0	11
20/04/2021	SI	14:50	17:50	3	1	N	0	8	2	2	0	0	11
25/05/2021	JC	14:40	17:40	1	3	NW	1	4	2	2	0	0	14
25/05/2021	JC	14:40	17:40	2	3	NW	0	3	2	2	0	0	14
25/05/2021	JC	14:40	17:40	3	2	NW	0	3	2	2	0	0	13
26/05/2021	JC	18:20	21:20	1	1	NW	0	3	2	2	0	0	16
26/05/2021	JC	18:20	21:20	2	1	NW	0	4	2	2	0	0	14

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
26/05/2021	JC	18:20	21:20	3	2	NW	0	4	2	2	0	0	14
24/06/2021	AK	09:45	12:45	1	2	NW	0	8	2	2	0	0	15
24/06/2021	AK	09:45	12:45	2	3	NW	0	8	2	2	0	0	15
24/06/2021	AK	09:45	12:45	3	3	NW	0	8	2	2	0	0	15
25/06/2021	AK	11:05	14:05	1	2	SE	0	8	2	2	0	0	13
25/06/2021	AK	11:05	14:05	3	3	SE	0	8	2	2	0	0	13
27/07/2021	JD	14:30	17:30	1	3	NW	2	8	2	2	0	0	17
27/07/2021	JD	14:30	17:30	2	3	NW	1	8	2	2	0	0	18
27/07/2021	JD	14:30	17:30	3	3	N	0	7	2	2	0	0	18
28/07/2021	JD	07:00	10:00	1	1	SW	0	7	2	2	0	0	12
28/07/2021	JD	07:00	10:00	2	1	SW	1	7	2	2	0	0	12
28/07/2021	JD	07:00	10:00	3	2	NW	1	7	2	2	0	0	13
19/08/2021	JD	09:00	12:00	1	0	SE	0	8	2	2	0	0	13
19/08/2021	JD	09:00	12:00	2	2	SE	1	8	1	2	0	0	13
19/08/2021	JD	09:00	12:00	3	1	SE	0	8	1	2	0	0	15
20/08/2021	JD	12:30	15:30	1	3	SE	1	8	1	1	0	0	18
20/08/2021	JD	12:30	15:30	2	2	SE	0	7	1	2	0	0	19
20/08/2021	JD	12:30	15:30	3	2	SE	1	8	1	2	0	0	19
21/09/2021	JD	09:15	12:15	1	1	SW	1	8	1	1	0	0	14
21/09/2021	JD	09:15	12:15	2	1	SW	0	7	2	2	0	0	15
21/09/2021	JD	09:15	12:15	3	1	SW	0	8	2	2	0	0	16

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
19/04/2021	SI	13:00	16:00	1	1	S	2	8	2	2	0	0	10
19/04/2021	SI	13:00	16:00	2	1	S	1	8	2	2	0	0	10
<b>Rain/ Precipitation</b>			<b>Cloud Cover</b>			<b>Visibility</b>			<b>Lying Snow</b>			<b>Frost</b>	
None 0			Expressed in oktas (n/8)			Poor (<1km) 0			None 0			None 0	
Drizzle 1			<b>Cloud Height</b>			Moderate (1-3km) 1			On site 1			Ground 1	
Light showers/snow 2			Height of cloud above			Good (>3km) 2			On higher ground 2			All day 2	
Heavy showers/snow 3			average height of viewshed										
Heavy rain/snow 4			<150m 0										
			150-500m 1										
			>500m 2										

**Table A2-6**  
Weather data collected during flight activity surveys undertaken at WF2 VP4

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
19/04/2021	SI	09:30	12:30	1	2	S	1	8	1	1	0	0	8
19/04/2021	SI	09:30	12:30	2	2	S	1	8	1	1	0	0	9
19/04/2021	SI	09:30	12:30	3	1	S	0	8	2	2	0	0	10
20/04/2021	SI	11:20	14:20	1	1	N	0	8	2	2	0	0	10
20/04/2021	SI	11:20	14:20	2	1	N	0	8	2	2	0	0	10

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
20/04/2021	SI	11:20	14:20	3	1	N	0	8	2	2	0	0	11
25/05/2021	JC	18:15	21:15	1	3	NW	0	3	2	2	0	0	12
25/05/2021	JC	18:15	21:15	2	3	NW	0	6	2	2	0	0	12
25/05/2021	JC	18:15	21:15	3	2	NW	0	8	2	2	0	0	10
26/05/2021	JC	06:55	09:55	1	2	NW	0	8	2	2	0	0	6
26/05/2021	JC	06:55	09:55	2	2	NW	0	7	2	2	0	0	8
26/05/2021	JC	06:55	09:55	3	1	NW	0	7	2	2	0	0	10
24/06/2021	AK	13:45	16:45	1	3	NE	1	8	1	2	0	0	16
24/06/2021	AK	13:45	16:45	2	3	NE	1	8	1	2	0	0	16
24/06/2021	AK	13:45	16:45	3	3	NE	1	8	1	2	0	0	16
25/06/2021	AK	07:10	10:10	1	2	SE	0	7	2	2	0	0	10
25/06/2021	AK	07:10	10:10	2	3	Se	0	7	2	2	0	0	11
25/06/2021	AK	07:10	10:10	3	3	SE	0	8	2	2	0	0	12
26/07/2021	JD	14:15	17:15	1	1	NW	0	8	1	2	0	0	21
26/07/2021	JD	14:15	17:15	2	1	NW	0	8	1	2	0	0	22
26/07/2021	JD	14:15	17:15	3	1	NW	0	8	1	2	0	0	21
28/07/2021	JD	10:45	13:45	1	1	W	0	7	2	2	0	0	14
28/07/2021	JD	10:45	13:45	2	2	NW	0	5	2	2	0	0	15
28/07/2021	JD	10:45	13:45	3	2	W	0	7	2	2	0	0	16
19/08/2021	JD	12:30	15:30	1	1	SE	0	8	1	2	0	0	17
19/08/2021	JD	12:30	15:30	2	1	SE	0	5	2	2	0	0	18

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)	
19/08/2021	JD	12:30	15:30	3	1	SE	0	8	2	2	0	0	19	
20/08/2021	JD	09:00	12:00	1	3	SE	0	7	2	2	0	0	17	
20/08/2021	JD	09:00	12:00	2	3	SE	0	8	1	2	0	0	18	
20/08/2021	JD	09:00	12:00	3	3	SE	2	8	1	2	0	0	18	
08/09/2021	JD	10:30	13:30	1	1	E	1	7	2	2	0	0	19	
08/09/2021	JD	10:30	13:30	2	1	E	0	7	2	2	0	0	20	
08/09/2021	JD	10:30	13:30	3	1	E	0	7	2	2	0	0	21	
10/09/2021	JD	10:45	13:45	1	1	W	0	8	1	1	0	0	17	
10/09/2021	JD	10:45	13:45	2	1	W	0	8	1	1	0	0	18	
10/09/2021	JD	10:45	13:45	3	1	W	0	8	1	1	0	0	18	
<b>Rain/ Precipitation</b>				<b>Cloud Cover</b>				<b>Visibility</b>			<b>Lying Snow</b>		<b>Frost</b>	
None 0				Expressed in oktas (n/8)				Poor (<1km) 0			None 0		None 0	
Drizzle 1				<b>Cloud Height</b>				Moderate (1-3km) 1			On site 1		Ground 1	
Light showers/snow 2				Height of cloud above				Good (>3km) 2			On higher ground 2		All day 2	
Heavy showers/snow 3				average height of viewshed										
Heavy rain/snow 4				<150m 0										
				150-500m 1										
				>500m 2										

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## APPENDIX 03

### Flight activity survey data

**Table A3-1**  
**Primary target species recorded during flight activity surveys undertaken at WF1 VP1**

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
15/04/2021	SI	1	BH	3	Ad	U	09:10	30
15/04/2021	SI	2	BH	1	Ad	U	10:05	45
15/04/2021	SI	3	BH	2	Ad	U	10:27	30
15/04/2021	SI	4	BH	1	Ad	U	11:26	45
15/04/2021	SI	5	CU	4	U	U	11:57	45
15/04/2021	SI	1	BH	12	Ad	U	12:30	240
21/06/2021	AK	1	TD	1	Ad	U	18:11	15
21/06/2021	AK	2	BH	1	Ad	U	18:27	60
21/06/2021	AK	3	BH	1	Ad	U	18:46	30
19/07/2021	JD	1	BH	4	Ad	U	14:40	165
19/07/2021	JD	2	BH	2	Ad	U	14:52	60
20/07/2021	JD	1	BH	1	Ad	U	07:49	90
20/07/2021	JD	2	BH	1	Ad	U	08:23	15
12/08/2021	JD	1	BH	5	U	U	16:02	45

**Table A3-2**  
**Primary target species recorded during flight activity surveys undertaken at WF1 VP2**

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
14/04/2021	SI	1	BH	2	Ad	U	13:25	30
14/04/2021	SI	2	BH	4	Ad	U	14:17	30
14/04/2021	SI	3	BH	3	Ad	U	15:03	45
21/06/2021	AK	1	BH	1	Ad	U	14:53	45
21/06/2021	AK	2	BH	1	Ad	U	15:34	15
21/06/2021	AK	3	BH	1	Ad	U	15:47	15
21/06/2021	AK	4	BH	1	Ad	U	16:13	75
21/06/2021	AK	5	BH	1	Ad	U	16:18	15
21/06/2021	AK	6	BH	2	Ad	U	16:38	30
22/06/2021	AK	1	BH	1	Ad	U	16:19	60
22/06/2021	AK	2	K.	1	Ad	U	16:36	15
27/07/2021	JD	1	K.	1	Ad	M	11:50	45
27/07/2021	JD	2	K.	1	Ad	M	12:00	15
13/08/2021	JD	1	PE	1	Ad	U	11:51	60
09/09/2021	JD	1	K.	1	Ad	U	15:10	45

**Table A3-3**  
**Primary target species recorded during flight activity surveys undertaken at WF2 VP1**

Date	Surveyor	Flight ID	Species	Num. Birds	Sex	Age	Obs. Time	Flight time (s)
16/04/2021	SI	1	K.	1	Ad	F	10:34	210
16/04/2021	SI	2	K.	1	Ad	F	10:45	120
16/04/2021	SI	3	K.	1	Ad	U	11:04	120
16/04/2021	SI	4	K.	1	Ad	U	11:13	240
28/06/2021	AK	1	BH	1	Ad	U	18:58	15
28/06/2021	AK	2	BH	1	Ad	U	19:11	15
29/06/2021	AK	1	K.	1	Ad	F	11:14	90
29/06/2021	AK	2	PE	1	Ad	U	11:34	180
29/06/2021	AK	3	PE	1	Ad	U	12:12	195
29/06/2021	AK	4	PE	2	Ad	M+F	12:15	120
13/08/2021	JD	1	PE	1	Ad	F	10:07	15

**Table A3-4**  
**Primary target species recorded during flight activity surveys undertaken at WF2 VP2**

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
16/04/2021	SI	1	K.	1	Ad	U	09:12	60
21/02/2021	SI	1	K.	1	Ad	U	13:54	60
27/05/2021	JC	1	K.	1	Ad	U	18:02	90
28/06/2021	AK	1	K.	1	Ad	U	14:~1	225
21/09/2021	JD	1	PE	2	U	U	14:07	165

**Table A3-5**  
**Primary target species recorded during flight activity surveys undertaken at WF2 VP3**

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
19/04/2021	SI	1	BH	4	Ad	U	13:47	75
19/04/2021	SI	2	CU	2	U	U	14:28	45
20/04/2021	SI	1	BH	3	Ad	U	11:52	60
20/04/2021	SI	2	CU	1	Ad	U	13:58	60
20/04/2021	SI	3	BH	2	Ad	U	14:10	60

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
25/05/2021	JC	1	BH	2	Ad	U	16:06	30
25/05/2021	JC	2	BH	2	Ad	U	16:32	75
25/05/2021	JC	3	BH	2	Ad	U	16:56	15
25/05/2021	JC	4	BH	1	Ad	U	17:25	105
26/05/2021	JC	1	BH	1	Ad	U	18:56	30
26/05/2021	JC	2	BH	2	Ad	U	19:24	15
26/05/2021	JC	3	BH	2	Ad	U	19:43	45
24/06/2021	AK	1	BH	1	Ad	U	09:49	15
24/06/2021	AK	2	L.	1	Ad	U	09:50	15
24/06/2021	AK	3	BH	2	Ad	U	10:23	30
24/06/2021	AK	4	BH	2	Ad	U	10:27	15
24/06/2021	AK	A	L.	9	Ad	U	10:30	15
24/06/2021	AK	5	BH	1	Ad	U	10:32	15
24/06/2021	AK	6	BH	2	Ad	U	10:41	15
24/06/2021	AK	7	BH	1	Ad	U	10:47	15
24/06/2021	AK	8	BH	2	Ad	U	10:52	15
24/06/2021	AK	9	BH	1	Ad	U	11:17	30
24/06/2021	AK	10	BH	1	Ad	U	11:21	15
24/06/2021	AK	11	BH	1	Ad	U	11:31	30
24/06/2021	AK	12	BH	3	Ad	U	12:11	120
24/06/2021	AK	13	L.	15	Ad	U	12:25	15
24/06/2021	AK	13	BH	8	Ad	U	12:25	15
25/06/2021	AK	1	BH	2	Ad	U	10:57	15
25/06/2021	AK	2	BH	3	Ad	U	11:58	30
25/06/2021	AK	3	BH	2	Ad	U	12:15	15
25/06/2021	AK	4	BH	1	Ad	U	12:17	15
25/06/2021	AK	5	BH	1	Imm	U	12:21	15
25/06/2021	AK	6	L.	1	Ad	U	12:25	15
25/06/2021	AK	7	L.	34	Ad+Imm	U	12:49	285
25/06/2021	AK	8	BH	1	Ad	U	13:12	15
25/06/2021	AK	9	BH	2	Ad	U	13:34	45
27/07/2021	JD	1	BH	1	Juv	U	14:30	0
27/07/2021	JD	2	BH	1	Juv	U	15:14	90
28/07/2021	JD	1	BH	1	Ad	U	08:04	15
28/07/2021	JD	2	BH	2	Ad	U	08:15	15
28/07/2021	JD	3	BH	3	Ad	U	08:48	15
20/08/2021	JD	1	CU	1	Ad	U	13:33	15

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
20/08/2021	JD	2	CU	12	Ad	U	14:45	45
20/08/2021	JD	3	CU	1	Ad	U	14:49	15
20/08/2021	JD	4	CU	7	Ad	U	15:10	15
21/09/2021	JD	1	CU	16	Ad	U	10:02	60
21/09/2021	JD	2	CU	15	Ad	U	10:12	45
21/09/2021	JD	4	CU	10	Ad	U	11:32	60

**Table A3-6**  
**Primary target species recorded during flight activity surveys undertaken at WF2 VP4**

Date	Surveyor	Flight ID	Species	Num. Birds	M/F	Age	Obs. Time	Flight time (s)
25/05/2021	JC	1	BH	1	Ad	U	20:56	45
26/05/2021	JC	1	K.	1	Ad	U	07:25	75
24/06/2021	AK	1	BH	1	Ad	U	12:58	15
24/06/2021	AK	2	BH	1	Ad	U	14:10	30
24/06/2021	AK	3	BH	6	Ad	U	14:10	15
24/06/2021	AK	4	BH	2	Ad	U	14:12	30
24/06/2021	AK	5	BH	1	Ad	U	15:16	75
24/06/2021	AK	6	BH	1	Ad	U	15:18	75
24/06/2021	AK	7	BH	1	Ad	U	15:20	45
24/06/2021	AK	8	BH	1	Ad	U	15:31	15
24/06/2021	AK	9	BH	2	Ad	U	15:38	30
24/06/2021	AK	10	BH	2	Ad	U	16:27	45
25/06/2021	AK	1	BH	1	Ad	U	07:31	30
25/06/2021	AK	2	BH	1	Ad	U	07:42	75
25/06/2021	AK	3	BH	1	Ad	U	07:50	30
25/06/2021	AK	4	BH	1	Ad	U	08:18	45
25/06/2021	AK	5	BH	2	Ad	U	08:41	30
25/06/2021	AK	6	BH	1	Ad	U	08:51	30
25/06/2021	AK	7	BH	1	Ad	U	08:57	15
25/06/2021	AK	8	BH	1	Ad	U	09:45	15
25/06/2021	AK	9	BH	1	Ad	U	09:55	15

**Table A3-7**  
**Secondary target species recorded during flight activity surveys undertaken at WF1 VP1**

Date	Survey Start	Survey End	Species	Count	5 min period
14/04/2021	09:30	12:30	RN	2	09:35
14/04/2021	09:30	12:30	RN	2	09:50
14/04/2021	09:30	12:30	RN	1	10:15
14/04/2021	09:30	12:30	RN	3	11:40
15/04/2021	12:30	15:30	LB	17	13:55
15/04/2021	12:30	15:30	BZ	1	14:00
15/04/2021	12:30	15:30	LB	2	14:20
15/04/2021	12:30	15:30	LB	2	14:25
21/05/2021	12:30	15:30	RN	1	13:50
24/05/2021	14:40	17:40	RN	1	15:05
21/06/2021	18:00	21:00	GB	1	18:20
21/06/2021	18:00	21:00	CM	1	18:55
21/06/2021	18:00	21:00	H.	1	19:05
21/06/2021	18:00	21:00	CM	1	19:25
21/06/2021	18:00	21:00	CM	1	19:35
21/06/2021	18:00	21:00	CM	1	19:45
21/06/2021	18:00	21:00	CM	1	19:55
21/06/2021	18:00	21:00	LB	1	20:00
21/06/2021	18:00	21:00	GB	1	20:00
21/06/2021	18:00	21:00	LB	2	20:20
21/06/2021	18:00	21:00	LB	1	20:20
21/06/2021	18:00	21:00	BZ	1	20:40
21/06/2021	18:00	21:00	GB	1	20:45
22/06/2021	06:45	09:45	CM	1	06:50
22/06/2021	06:45	09:45	CM	1	06:55
22/06/2021	06:45	09:45	RN	1	07:25
22/06/2021	06:45	09:45	RN	2	07:30
22/06/2021	06:45	09:45	RN	3	07:50
22/06/2021	06:45	09:45	LB	1	08:00
22/06/2021	06:45	09:45	LB	1	08:05
22/06/2021	06:45	09:45	RN	1	08:35
22/06/2021	06:45	09:45	CM	1	08:45
19/07/2021	14:10	17:10	BZ	1	14:35
20/07/2021	07:15	10:15	LB	1	07:50

Date	Survey Start	Survey End	Species	Count	5 min period
20/07/2021	07:15	10:15	LB	2	08:35
20/07/2021	07:15	10:15	LB	1	08:40
20/07/2021	07:15	10:15	HG	1	09:00
20/07/2021	07:15	10:15	HG	1	09:10
20/07/2021	07:15	10:15	LB	2	09:25
20/07/2021	07:15	10:15	LB	1	09:35
20/07/2021	07:15	10:15	RN	1	09:45
12/08/2021	14:30	17:30	SH	1	14:25
12/08/2021	14:30	17:30	BZ	1	14:35
18/08/2021	14:00	17:00	SH	1	14:15
18/08/2021	14:00	17:00	LB	9	14:15
18/08/2021	14:00	17:00	BZ	1	14:30
18/08/2021	14:00	17:00	RN	2	15:00
18/08/2021	14:00	17:00	SH	1	15:10
08/09/2021	17:30	20:30	LB	5	17:40
10/09/2021	07:15	10:15	RN	1	09:25
10/09/2021	07:15	10:15	RN	1	09:40

**Table A3-8**  
**Secondary target species recorded during flight activity surveys undertaken at WF1 VP2**

Date	Survey Start	Survey End	Species	Count	5 min period
14/04/2021	13:00	16:00	BZ	1	13:40
14/04/2021	13:00	16:00	BZ	1	14:10
14/04/2021	13:00	16:00	RN	1	14:15
14/04/2021	13:00	16:00	HG	3	14:35
15/04/2021	09:00	12:00	BZ	1	11:00
15/04/2021	09:00	12:00	BZ	1	11:05
15/04/2021	09:00	12:00	BZ	1	11:05
15/04/2021	09:00	12:00	LB	1	11:25
15/04/2021	09:00	12:00	RN	1	11:40
21/05/2021	17:25	20:25	LB	1	19:00
21/05/2021	17:25	20:25	RN	1	19:00
24/05/2021	10:55	13:55	RN	2	11:20
24/05/2021	10:55	13:55	RN	1	12:50
21/06/2021	14:30	17:30	CM	1	15:15

Date	Survey Start	Survey End	Species	Count	5 min period
21/06/2021	14:30	17:30	GB	1	15:30
21/06/2021	14:30	17:30	RN	2	15:40
21/06/2021	14:30	17:30	GB	1	15:40
21/06/2021	14:30	17:30	RN	1	15:45
21/06/2021	14:30	17:30	RN	2	16:15
21/06/2021	14:30	17:30	LB	1	16:30
21/06/2021	14:30	17:30	LB	1	16:35
21/06/2021	14:30	17:30	LB	2	16:40
21/06/2021	14:30	17:30	CM	1	16:45
21/06/2021	14:30	17:30	LB	1	16:55
22/06/2021	15:45	18:45	CM	1	16:55
22/06/2021	15:45	18:45	CM	1	17:25
22/06/2021	15:45	18:45	LB	1	17:35
22/06/2021	15:45	18:45	LB	1	18:15
22/06/2021	15:45	18:45	LB	1	18:35
26/07/2021	10:45	13:45	HG	1	12:15
27/07/2021	09:10	12:10	LB	1	10:25
27/07/2021	09:10	12:10	LB	1	11:40
27/07/2021	09:10	12:10	LB	1	12:05
11/08/2021	10:15	13:15	LB	1	10:40
11/08/2021	10:15	13:15	LB	5	11:10
13/08/2021	11:00	14:00	RN	2	11:45
13/08/2021	11:00	14:00	RN	1	12:00
13/08/2021	11:00	14:00	RN	5	12:05
13/08/2021	11:00	14:00	RN	2	12:50
13/08/2021	11:00	14:00	LB	1	13:05
08/09/2021	14:00	17:00	RN	2	14:15
08/09/2021	14:00	17:00	HG	1	15:00
09/09/2021	14:00	17:00	BZ	1	14:40
09/09/2021	14:00	17:00	RN	1	14:45
09/09/2021	14:00	17:00	RN	1	15:10

**Table A3-9**  
**Secondary target species recorded during flight activity surveys undertaken at WF2 VP1**

Date	Survey Start	Survey End	Species	Count	5 min period
16/04/2021	10:30	13:30	BZ	1	10:50
16/04/2021	10:30	13:30	LB	2	10:50
16/04/2021	10:30	13:30	BZ	1	11:10
16/04/2021	10:30	13:30	LB	1	11:15
16/04/2021	10:30	13:30	RN	1	11:25
16/04/2021	10:30	13:30	BZ	2	12:40
21/04/2021	08:10	11:10	BZ	1	09:05
21/04/2021	08:10	11:10	BZ	1	09:45
21/04/2021	08:10	11:10	BZ	1	10:35
24/05/2021	18:20	21:20	LB	2	19:25
24/05/2021	18:20	21:20	LB	1	19:35
24/05/2021	18:20	21:20	HG	1	21:05
24/05/2021	18:20	21:20	LB	2	21:15
28/05/2021	06:55	09:55	RN	1	07:20
28/05/2021	06:55	09:55	RN	1	07:55
28/06/2021	16:15	19:15	BZ	1	16:45
28/06/2021	16:15	19:15	BZ	1	16:55
28/06/2021	16:15	19:15	BZ	1	17:20
28/06/2021	16:15	19:15	BZ	1	17:40
28/06/2021	16:15	19:15	BZ	1	18:30
28/06/2021	16:15	19:15	RN	1	18:45
29/06/2021	11:00	14:00	BZ	1	11:20
29/06/2021	11:00	14:00	RN	1	11:45
29/06/2021	11:00	14:00	RN	2	12:35
29/06/2021	11:00	14:00	RN	2	12:55
29/06/2021	11:00	14:00	BZ	1	13:10
29/06/2021	11:00	14:00	BZ	1	13:12
29/06/2021	11:00	14:00	BZ	1	13:55
21/07/2021	06:30	09:30	HG	1	07:50
21/07/2021	06:30	09:30	LB	1	09:00
12/08/2021	11:00	14:00	BZ	1	12:00
12/08/2021	11:00	14:00	LB	2	12:25
12/08/2021	11:00	14:00	LB	2	12:30
12/08/2021	11:00	14:00	SH	1	13:15

Date	Survey Start	Survey End	Species	Count	5 min period
13/08/2021	07:30	10:30	LB	2	09:55
13/08/2021	07:30	10:30	BZ	1	10:00
09/09/2021	10:30	13:30	BZ	1	11:30
09/09/2021	10:30	13:30	RN	2	11:55
22/09/2021	07:00	10:00	BZ	1	07:00

**Table A3-10**  
**Secondary target species recorded during flight activity surveys undertaken at WF2 VP2**

Date	Survey Start	Survey End	Species	Count	5 min period
16/04/2021	07:00	10:00	RN	2	07:10
16/04/2021	07:00	10:00	LB	1	08:20
16/04/2021	07:00	10:00	RN	3	08:40
16/04/2021	07:00	10:00	RN	1	09:15
21/04/2021	12:00	15:00	RN	1	12:30
21/04/2021	12:00	15:00	RN	2	13:15
25/05/2021	06:50	09:50	BZ	2	07:10
25/05/2021	06:50	09:50	BZ	1	07:30
25/05/2021	06:50	09:50	LB	1	08:05
25/05/2021	06:50	09:50	RN	1	08:40
25/05/2021	06:50	09:50	BZ	2	09:05
27/05/2021	16:15	19:15	H.	1	16:55
27/05/2021	16:15	19:15	RN	1	17:25
27/05/2021	16:15	19:15	RN	1	17:35
27/05/2021	16:15	19:15	RN	1	18:20
23/06/2021	13:00	16:00	RN	2	13:15
23/06/2021	13:00	16:00	RN	1	13:35
23/06/2021	13:00	16:00	RN	1	13:35
23/06/2021	13:00	16:00	RN	1	13:40
23/06/2021	13:00	16:00	RN	2	14:10
23/06/2021	13:00	16:00	RN	1	14:30
23/06/2021	13:00	16:00	RN	1	14:45
23/06/2021	13:00	16:00	RN	2	14:45
28/06/2021	12:30	15:30	RN	1	12:50
28/06/2021	12:30	15:30	RN	1	12:55
28/06/2021	12:30	15:30	BZ	3	13:05

Date	Survey Start	Survey End	Species	Count	5 min period
28/06/2021	12:30	15:30	BZ	2	13:25
28/06/2021	12:30	15:30	BZ	2	13:40
28/06/2021	12:30	15:30	RN	1	13:45
28/06/2021	12:30	15:30	LB	1	13:55
19/07/2021	10:40	13:40	SH	1	10:40
19/07/2021	10:40	13:40	H.	1	11:45
19/07/2021	10:40	13:40	RN	2	12:30
21/07/2021	10:00	13:00	BZ	1	11:30
21/07/2021	10:00	13:00	BZ	1	11:40
21/07/2021	10:00	13:00	BZ	1	11:55
21/07/2021	10:00	13:00	BZ	1	12:20
21/07/2021	10:00	13:00	BZ	1	12:25
12/08/2021	07:30	10:30	RN	1	08:40
12/08/2021	07:30	10:30	RN	1	09:05
12/08/2021	07:30	10:30	RN	5	09:40
12/08/2021	07:30	10:30	RN	6	10:05
18/08/2021	17:30	20:30	BZ	2	17:30
18/08/2021	17:30	20:30	BZ	2	17:35
18/08/2021	17:30	20:30	RN	4	17:35
18/08/2021	17:30	20:30	RN	6	17:40
18/08/2021	17:30	20:30	RN	3	17:45
18/08/2021	17:30	20:30	RN	4	18:35
18/08/2021	17:30	20:30	RN	2	18:50
09/09/2021	07:00	10:00	RN	2	08:50
09/09/2021	07:00	10:00	RN	1	09:30
09/09/2021	07:00	10:00	RN	2	09:40
09/09/2021	07:00	10:00	RN	1	09:45
09/09/2021	07:00	10:00	RN	2	09:50
21/09/2021	12:45	15:45	RN	2	13:20
21/09/2021	12:45	15:45	RN	2	13:35
21/09/2021	12:45	15:45	RN	2	13:45
21/09/2021	12:45	15:45	RN	3	13:55
21/09/2021	12:45	15:45	BZ	1	14:45
21/09/2021	12:45	15:45	RN	1	14:55

**Table A3-11**  
**Secondary target species recorded during flight activity surveys undertaken at WF2 VP3**

Date	Survey Start	Survey End	Species	Count	5 min period
19/04/2021	13:00	16:00	MA	4	13:40
19/04/2021	13:00	16:00	LB	1	15:00
25/05/2021	14:40	17:40	MA	2	15:10
25/05/2021	14:40	17:40	H.	1	16:20
25/05/2021	14:40	17:40	MA	1	16:50
26/05/2021	18:20	21:20	CO	2	18:50
26/05/2021	18:20	21:20	LB	2	19:05
26/05/2021	18:20	21:20	LB	1	19:15
26/05/2021	18:20	21:20	RN	1	20:00
26/05/2021	18:20	21:20	LB	1	20:05
26/05/2021	18:20	21:20	RN	1	20:35
24/06/2021	09:45	12:45	RN	1	09:50
24/06/2021	09:45	12:45	MA	27	10:15
24/06/2021	09:45	12:45	MA	6	10:20
24/06/2021	09:45	12:45	MA	10	10:20
24/06/2021	09:45	12:45	H.	1	10:20
24/06/2021	09:45	12:45	CM	1	10:35
24/06/2021	09:45	12:45	LB	1	10:45
24/06/2021	09:45	12:45	CM	1	11:00
24/06/2021	09:45	12:45	H.	1	11:10
24/06/2021	09:45	12:45	H.	1	11:20
24/06/2021	09:45	12:45	LB	1	11:40
24/06/2021	09:45	12:45	MA	5	11:45
24/06/2021	09:45	12:45	H.	1	11:50
24/06/2021	09:45	12:45	RN	3	11:50
24/06/2021	09:45	12:45	RN	1	12:20
24/06/2021	09:45	12:45	BZ	1	12:40
24/06/2021	09:45	12:45	LB	2	12:40
24/06/2021	09:45	12:45	MA	6	12:40
24/06/2021	09:45	12:45	MA	1	12:40
24/06/2021	09:45	12:45	MA	6	12:45
25/06/2021	11:05	14:05	MA	13	10:50
25/06/2021	11:05	14:05	LB	1	11:20
25/06/2021	11:05	14:05	H.	1	11:20

Date	Survey Start	Survey End	Species	Count	5 min period
25/06/2021	11:05	14:05	BZ	3	11:20
25/06/2021	11:05	14:05	MA	9	11:40
25/06/2021	11:05	14:05	MA	5	11:50
25/06/2021	11:05	14:05	LB	1	11:50
25/06/2021	11:05	14:05	LB	1	11:55
25/06/2021	11:05	14:05	H.	1	11:55
25/06/2021	11:05	14:05	RN	1	11:55
25/06/2021	11:05	14:05	ET	2	12:05
25/06/2021	11:05	14:05	ET	1	12:10
25/06/2021	11:05	14:05	BZ	1	12:25
25/06/2021	11:05	14:05	H.	7	12:55
25/06/2021	11:05	14:05	MA	1	13:15
25/06/2021	11:05	14:05	CM	2	13:25
25/06/2021	11:05	14:05	MA	1	14:00
27/07/2021	14:30	17:30	SH	1	14:30
27/07/2021	14:30	17:30	MA	2	14:40
27/07/2021	14:30	17:30	MA	3	14:45
27/07/2021	14:30	17:30	CO	4	14:50
27/07/2021	14:30	17:30	RN	1	16:00
27/07/2021	14:30	17:30	RN	2	16:15
27/07/2021	14:30	17:30	RN	2	16:25
27/07/2021	14:30	17:30	RN	2	16:35
28/07/2021	07:00	10:00	BZ	1	09:00
19/08/2021	09:00	12:00	RN	1	09:00
19/08/2021	09:00	12:00	MA	2	10:00
19/08/2021	09:00	12:00	H.	1	11:00
19/08/2021	09:00	12:00	RN	1	11:05
20/08/2021	12:30	15:30	SH	2	13:25
20/08/2021	12:30	15:30	RN	1	13:40
20/08/2021	12:30	15:30	RN	1	13:45
20/08/2021	12:30	15:30	RN	2	13:55
20/08/2021	12:30	15:30	LB	1	14:15
20/08/2021	12:30	15:30	BZ	2	14:50
21/09/2021	09:15	12:15	SH	1	09:45
21/09/2021	09:15	12:15	RN	2	10:00

Date	Survey Start	Survey End	Species	Count	5 min period
21/09/2021	09:15	12:15	RN	2	10:25
21/09/2021	09:15	12:15	RN	1	10:40
21/09/2021	09:15	12:15	MA	2	10:45
21/09/2021	09:15	12:15	RN	3	11:15
21/09/2021	09:15	12:15	RN	1	11:45
22/09/2021	12:10	15:10	RN	1	12:15
22/09/2021	12:10	15:10	RN	2	12:20
22/09/2021	12:10	15:10	RN	3	12:30
22/09/2021	12:10	15:10	RN	10	13:30
22/09/2021	12:10	15:10	RN	3	14:10

**Table A3-12**  
**Secondary target species recorded during flight activity surveys undertaken at WF2 VP4**

Date	Survey Start	Survey End	Species	Count	5 min period
19/04/2021	13:45	16:45	RN	1	09:45
25/05/2021	13:45	16:45	LB	1	19:05
25/05/2021	13:45	16:45	RN	1	19:30
25/05/2021	07:10	10:10	RN	1	19:55
25/05/2021	07:10	10:10	BZ	2	20:50
25/05/2021	07:10	10:10	CA	1	21:10
26/05/2021	07:10	10:10	BZ	1	07:05
26/05/2021	07:10	10:10	RN	1	07:45
26/05/2021	07:10	10:10	RN	1	07:55
26/05/2021	07:10	10:10	LB	2	09:05
26/05/2021	07:10	10:10	BZ	1	09:20
24/06/2021	07:10	10:10	LB	1	14:10
24/06/2021	14:15	17:15	CM	1	15:00
24/06/2021	10:45	13:45	LB	1	15:05
24/06/2021	12:30	15:30	MA	2	15:30
25/06/2021	12:30	15:30	MA	15	07:10
25/06/2021	09:00	12:00	LB	1	08:25
25/06/2021	10:30	13:30	RN	1	08:55
25/06/2021	13:45	16:45	H.	2	09:05
25/06/2021	13:45	16:45	CM	1	09:15
25/06/2021	13:45	16:45	CM	1	09:20

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Date	Survey Start	Survey End	Species	Count	5 min period
25/06/2021	07:10	10:10	LB	1	-
25/06/2021	07:10	10:10	CM	1	09:40
25/06/2021	07:10	10:10	CM	1	09:50
26/04/2021	07:10	10:10	SH	1	15:20
28/07/2021	07:10	10:10	LB	1	11:20
19/08/2021	07:10	10:10	BZ	1	13:35
19/08/2021	07:10	10:10	LB	1	14:40
20/08/2021	07:10	10:10	RN	1	10:40
08/09/2021	07:10	10:10	RN	1	11:35

---

## APPENDIX 04

### Confidential Appendix



## EUROPEAN OFFICES

### United Kingdom

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