

**Appendix 7I**  
**Winter 2022/23 Survey Report, Irish Ornithological Survey  
Group (IOSG)**



## *Bird Activity Summary Report*

*Winter 2022-2023*

*Site: Ballycar, Co Clare*

*Client: Ballycar Green Energy Ltd*

*Date: 10.11.2023*

# Ballycar

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# 1 Introduction

This report is a compilation of the bird activity recorded at the Ballycar site for the period October 2022 to March 2023 inclusive. It describes the methodologies and guidance followed, results, discussions on each target species recorded and conclusions of significant observations for this winter period. This report is supported by Appendix 1 - 4.

Appendix 1 contains the survey effort which shows all surveys carried out, their timings, weather conditions, surveyor and survey types undertaken during this study period at Ballycar.

Appendix 2 contains a table of all target species observations. This includes a map reference number for each target species observed. The data includes details of species, number of birds, activity, and flight height data.

Appendix 3 lists all non-target species recorded within 500m of the site boundary. Appendix 4 shows all mapped data from all survey types as well as site and survey locations. It includes observations of target species only and is relevant to the data contained in Appendix 2.

The site area is made up of a mixture of conifer plantation, rough grassland, bog / moorland and intensive farmland. It is surrounded by conifer plantations, an active quarry to the north and the River Shannon and Fergus Estuaries SPA to the south.

The reliability of survey work is dependent on the use of appropriately skilled and experienced observers. As such, surveys were carried out by the following members of the Irish Ornithological Survey Group (IOSG). John N Murphy (Environmental Manager & Lead Ornithologist), John Hehir (Field Ecologist/ Ornithologist & BSc (Hon) Wildlife Biology), Tom Ryan (Field Ecologist/ Ornithologist & BSc (Hon) Environmental & Natural Resource Management), John Deasy (Field Ecologist/ Ornithologist & MSc Ecology Assessment & Marine Science), Stan Nugent (Field Ecological Surveyor/ Ornithologist & BSc (Hon) Environmental Studies), Austin Cooney (Field Ecological Surveyor/ Ornithologist), Gerry Murphy (Field Ecological Surveyor/ Ornithologist), Pdraig Cullinan (Field Ecological Surveyor/ Ornithologist) and Tom Tarpey (Field Ecological Surveyor/ Ornithologist).

This report was prepared by Tom Ryan BSc. (Field Ecologist/Ornithologist) and reviewed by John N Murphy (Environmental Manager & Lead Ornithologist).

## 2 Field Survey Methodologies

### 2.1 Specifying Target Species

Target species were considered to be those listed on Annex I of the EU Birds Directive (2009/147/EC) species listed on the Red List of Birds of Conservation Concern in Ireland (Gilbert et al., 2021), species listed on Schedule 4 of the Wildlife Acts 1976-2018 (39/1976) and species that are a Special Conservation Interest (SCI) of a Special Protection Area (SPA) designated under the EU Habitats Directive (92/43/EEC) Natura 2000 network within 15km of the proposed development site. A select number of species which fall outside these categories and are deemed noteworthy from an ecological perspective are also included as target species in this report. Passerines are not included as target species as they are not considered to be adversely affected by wind energy developments (SNH, 2017).

The River Shannon and River Fergus Estuaries SPA as designated by the National Parks and Wildlife Service (NPWS) is located 4km from the site boundary and includes a range of bird species of special conservation interest. Although not regularly encountered, all are target species at the Ballycar site.

### 2.2 Vantage Point Surveys

Vantage point surveys were carried out in accordance with SNH guidance (SNH, 2017). Three vantage point locations (VPs) were chosen and surveyed for 6 hours per month throughout the winter period. The locations were chosen to give an adequate view of the site out to 500m. Each vantage point was surveyed by scanning a two-kilometer radius overlooking the study area.

Set height bands were used to categorize each flightline. These were chosen based on modern turbine heights and to aid data input into collision risk analysis. Height bands used were 0-20m, 20,50m, 50-100m, 100-200m and >200m.

To achieve maximum visibility vantage points were selected on elevated areas of land, where possible, or in other areas which provide clear views over the entire study area. The flight activity survey area was taken to be that area encompassing the potential development area extending out to a distance of 500m beyond the potential development boundary, hereafter referred to as the study area. Survey effort for VPs is included in Appendix 1. Summary results are in table format in section 3.1 and in full format in Appendix 2, Table 1. VP locations are mapped in Appendix 4, Figure 2.

### 2.3 Transects

Set transect routes were selected at the beginning of the survey period. These transects were selected to encompass different habitats within the 500m survey radius, where access allowed. Survey methods were adapted from the Countryside Bird Survey (CBS) (Birdwatch Ireland, 2012) and aimed to locate any target species within the study area. Survey effort for winter transects is included in Appendix 1. Survey summary results are in table format in section 3.2. Transect routes are mapped in Appendix 4, Figure 3.

### 2.4 Hen Harrier Roost Surveys

Hen Harrier Roost Surveys were carried out to monitor the suitable roosting habitat within 2km of the site boundary, as per guidance by SNH (2017). Survey methodologies were also adapted from published guidance by Hardey et al (2013), Gilbert et al (1998) and O'Donoghue (2019). Survey effort for winter roost surveys is included in Appendix 1. Results are in table format in section 3.3. The Hen Harrier Roost survey locations are mapped in Appendix 4, Figure 4.

### 2.5 Waterbird Distribution Surveys

The River Shannon and River Fergus Estuaries SPA is 4.4km to the southwest of the survey area. Waterbird distribution surveys were undertaken along four representative sections of the River Shannon Estuary at its nearest point to the proposed windfarm from upstream of Thomas Island at the Shannon Banks to Bunlickey Lake and Coonagh Point. The counted sections are mapped in Appendix 4, Figure 5.

Survey methodology was based on that birdwatch Irelands IWEBS methodology (Bibby et al, 2000). The area surveyed was suitable estuarine habitat on the Shannon estuary from the Shannon Banks area of Limerick city westwards through Bunlickey. Four sections were created and each one surveyed where all target species were recorded and counted in each section. Habitats surveyed include all suitable foraging and roosting areas for wintering waterbirds within the survey area. Survey effort for the waterbird distribution surveys is included in Appendix 1. Results are in table format in section 3.4. The counted sections are mapped in Appendix 4, Figure 5.

### 2.6 Hinterland Surveys

General hinterland surveys were carried out twice during the survey period. The area surveyed was out to 5km from the site boundary. A systematic approach was used where a consistent road transect was surveyed where all target species were recorded from suitable vantage

points along the route. Habitats surveyed ranged broadly from farmland, waterbodies, rough grassland and woodland. Results for hinterland surveys are summarized in table 3.5 and mapped in Appendix 4, Figure 17. The road transect route is mapped in Appendix 4, Figure 6.

Incidental observations of target species which were recorded outside survey times are displayed in table 3.6 and mapped in Appendix 4, Figure 18. These records are from the broader hinterland of the site.

A comprehensive suite of surveys was employed at this site. They have provided a detailed set of data which describes bird flight activity and bird behavior observed within the site and surrounding areas during this survey period, with a particular emphasis on target species.

### 3 Results

The following bird species were recorded during the 2022-2023 winter season and records are described in detail in subsequent sections below. These include species listed on Annex I of the EU Birds Directive (2009/147/EC), species listed on the Red List of Birds of Conservation Concern in Ireland (Gilbert et al., 2021), species listed on Schedule 4 of the Wildlife Acts 1976-2018 (39/1976) and species that are a Special Conservation Interest (SCI) of a Special Protection Area (SPA) designated under the EU Habitats Directive (92/43/EEC) Natura 2000 network within 15km of the proposed development site. The list is ordered in accordance with conservation significance:

A total of six target species were recorded during this survey period. Target species encountered within the core 500m survey radius during the 2022/2023 winter survey season are listed below.

- Peregrine Falcon (Annex 1 Birds Directive)
- Kestrel (BoCCI Red List)
- Snipe (BoCCI Red List)
- Buzzard (Schedule 4 Wildlife Acts)
- Sparrowhawk (Schedule 4 Wildlife Acts)
- Herring Gull (BoCCI Amber List)

Details of each target species observation including activity, habitat and flight height can be found in Appendix 2. All non-target species were also recorded during Vantage Point surveys, peak counts for non-target species are included in Appendix 3. Target species observation maps are included as Figures in Appendix 4.

### 3.1 Vantage Point Survey Results

Table 3.1 below shows a summary of observations for the target species listed above, which were recorded between October 2022 and March 2023. Any notable activity pertaining to the target species listed above has been included in this table.

**Table 3-1: Vantage Point Survey Summary Results**

Conservation Status	Species	Total number of observations recorded during VP watches	Number of observations on site/within 500m	Activity of note	Figure
Annex I	Peregrine Falcon	1	1	One bird flying/Hunting on site in November.	Appendix 4 - Fig. 8
BoCCI Red List	Kestrel	33	33	Regularly recorded during surveys. Hunting, soaring, and perching on site. Resident population.	Appendix 4 - Fig. 9
BoCCI Red List	Snipe	1	1	One bird observed in flight from VP2 in October. See flying eastwards over the site.	Appendix 4 - Fig. 10
Schedule 4 Wildlife Acts	Buzzard	28	28	Regularly recorded during surveys. Observations ranged from 1-2 individuals. Activity ranged from display, soaring, hunting, circling and perched. Resident population.	Appendix 4 - Fig. 11
Schedule 4 Wildlife Acts	Sparrowhawk	6	6	A resident population are present on site. Observed hunting and flying in a number of areas.	Appendix 4 - Fig. 12
BoCCI Amber List	Herring Gull	1	1	A small flock of three birds were observed once, passing through the site.	Appendix 4 - Fig. 14

### 3.2 Transect Survey Results

Transect surveys were carried out in November 2022 and January 2023 at transect A. Summary results of target species encountered during transect surveys are included in table 3-2 below. Full results of all species recorded are listed in Appendix 2, table 2.

**Table 3-2: Transect Survey Summary Results**

Conservation Status	Species	Total number of observations during transect surveys	Flock Size Range	Number of observations on site/ within 500m	Activity of note	Figure
BoCCI Red List	Kestrel	1	1	1	One observation of one bird perched in tree line.	Appendix 4 - Fig. 3
BoCCI Red List	Snipe	2	1	2	One bird recorded on site, flushed by surveyor during transect survey in February and March.	Appendix 4 - Fig. 3
Schedule 4 Wildlife Acts	Buzzard	1	1	1	There was one observation of a bird circling over the site and flying west.	Appendix 4 - Fig. 3
Schedule 4 Wildlife Acts	Sparrowhawk	1	1	1	Observed in flight during transect survey.	Appendix 4 - Fig. 3

### 3.3 Hen Harrier Roost Surveys

Hen harrier roost surveys were carried out on four occasions, over the most suitable roosting habitat within 2km of the site. The hinterland of the site was analyzed comprehensively in the early winter for potential roosting habitat and a consistent suitable VP surveyed thereafter. The areas surrounding Woodcock Hill to the west of the site were deemed potentially suitable and therefore the HHVP was placed in this location. As outlined in table 3-3 below, no hen harrier observations were recorded during these surveys.

An incidental observation of a male bird was recorded to the north of the site in March. See results in section 3.6 below and mapped observations in Appendix 4, Figure 18.

**Table 3-3 - Hen Harrier Roost Survey Summary Results**

Conservation Status	Total number of observations during Hen Harrier Roost Surveys	Sex	Activity of note	Figure
Annex 1	0	N/A	No observations were made of this species during any of the four roost surveys carried out in <b>November, December, January and February</b> from HHVP 1, Woodcock Hill.	Appendix 4 - Fig. 4

### 3.4 Waterbird Distribution Survey Results

Waterbird distribution surveys were carried out during the 2022/2023 winter season in November, January, February and March. Summary results from the waterbird distribution surveys are presented below in Table 3-4.

Table 3-4 shows the records of species observed both within 500m of the site and during the waterbird distribution surveys. Many more species considered as target species were observed during off site waterbird distribution surveys, but only **whooper swan** and those also observed on site are summarized below. A full list of all species encountered during these surveys can be found in Appendix 2.

**Table 3-4 - Waterbird Distribution Survey Summary Results**

Conservation Status	Species	Total number of observations recorded	Flock Size Range	Number of observations on site/ within 500m	Activity of note	Figure
Annex 1 Birds Directive, SCI species of the River Shannon and Fergus Estuaries SPA	Whooper Swan	4	14-154 (IOSG Surveys)	0	<p><sup>1</sup>A regularly occurring flock returns to lands south of section D each year, this is a known location for the species around the area of <b>Copperhill</b>. Data obtained by IOSG shows that the max flock size recorded in this area in the past 5-year period was 208 birds, recorded in February 2021. The flock uses <b>Cooperhill Lake</b> as a regular roost.</p> <p>Further West of Cooperhill, on the eastern side of the river Maigne at Newtown and Carrig West, flocks of 66 birds are regularly recorded.</p> <p>Kings Island – 19 birds recorded in January 2020, not a regular site. (Murphy, 2023).</p>	Appendix 4 - Fig. 21

<sup>1</sup> Data sourced by IOSG from Murphy, G. (2023)

Conservation Status	Species	Total number of observations recorded	Flock Size Range	Number of observations on site/ within 500m	Activity of note	Figure
BoCCI Red List	Snipe	6	1-32	5	Seven observations during Waterbird surveys. Recorded in section A, C and D. Most observations were 1-3 birds. One larger flock of 32 birds was observed in section A in January 2023.	Appendix 4 - Fig. 5
BoCCI Amber List	Herring Gull	9	1-114	1	Observed in all sections, average flock size was 25 birds. One small flock of three birds was observed once on-site during VP surveys.	Appendix 4 - Fig. 5

### 3.5 Hinterland Surveys

Two hinterland surveys were carried out over the study period. A consistent road transect and viewing points were used. Summary results of all target species recorded are outlined in table 3- 5 below.

**Table 3-5 - Hinterland Survey Summary Results**

Conservation Status	Species	Total number of observations recorded	Flock Size Range	Date	Activity of note	Figure
SCI species of the River Shannon and Fergus Estuaries SPA	Black – headed Gull	2	4-80	16/02/2023	One observation of a flock of 80 at Ardnacrusha Bridge (approx. 3.5km southeast of the wind farm site). There was also one observation of a small flock of four birds observed approx. 3.5 km south of the site.	Appendix 4 - Fig. 17
BoCCI Red List	Kestrel	2	1	03/10/2022	Two separate observations, off site during waterbird surveys. One at Woodcock Hill, 1km to the west of the site and another at Ballyfinneen North, just outside the 500m survey radius at the east of the site.	Appendix 4 - Fig. 17
Schedule 4 Wildlife Acts	Buzzard	1	1	16/02/2023	One observation at Cloghera, 4km northeast of the site.	Appendix 4 - Fig. 17
BoCCI Amber List	Lesser Black -backed Gull	1	2	16/02/2023	Two birds at Parteen Bridge, approx. 3.5 km off site.	Appendix 4 - Fig. 17

### 3.6 Incidental Observations

**Table 3-7: Incidental Observations Summary Results**

Conservation Status	Species	Total number of observations recorded	Flock Size Range	Activity of note	Figure
Annex 1	Hen Harrier	1	1	Travelling through the area, continued north for 110 seconds.	Appendix 4 - Fig. 18
Annex 1	Peregrine	1	2	Early courtship behaviour near known breeding location beside active quarry	Appendix 4 - Fig. 18
Annex 1	Golden Plover	3	unknown	Three observations made on the same date at woodcock hill, approximately 2km west of the site. A flock was heard calling overhead during a hen harrier roost survey. There was no visual of the flock.	Appendix 4 - Fig. 18
Annex 1	Hen Harrier	1	1		
BoCCI Red List	Kestrel	3	1	Three observations west of the site, at woodcock hill and 1km NW of the site	Appendix 4 - Fig. 18
Schedule 4 Wildlife Acts	Buzzard	1	1	One observation 1km northwest of the site.	Appendix 4 - Fig. 18

# 1 Summary Of Results

## 1.1 Peregrine Falcon (Falco Peregrinus)

A single bird was observed from VP 1 in November 2022. The bird was seen flying northwest through the site area at 40 -50 metres in height. An incidental observation of a pair in early courtship behaviour was recorded to the north of the site in March, near a known breeding area close to an active quarry.

## 1.2 Kestrel (Falco tinnunculus)

There were 39 observations of Kestrel during the survey period, 34 were on site and within the 500m survey radius. The species was regularly recorded during VP surveys, hunting, soaring, and perching on site. There were also five off-site records which were recorded during hinterland surveys and as incidental records, all outside the 500m survey radius.

## 1.3 Snipe (Gallinago gallinago)

There were two observations made during the survey period, all on site or within 500m, during transect surveys. A single bird was recorded on each occasion. Records were from rough grassland and moorland areas at the center of the site. Both records were of flushed birds which were roosting or foraging on site at transect A.

#### 1.4 Buzzard (Buteo buteo)

There were 32 Buzzard observations made in total during the winter period. Of these, 29 were on site or within 500m. There was also a record of three birds made during the waterbird distribution surveys, approximately 4km northeast of the site at Cloghera. Most of the birds were recorded during VP surveys, displaying, hunting, circling, and soaring over the site area. The forested and rough grassland areas were the area's most frequently used by the species.

#### 1.5 Sparrowhawk (Accipiter nisus)

There were seven observations of sparrowhawk in total. Of these, six were made during VP surveys, one bird was observed during a transect survey. The species was typically observed hunting, soaring, and travelling over the site area.

#### 1.6 Herring Gull (Larus argentatus)

One small flock of three birds was observed flying westwards through the site in November 2022. It was the only observation of the species during this winter period.

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## Appendix 1 - Survey Effort

**Appendix 1 Table 1 – Survey Effort**

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed Beaufort	Wind Direction	Temperature °C	Observer
22/11/2022	Hen Harrier Roost	1	12:45	04:15	Good	8	Light Showers	3	W	7	JH
19/12/2022	Hen Harrier Roost	1	12:30	04:20	Good	5	Dry	4	S	7	JH
20/01/2023	Hen Harrier Roost	1	13:00	04:20	Good	8	Dry	2	SE	5	JH
07/02/2023	Hen Harrier Roost	1	13:45	04:15	Good	8	Dry	3	SE	7	JH
03/03/2023	Hen Harrier Roost	1	14:45	18:45	Good	4	Dry	2	NE	7	PC
03/10/2022	Hinterland (5km)	1	09:00	06:30	Good	8	dry	5	S	16	JH
16/02/2023	Hinterland (5km)	1	09:25	04:35	Moderate	8	Drizzle	3	SW	11	JH
01/11/2022	Waterbird Distribution	A-D	08:05	06:45	Good	8	Heavy Showers	4	SW	11	TT
17/01/2023	Waterbird Distribution	A-D	09:00	07:00	Good	6	Dry	2	N	1	TT

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed Beaufort	Wind Direction	Temperature °C	Observer
19/02/2023	Waterbird Distribution	A-D	09:05	08:00	Good	8	Dry	3	SW	12	TT
07/03/2023	Waterbird Distribution	A-D	09:10	08:20	Good	2	Dry	2	E	6	TT
01/11/2022	Transect	A	09:30	03:00	Good	6	Dry	4	S	8	SN
11/01/2023	Transect	A	09:45	03:00	Moderate	8	Drizzle	5	W	6	JH
06/03/2023	Transect	A	09:15	02:45	Moderate	8	Light Showers	3	NW	8	JH
04/10/2022	Vantage Point	1	08:50	03:00	Moderate - Good	8	Light Showers	3	SW	16	AC
04/10/2022	Vantage Point	1	12:20	03:00	Moderate - Good	8	Light Showers	3	SW	16	AC
04/10/2022	Vantage Point	2	10:00	03:00	Poor	8	Light Showers	3	SW	16	GM
04/10/2022	Vantage Point	2	13:30	03:00	Poor	8	Light Showers	3	SW	16	GM
04/10/2022	Vantage Point	3	08:45	03:00	Moderate	8	Heavy Showers	3	SW	14	SN
04/10/2022	Vantage Point	3	12:15	03:00	Moderate	8	Heavy Showers	3	SW	14	SN

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed Beaufort	Wind Direction	Temperature °C	Observer
02/11/2022	Vantage Point	1	08:30	03:00	Moderate - Good	8	Heavy Rain	5	SW	12	JH
02/11/2022	Vantage Point	1	12:00	03:00	Moderate - Good	8	Heavy Rain	6	SW	12	JH
02/11/2022	Vantage Point	2	08:50	03:00	Poor - Moderate	8	Heavy Rain	5	SW	9	AC
02/11/2022	Vantage Point	2	12:20	03:00	Moderate - Good	7	Dry	7	SW	11	AC
02/11/2022	Vantage Point	3	08:30	03:00	Moderate	8	Heavy Rain	4	W	10	JNM
02/11/2022	Vantage Point	3	12:00	03:00	Moderate - Good	8	Dry	4	W	10	JNM
05/12/2022	Vantage Point	1	07:30	03:00	Good	8	Dry	3	NW	6	GM
05/12/2022	Vantage Point	1	11:00	03:00	Good	8	Light Showers	3	NW	8	GM
05/12/2022	Vantage Point	2	07:30	03:00	Good	8	Dry	3	NE	6	JH
05/12/2022	Vantage Point	2	11:00	03:00	Good	6	Dry	4	NE	6	JH
05/12/2022	Vantage Point	3	07:35	03:00	Good	8	Dry	2	NE	3	AC
05/12/2022	Vantage Point	3	11:05	03:00	Good	7	Dry	4	NE	3	AC
03/01/2023	Vantage Point	1	10:45	03:00	Good	8	Light Showers	4	S	10	SN
03/01/2023	Vantage Point	1	14:15	03:00	Good	8	Heavy Rain	5	S	10	SN

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed Beaufort	Wind Direction	Temperature °C	Observer
03/01/2023	Vantage Point	3	11:00	03:00	Poor - Moderate	8	Light Showers	2	SW	12	JH
03/01/2023	Vantage Point	3	14:30	03:00	Poor - Moderate	8	Heavy Rain	2	SW	12	JH
03/01/2023	Vantage Point	2	10:50	03:00	Moderate - Good	8	Light Showers	3	SW	10	JD
03/01/2023	Vantage Point	2	14:20	03:00	Poor - Moderate	8	Heavy Rain	3	SW	10	JD
02/02/2023	Vantage Point	1	07:30	03:00	Good	8	Heavy Showers	4	SW	8	AC
02/02/2023	Vantage Point	1	11:00	03:00	Good	8	Heavy Showers	4	SW	10	AC
02/02/2023	Vantage Point	2	07:30	03:00	Good	7	Light Showers	4	SW	8	SN
02/02/2023	Vantage Point	2	11:00	03:00	Good	7	Light Showers	4	SW	8	SN
02/02/2023	Vantage Point	3	07:30	03:00	Good	8	Light Showers	4	W	10	JH
02/02/2023	Vantage Point	3	11:00	03:00	Good	8	Drizzle	4	SW	10	JH
02/03/2023	Vantage Point	1	12:00	15:00	Good	8	Light Showers	3	NE	7	PC
02/03/2023	Vantage Point	1	15:30	18:30	Good	8	Light Showers	4	NE	7	PC
02/03/2023	Vantage Point	2	12:05	15:05	Good	7	Light Showers	3	NE	7	AC
02/03/2023	Vantage Point	2	15:35	18:35	Good	7	Light Showers	4	NE	7	AC

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed Beaufort	Wind Direction	Temperature °C	Observer
02/03/2023	Vantage Point	3	12:00	15:00	Good	7	Dry	2	E	7	SN
02/03/2023	Vantage Point	3	15:30	18:30	Good	7	Dry	3	E	7	SN

## Appendix 2 – Target Species Observations

**Appendix 2 Table 1 – VP Survey Results**

Species Reference Number GIS Maps	Date	Time	VP	Species Common Name	No. of Birds	Activity (1)	Flight Height Band 0 -20m	Flight Height Band 20-50m	Flight Height Band 50-100m	Flight Height Band 100 -200m	Flight Height Band >200m	Duration (s)
BZ 001 Appendix 4, Fig. 11	02/11/22	10:05	3	Buzzard	1	On ground / flying	60					60
BZ 002 Appendix 4, Fig. 11	02/11/22	15:15	2	Buzzard	1	Hunting				120		120
BZ 003 Appendix 4, Fig. 11	05/12/22	11:28	1	Buzzard	1	Hunting	104					104
BZ 004 Appendix 4, Fig. 11	03/01/23	11:16	2	Buzzard	1	Flying	7					7
BZ 005 Appendix 4, Fig. 11	03/01/23	12:23	2	Buzzard	1	Hunting	108					108
BZ 006 Appendix 4, Fig. 11	03/01/23	12:28	2	Buzzard	1	Soaring		92				92
BZ 007 Appendix 4, Fig. 11	03/01/23	12:30	3	Buzzard	1	Flying			154			154

Species Reference Number GIS Maps	Date	Time	VP	Species Common Name	No. of Birds	Activity (1)	Flight Height Band 0 -20m	Flight Height Band 20-50m	Flight Height Band 50-100m	Flight Height Band 100 -200m	Flight Height Band >200m	Duration (s)
BZ 008 Appendix 4, Fig. 11	03/01/23	12:30	3	Buzzard	1	Flying			261			261
BZ 009 Appendix 4, Fig. 11	03/01/23	12:34	2	Buzzard	1	Soaring		600				600
BZ 010 Appendix 4, Fig. 11	03/01/23	12:37	2	Buzzard	1	Soaring		180				180
BZ 011 Appendix 4, Fig. 11	03/01/23	12:37	2	Buzzard	1	Soaring		300				300
BZ 012 Appendix 4, Fig. 11	03/01/23	12:52	2	Buzzard	1	Hunting		120				120
BZ 013 Appendix 4, Fig. 11	03/01/23	12:59	2	Buzzard	1	Hunting	75	377				452
BZ 014 Appendix 4, Fig. 11	03/01/23	15:16	2	Buzzard	1	Hunting	99					99
BZ 015 Appendix 4, Fig. 11	03/01/23	15:32	2	Buzzard	1	Hunting	217	44				261
BZ 016 Appendix 4, Fig. 11	03/01/23	15:54	3	Buzzard	1	Hunting		207				207

Species Reference Number GIS Maps	Date	Time	VP	Species Common Name	No. of Birds	Activity (1)	Flight Height Band 0 -20m	Flight Height Band 20-50m	Flight Height Band 50-100m	Flight Height Band 100 -200m	Flight Height Band >200m	Duration (s)
BZ 017 Appendix 4, Fig. 11	02/02/23	09:56	3	Buzzard	1	Hunting	74					74
BZ 018 Appendix 4, Fig. 11	02/02/23	10:12	3	Buzzard	1	Soaring/Hunting	295	100	120	260		775
BZ 019 Appendix 4, Fig. 11	02/02/23	11:17	3	Buzzard	1	Hunting/ Hunting	50	163				213
BZ 020 Appendix 4, Fig. 11	02/02/23	11:29	3	Buzzard	1	Flying	182					182
BZ 022 Appendix 4, Fig. 11	02/02/23	11:52	2	Buzzard	1	Circling / Hunting				360		360
BZ 023 Appendix 4, Fig. 11	02/02/23	12:12	2	Buzzard	1	Circling/Hunting				5		5
BZ 024 Appendix 4, Fig. 11	02/02/23	12:37	3	Buzzard	2	Hunting / Circling		90	264			354
BZ 025 Appendix 4, Fig. 11	02/02/23	12:43	3	Buzzard	1	Hunting	214					214
BZ 027 Appendix 4, Fig. 11	07/03/23	12:19	3	Buzzard	1	Circling			5			5

Species Reference Number GIS Maps	Date	Time	VP	Species Common Name	No. of Birds	Activity (1)	Flight Height Band 0 -20m	Flight Height Band 20- 50m	Flight Height Band 50- 100m	Flight Height Band 100 - 200m	Flight Height Band >200m	Duration (s)
BZ 028 Appendix 4, Fig. 11	07/03/23	12:26	1	Buzzard	1	Circling		187				187
BZ 030 Appendix 4, Fig. 11	07/03/23	13:23	1	Buzzard	2	Hunting		82				82
BZ 032 Appendix 4, Fig. 11	07/03/23	16:11	2	Buzzard	1	Flying			25			25
HG 001 Appendix 4, Fig. 14	02/11/22	12:31	3	Herring Gull	3	Flight		4				4
K 002 Appendix 4, Fig. 9	02/11/22	08:39	1	Kestrel	1	Flying	37					37
K 003 Appendix 4, Fig. 9	02/11/22	10:29	1	Kestrel	1	Hunting			8			8
K 004 Appendix 4, Fig. 9	02/11/22	10:31	1	Kestrel	1	Flying		10				10
K 005 Appendix 4, Fig. 9	02/11/22	11:09	2	Kestrel	1	Flying		30				4
K 007 Appendix 4, Fig. 9	02/11/22	14:10	1	Kestrel	1	Flying		52				52

Species Reference Number GIS Maps	Date	Time	VP	Species Common Name	No. of Birds	Activity (1)	Flight Height Band 0 -20m	Flight Height Band 20-50m	Flight Height Band 50-100m	Flight Height Band 100 -200m	Flight Height Band >200m	Duration (s)
K 008 Appendix 4, Fig. 9	05/12/22	08:12	1	Kestrel	1	Flying / Hunting	88					88
K 009 Appendix 4, Fig. 9	05/12/22	08:21	1	Kestrel	1	Soaring	57					57
K 010 Appendix 4, Fig. 9	05/12/22	11:36	1	Kestrel	1	Soaring / Hunting		588				588
K 011 Appendix 4, Fig. 9	05/12/22	12:11	2	Kestrel	1	Flying	25					25
K 012 Appendix 4, Fig. 9	05/12/22	13:04	1	Kestrel	1	Flying/ Soaring		38				38
K 019 Appendix 4, Fig. 9	03/01/23	12:05	2	Kestrel	1	Flying / Hunting	92					92
K 020 Appendix 4, Fig. 9	03/01/23	12:38	2	Kestrel	1	Hunting/ Flying	180					180
K 014 Appendix 4, Fig. 9	03/01/23	13:06	2	Kestrel	1	Flying/ Soaring		156				156
K 021 Appendix 4, Fig. 9	03/01/23	13:09	2	Kestrel	1	Perched	120					120

Species Reference Number GIS Maps	Date	Time	VP	Species Common Name	No. of Birds	Activity (1)	Flight Height Band 0 -20m	Flight Height Band 20-50m	Flight Height Band 50-100m	Flight Height Band 100 -200m	Flight Height Band >200m	Duration (s)
K 015 Appendix 4, Fig. 9	03/01/23	13:17	2	Kestrel	1	Soaring/Hunting	321					321
K 016 Appendix 4, Fig. 9	03/01/23	13:23	2	Kestrel	1	Flying / Soaring		239				239
K 017 Appendix 4, Fig. 9	03/01/23	13:27	3	Kestrel	1	Perched	36					36
K 018 Appendix 4, Fig. 9	03/01/23	13:28	2	Kestrel	1	Hunting	138					138
K 022 Appendix 4, Fig. 9	03/01/23	13:37	2	Kestrel	1	Hunting	35					35
K 023 Appendix 4, Fig. 9	03/01/23	13:42	2	Kestrel	1	Hunting	70					70
K 024 Appendix 4, Fig. 9	03/01/23	14:22	2	Kestrel	1	Flying /Perched	30					30
K 025 Appendix 4, Fig. 9	03/01/23	14:37	3	Kestrel	1	Hunting		259				259
K 026 Appendix 4, Fig. 9	03/01/23	14:40	3	Kestrel	1	Hunting	89					89

Species Reference Number GIS Maps	Date	Time	VP	Species Common Name	No. of Birds	Activity (1)	Flight Height Band 0 -20m	Flight Height Band 20- 50m	Flight Height Band 50- 100m	Flight Height Band 100 - 200m	Flight Height Band >200m	Duration (s)
K 027 Appendix 4, Fig. 9	03/01/23	15:03	2	Kestrel	1	Hunting		171				171
K 028 Appendix 4, Fig. 9	03/01/23	15:09	2	Kestrel	1	Hunting		67				67
K 030 Appendix 4, Fig. 9	03/01/23	15:22	1	Kestrel	1	Hunting	30	216				298
K 031 Appendix 4, Fig. 9	02/02/23	09:28	3	Kestrel	1	Flying/ Hunting	23					23
K 032 Appendix 4, Fig. 9	02/02/23	09:43	3	Kestrel	1	Flying/ Hunting	226					226
K 034 Appendix 4, Fig. 9	02/02/23	12:40	2	Kestrel	1	Hunting			180			180
K 036 Appendix 4, Fig. 9	07/03/23	12:07	1	Kestrel	1	Flying	22					22
K 038 Appendix 4, Fig. 9	07/03/23	12:42	1	Kestrel	1	Flying	573					573
K 039 Appendix 4, Fig. 9	07/03/23	13:00	1	Kestrel	1	Flying	76					76

Species Reference Number GIS Maps	Date	Time	VP	Species Common Name	No. of Birds	Activity (1)	Flight Height Band 0 -20m	Flight Height Band 20- 50m	Flight Height Band 50- 100m	Flight Height Band 100 - 200m	Flight Height Band >200m	Duration (s)
K 042 Appendix 4, Fig. 9	07/03/23	16:09	1	Kestrel	1	Flying	37					37
PE 001 Appendix 4, Fig. 8	02/11/22	11:21	1	Peregrine Falcon	1	Flying / Hunting		70				70
SH 003 Appendix 4, Fig. 10	02/11/22	10:37	3	Sparrowhawk	1	Soaring			60			60
SH 005 Appendix 4, Fig. 10	02/11/22	12:02	1	Sparrowhawk	1		20					20
SH 006 Appendix 4, Fig. 10	05/12/22	08:33	1	Sparrowhawk	1	Flying/ Hunting		58				58
SH 008 Appendix 4, <b>Fig.12</b>	03/01/23	13:03	2	Sparrowhawk	1	Soaring/ Display		120				120
SH 009 Appendix 4, Fig.12	03/01/23	13:05	2	Sparrowhawk	1	Soaring/ Display		60				60
SH 010 Appendix 4, Fig.12	03/01/23	13:05	1	Sparrowhawk	1	Flying		10				10
SN 001 Appendix 4, Fig. 10	04/10/22	11:03	1	Snipe	1	Flying		24				24

**Appendix 2 Table 2 - Transect Survey Results**

Ballycar Species Count	Transect A			
Date:	01/11/2022	11/01/2023	06/03/2023	Notes
Species	No.	No.	No.	
Buzzard	1	1		circling over site
Kestrel		1		perched in treeline
Snipe		1	1	flushed by surveyor
Sparrowhawk	1			
Blackbird	12	10	15	
Blue Tit	4	2	5	
Bullfinch	4	6	2	
Chaffinch	14	22	31	
Coal Tit	7	2	5	
Collared Dove			1	
Dunnock	7		10	
Fieldfare	8	16	30	
Goldcrest	3	1		
Goldfinch	5			
Great Tit	5	1	9	
Hooded Crow	10	16	25	
House Sparrow			11	
Jackdaw		2	7	
Jay (Eurasian)	1		2	
Linnet (Common)	4	3		
Long-tailed Tit	16	8	3	
Magpie	4	3	3	
Meadow pipit	18		12	
Mistle Thrush	11			
Pheasant	2		4	
Pied wagtail	2		1	
Raven	3	1		
Redpoll (Common)			7	
Redwing		11	4	
Reed Bunting	2			
Robin	33	9	17	
Rook	5	1	2	
Song Thrush	1		6	
Starling (Common)	16	3	22	
Stonechat	2			
Woodpigeon	14	7	52	
Wren	8	4	7	

**Appendix 2 Table 3 - Waterbird Distribution Survey Results – November 2022**

Ballycar – Waterbird Distribution Survey	01/11/2022			
	Section A	Section B	Section C	Section D
Species	No.	No.	No.	No.
Black-headed Gull	275	366	57	28
Common Gull	8	3		
Cormorant	34	4	51	
Dunlin			1	
Gadwall	10	5		32
Great Black-backed Gull	5			
Grey Heron	2	2		1
Greylag Goose	167			
Herring Gull	14	5	1	
Lapwing	6			
Lesser Black-backed Gull	126	25	1	
Little Egret				3
Little Grebe		1		41
Mallard	71	3	8	2
Moorhen	1	3	1	2
Mute Swan	13	20	13	4
Oystercatcher	9			
Pochard				4
Redshank			21	
Shoveler	6			1
Snipe	1			1
Teal			3	
Tufted Duck	2	11		9
Water Rail				3
Whooper Swan				42
Wigeon				4

**Appendix 2 Table 4 - Waterbird Distribution Survey Results - January 2023**

	17/01/2023			
Ballycar - Waterbird Distribution Survey	Section A	Section B	Section C	Section D
Species	No.	No.	No.	No.
Black-headed Gull	411	354	100	26
Buzzard				1
Common Gull	17	5		
Coot	9	15		122
Cormorant	20	3	162	5
Curlew			11	
Gadwall		6		42
Great Black-backed Gull	3			
Grey Heron	2		5	2
Greylag Goose			108	1
Herring Gull	114	36	1	1
Lapwing				27
Lesser Black-backed Gull	6	1	1	
Little Grebe		2	2	10
Mallard	24	10	14	1
Moorhen	2	23	3	14
Mute Swan	18	22	11	9
Oystercatcher	14		1	
Pintail		1		
Redshank			5	
Shoveler				14
Snipe	32		1	
Sparrowhawk				1
Teal	4	28	4	2
Tufted Duck	1	13	1	6
Whooper Swan	14			154
Wigeon				23
Ring-billed Gull		1		
Iceland Gull		1		

**Appendix 2 Table 5 - Waterbird Distribution Survey Results - February 2023**

	19/02/2023			
Ballycar - Waterbird Distribution Survey	Section A	Section B	Section C	Section D
Species	No.	No.	No.	No.
Black-headed Gull	421	495	357	47
Common Gull	11	14	13	4
Coot	10	8		57
Cormorant	11	10	406	32
Curlew			9	1
Gadwall	2	16	16	46
Great Black-backed Gull	3	3	5	2
Grey Plover		3	3	
Greylag Goose	2		15	
Herring Gull	56	41		3
Kingfisher			1	
Lesser Black-backed Gull	7	3	4	1
Little Egret	1			1
Little Grebe		1		15
Mallard	41	26	10	8
Moorhen	2	6		10
Mute Swan	11	33	12	11
Oystercatcher	84			
Pochard		8		
Redshank	1		1	5
Snipe				1
Teal	4	8	235	48
Tufted Duck	14	14		15
Water Rail		4		5
Whooper Swan				140
Wigeon				18
Iceland Gull		1		

**Appendix 2 Table 6 - Waterbird Distribution Survey Results - March 2023**

	07/03/2023			
Ballycar Waterbird Distribution Survey	Section A	Section B	Section C	Section D
Species	No.	No.	No.	No.
Black-headed Gull	223	340	229	870
Buzzard				2
Common Gull	25	19	4	12
Coot	6	7		34
Cormorant	18	11	351	14
Gadwall	2	12	22	54
Great Crested Grebe				2
Greenshank				
Grey Heron	2	3	3	3
Greylag Goose			31	1
Herring Gull	4	18	1	30
Lesser Black-backed Gull	3	13	2	
Little Grebe		4		10
Mallard	27	25	21	21
Moorhen	2	14	2	1
Mute Swan	9	38	15	7
Oystercatcher	17			
Pochard		2		
Redshank	1			
Shoveler		2		
Snipe	2			
Sparrowhawk	1			
Teal	10	12	62	52
Tufted Duck		20	1	6
Water Rail		2		4
Whooper Swan				138
Wigeon				48

## Appendix 3 – Non -Target Species

Appendix 3 Table 1 - VP1 Non-target Species

VP1 - Ballycar Non - Target Species		Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023
Species	Scientific Name:	No.	No.	No.	No.	No.	No.
Blackbird	<i>Turdus merula</i>	4	1	8	7	3	6
Blue Tit	<i>Cyanistes caeruleus</i>	2	1		2		2
Bullfinch	<i>Pyrrhula pyrrhula</i>		3	2			1
Chaffinch	<i>Fringilla coelebs</i>	10	2	6	22	12	11
Coal Tit	<i>Periparus ater</i>			2	1		1
Collared Dove	<i>Streptopelia decaocto</i>	2				4	2
Dunnock	<i>Prunella modularis</i>	2		3	2	4	4
Fieldfare	<i>Turdus pilaris</i>			29	2		24
Goldcrest	<i>Regulus regulus</i>			2			1
Goldfinch	<i>Carduelis carduelis</i>	10	2	4	5		3
Great Tit	<i>Parus major</i>	1			2	1	1
Grey Wagtail	<i>Motacilla cinerea</i>			1	2		2
Hooded Crow	<i>Corvus cornix</i>	9	7	15	4	10	5
House Sparrow	<i>Passer domesticus</i>	8	12		9	6	
Jackdaw	<i>Corvus monedula</i>	11	17	31	17	16	25
Linnet (Common)	<i>Carduelis cannabina</i>		6				
Long-tailed Tit	<i>Aegithalos caudatus</i>		5				
Magpie	<i>Pica pica</i>	5	4	4	14	7	9
Meadow pipit	<i>Anthus pratensis</i>	2	7	7	3		5
Mistle Thrush	<i>Turdus viscivorus</i>		2	3	2	2	
Pheasant	<i>Phasianus colchicus</i>				1	1	1
Pied wagtail	<i>Motacilla alba</i>	3	1	3	2	2	1
Raven	<i>Corvus corax</i>	3	4	3	2		6
Redpoll (Common)	<i>Carduelis flammea</i>				2		2
Redwing	<i>Turdus iliacus</i>		28	121	26	8	22
Reed Bunting	<i>Emberiza schoeniclus</i>	8			2	2	
Robin	<i>Erithacus rubecula</i>	6	1	3	4	5	3
Rook	<i>Corvus frugilegus</i>	9	10	28	14	40	14
Siskin	<i>Carduelis spinus</i>						1
Skylark	<i>Alauda arvensis</i>				1		
Song Thrush	<i>Turdus philomelos</i>			2	5	2	1
Starling (Common)	<i>Sturnus vulgaris</i>	16	43	22	9	8	27
Stonechat	<i>Saxicola rubicola</i>	2		2	2		2
Woodpigeon	<i>Columba palumbus</i>	8	5	18	14	6	14

VP1 - Ballycar Non - Target Species		Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023
Species	Scientific Name:	No.	No.	No.	No.	No.	No.
Wren	<i>Troglodytes troglodytes</i>	2	1	4	3	2	2

**Appendix 3 Table 2 - VP2 Non-target Species**

VP2 - Ballycar Non - Target Species		Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023
Species	Scientific Name:	No.	No.	No.	No.	No.	No.
Blackbird	<i>Turdus merula</i>	7	2	1	2	4	4
Blue Tit	<i>Cyanistes caeruleus</i>	6		2	1	2	
Bullfinch	<i>Pyrrhula pyrrhula</i>			1	1	2	
Chaffinch	<i>Fringilla coelebs</i>	19	18	3	1	5	6
Chiffchaff	<i>Phylloscopus collybita</i>	1					
Coal Tit	<i>Periparus ater</i>		1		1	2	
Dunnock	<i>Prunella modularis</i>					2	1
Fieldfare	<i>Turdus pilaris</i>		18	56		30	16
Goldcrest	<i>Regulus regulus</i>				2	2	
Goldfinch	<i>Carduelis carduelis</i>		10	1		4	
Great Tit	<i>Parus major</i>	3			1	4	
Hooded Crow	<i>Corvus cornix</i>	21	11	12	2	2	12
Jackdaw	<i>Corvus monedula</i>	13	11	9	2	9	12
Jay (Eurasian)	<i>Garrulus glandarius</i>	4		1	1	2	
Long-tailed Tit	<i>Aegithalos caudatus</i>			2			
Magpie	<i>Pica pica</i>	6	4	3		12	3
Meadow pipit	<i>Anthus pratensis</i>	8	2			22	
Mistle Thrush	<i>Turdus viscivorus</i>	7	2	1	1	4	4
Pheasant	<i>Phasianus colchicus</i>	2		1			
Pied wagtail	<i>Motacilla alba</i>	6	2	2	1	2	2
Raven	<i>Corvus corax</i>	4	4	2	1	2	2
Redpoll (Common)	<i>Carduelis flammea</i>			3			
Redwing	<i>Turdus iliacus</i>		10	22	20	12	6
Robin	<i>Erithacus rubecula</i>	7	2	1		3	4
Rook	<i>Corvus frugilegus</i>		25	3	2	15	60
Siskin	<i>Carduelis spinus</i>					1	
Song Thrush	<i>Turdus philomelos</i>					2	2
Starling (Common)	<i>Sturnus vulgaris</i>		10	47	25	12	40
Woodpigeon	<i>Columba palumbus</i>	43	18	14	1	21	
Wren	<i>Troglodytes troglodytes</i>	4	1	1	1	2	

**Appendix 3 Table 3 - VP3 Non-target Species**

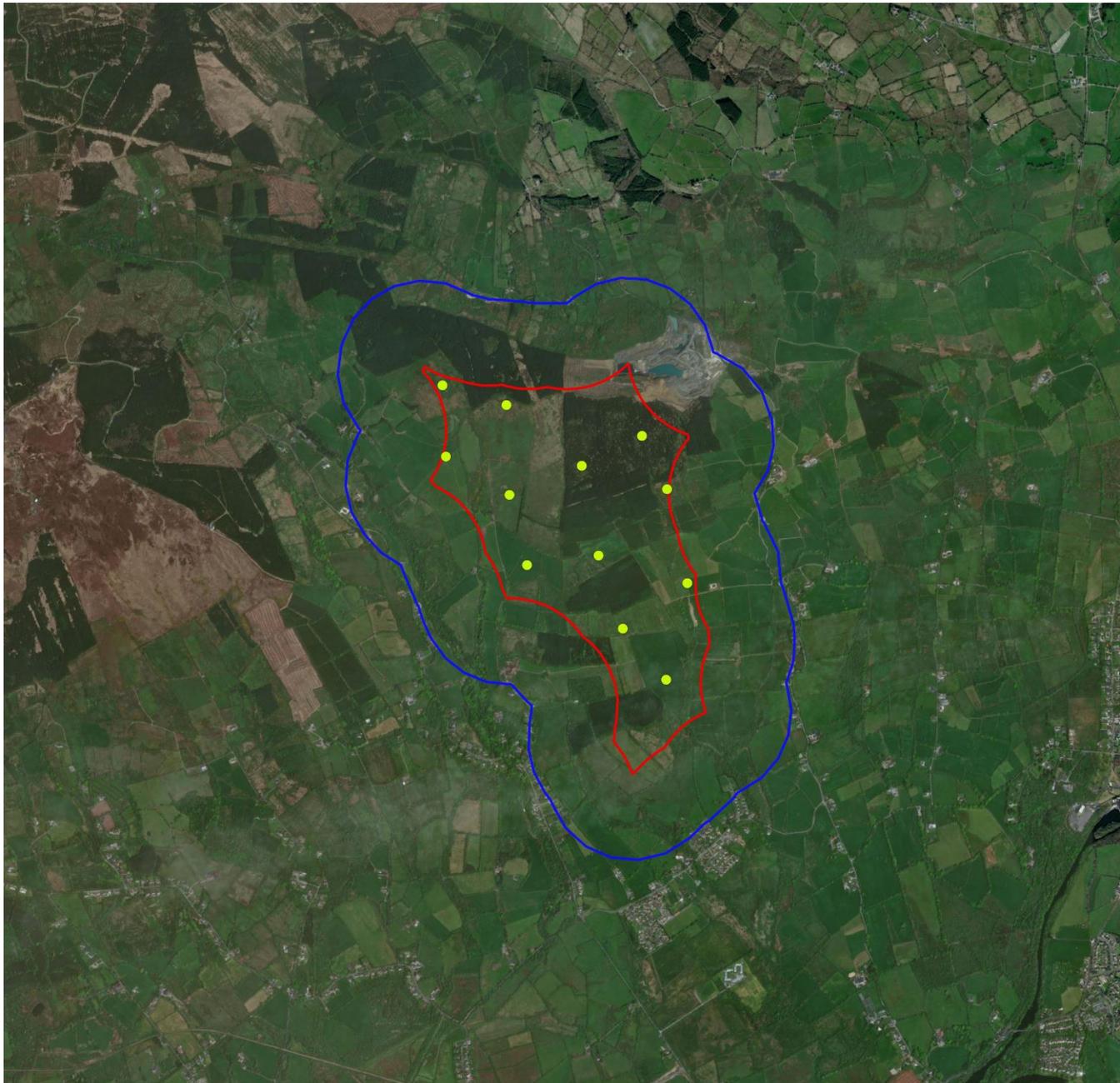
VP3 - Ballycar Non - Target Species		Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023
Species	Scientific Name:	No.	No.	No.	No.	No.	No.
Blackbird	<i>Turdus merula</i>	5	10	3	1	1	4
Blue Tit	<i>Cyanistes caeruleus</i>	2	5		1	2	2
Chaffinch	<i>Fringilla coelebs</i>	5	12	5	4	4	8
Coal Tit	<i>Pariparus ater</i>	2	2		1	1	2
Dunnock	<i>Prunella modularis</i>	1	2	2			1
Fieldfare	<i>Turdus pilaris</i>			16	16	36	
Goldcrest	<i>Regulus regulus</i>	2					1
Goldfinch	<i>Carduelis carduelis</i>	35	12			9	
Great Tit	<i>Parus major</i>	2	3	1		3	2
Hooded Crow	<i>Corvus cornix</i>	4	4	7	7	18	4
Jackdaw	<i>Corvus monedula</i>	6	6	2	4	2	15
Jay (Eurasian)	<i>Garrulus glandarius</i>	1					
Linnet (Common)	<i>Carduelis cannabina</i>		6				
Long-tailed Tit	<i>Aegithalos caudatus</i>	8	8		8		2
Magpie	<i>Pica pica</i>	3	6	4	2	4	4
Meadow pipit	<i>Anthus pratensis</i>	5	10			2	
Mistle Thrush	<i>Turdus viscivorus</i>	2	5			1	2
Pheasant	<i>Phasianus colchicus</i>	1	1	1	1	1	1
Pied wagtail	<i>Motacilla alba</i>	2	2			1	2
Raven	<i>Corvus corax</i>	4	2	6	2	4	8
Redwing	<i>Turdus iliacus</i>		70	4	2	30	
Robin	<i>Erithacus rubecula</i>	3	5	3	1	1	3
Rook	<i>Corvus frugilegus</i>	9	14	6	3	5	25
Siskin	<i>Carduelis spinus</i>		2				
Song Thrush	<i>Turdus philomelos</i>	2	2			1	2
Starling (Common)	<i>Sturnus vulgaris</i>	12	125		10		22
Stonechat	<i>Saxicola rubicola</i>	2	2				
Woodpigeon	<i>Columba palumbus</i>	6	22		1	3	12
Wren	<i>Troglodytes troglodytes</i>	2	4	2		1	2

**Appendix 3 Table 4 - Peak Counts VP1 – VP3**

Peak Counts VP1-VP3 Non - Target Species		Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023
Species	Scientific Name:	No.	No.	No.	No.	No.	No.
Blackbird	<i>Turdus merula</i>	7	10	15	9	6	6
<b>Blackbird</b>	<i>Turdus merula</i>	7	10	8	7	4	6
Blue Tit	<i>Cyanistes caeruleus</i>	6	5	2	2	2	2
Bullfinch	<i>Pyrrhula pyrrhula</i>	0	3	2	1	2	1
Chaffinch	<i>Fringilla coelebs</i>	19	18	6	22	12	11
Chiffchaff	<i>Phylloscopus collybita</i>	1	0	0	0	0	0
Coal Tit	<i>Periparus ater</i>	2	2	2	1	2	2
Collared Dove	<i>Streptopelia decaocto</i>	2	0	0	0	4	2
Dunnock	<i>Prunella modularis</i>	2	2	3	2	4	4
Fieldfare	<i>Turdus pilaris</i>	0	18	56	16	36	24
Goldcrest	<i>Regulus regulus</i>	2	0	2	2	2	1
Goldfinch	<i>Carduelis carduelis</i>	35	12	4	5	9	3
Great Tit	<i>Parus major</i>	3	3	1	2	4	2
Grey Wagtail	<i>Motacilla cinerea</i>	0	0	1	2	0	2
Hooded Crow	<i>Corvus cornix</i>	21	11	15	7	18	12
House Sparrow	<i>Passer domesticus</i>	8	12	0	9	6	0
Jackdaw	<i>Corvus monedula</i>	13	17	31	17	16	25
Jay (Eurasian)	<i>Garrulus glandarius</i>	4	0	1	1	2	0
Linnet (Common)	<i>Carduelis cannabina</i>	0	6	0	0	0	0
Long-tailed Tit	<i>Aegithalos caudatus</i>	8	8	2	8	0	2
Magpie	<i>Pica pica</i>	6	6	4	14	12	9
Meadow pipit	<i>Anthus pratensis</i>	8	10	7	3	22	5
Mistle Thrush	<i>Turdus viscivorus</i>	7	5	3	2	4	4
Pheasant	<i>Phasianus colchicus</i>	2	1	1	1	1	1
Pied wagtail	<i>Motacilla alba</i>	6	2	3	2	2	2
Raven	<i>Corvus corax</i>	4	4	6	2	4	8
Redpoll (Common)	<i>Carduelis flammea</i>	0	0	3	2	0	2
Redwing	<i>Turdus iliacus</i>	0	70	121	26	30	22
Reed Bunting	<i>Emberiza schoeniclus</i>	8	0	0	2	2	0
Robin	<i>Erithacus rubecula</i>	7	5	3	4	5	4
Rook	<i>Corvus frugilegus</i>	9	25	28	14	40	60
Siskin	<i>Carduelis spinus</i>	0	2	0	0	1	1
Skylark	<i>Alauda arvensis</i>	0	0	0	1	0	0
Song Thrush	<i>Turdus philomelos</i>	2	2	2	5	2	2
Starling (Common)	<i>Sturnus vulgaris</i>	16	125	47	25	12	40
Stonechat	<i>Saxicola rubicola</i>	2	2	2	2	0	2
Woodpigeon	<i>Columba palumbus</i>	43	22	18	14	21	16

Peak Counts VP1-VP3 Non - Target Species		Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023
Species	Scientific Name:	No.	No.	No.	No.	No.	No.
Wren	<i>Troglodytes troglodytes</i>	4	4	4	3	2	2

## Appendix 4 - Figures



## Ballycar Bird Surveys

Winter 2022 / 2023



-  Development Area
-  500m Study Area
-  Turbine Layout

Figure 1:  
Site Layout

Author: Tom Ryan

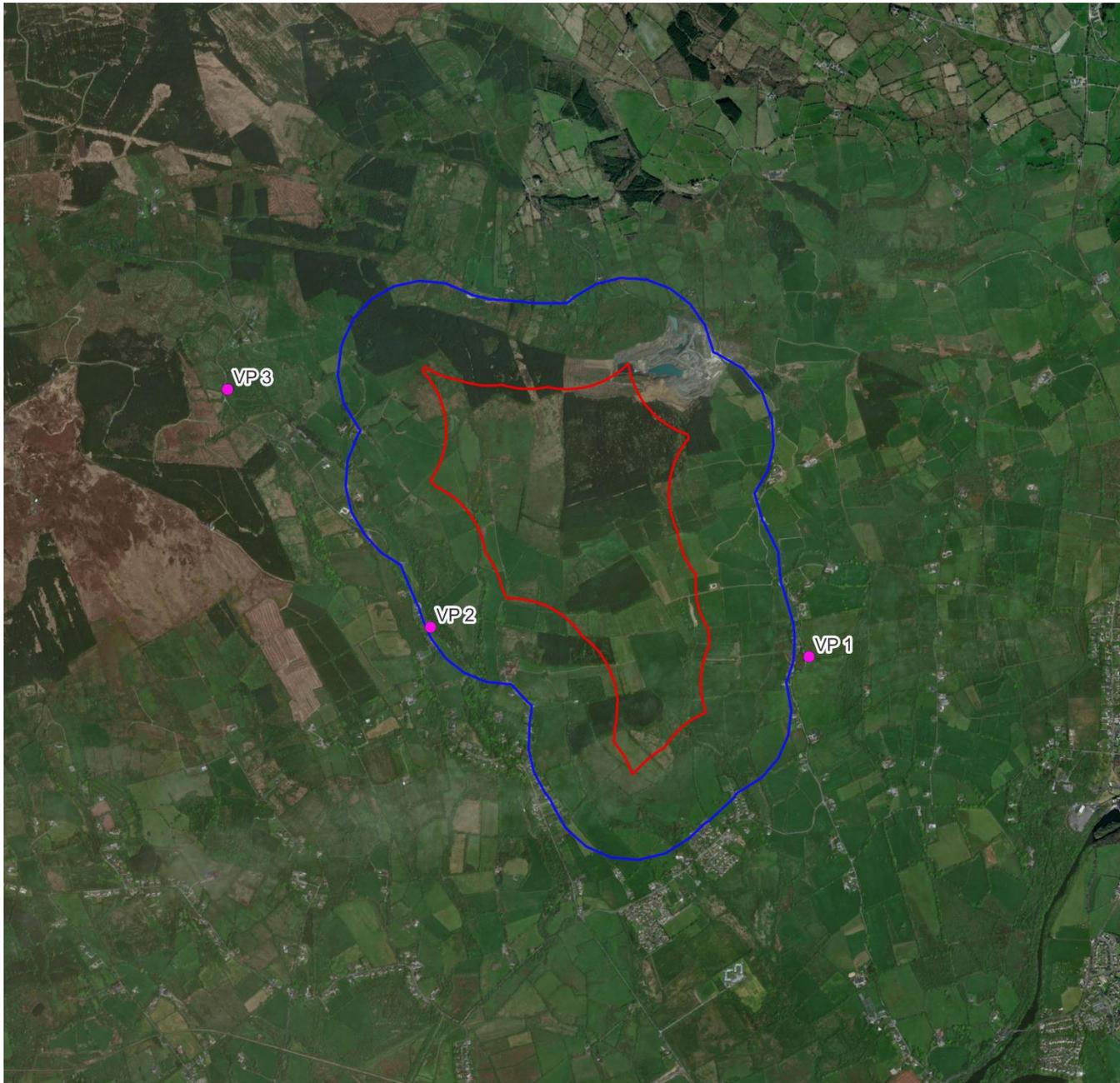
Reviewed By: John Murphy

21/07/2023

Scale: 1: 30,000

0 1 km





## Ballycar Bird Surveys

Winter 2022 / 2023



-  Development Area
-  500m Study Area
-  VP Locations

Figure 2:  
Vantage Point Locations

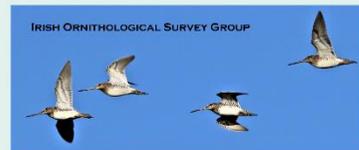
Author: Tom Ryan

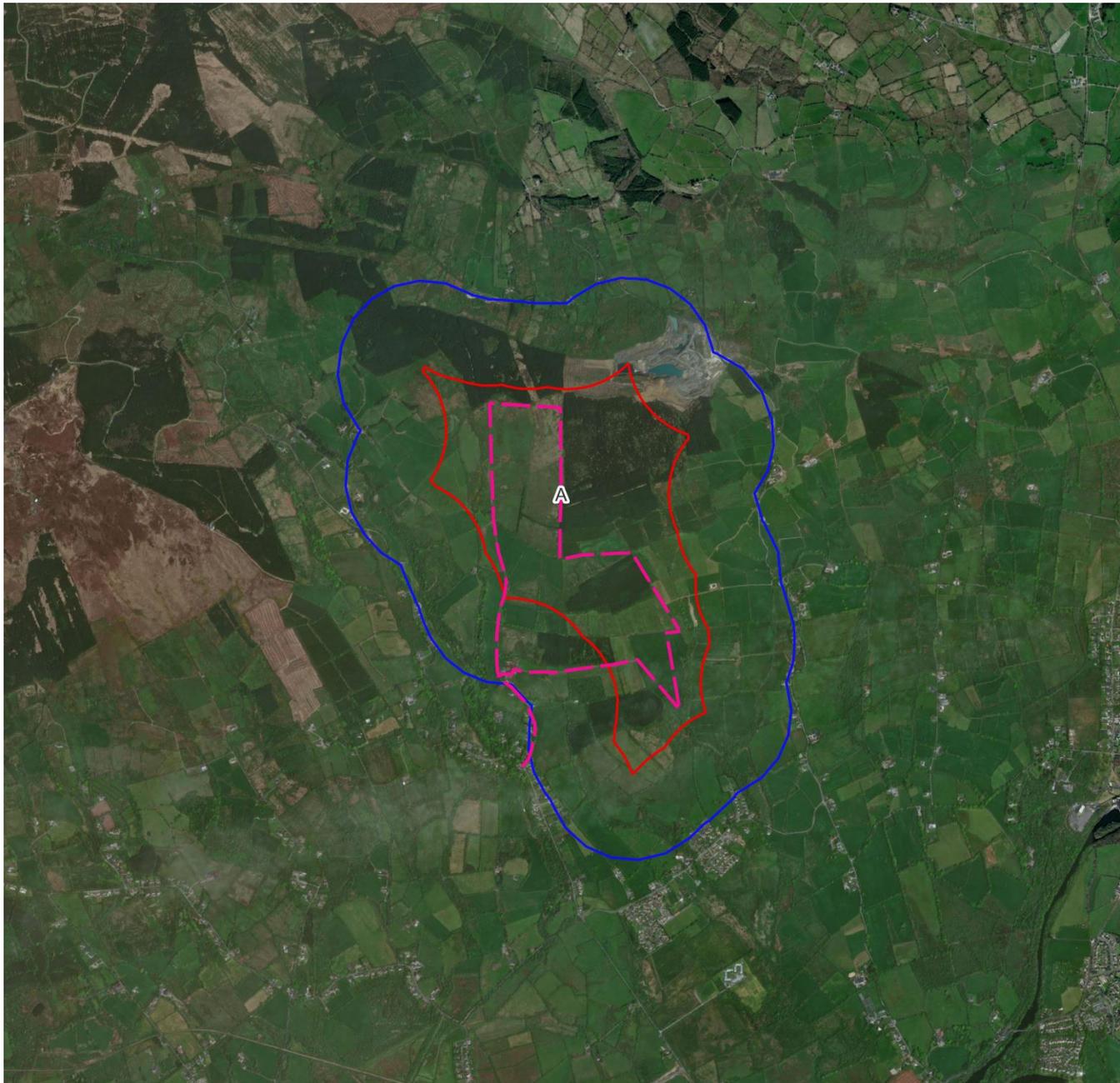
Reviewed By: John Murphy

21/07/2023

Scale: 1: 30,000

0 1 km





## Ballycar Bird Surveys

Winter 2022 / 2023



-  Development Area
-  500m Study Area
-  Transect location

**Figure 3:**  
Transect Location

Author: Tom Ryan

Reviewed By: John Murphy

21/07/2023

Scale: 1: 30,000

0 1 km





## Ballycar Bird Surveys

Winter 2022 / 2023



-  Development Area
-  500m Study Area
-  HH Roost Vps

Figure 4:  
Hen Harrier Roost  
Survey VP

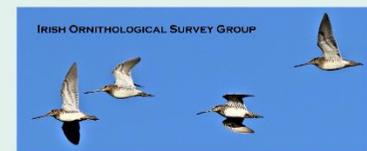
Author: Tom Ryan

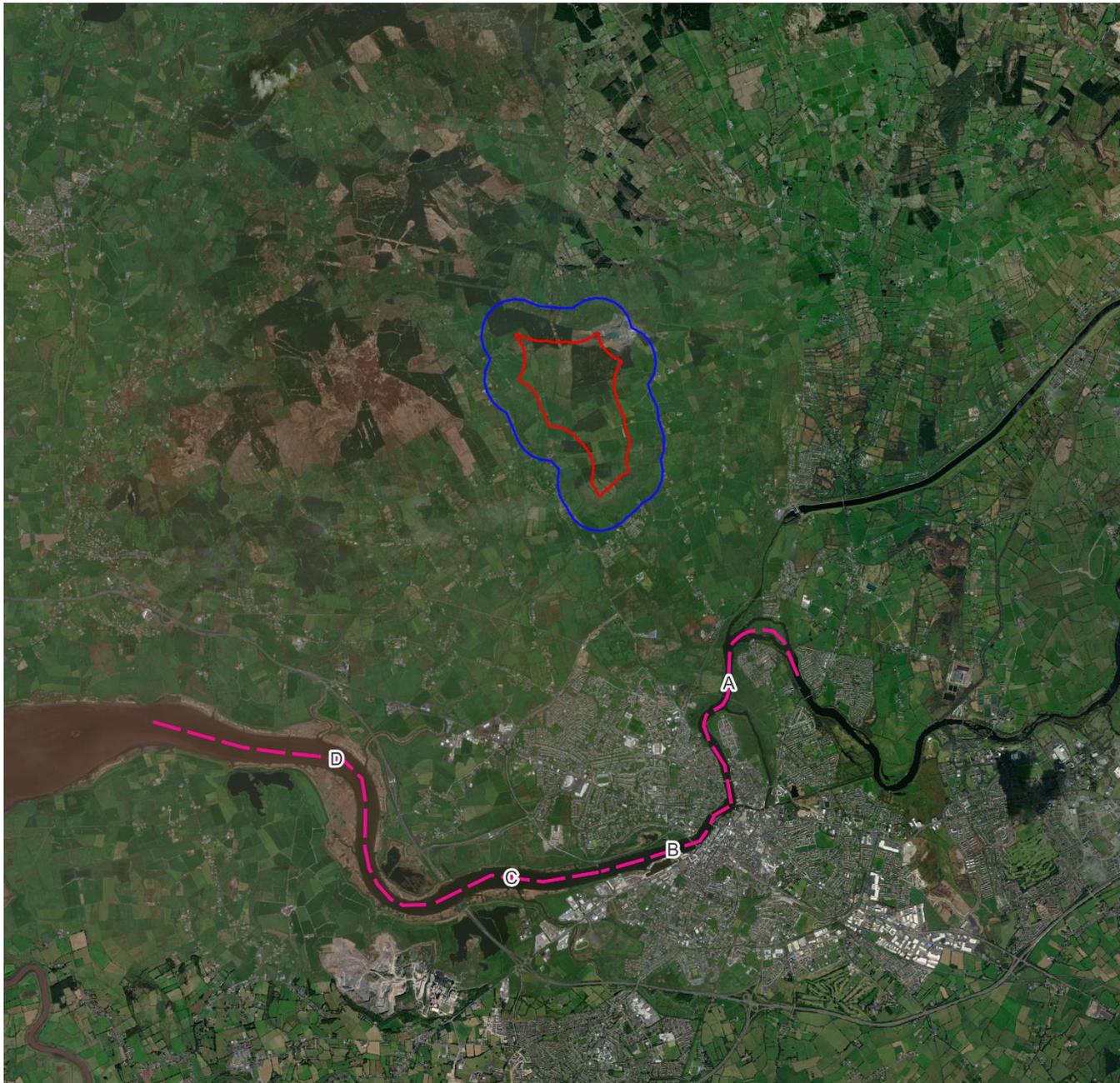
Reviewed By: John Murphy

21/07/2023

Scale: 1: 30,000

0 1 km





## Ballycar Bird Surveys

Winter 2022 / 2023



-  Development Area
-  500m Study Area
-  Waterbird Survey Sections

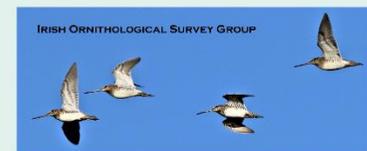
Figure 5:  
Waterbird Survey  
Sections A - D

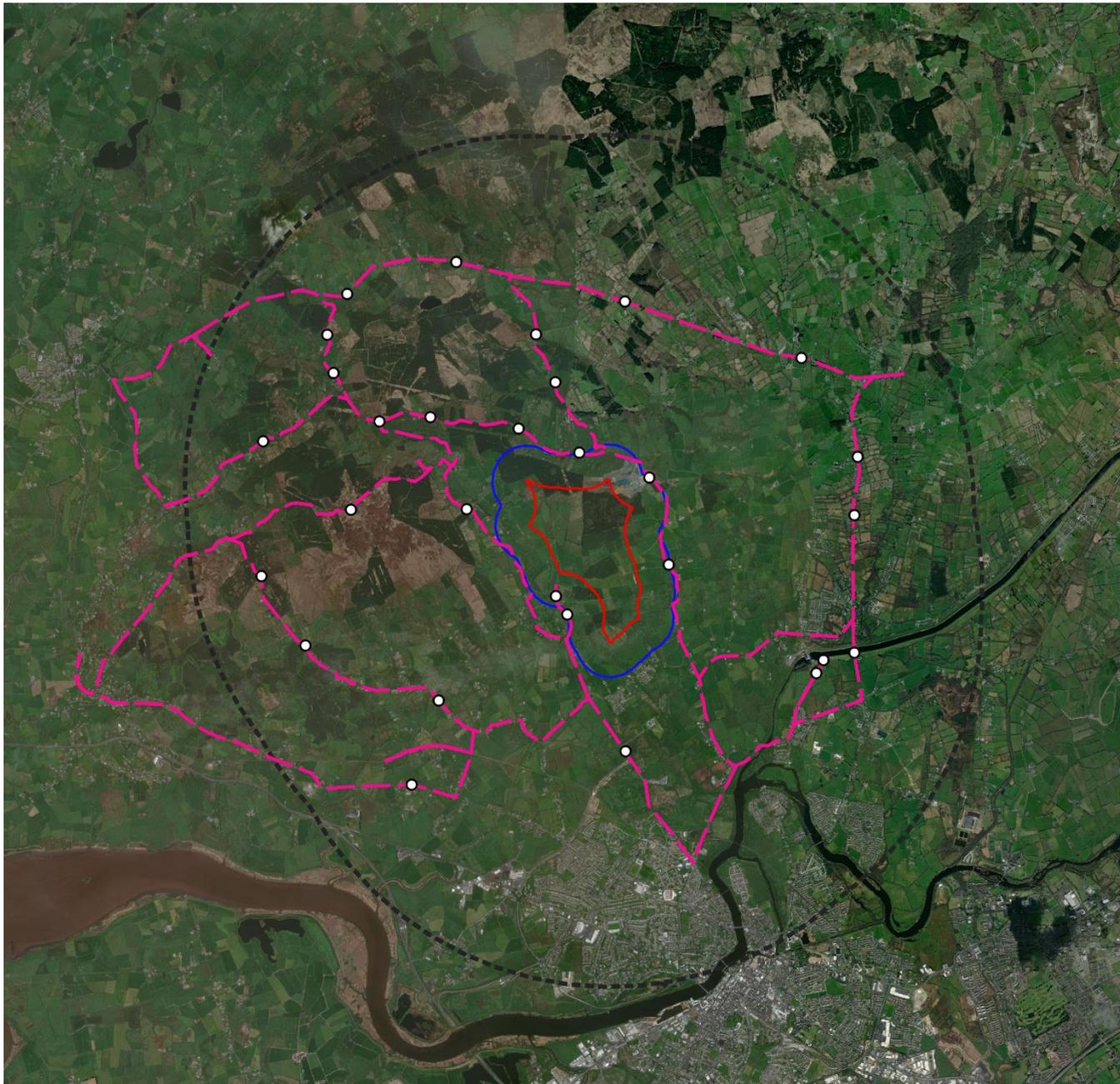
Author: Tom Ryan

Reviewed By: John Murphy

21/07/2023

Scale: 1: 75,000





## Ballycar Bird Surveys

Winter 2022 / 2023



-  Development Area
-  500m Study Area
-  5km Hinterland Area
-  Hinterland Road Transect
-  Hinterland Viewing Points

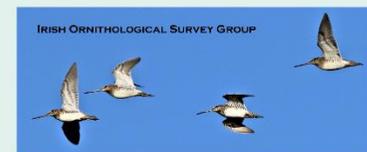
Figure 6:  
Hinterland Survey Area

Author: Tom Ryan

Reviewed By: John Murphy

21/07/2023

Scale: 1: 75,000





# Ballycar Bird Surveys

Winter 2022 / 2023



-  Development Area
-  500m Study Area
-  Peregrine

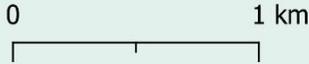
### Figure 8: Peregrine Flights

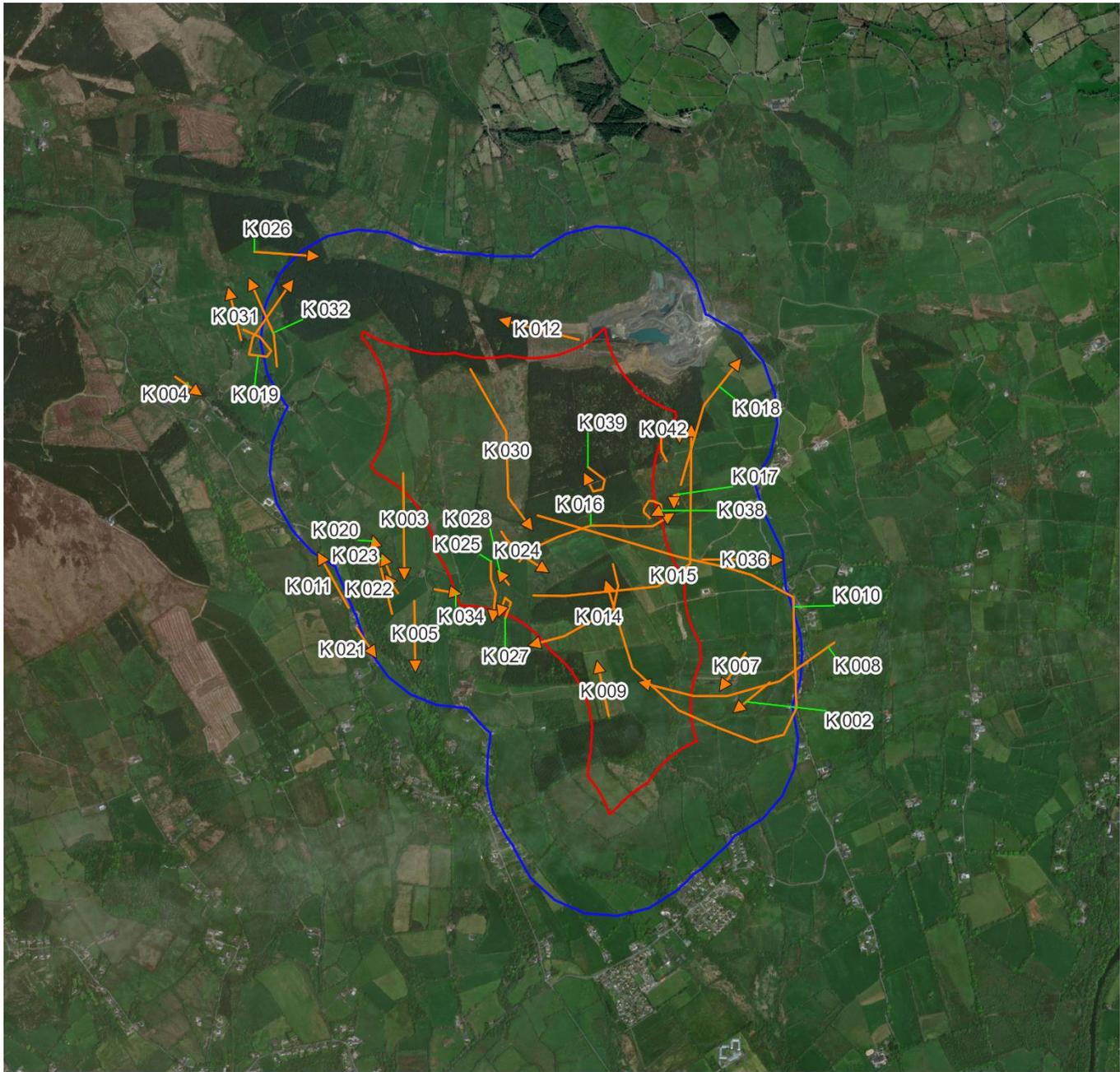
Author: Tom Ryan

Reviewed By: John Murphy

21/07/2023

Scale: 1: 25,000





**Ballycar Bird Surveys**

Winter 2022 / 2023

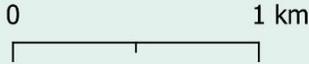


- Development Area
- 500m Study Area
- Kestrel

**Figure 9:  
Kestrel Flights**

Author: Tom Ryan  
 Reviewed By: John Murphy  
 23/07/2023

Scale: 1: 25,000





## Ballycar Bird Surveys

Winter 2022 / 2023



-  Development Area
-  500m Study Area
-  Snipe

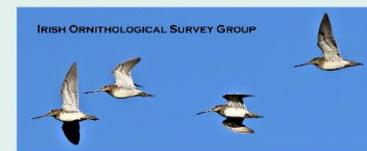
Figure 10:  
Snipe Flights

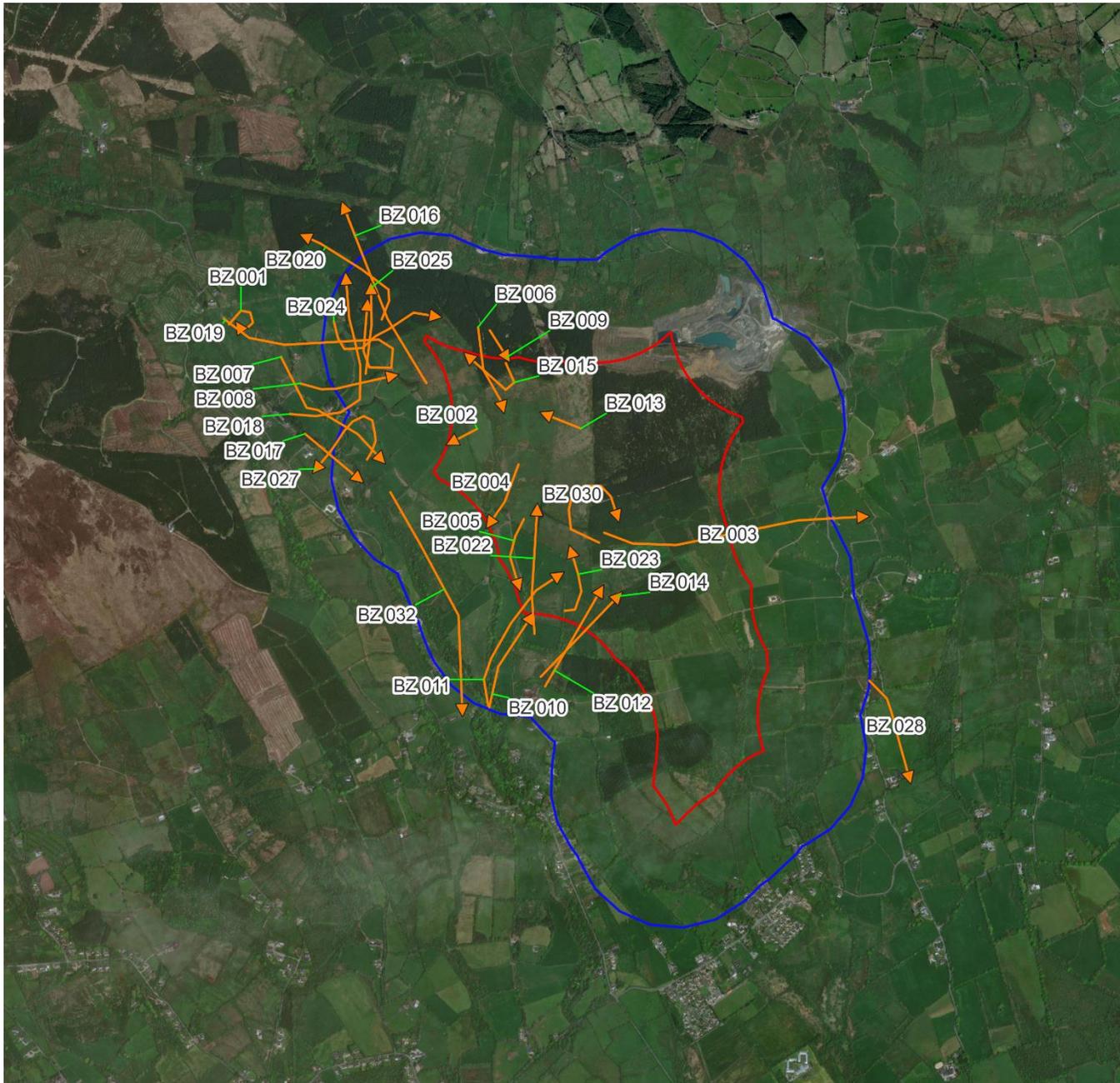
Author: Tom Ryan

Reviewed By: John Murphy

24/07/2023

Scale: 1: 25,000





## Ballycar Bird Surveys

Winter 2022 / 2023



- Development Area
- 500m Study Area
- Buzzard

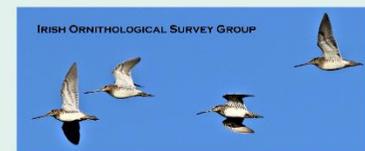
**Figure 11:**  
Buzzard Flights

Author: Tom Ryan

Reviewed By: John Murphy

24/07/2023

Scale: 1: 25,000





**Ballycar Bird Surveys**

Winter 2022 / 2023



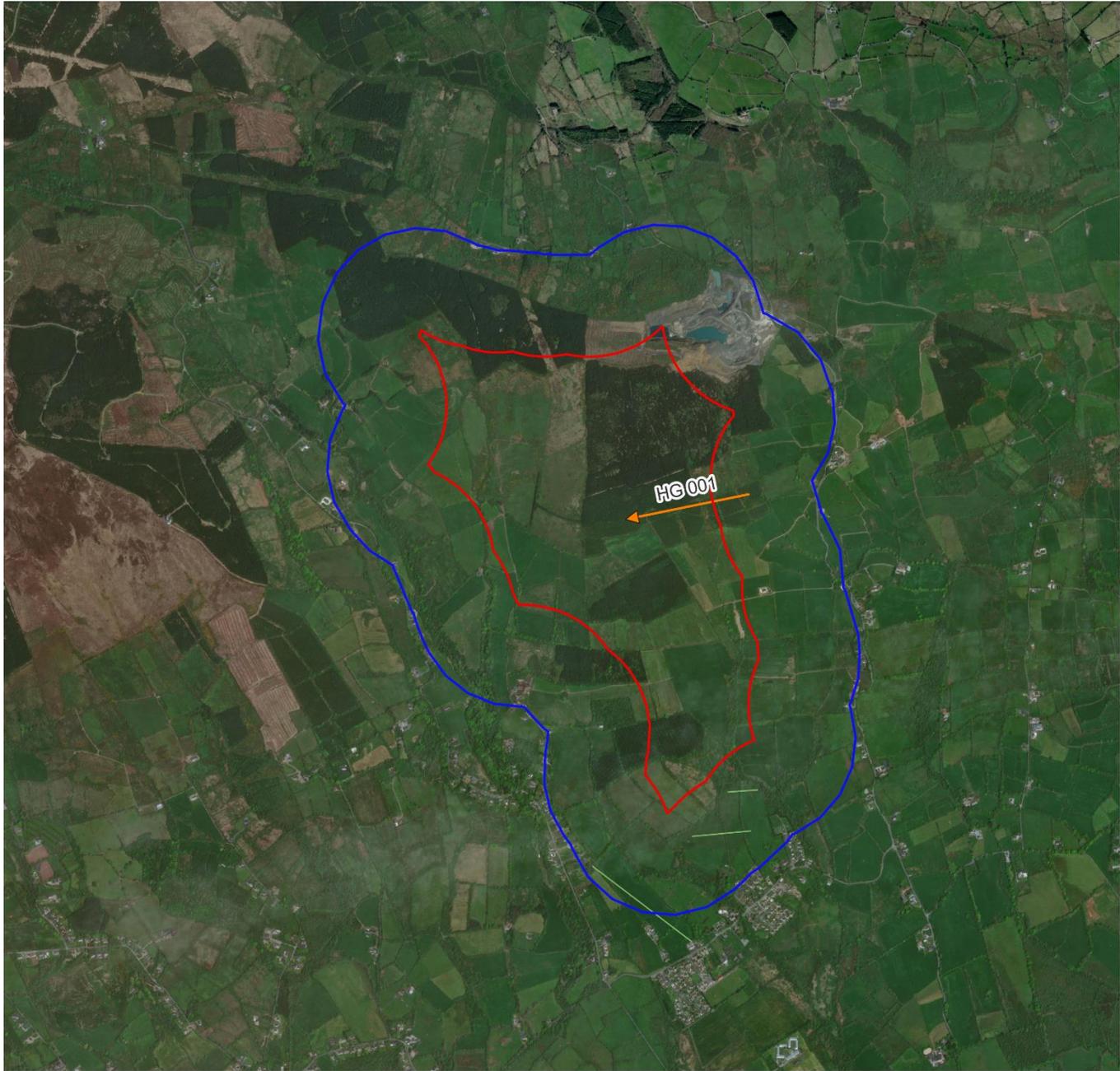
- Development Area
- 500m Study Area
- ▶ Sparrowhawk

**Figure 12:  
Sparrowhawk Flights**

Author: Tom Ryan  
 Reviewed By: John Murphy  
 24/07/2023

Scale: 1: 25,000





**Ballycar Bird Surveys**

Winter 2022 / 2023



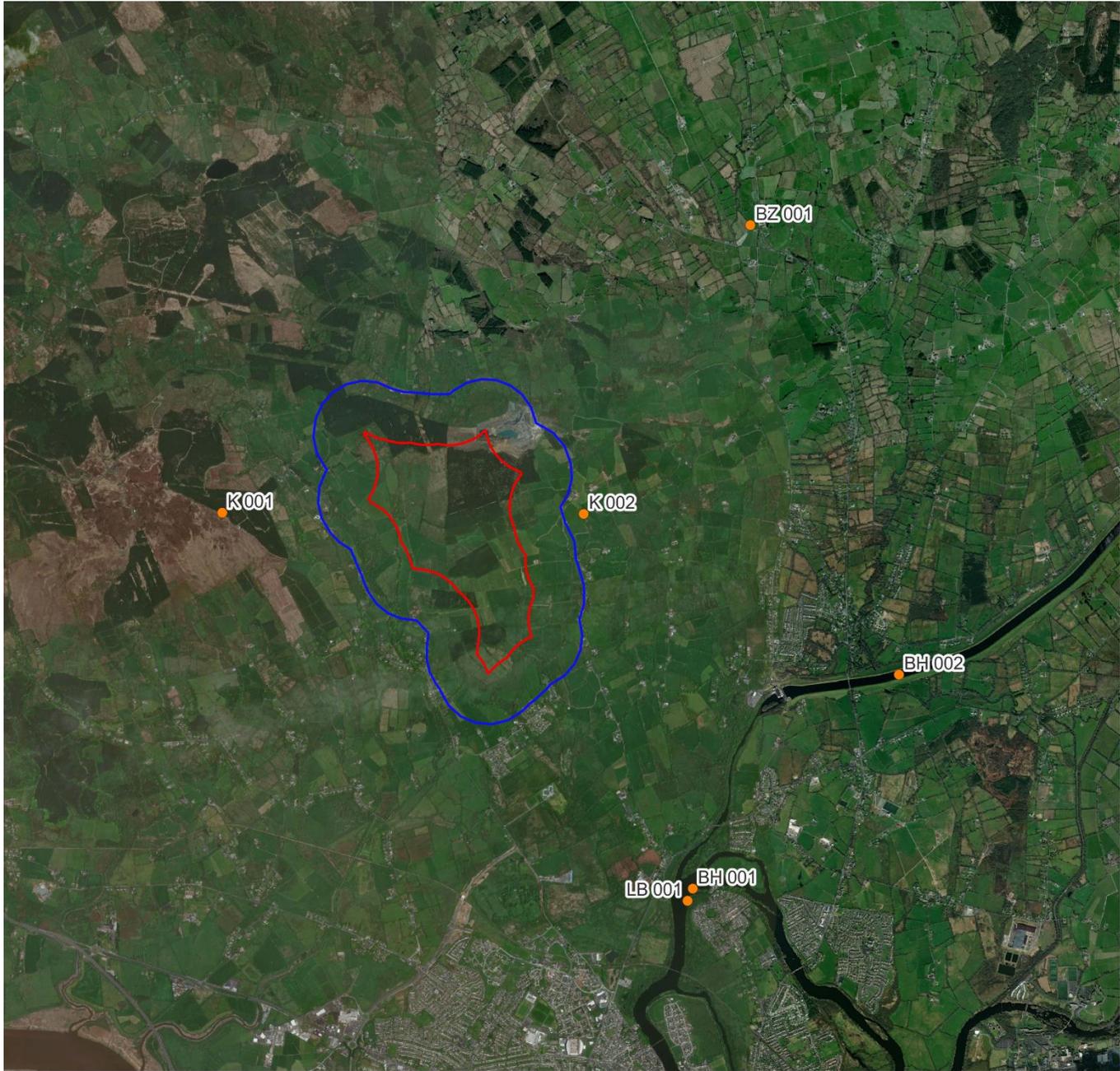
-  Development Area
-  500m Study Area
-  Herring Gull

**Figure 14:  
Herring Gull Flights**

Author: Tom Ryan  
Reviewed By: John Murphy  
24/07/2023

Scale: 1: 25,000





**Ballycar Bird Surveys**

Winter 2022 / 2023

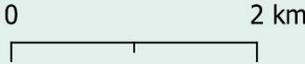


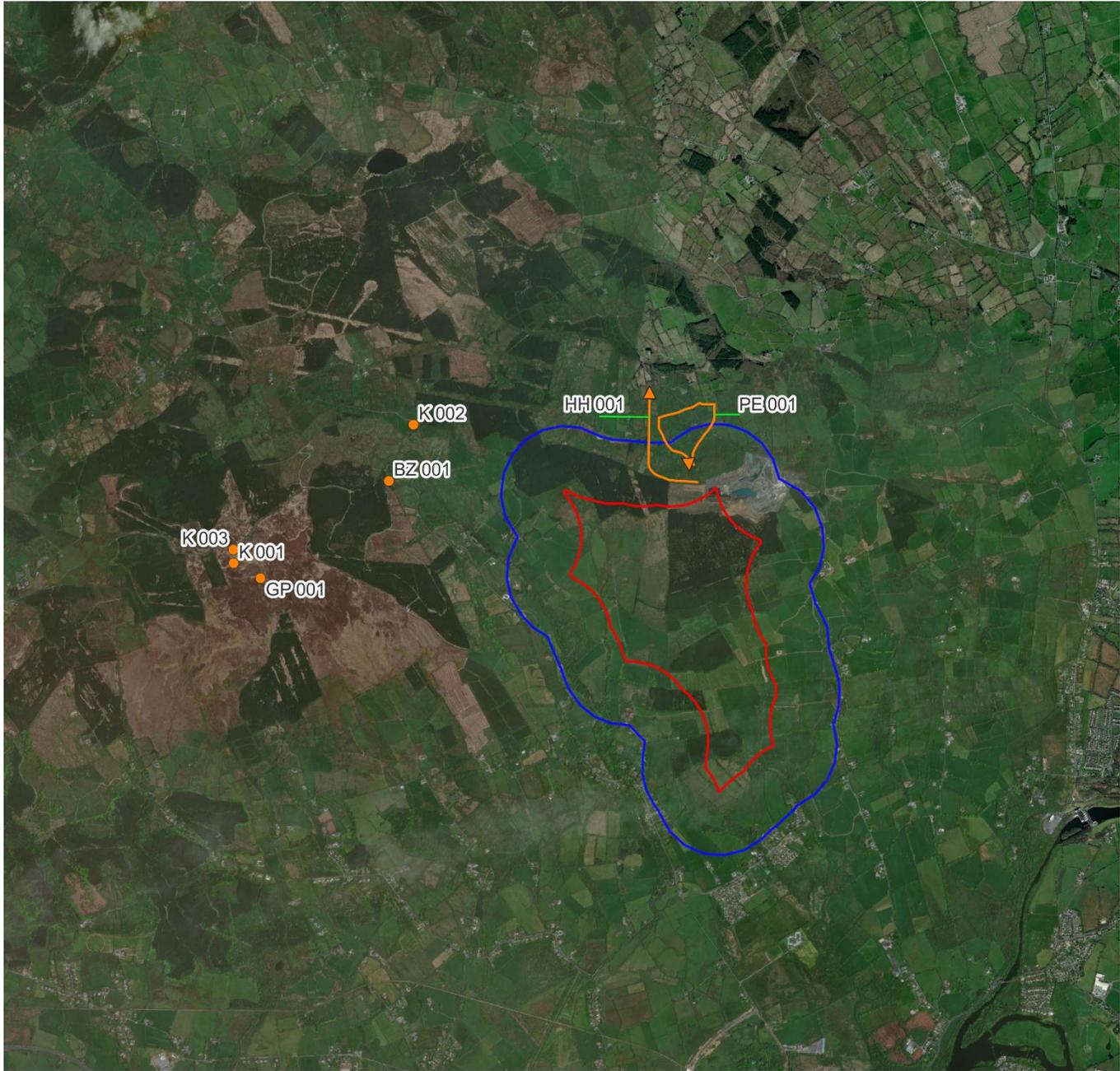
- Development Area
- 500m Study Area
- Hinterland Survey Observations

**Figure 17:  
Hinterland Survey  
Observations**

Author: Tom Ryan  
 Reviewed By: John Murphy  
 24/07/2023

Scale: 1: 50,000





**Ballycar Bird Surveys**

Winter 2022 / 2023



- Development Area
- 500m Study Area
- Incidental Observations
- Incidental Flights

**Figure 18:  
Incidental Observations**

Author: Tom Ryan  
 Reviewed By: John Murphy  
 27/07/2023

Scale: 1: 40,000





**Ballycar Bird Surveys**

Winter 2022 / 2023



- Development Area
- 500m Study Area
- 5km Hinterland Area
- Wildfowl Survey Sections
- Whooper Swan Flocks

**Figure 21:**  
**Whooper Swan Flocks**

Author: Tom Ryan  
 Reviewed By: John Murphy  
 24/07/2023

Scale: 1: 75,000

