

## **Appendix 7J**

### **Summer 2023 Survey Report, IOSG**



## *Bird Activity Summary Report*

*Breeding Season 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 April to September 2023 inclusive. It describes the methodologies and guidance followed, results, and a summary of the main findings. 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. Species maps include 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), Stan Nugent (Field Ecological Surveyor/ Ornithologist & BSc (Hon) Environmental Studies), Tom Tarpey (Field Ecological Surveyor/ Ornithologist), Padraig Cullinan (Field Ecological Surveyor/ Ornithologist), Sean Dundon (Field Ecologist/ Ornithologist & BSc (Hon) Wildlife Biology) and Gerry Murphy (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. METHODOLOGY**

### **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 Qualifying Interest (QI) 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).

### **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-kilometre 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 study area is defined as the site boundary up to and including 500m that extends from the site boundary, hereafter referred to as the 500m 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. Transect survey**

Set transect routes were selected at the beginning of the survey period. The study area for these surveys was the wind farm site and out to a 500m survey radius of the wind farm site. The transects were selected to encompass different habitats within the 500m survey radius, where access allowed. Transects were extended at the beginning of this summer period in order to cover the areas surrounding the proposed substation location at the north of the site. 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 transects is included in Appendix 1. Results are summarized in section 3-2. Transect routes are mapped in Appendix 4, Figure 3.

#### **2.4. Wader surveys**

Wader surveys were carried out in April, May and June within the 500m study area. There were three visits made to the most suitable areas for these species. These visits were made in addition to the standard transect surveys described in section 2.3. The survey method is adapted from the O'Brien and Smith methodology for censusing lowland breeding wader populations as described in Gilbert et al (1998).

#### **2.5. Woodcock surveys**

Woodcock surveys were carried out to detect the presence of displaying males over areas of suitable habitat within the 500m study area. Suitable habitat to the further northwest was also surveyed. The areas surveyed are displayed in Appendix 4, Figure 5. The survey method followed is as described in Gilbert et al (1998) and the British Trust for Ornithology (BTO) (2013).

#### **2.6. Breeding Raptor Surveys**

Bird of prey species other than those mentioned in section 2.7 and 2.8 below were surveyed in accordance with the methods described by Hardey et al (2013). Suitable breeding habitat areas out to 2km from the development boundary were visited during the core breeding season.

#### **2.7. Breeding Peregrine falcon / Kestrel surveys**

Nearby suitable peregrine falcon breeding areas were surveyed for the presence of breeding behaviour during the core breeding season. Methods followed were those described in Hardey et al (2013). Areas surveyed are displayed in Appendix 4, Figure 18.

#### **2.8. Hen harrier surveys**

Nearby suitable hen harrier breeding areas were surveyed for the presence of breeding behaviour during the core breeding season. Methods followed were those described in Hardey et al (2013). Set areas surveyed are displayed in Appendix 4, Figure 5.

#### **2.9. Incidental observations**

Incidental observations of target species which were recorded outside survey times or during surveys not covered in this report are summarised in Table 7.

### 3. RESULTS

#### 3.1. Vantage point surveys

Table 1 below shows a summary of observations for the target species listed above that were recorded during VP surveys between April and September 2023. Any activity recorded in relation to species of highest conservation significance have been summarised in this table. A full list of all target species recorded during VP surveys is displayed in Appendix 2, Table 1. Non-target species counts are included in Appendix 3, Tables 3-6.

**Table 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 1	Peregrine	2	2	Observed in flight on site in May and July.	Appendix 4 – Fig. 6
BoCCI Red List	Kestrel	11	11	Observed hunting, soaring and circling on site.	Appendix 4 - Fig. 7 & 17
BoCCI Red List	Snipe	1	1	In flight at the southwest of the study area in April. Also recorded as an incidental on site in April. Non-breeding record.	Appendix 4 – Fig. 8

### 3.2. Transect surveys

Transect surveys were carried out in the period May – September 2023 inclusive at Transect A and B. All target Species recorded are summarised in Table 2 below. Full results of all non-target species recorded are listed in Appendix 3, Tables 1 & 2.

**Table 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 List1	Kestrel	2	1	2	Adult female present.	Appendix 4 – Fig. 3
BoCCI Green List	Buzzard	3	1-2	3	Adults present.	Appendix 4 – Fig. 3
BoCCI Green List	Sparrowhawk	2	1-2	2	Present.	Appendix 4 – Fig. 3
BoCCI Green List	Lesser Black-backed Gull	1	8	1	Present in September, foraging on site.	Appendix 4 – Fig. 3

### 3.3. Breeding Wader Surveys

Breeding wader surveys were carried out in April, May and June 2023. All wader observations are summarised in Table 3 below.

**Table 3. Breeding Wader Survey Results**

Conservation Status	Species	Total number of observations during wader surveys	Flock Size Range	Number of observations on site/ within 500m	Activity of note	Figure
BoCCI Red List1	Snipe	1	1	1	Flushed from wet grassland area where drain has been culverted and re-seeded over, circled and landed again on site to the southwest.	Appendix 4 – Fig. 19

### 3.4. Breeding raptor surveys

Observations recorded during bird of prey surveys are listed in Table 4 below. Mapped observations are included in Appendix 4, Figure 16.

**Table 4. Breeding Raptor Survey Results**

Map Ref GIS	Date	Species Common Name	No. of Birds	Age	Sex	Activity	Flight Path Notes	Surveyor
BZ 001	07/06/23	Buzzard	1	Adult			soaring	PC
BZ 002	07/06/23	Buzzard	1	Adult			flying low	PC
BZ 003	07/06/23	Buzzard	1	Adult			soaring/circling	PC
BZ 004	07/06/23	Buzzard	1	Adult			flying SE	PC
BZ 005	07/07/23	Buzzard	1	Adult			Hunting NW section of the site	SD
BZ 006	07/07/23	Buzzard	1	Adult			Hunting going north	SD
K 001	09/05/23	Kestrel	1			Hunting	hunting north of the site	JNM
K 002	07/06/23	Kestrel	1				flying E	PC
PE 001	07/06/23	Peregrine Falcon	1	Adult			Soaring at 40-50m	PC
SH 001	07/06/23	Sparrowhawk	1	Adult	M		flying N	PC
SH 002	07/06/23	Sparrowhawk	1	Adult	F		Flying SW	PC

### 3.5. Breeding Peregrine falcon / Kestrel surveys

Breeding observations are listed in Table 5 below. The surveyed area is mapped and included in Appendix 4, Figure 18.

**Table 5. Peregrine/Kestrel Survey Results**

PE AREA	Date	Time	Species Common Name	No. of Birds	Age	Sex	Activity	Flight Path Notes
Cratloemoye Castle	05/04/23	Not specified	Kestrel	1	A	M	Hunting	Possible breeding territory.
Cratloemoye Castle	15/05/23	09:00	Kestrel	1	A	M	Perched	Perched on castle and hunting.
Ballycar Quarry	07/06/23	08:30:00	Peregrine Falcon	2	Adult	Pair	Flying and perching	Pair observed flying over and landing on tree line beside quarry. Both flew from the perch, the female landing again into treeline, male carried on.
Ballycar Quarry	15/06/23	07:14:00	Peregrine Falcon	1	Adult	F	S - Soaring	Flying and circling over quarry landing into treeline on top of quarry. Flew from perch at 08:30 heading west.

Ballycar Quarry	19/07/23	07:48:00	Peregrine Falcon	3	Juvenile		Flying/ Perched	Three juveniles observed on a number of occasions - flying over the quarry and perching on the quarry edge.
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### 3.6. Hen harrier surveys

Observations of hen harrier are listed in Table 6 below. A possible breeding attempt was recorded in May close to area D, approximately 3.8 km west of the site. The possible breeding attempt is likely to have failed as no further records were made in the area mentioned below under HH 003. All activity is mapped and included in Appendix 4, Figure 15.

**Table 6. Hen Harrier Survey Results**

HH AREA	Flight Reference Number GIS Maps	Date	Time	Species Common Name	No. of Birds	Age	Sex	Activity	Flight Path Notes
C	HH 001	16/06/23	12:09	Hen Harrier	1	A	M	Flying	Flying northwest over boggy hillside. No breeding behaviour observed.
C	HH 002	04/05/23	10:17	Hen Harrier	1	A	M	Flying	Flying northwest at 20-30m for 5 seconds.
D	HH 003	04/05/23	11:25	Hen Harrier	1	A	F	On Ground & flying	Possible breeding attempt. Flying and appearing to land x 2. Flying for 20 seconds x 1. Landed in area of young conifers at 12:50.

### 3.7. Incidental observations

Incidental records are listed in Table 7 below. Observations are mapped and included in Appendix 4, Figure 17. Included in this section is a confirmed breeding kestrel territory.

**Table 7. Incidental Observations**

Map Ref GIS	Date	Species Common Name	No. of Birds	Notes
SN 001	18/04/2023	Snipe	1	Non-breeding. Calling at 21:12, 21:17 & 21:23. During woodcock survey.
K 001	01/08/2023	Kestrel	3	Confirmed breeding nearby Juveniles recorded hunting during a VP survey.

### 3.8. Breeding Woodcock Surveys

One woodcock observation was recorded in June. This breeding activity was observed approximately 1.3km northwest of the development boundary. The observation is mapped in Appendix 4, Figure 20.

**Table 8. Breeding Woodcock Observations**

Map Ref GIS	Date	Species Common Name	No. of Birds	Notes
WK 001	19/06/2023	Woodcock	1	Probable breeding territory. Flying and calling in a circle at 23.05 – 23.06.

#### **4. SUMMARY OF RESULTS**

Overall, there were nine target species observed within the core 500m study area during the summer season 2023 at Ballycar.

Peregrine falcon was confirmed as having successfully fledged at least three chicks at Ballycar Quarry this breeding season. This is a known breeding area for the species located within the core 500m study area to the north of the site.

An individual female hen harrier was recorded in suitable breeding habitat approximately 3.8 km to the west of the site in May where a possible breeding attempt was recorded. A male bird was also recorded not far from the same area in May and June but never with the female. No subsequent observations were made in the possible breeding area. It is highly likely that any possible breeding attempt in that area would have failed, as no further sightings were recorded in that area for the remainder of the breeding season.

A breeding pair of kestrels were confirmed to have fledged at least two chicks in an area north of the site, within the 500m study area. A possible breeding territory was recorded at Cratloemoyle during breeding Peregrine/ Kestrel surveys.

Snipe were present in April on moorland at the western side of the site and an area of wet grassland at the southwest of the site, these are highly likely to be non-breeding individuals as no further records were made during the remainder of the breeding season.

A single record of breeding woodcock was made approximately 1.3 km northwest of the development boundary in June.

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**APPENDIX 1 - SURVEY EFFORT**

**Table 1. Survey Effort**

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed (Bft.)	Wind	Temperature °C	Observer
04/04/2023	Vantage Point	1	14:00	03:00	Good	8	Dry	4	S	12	SN
04/04/2023	Vantage Point	1	17:30	03:00	Good	8	Light Showers	4	S	12	SN
04/04/2023	Vantage Point	2	14:00	03:00	Good	8	Dry	4	S	12	PC
04/04/2023	Vantage Point	2	17:30	03:00	Good	8	Light Showers	4	S	12	PC
04/04/2023	Vantage Point	3	14:00	03:00	Good	8	Dry	4	S	12	JH
04/04/2023	Vantage Point	3	17:30	03:00	Good	8	Light Showers	4	S	12	JH
03/05/2023	Vantage Point	1	06:30	03:00	Good	8	Dry	3	SE	13	TR
03/05/2023	Vantage Point	1	10:00	03:00	Good	5	Dry	3	SE	13	TR
03/05/2023	Vantage Point	2	06:30	03:00	Good	8	Dry	3	SE	13	TT
03/05/2023	Vantage Point	2	10:00	03:00	Good	5	Dry	3	SE	13	TT
03/05/2023	Vantage Point	3	06:30	03:00	Good	8	Dry	3	SE	13	PC
03/05/2023	Vantage Point	3	10:00	03:00	Good	5	Dry	3	SE	13	PC
01/06/2023	Vantage Point	1	07:30	03:00	Good	1	Dry	2	NE	14	SD
01/06/2023	Vantage Point	1	11:00	03:00	Good	1	Dry	2	NE	14	SD
01/06/2023	Vantage Point	2	07:30	03:00	Good	1	Dry	2	NE	14	TR
01/06/2023	Vantage Point	2	11:00	03:00	Good	1	Dry	2	NE	14	TR
01/06/2023	Vantage Point	3	07:30	03:00	Good	1	Dry	2	NE	14	SN
01/06/2023	Vantage Point	3	11:00	03:00	Good	1	Dry	2	NE	14	SN
03/07/2023	Vantage Point	1	06:50	03:00	Moderate	8	Heavy Showers	4	W	11	SD
03/07/2023	Vantage Point	1	10:20	03:00	Moderate	8	Heavy Showers	4	W	11	SD

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed (Bft.)	Wind	Temperature °C	Observer
03/07/2023	Vantage Point	2	07:20	03:00	Good	6	Heavy Showers	4	W	13	TR
03/07/2023	Vantage Point	2	10:50	03:00	Good	1	Heavy Showers	4	W	13	TR
03/07/2023	Vantage Point	3	06:50	03:00	Good	8	Heavy Showers	4	W	11	SN
03/07/2023	Vantage Point	3	10:20	03:00	Good	8	Heavy Showers	4	W	15	SN
01/08/2023	Vantage Point	1	06:30	03:00	Moderate	8	Light Showers	2	W	13	JH
01/08/2023	Vantage Point	1	10:00	03:00	Good	8	Light Showers	3	W	15	JH
01/08/2023	Vantage Point	2	07:20	03:00	Good	8	Heavy Showers	2	W	13	AC
01/08/2023	Vantage Point	2	10:50	03:00	Good	7	Heavy Showers	4	W	16	AC
01/08/2023	Vantage Point	3	07:20	03:00	Good	7	Heavy Showers	3	SW	17	TR
01/08/2023	Vantage Point	3	10:50	03:00	Moderate	8	Heavy Showers	3	SW	17	TR
08/09/2023	Vantage Point	1	06:50	03:00	Good	7	Dry	1	SE	16	PC
08/09/2023	Vantage Point	1	10:20	03:00	Good	1	Dry	3	SE	26	PC
08/09/2023	Vantage Point	2	06:50	03:00	Good	7	Dry	1	SE	16	JH
08/09/2023	Vantage Point	2	10:20	03:00	Good	1	Dry	3	SE	26	JH
08/09/2023	Vantage Point	3	07:10	03:00	Good	7	Dry	1	SE	16	AC
08/09/2023	Vantage Point	3	10:40	03:00	Good	1	Dry	3	SE	26	AC
18/04/2023	Woodcock Survey	Ballycar West	19:00	03:00	Good	1	Dry	1	SE	16	PC
08/05/2023	Woodcock Survey	Ballycar West	19:00	03:00	Good	6	Dry	4	W	10	SN

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed (Bft.)	Wind	Temperature °C	Observer
19/06/2023	Woodcock Survey	1.3km Northwest	19:30	04:00	Good	4	Dry	2	W	12	SD
07/06/2023	Birds of Prey Survey	2km hinterland	08:00	05:00	Good	2	Dry	2	E	18	PC
07/07/2023	Birds of Prey Survey	2km hinterland	07:00	05:00	Moderate	4	Light Showers	5	SW	16	SD
17/04/2023	Hen Harrier Nest Survey	5 km hinterland	Not Specified	-	Good	8	Drizzle	3	SE	12	JH
12/05/2023	Hen Harrier Nest Survey	5 km hinterland	12:45	06:15	Good	2	Dry	2	NE	17	TR
16/06/2023	Hen Harrier Nest Survey	5 km hinterland	07:30	07:20	Poor - Moderate	8	Heavy Showers	3	SW	11	SD
07/07/2023	Hen Harrier Nest Survey	5 km hinterland	08:00	05:00	Moderate	4	Light Showers	5	SW	16	JNM
05/04/2023	Peregrine Survey	Ballycar Quarry	Not Specified	-	Good	8	Drizzle	3	SW	12	JH
05/04/2023	Peregrine Survey	St. Johns Cathedral	09:00	-	Good	8	Drizzle	3	SW	12	JH
05/04/2023	Peregrine Survey	Cratloemoyle Castle	Not Specified	-	Good	8	Drizzle	3	SW	12	JH
05/04/2023	Peregrine Survey	Rossmanagher Castle	Not Specified	-	Good	8	Drizzle	3	SW	12	JH
15/05/2023	Peregrine Survey	Ballycar Quarry	11:20	01:05	Good	6	Dry	3	NW	16	JH
15/05/2023	Peregrine Survey	Cratloemoyle Castle	09:00	-	Good	6	Dry	3	NW	16	JH
15/05/2023	Peregrine Survey	Rossmanagher Castle	10:10	-	Good	6	Dry	3	NW	16	JH
15/06/2023	Peregrine Survey	Ballycar Quarry	07:14	-	Good	4	Dry	2	SW	25	JH

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed (Bft.)	Wind	Temperature °C	Observer
07/06/2023	Peregrine Survey	Ballycar Quarry	08:30	-	Good	6	Dry	2	E	20	JH
19/07/2023	Peregrine Survey	Ballycar Quarry	07:30	-	Good	4	Dry	3	NE	17	JH
17/05/2023	Transect	A	07:30	03:05	Good	1	Dry	1	SW	10	PC
15/06/2023	Transect	B	10:30	02:00	Good	2	Dry	3	S	21	JNM
21/06/2023	Transect	A	08:30	02:50	Good	1	Dry	1	SW	15	PC
04/07/2023	Transect	B	09:00	01:35	Good	4	Dry	5	N	16	JNM
19/07/2023	Transect	A	09:00	03:00	Good	1	Dry	4	SE	3	JNM
09/08/2023	Transect	B	13:00	02:30	Good	8	Dry	3	SW	15	SD
05/09/2023	Transect	A	08:30	03:00	Good	7	Dry	4	SE	19	PC
13/09/2023	Transect	B	08:30	03:00	Moderate	8	Dry	2	N	10	SD
14/04/2023	Wader Survey	500m study area	07:00	03:00	Good	1	Dry	2	N	10	JD
08/05/2023	Wader Survey	500m study area	16:00	03:00	Good	6	Light Showers	4	W	15	SN
23/06/2023	Wader Survey	500m study area	08:00	05:00	Good	8	Light Showers	3	SW	20	JNM
01/06/2023	Wader/ Woodcock Survey	Ballycar West	17:30	05:00	Good	1	Dry	2	SE	23	GM

**APPENDIX 2 – TARGET SPECIES OBSERVATIONS**

**Table 1. VP Flights**

Species Reference Number GIS Maps	Date	Time	VP	Species Common Name	No. of Birds	Activity	Flight Height Band 0 -20m	Flight Height Band 20-50m	Flight Height Band 50-100m	Flight Height Band 100 -200m	Flight Height Band >200 m	Total Duration (s)
BZ 001	04/04/23	13:00	1	Buzzard	1	Circling			7			7
BZ 002	04/04/23	13:13	1	Buzzard	1	Soaring				300		300
BZ 003	04/04/23	14:16	3	Buzzard	1	Circling	70	146				216
BZ 004	04/04/23	14:27	2	Buzzard	1	Hunting	117					117
BZ 007	04/04/23	15:46	3	Buzzard	2	Circling		162				162
BZ 008	04/04/23	16:04	1	Buzzard	1	Hunting		15				15
BZ 010	03/05/23	08:03	1	Buzzard	1	Circling	60	120				180
BZ 013	03/05/23	09:00	1	Buzzard	1	Circling	150	300				450
BZ 014	03/05/23	09:01	3	Buzzard	1	Hunting	123					123
BZ 015	03/05/23	10:00	2	Buzzard	1	Flying		8				8
BZ 018	03/05/23	12:42	3	Buzzard	1	Flying	44					44
BZ 019	01/06/23	09:51	3	Buzzard	1	Circling			9			9
BZ 020	01/06/23	10:25	3	Buzzard	1	Soaring				20		20
BZ 021	01/06/23	12:10	1	Buzzard	1	Soaring	100					100
BZ 023	01/06/23	12:37	3	Buzzard	1	Soaring				10		10
BZ 024	03/07/23	11:05	2	Buzzard	1	Hunting	70	20	150			240
BZ 025	03/07/23	11:05	3	Buzzard	1	Hunting				300		300
BZ 026	03/07/23	12:00	2	Buzzard	1	Hunting	30					30
BZ 027	03/07/23	12:29	3	Buzzard	1	Flying		4				4
BZ 028	03/07/23	13:12	2	Buzzard	1	Hunting	150	200				350
BZ 029	01/08/23	10:07	3	Buzzard	2	Soaring	100	260				360
BZ 030	08/09/23	08:56	1	Buzzard	1	Flying		17				17

Species Reference Number GIS Maps	Date	Time	VP	Species Common Name	No. of Birds	Activity	Flight Height Band 0 -20m	Flight Height Band 20-50m	Flight Height Band 50-100m	Flight Height Band 100 -200m	Flight Height Band >200 m	Total Duration (s)
BZ 031	08/09/23	09:09	1	Buzzard	1	Flying	10					10
BZ 032	08/09/23	10:39	1	Buzzard	1	Flying				7		7
BZ 033	08/09/23	11:18	1	Buzzard	1	Hunting	14					14
BZ 037	08/09/23	12:37	1	Buzzard	3	Soaring				180		180
BZ 038	08/09/23	12:43	2	Buzzard	2	Soaring				108		108
CA 001	03/05/23	12:05	1	Cormorant	1	Flying	20	10				30
CA 002	01/06/23	12:38	2	Cormorant	1	Flying		25				25
H 001	03/07/23	08:57	2	Grey Heron	1	Flying	15					15
K 001	04/04/23	14:52	2	Kestrel	1	Hunting	12					12
K 002	04/04/23	15:17	2	Kestrel	1	Flying	265					265
K 004	04/04/23	15:42	3	Kestrel	1	Hunting	32					32
K 006	03/05/23	10:26	1	Kestrel	1	Hunting	90					90
K 008	03/05/23	11:10	2	Kestrel	1	Hunting	2	6				8
K 018	01/08/23	10:40	1	Kestrel	1	Hunting	78					78
K 020	01/08/23	11:45	3	Kestrel	1	Hunting	40					40
K 021	08/09/23	08:02	1	Kestrel	1	Hunting		22				22
K 022	08/09/23	09:22	2	Kestrel	1	Flying	40					40
K 023	08/09/23	11:20	2	Kestrel	1	Hunting	22					22
K 024	08/09/23	13:33	3	Kestrel	1	Flying		12				12
LB 003	01/06/23	07:58	1	Lesser Black-backed Gull	1	Flying	10					10
LB 004	01/06/23	08:34	1	Lesser Black-backed Gull	1	Flying	35					35
LB 006	01/06/23	08:48	1	Lesser Black-backed Gull	1	Flying	30					30

Species Reference Number GIS Maps	Date	Time	VP	Species Common Name	No. of Birds	Activity	Flight Height Band 0 -20m	Flight Height Band 20-50m	Flight Height Band 50-100m	Flight Height Band 100 -200m	Flight Height Band >200 m	Total Duration (s)
LB 008	01/06/23	09:13	1	Lesser Black-backed Gull	6	Flying	120					120
LB 010	01/06/23	11:42	1	Lesser Black-backed Gull	1	Flying	70					70
LB 012	03/07/23	12:09	2	Lesser Black-backed Gull	1	Circling	45					45
MA 003	03/05/23	07:59	3	Mallard	1	Flying	9					9
MA 004	03/05/23	08:26	1	Mallard	1	Flying		20				20
PE 001	03/05/23	10:24	1	Peregrine Falcon	1	Flying	15					15
PE 004	03/07/23	11:12	2	Peregrine Falcon	1	Soaring	15	15	10	10		50
SH 001	04/04/23	14:51	2	Sparrowhawk	1	Hunting	17					17
SH 006	03/07/23	09:32	1	Sparrowhawk	2	Hunting		45				45
SH 008	01/08/23	08:41	1	Sparrowhawk	1	Hunting	114					114
SH 009	01/08/23	08:42	1	Sparrowhawk	1	Hunting	40					40
SH 010	01/08/23	11:25	1	Sparrowhawk	1	Hunting	48	100				148
SN 001	04/04/23	19:25	2	Snipe	2	Flying		14				14

## APPENDIX 3 – NON-TARGET SPECIES OBSERVATIONS

**Table 1. Transect A- Non-target species**

Ballycar Transect A Species Count	17/05/2023	21/06/2023	19/07/2023	05/09/2023	Notes
Species	No.	No.	No.	No.	
Blackbird	13	4	15	3	
Blackcap	6	10	2	2	
Blue Tit	1	5	4	2	
Bullfinch	1	1	3	2	
Chaffinch	6	22	10	10	
Chiffchaff	5	7	1	3	
Coal Tit	3	7		9	
Collared Dove	1				
Crossbill (Common)	2	3			
Cuckoo	2	1			
Dunnock	7	3	5	5	
Goldcrest	3	12		10	
Goldfinch	2	1	5	8	
Great-spotted Woodpecker				1	East of the farm
Great Tit	4	3	8	1	
Greenfinch					
Grey Wagtail		1		1	
Hooded Crow	10	7	6	13	
House Martin	13	5	8	2	
House Sparrow	2			21	
Jackdaw		1	12	2	
Jay (Eurasian)	1	1		1	
Linnet (Common)	2	5	16	1	
Long-tailed Tit				8	
Magpie	2	4	3	2	
Meadow pipit	7	6	10	16	
Mistle Thrush	1	2		22	
Pheasant	2	3			
Pied wagtail		1	2	4	
Raven	1	1			
Redpoll (Common)	5	6			
Redwing			3		
Reed Bunting		1			
Robin	6	10	7	13	
Rook		5		4	
Siskin	3	3			
Skylark			3		

Ballycar Transect A Species Count	17/05/2023	21/06/2023	19/07/2023	05/09/2023	Notes
Species	No.	No.	No.	No.	
Song Thrush	8	4	4	3	
Starling (Common)	106	14	23	28	
Stonechat	4	6		4	
Swallow	11	19	24	56	
Treecreeper (Eurasian)	1				
Whitethroat (Common)	6	5	1	4	
Willow Warbler	11	9	5		
Woodpigeon		6	13	21	
Wren	22	18	5	18	

**Table 2. Transect B – Non-target species**

Ballycar Transect B Species Count	15/06/2023	04/07/2023	09/08/2023	13/09/2023
	No.	No.		
Blackbird	6	3	2	3
Blackcap	6	3		
Blue Tit	2	3	2	4
Bullfinch	2		1	
Chiffchaff	1			
Coal Tit	8	4		2
Dunnock	2	2		7
Goldcrest	1			13
Goldfinch	2	4		
Great Tit			2	3
Hooded Crow	2	2		
Jay (Eurasian)	2		2	
Long-tailed Tit			4	
Meadow pipit	2	4		
Pheasant	1			
Pied wagtail		2		
Raven	2			8
Robin	5	4		15
Siskin	15			
Song Thrush	1	2		
Swallow			3	
Treecreeper (Eurasian)			1	
Willow Warbler	8	5		
Woodpigeon	3	5		2
Wren	16	4	11	8

**Table 3. VP 1 Non-target species**

VP 1 Ballycar Non - Target Species	April 2023	May 2023	June 2023	July 2023	Aug 2023	Sept 2023
Species	No.	No.	No.	No.	No.	No.
Blackbird	3	5	5	3	1	2
Blue Tit	2	2			1	2
Bullfinch					1	
Chaffinch	7	4	6		3	3
Chiffchaff						1
Coal Tit						1
Collared Dove	2	1	4	2	4	1
Dunnock	2	2	4	2	1	2
Goldcrest			2			2
Goldfinch	3				25	13
Great Tit	2	2				2
Greenfinch						1
Grey Wagtail			1			2
Hooded Crow	35	5	19	11	5	38
House Martin		3	9	2	10	7
House Sparrow	8	4	7	7	22	62
Jackdaw	29	1	29	7	9	10
Jay (Eurasian)		1				1
Linnet (Common)		3		6		22
Long-tailed Tit						2
Magpie	4		5	2	3	11
Meadow pipit	2		2		1	3
Mistle Thrush	1		2			
Pheasant	1	1	2	1	2	2
Pied wagtail	2	2		3	2	3
Raven	2	2				1
Reed Bunting						1
Robin	3	3	2	2	1	5
Rook	12	10		19	15	31
Siskin						4
Skylark				8		
Song Thrush	1	1				1
Starling (Common)	15	8	120	12	8	34
Stonechat	2					4
Swallow		5	6	5	15	8
Swift (Common)				3	1	
Willow Warbler		2	5			
Woodpigeon	15	4	39	9	4	17

VP 1 Ballycar Non - Target Species	April 2023	May 2023	June 2023	July 2023	Aug 2023	Sept 2023
Species	No.	No.	No.	No.	No.	No.
Wren	2	2	2		1	2

**Table 4. VP 2 Non-target species**

VP 2 Ballycar Non - Target Species	April 2023	May 2023	June 2023	July 2023	Aug 2023	Sept 2023
Species	No.	No.	No.	No.	No.	No.
Blackbird	4	7	2		3	4
Blackcap		2	1			
Blue Tit	2	3	1			2
Bullfinch		2	2	2		2
Chaffinch	5	7	4	2	4	3
Chiffchaff		1		1		
Coal Tit	1	2	2		1	
Collared Dove	1					
Cuckoo		1				
Dunnock	1	2				
Fieldfare	62					
Goldcrest	2	2	1	2		
Goldfinch	4	12	4	1	14	
Great Tit	3	6	1	2		
Greenfinch		1				
Hooded Crow	4	6	4	4	7	3
House Martin		3	2	2	6	
Jackdaw	4	4	3			1
Linnet (Common)				1		1
Long-tailed Tit						3
Magpie	5	2	2	3	3	3
Meadow pipit	1	1				
Mistle Thrush	3	2		2		5
Pheasant	1	1	1			
Pied wagtail	2	4			3	2
Raven	2	2	1	4		7
Redpoll (Common)		1		3		
Redwing	15					
Robin	2	3	1	3	3	2
Rook	2	1			6	5
Sand Martin	1					
Siskin	3			2		
Skylark	1					

VP 2 Ballycar Non - Target Species	April 2023	May 2023	June 2023	July 2023	Aug 2023	Sept 2023
Species	No.	No.	No.	No.	No.	No.
Song Thrush	2	4	2		1	
Starling (Common)	10	11	15	13		6
Swallow		4	3	3	10	9
Swift (Common)				2	1	
Willow Warbler	1	2	2	3	1	
Woodpigeon		39	61	8	8	6
Wren		4	3	3	2	2

**Table 5. VP 3 Non-target species**

VP 3 Ballycar Non - Target Species	April 2023	May 2023	June 2023	July 2023	Aug 2023	Sept 2023
Species	No.	No.	No.	No.	No.	No.
Blackbird	4	7	2		3	4
Blackbird	1	4	5	5	3	3
Blackcap		2	2	2	2	
Blue Tit	1	1	2	2	3	
Bullfinch		2	2	2		
Chaffinch	4	2	5	4	7	2
Chiffchaff		2	1			
Coal Tit	1				2	1
Collared Dove	2	1				
Crossbill (Common)		1				
Cuckoo		1	1			
Dunnock	1	2	2	2	1	2
Fieldfare	1					
Goldcrest	2	1	2	2		
Goldfinch		4	4	5	3	
Great Tit	2	1	2	2	2	
Grey Wagtail		2				
Hooded Crow	3	4	6	4	1	6
House Martin				2		
Jackdaw			12	6		
Jay (Eurasian)						2
Linnet (Common)		1			4	
Long-tailed Tit	2					
Magpie	3	4	14	4	2	3
Meadow pipit	2	1	2	2	1	
Mistle Thrush	1	1	10	2		1
Pheasant	2	2	1	1	1	1

VP 3 Ballycar Non - Target Species	April 2023	May 2023	June 2023	July 2023	Aug 2023	Sept 2023
Species	No.	No.	No.	No.	No.	No.
Pied wagtail		1	2			
Raven		5	2			3
Redpoll (Common)		1		2		
Reed Bunting			1	2	2	
Robin	2	2	4	2	2	4
Rook	6		8	9		
Siskin			2	2		
Song Thrush	2	2	1	2		
Starling (Common)			17	12		30
Stonechat		1		2		
Swallow		4	4	4	11	20
Swift (Common)				8	1	
Whitethroat (Common)			2			
Willow Warbler	1	4		2		
Woodpigeon	3	1	27	11		6
Wren	1	3	2	3	4	2

**Table 6. Peak Counts VP 1 - VP 3**

Peak Counts VP1 – VP 3 Non - target Species	April 2023	May 2023	June 2023	July 2023	August 2023	Sept 2023
Species	No.	No.	No.	No.	No.	No.
Blackbird	4	7	5	5	3	4
Blackcap	0	2	2	2	2	0
Blue Tit	2	3	2	2	3	2
Bullfinch	0	2	2	2	1	2
Chaffinch	7	7	6	4	7	3
Chiffchaff	0	2	1	1	0	1
Coal Tit	1	2	2	0	2	1
Collared Dove	2	1	4	2	4	1
Crossbill (Common)	0	1	0	0	0	0
Cuckoo	0	1	1	0	0	0
Dunnock	2	2	4	2	1	2
Fieldfare	62	0	0	0	0	0
Goldcrest	2	2	2	2	0	2
Goldfinch	4	12	4	5	25	13
Great Tit	3	6	2	2	2	2
Greenfinch	0	1	0	0	0	1
Grey Wagtail	0	2	1	0	0	2
Hooded Crow	35	6	19	11	7	38
House Martin	0	3	9	2	10	7
House Sparrow	8	4	7	7	22	62
Jackdaw	29	4	29	7	9	10
Jay (Eurasian)	0	1	0	0	0	2
Linnet (Common)	0	3	0	6	4	22
Long-tailed Tit	2	0	0	0	0	3
Magpie	5	4	14	4	3	11
Meadow pipit	2	1	2	2	1	3
Mistle Thrush	3	2	10	2	0	5
Pheasant	2	2	2	1	2	2
Pied wagtail	2	4	2	3	3	3
Raven	2	5	2	4	0	7
Redpoll (Common)	0	1	0	3	0	0
Redwing	15	0	0	0	0	0
Reed Bunting	0	0	1	2	2	1
Robin	3	3	4	3	3	5
Rook	12	10	8	19	15	31
Sand Martin	1	0	0	0	0	0
Siskin	3	0	2	2	0	4
Skylark	1	0	0	8	0	0
Song Thrush	2	4	2	2	1	1
Starling (Common)	15	11	120	13	8	34

Peak Counts VP1 – VP 3 Non - target Species	April 2023	May 2023	June 2023	July 2023	August 2023	Sept 2023
Species	No.	No.	No.	No.	No.	No.
Stock Dove	0	0	0	0	0	0
Stonechat	2	1	0	2	0	4
Swallow	0	5	6	5	15	20
Swift (Common)	0	0	0	8	1	0
Whitethroat (Common)	0	0	2	0	0	0
Willow Warbler	1	4	5	3	1	0
Woodpigeon	15	39	61	11	8	17
Wren	2	4	3	3	4	2

## APPENDIX 4 – MAPS



# Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  Turbine Layout

### Figure 1: Site Layout

Author: Tom Ryan  
Reviewed By: John Murphy  
10/11/2023

Scale: 1: 25,000





## Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  VP Locations

Figure 2:  
VP Locations

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1: 25,000







## Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  5km Hinterland Area
-  HH Breeding Survey Areas

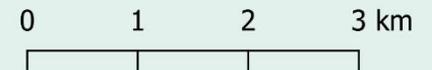
Figure 4:  
Hen Harrier Survey  
Locations

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1: 60,000





## Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  Woodcock Survey Points

Figure 5:  
Woodcock Survey  
Locations

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1: 25,000





# Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  Peregrine

Figure 6:  
VP Peregrine Flights

Author: Tom Ryan  
Reviewed By: John Murphy  
10/11/2023

Scale: 1: 25,000





## Ballycar Bird Surveys

Summer 2023



- Ballycar 500m Turbine Buffer
- Kestrel

Figure 7:  
VP Kestrel Flights

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1: 25,000





# Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  Snipe

Figure 8:  
VP Snipe Flights

Author: Tom Ryan  
Reviewed By: John Murphy  
10/11/2023

Scale: 1: 25,000





## Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  Sparrowhawk

Figure 9:  
VP Sparrowhawk Flights

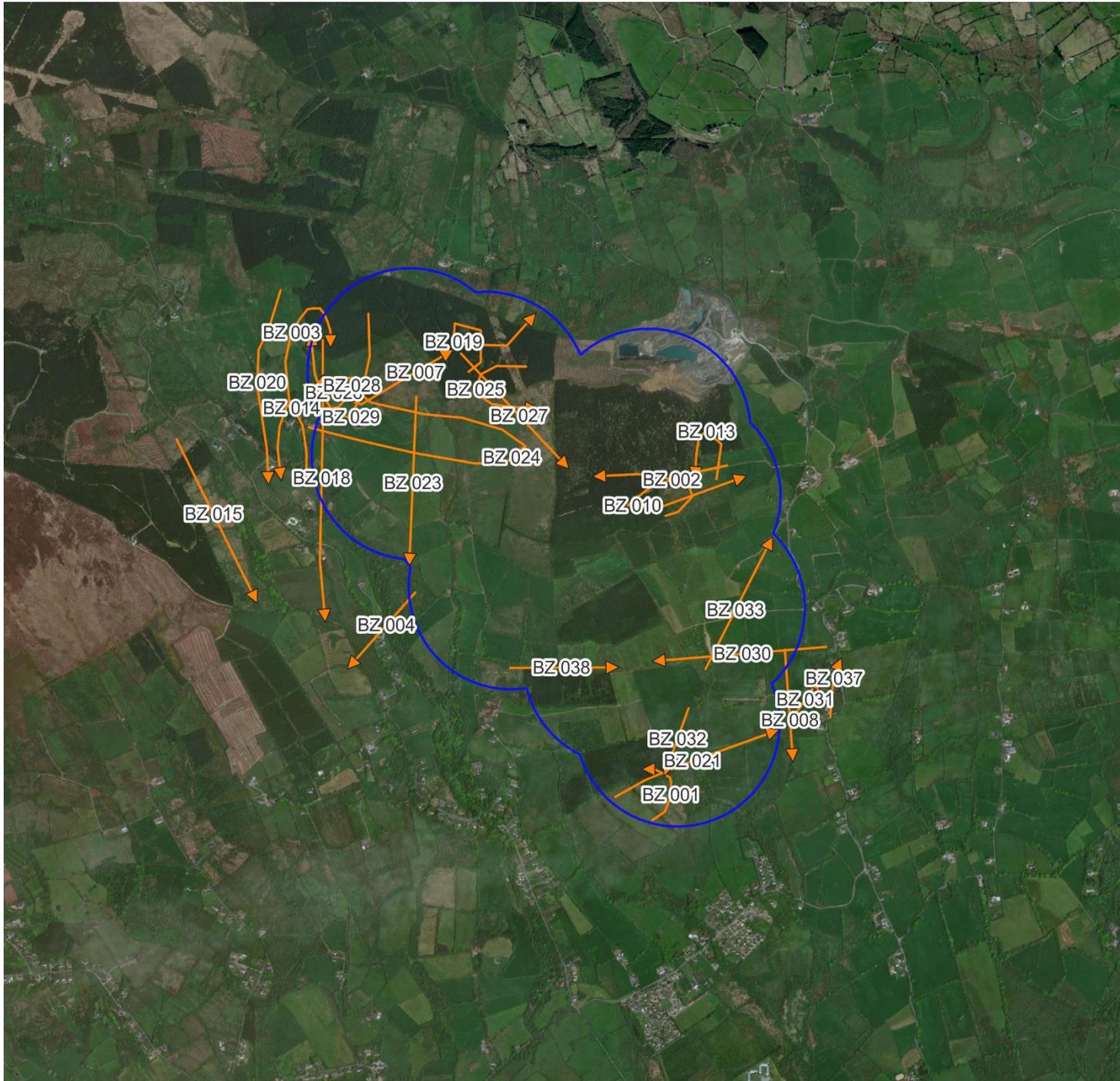
Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1: 25,000





# Ballycar Bird Surveys

Summer 2023



- Ballycar 500m Turbine Buffer
- Buzzard

Figure 10:  
VP Buzzard Flights

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1: 25,000





## Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  Cormorant

Figure 11:  
VP Cormorant Flights

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1: 25,000





## Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  VP Grey Heron

Figure 12:  
VP Grey Heron Flights

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1: 25,000





## Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  Lesser Black-backed Gull

Figure 13:  
VP Lesser Black-backed  
Gull Flights

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1: 25,000





## Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  Mallard

Figure 14:  
VP Mallard Flights

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1: 25,000





## Ballycar Bird Surveys

Summer 2023



- Ballycar 500m Turbine Buffer
- HH Breeding Survey Areas
- HH Survey Observations

**Figure 15:  
Hen Harrier Survey  
Observations**

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1:50,000





## Ballycar Bird Surveys

Summer 2023



- Ballycar 500m Turbine Buffer
- Raptor Survey Observations

**Figure 16:  
Breeding Raptor Survey  
Observations**

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1:25,000





## Ballycar Bird Surveys

Summer 2023



 Ballycar 500m Turbine Buffer

 Incidental Observations

Figure 17:  
Incidental Observations

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1:25,000





## Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  Peregrine Survey Areas

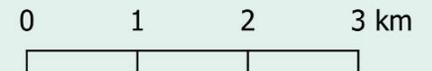
Figure 18:  
Peregrine Survey  
Locations

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1:60,000





## Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  Wader Survey Observations

Figure 19:  
Breeding Wader Survey  
Observations

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1:25,000





## Ballycar Bird Surveys

Summer 2023



-  Ballycar 500m Turbine Buffer
-  Woodcock survey observations

Figure 20:  
Woodcock Survey  
Observations

Author: Tom Ryan

Reviewed By: John Murphy

10/11/2023

Scale: 1:25,000

