



Moanmore

Bird Activity Summary Report

Winter 2022/2023

Clare Planning Authority - Inspection Purposes Only

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1 Introduction

This report is a compilation of the bird activity recorded at the Moanmore site for the period October 2022 to March 2023 inclusive. It describes the methodologies and guidance followed, results and discussions on each target species recorded. 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 Moanmore. 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, cutover bog, and intensive farmland. The site is flanked by the River Shannon and River Fergus Estuaries SPA as designated by the National Parks and Wildlife Service (NPWS). The Estuaries SPA is located approximately 1km from the site boundary at its nearest point. Also of note is the Mid-Clare Coast SPA, located 8km to the north of the site.

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), Austin Cooney (Field Ecological Surveyor/ Ornithologist) and Stan Nugent (Field Ecological Surveyor / Ornithologist & BSc (Hon) Environmental Studies).

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 Qualifying Interest (QI) of an 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). Two 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 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 survey radius. 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 1.

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 2.

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). Known roost sites out to 5km were also monitored. Survey methodologies were adapted from published guidance by O'Donoghue (2019), Hardey et al (2013), and Gilbert et al (1998). Survey effort for winter roost surveys is included in appendix 1. Results are in table format in Section 3.3. Hen Harrier Roost survey locations are mapped in Appendix 4, Figure 3.

2.5 Wildfowl Distribution Surveys

The nearby Poulmasherry Bay and sections of the estuary between Knock and Kilrush were surveyed during the winter months to monitor the distribution and abundance of wintering wildfowl populations. The survey methodology was based on that birdwatch Ireland's IWEBS methodology (Bibby et al, 2000). Seven 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 wildfowl within the survey area. Survey effort for wildfowl 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 4.

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 20. The road transect route is mapped in Appendix 4, Figure 5.

Incidental observations of target species which were recorded outside survey times are

displayed in Table 3.6 and mapped in Appendix 4, Figure 21.

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 eleven 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.

- Hen Harrier (Annex 1 Birds Directive)
- Merlin (Annex 1 Birds Directive)
- Little Egret (Annex 1 Birds Directive)
- Black – headed Gull (BoCCI Amber List)
- Kestrel (BoCCI Red List)
- Snipe (BoCCI Red List)
- Buzzard (Schedule 4 Wildlife Acts)
- Sparrowhawk (Schedule 4 Wildlife Acts)
- Common Gull (BoCCI Amber List)
- Cormorant (BoCCI Amber List)
- Herring Gull (BoCCI Amber List)
- Lesser Black – backed Gull (BoCCI Amber List)
- Mallard (BoCCI Amber List)
- Grey Heron – (BoCCI Green 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	Hen Harrier	6	6	Six observations of birds hunting the bog on site and travelling through the site. Males and females were recorded.	Appendix 4 - Fig. 6
Annex 1	Merlin	3	3	Immature female and adult male seen hunting and perching on site	Appendix 4 - Fig. 7
Annex I	Little Egret	1	1	One bird flew north to the west of the site.	Appendix 4 - Fig. 8
BoCCI Amber List	Black-headed Gull	1	1	One individual bird flying north.	Appendix 4 - Fig. 9
BoCCI Red Listed	Kestrel	12	12	Regularly recorded during surveys. Hunting, and perching on site and within 500m. Resident population.	Appendix 4 - Fig. 10
BoCCI Red Listed	Snipe	1	1	A flock of 25 birds were seen circling and landing into the bog in October.	Appendix 4 - Fig. 11

Conservation Status	Species	Total number of observations recorded during VP watches	Number of observations on site/within 500m	Activity of note	Figure
Schedule 4 Wildlife Acts	Buzzard	1	1	One flight over the full winter period.	Appendix 4 - Fig. 12
Schedule 4 Wildlife Acts	Sparrowhawk	2	2	Hunting and flying in November and March.	Appendix 4 - Fig. 13
BoCCI Amber List	Common Gull	2	2	Two flights in December, passing west to east through the site. One bird in both flights.	Appendix 4 - Fig. 14
BoCCI Amber List	Cormorant	3	3	Landing into small watercourse within 500m and travelling over wet grassland.	Appendix 4 - Fig. 15
BoCCI Amber List	Herring Gull	3	3	Flying in a north-south direction through the site in January and February. Two birds in each flight.	Appendix 4 - Fig. 16
BoCCI Amber List	Lesser Black – backed Gull	5	5	Flying in a north-south direction through the site, one bird in each flight.	Appendix 4 - Fig. 17
BoCCI Amber List	Mallard	1	1	One bird flew south in March at the southeast of the site.	Appendix 4 - Fig. 18
Non - BoCCI	Grey Heron	5	5	Flying through the site in November, February, and March. One bird in each flight.	Appendix 4 - Fig. 19

3.2 Transect Survey Results

Transect surveys were carried out in November 2022, January 2023, and March 2023 at transect A, B and C. 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
Annex 1 Birds Directive	Little Egret	1	1	1	Observed in January from transect A.	Appendix 4 – Fig. 2
BoCCI Red List	Kestrel	1	1	1	Observed in January from transect A.	Appendix 4 – Fig. 2
BoCCI Amber List	Herring Gull	1	3	1	Three birds observed from transect A in January.	Appendix 4 – Fig. 2
BoCCI Amber List	Lesser Black-backed Gull	2	1-2	2	Observed from transect A and B in November and January.	Appendix 4 – Fig. 2

3.3 Hen Harrier Roost Surveys

Hen Harrier Surveys were carried out between November – March inclusive. Activity of note is summarized in table 3-3 below. Full details of observations are available in table format in Appendix 2, Table 17.

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	13	M & F	Three of the 13 observations were direct roosting observations at a known roost site at Tullagher, approximately 5km to the north of the site boundary. There was one observation of two birds close to a separate known roost location, also approximately 5km from the site boundary to the south, at Scattery Island. All other observations were of birds hunting or flying, many approx. 1.5 - 2km from the site boundary. These were not recorded going to roost.	Appendix 4, Fig. 3

3.4 Waterbird Survey Results

Wildfowl distribution surveys were carried out during the 2022/2023 winter season during the months of October – March inclusive. Summary results from wildfowl 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 on wildfowl distribution surveys. Many more species considered targets were observed during off site wildfowl distribution surveys but only those also observed on site are summarized below. A full list of all species encountered during wildfowl surveys can be found in Appendix 2. Column 5 in Table 3-4 shows the number of observations on site, these were made during separate on-site surveys and are included for context.

Table 3-4 - Waterbird 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	Little Egret	25	1-47	2	Poulnasherry Bay – 9 records, 1-16 birds. Kilrush to Knock zone A – D, 15 records, 1 - 47 birds. Clonderlaw Bay – 1 record, 16 birds.	Appendix 4 - Fig. 3
BoCCI Amber List	Black – headed Gull	12	3-225	1	Poulnasherry Bay – 8 records, 3 - 92 birds. Kilrush to Knock zone A – D, 19 records, 6 - 225 birds. Tullabrack Lough – 1 record, 43 birds.	Appendix 4 - Fig. 3
BoCCI Red List	Snipe	13	2-52	1 (25 bird flock)	Poulnasherry Bay - 5 records, 2-15 birds. Kilrush to Knock zone A – D, 8 records, 3-52 birds.	Appendix 4 - Fig. 3

Conservation Status	Species	Total number of observations recorded	Flock Size Range	Number of observations on site/ within 500m	Activity of note	Figure
					Clonderlaw Bay – 1 record, 30 birds. Tullabrack Lough – 1 record, 2 birds.	
BoCCI Amber List	Common Gull	20	1-49	2	Poulnasherry Bay – 5 records, 7-19 birds. Kilrush to Knock zone A – D, 15 records, 1-49 birds. Moanmore Lough – 1 record, 6 birds. Tullabrack Lough – 1 record, 16 birds.	Appendix 4 - Fig. 3
BoCCI Amber List	Cormorant	19	1-31	3	Poulnasherry Bay – 5 records, 1-9 birds. Kilrush to Knock zone A – D, 14 records, 1-31 birds.	Appendix 4 - Fig. 3
BoCCI Amber List	Herring Gull	23	1-57	4	Poulnasherry Bay – 8 records, 1-57 birds. Kilrush to Knock zone A – D, 15 records, 1-46 birds. Tullabrack Lough – 1 record, 12 birds.	Appendix 4 - Fig. 3
BoCCI Amber List	Lesser Black – backed Gull	10	1-6	7	Poulnasherry Bay – 4 records, 1-3 birds. Kilrush to Knock zone A – D, 6 records 1-6 birds. Moanmore Lough – 1 record, 2 birds.	Appendix 4 - Fig. 3
BoCCI Amber List	Mallard	23	1-50	1	Poulnasherry Bay – 8 records, 2-43 birds. Kilrush to Knock zone A – D, 15 records 2-16 birds. Clonderlaw Bay – 1 record, 50 birds.	Appendix 4 - Fig. 3

Conservation Status	Species	Total number of observations recorded	Flock Size Range	Number of observations on site/ within 500m	Activity of note	Figure
					Moanmore Lough – 1 record, 10 birds. Tullabrack Lough – 2 records 2-4 birds.	
BoCCI Green List	Grey Heron	10	1-5	2	Poulnasherry Bay – 6 records, 1-5 birds. Kilrush to Knock zone A – D, 13 records 1-10 birds.	Appendix 4 - Fig. 3

3.5 Hinterland Surveys

Two hinterland surveys were carried out over the study period. Consistent road transects 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	Activity of note	Figure
Annex 1 Birds Directive	Hen Harrier	1	1	One bird observed at Poulnasherry, 1 km northwest of the site in October.	Appendix 4 – Fig. 20
Annex 1 Birds Directive	Little Egret	2	1	Two birds observed in separate locations in February. The closest was 1.2km southwest of the site.	Appendix 4 – Fig. 20
Annex 1 Birds Directive	Peregrine Falcon	1	1	One bird was recorded at the edge of Poulnasherry Bay, 1km west of the site in February.	Appendix 4 – Fig. 20
BoCCI Red List	Kestrel	5	1	Two individual birds recorded within 1km of the site, three recorded between 4 and 5km of the site boundary.	Appendix 4 – Fig. 20
Schedule 4 Wildlife Acts	Buzzard	1	1	One observation in an area of open bog, 2km northeast of the site.	Appendix 4 – Fig. 20
BoCCI Amber List	Cormorant	1	1	4.5km north of the site in October.	Appendix 4 – Fig. 20
BoCCI Amber List	Common Gull	1	1	1 bird, west of the site approximately 1km in October.	Appendix 4 – Fig. 20
BoCCI Amber List	Black – headed Gull	4	1	One bird observed at Poulnasherry, 1km west of the site. Three further observations, 4-5km from the site boundary.	Appendix 4 – Fig. 20
BoCCI Amber List	Herring Gull	5	1	Four of the five records, within 2km.	Appendix 4 – Fig. 20
BoCCI Amber List	Lesser Black - backed Gull	4	1	One bird observed 1km southwest of the site, the remainder were 2 – 5km from the site.	Appendix 4 – Fig. 20

BoCCI Amber List	Tufted Duck	1	1	Observed at lake, 4km east of the site in February.	Appendix 4 – Fig. 20
BoCCI Amber List	Wigeon	1	1	Observed at lake, 4km east of the site in February.	Appendix 4 – Fig. 20
BoCCI Green List	Mallard	2	1	Observed at lake, 4km east of the site in February.	Appendix 4 – Fig. 20

3.6 Incidental Observations

Table 3-6: Incidental Observations Summary Results

Conservation Status	Species	Total number of observations recorded	Flock Size Range	Activity of note	Figure
Annex 1	Whooper Swan	3	4 – 19	Flock of four birds flying southwest, 2km north of the site in December. 19 birds were recorded in a field approximately 5km northwest of the site in February. Also 13 birds at Farrihy lake, 8km northwest of the site in January.	Appendix 4 - Fig. 20
Annex 1 Birds Directive	Golden Plover	3	90-160	Two flocks at Farrihy lake, 8km northwest of the site and one flock at Doonbeg, 8km north of the site.	Appendix 4 - Fig. 20
BoCCI Red List	Barn Owl	1	1	Hunting in the late evening over bog, 2km north of the site.	Appendix 4 - Fig. 20
BoCCI Red List	Lapwing	1	300	At Farrihy lake, 8km northwest of the site.	Appendix 4 - Fig. 20
BoCCI Red List	Snipe	1	1	Calling within 500m of the site, west of VP 1 in March.	Appendix 4 - Fig. 20
BoCCI Red List	Kestrel	2	1	2km north of the site in February.	Appendix 4 - Fig. 18

4 Summary Of Results

4.1 Hen Harrier (*Circus Cyaneus*)

There were six flights recorded on site during vantage point surveys and 13 observations made during species specific roost surveys within 5km of the site. Two known roost locations are located approximately 5km from the site boundary. One roost location, to the north of the site, had birds going to roost on three occasions during this winter period. Two birds were observed near another known roost area to the south but not observed going to roost. The remainder of the records during roost surveys were of birds hunting and flying low over rough grassland and bog areas. Three of these were in an area of bog between 1.5 and 2km to the north of the site.

4.2 Merlin (*Falco Columbarius*)

Three flights of birds hunting and perching within 500m of the site in December, January, and February. At least two separate individuals were recorded.

4.3 Little Egret (*Egretta Garzetta*)

Two on-site observations were recorded over the winter period. The species was recorded more regularly during wildfowl distribution surveys within the nearby River Shannon and River Fergus Estuaries SPA. Little Egret was recorded in all survey sections. The peak number of birds counted was 47 birds in section C, in January 2023.

4.4 Black – headed Gull (*Larus ridibundus*)

One bird was recorded on site over the winter period. The species was recorded 14 times during wildfowl distribution surveys. The peak number of birds recorded was 225 birds in section C, in January 2023. There were four records of the species made during hinterland surveys.

4.5 Kestrel (*Falco tinnunculus*)

There were twelve flights within the 500m survey radous of the site. A resident population is present in and around the site area. Also recorded seven times off site during hinterland surveys and incidental records.

4.6 Snipe (*Gallinago gallinago*)

A flock of 25 birds was recorded landing into bog on site in October. One bird was heard calling on site in March. These were the only on-site records during the survey period. Snipe was also recorded during wildfowl distribution surveys. The peak count of 52 birds was recorded in section C in December.

4.7 Buzzard (*Buteo buteo*)

There was one record of Buzzard on site. The species was also observed 2km to the north of the site during hinterland surveys. Not regularly occurring on site during this survey period.

4.8 Sparrowhawk (*Accipiter nisus*)

There were two observations of sparrowhawk in total. The birds were recorded hunting and flying. Not recorded during any off site surveys.

4.9 Common Gull (*Larus canus*)

Two on site flights of birds passing through the area were recorded in December. The species was recorded in higher numbers during wildfowl distribution surveys. The peak count of 49 birds was recorded in November at section A.

4.10 Cormorant (*Phalacrocorax carbo*)

Three on site observation, one of which was of a bird landing on a small watercourse. Recorded once during hinterland surveys, 1km west of the site. The bird was more regularly recorded during wildfowl distribution surveys. The peak count of 31 birds was recorded in section C in December.

4.11 Herring Gull (*Larus argentatus*)

Four on-site observations were made during the study period. The peak on site number was 3 birds, recorded during a transect survey. The peak off site count of 57 birds was made during wildfowl distribution surveys at Poulnasherry Bay in March.

4.12 Lesser Black – backed Gull (*Larus fuscus*)

Observed seven times on site during transect and vantage point surveys. Birds were observed passing through the site area in a north-south direction. Also recorded during wildfowl distribution surveys off site.

4.13 Mallard

One on-site flight was recorded. Recorded more regularly during wildfowl distribution surveys.

4.14 Grey Heron (*Ardea cinerea*)

Five flights were recorded within 500m of the site in November, February, and March.

5 Bibliography

Bibby, C.J., Burgess, N.D., Hill, D.A., and Mustoe, S. (2000) *Bird Census Techniques*. Academic Press, London.

Birdwatch Ireland & National Parks and Wildlife Service (NPWS) (2012) CBS Manual: Guidelines for Countryside Bird Survey participants, available: [CBS Counter Manual - BirdWatch Ireland](#) [accessed 30 August 2022].

Council Directive (EU) 2009/147/EC of 30 November 2009 on the conservation of wild birds.

Gilbert et al. (1998) *Bird Monitoring Methods*. Pelagic Publishing.

Gilbert G, Stanbury A and Lewis L (2021), “*Birds of Conservation Concern in Ireland 2020–2026*”. Irish Birds 9: 523—544.

Hardy et al. (2013) *Raptors. A field Guide for Surveys and Monitoring*. The Stationary Office, Edinburgh.

National Parks and Wildlife Service (NPWS) (2023) Download Boundary Data [online], available: [Download Boundary Data | National Parks & Wildlife Service \(npws.ie\)](#) [accessed 01/05/2023].

O Donoghue, B. (2019) Irish Hen Harrier Winter Survey – Survey Guide [online], available: [Irish Hen Harrier Winter Survey \(ihhws.ie\)](#) [accessed 01/10/2022].

Scottish Natural Heritage (SNH) (2016) *Assessing Connectivity with Special Protection Areas (SPAs)* – Version 3, June 2016. Scottish Natural Heritage.

Scottish Natural Heritage (SNH) (2017) *Recommended bird survey methods to inform impact assessment of onshore wind farms* – Version 2, March 2017. Scottish Natural Heritage.

Wildlife Act 1976 - 2012, No 39/1976, S. 22, Dublin: Office of the Attorney General.

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
23/11/2022	Hen Harrier Roost	Redacted	13:00	05:30	Good	2	Dry	6	SW	9	JNM
15/12/2022	Hen Harrier Roost	Redacted	13:00	04:30	Good	4	Dry	3	NE	5 - -1	JNM
15/12/2022	Hen Harrier Roost	Redacted	13:00	04:30	Good	4	Dry	2	N	5 - -1	SN
16/01/2023	Hen Harrier Roost	Redacted	16:30	01:00	Good	8	Dry	3	SE	4	JNM
18/01/2023	Hen Harrier Roost	Redacted	15:00	03:00	Good	4	Dry	5	NW	6	JNM
26/01/2023	Hen Harrier Roost	Redacted	14:25	03:40	Good	6	Dry	3	N	9	AC
10/02/2023	Hen Harrier Roost	Redacted	15:45	02:15	Moderate - Good	7	Drizzle	4	SW	11	JNM
10/02/2023	Hen Harrier Roost	Redacted	15:45	02:15	Moderate - Good	7	Drizzle	5	SW	10	SN
06/03/2023	Hen Harrier Roost	Redacted	16:00	03:00	Moderate - Good	4	Light Showers	4	NW	9	JNM
08/03/2023	Hen Harrier Roost	Redacted	14:35	04:35	Good	8	Dry	4	E	5	AC

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed Beaufort	Wind Direction	Temperature °C	Observer
05/10/2022	Hinterland (5km)	1	09:20	05:40	Good	8	Heavy Showers	4	W	12	AC
02/02/2023	Hinterland (5km)	1	12:30	04:00	Good	4	Dry	5	SW	11	JNM
07/02/2023	Shore Count Clonderlaw Bay	1	15:15	00:45	Good	8	Dry	3	S	10	JNM
12/10/2022	Shore Count Kilrush to Knock	Zone A - D	12:40	02:20	Good	8	Dry	3	W	14	AC
07/11/2022	Shore Count Kilrush to Knock	Zone A-D	10:30	03:00	Moderate - Good	8	Light Showers	4	S	13	JNM
07/12/2022	Shore Count Kilrush to Knock	Zone A-D	13:00	03:00	Good	1	Dry	3	S	7	JNM
12/01/2023	Shore Count Kilrush to Knock	Zone A-D	13:00	03:00	Moderate	8	Dry	3	S	7	JNM
07/02/2023	Shore Count Kilrush to Knock	Zone A - D	13:00	03:00	Good	8	Dry	3	S	10	JNM
02/03/2023	Shore Count Kilrush to Knock	Zone A-D	13:00	02:00	Good	3	Dry	2	E	9	JNM
06/01/2023	Shore Count - Moanmore Lough	Moanmore	14:00	00:20	Good	8	Dry	3	W	6	JNM

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed Beaufort	Wind Direction	Temperature °C	Observer
11/10/2022	Shore Count Poulnasherry	PC2	13:00	02:00	Good	8	Dry	4	SW	12	SN
11/10/2022	Shore Count Poulnasherry	PC3	13:00	02:00	Good	8	Dry	4	SW	14	JNM
11/10/2022	Shore Count Poulnasherry	PC1	13:10	01:50	Good	8	Dry	4	SW	14	AC
16/01/2023	Shore Count Poulnasherry	PC1	13:30	03:00	Good	7	Dry	3	E	3	SN
16/01/2023	Shore Count Poulnasherry	PC2	13:30	03:00	Good	8	Dry	3	E	3	AC
16/01/2023	Shore Count Poulnasherry	PC3	13:30	03:00	Good	8	Dry	3	SE	4	JNM
15/03/2023	Shore Count Poulnasherry	PC2	15:00	03:00	Moderate	8	Heavy Rain	5	S	12	SN
15/03/2023	Shore Count Poulnasherry	PC1	15:30	02:30	Good	8	Heavy Rain	4	SW	10	PC
15/03/2023	Shore Count Poulnasherry	PC3	15:30	02:30	Poor - Moderate	8	Heavy Rain	4	SW	10	JNM
03/02/2023	Shore Count Tullabrack Lough	Tullabrack	10:30	00:20	Good	7	Dry	3	W	10	JNM
03/03/2023	Shore Count Tullabrack Lough	Tullabrack	14:55	00:10	Good	8	Dry	3	E	7	AC
14/11/2022	Transect	A	12:15	01:15	Good	1	Dry	3	S	8	SN
09/01/2023	Transect	A	10:30	01:30	Good	4	Light Showers	5	W	7	SN

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed Beaufort	Wind Direction	Temperature °C	Observer
09/01/2023	Transect	B	12:30	01:00	Good	4	Light Showers	5	W	7	SN
09/01/2023	Transect	C	14:00	01:00	Good	4	Light Showers	5	W	7	SN
08/03/2023	Transect	A	14:00	00:30	Good	8	Dry	3	E	6	JNM
08/03/2023	Transect	B	14:40	00:30	Good	8	Dry	4	E	6	JNM
08/03/2023	Transect	C	15:20	00:20	Good	8	Dry	5	E	6	JNM
10/10/2022	Vantage Point	2	09:00	06:00	Good	8	Dry	4	NW	14	JNM
10/10/2022	Vantage Point	1	09:05	06:00	Good	8	Dry	4	NW	14	AC
01/11/2022	Vantage Point	2	11:50	06:00	Good	8	Heavy Showers	5	SW	11	AC
01/11/2022	Vantage Point	1	12:00	06:00	Good	8	Heavy Showers	3	SW	10	JNM
06/12/2022	Vantage Point	1	07:30	03:00	Good	6	Dry	2	E	4	AC
06/12/2022	Vantage Point	2	07:30	03:00	Good	2	Dry	1	E	6	JNM
06/12/2022	Vantage Point	1	11:00	03:00	Good	1	Dry	5	NE	8	AC
06/12/2022	Vantage Point	2	11:00	03:00	Good	2	Dry	3	E	6	JNM
05/01/2023	Vantage Point	1	10:45	03:00	Moderate - Good	8	Light Showers	5	S	12	SN
05/01/2023	Vantage Point	2	11:00	03:00	Good	8	Light Showers	3	SW	12	JNM

Date	Survey Type	Survey Location	Start Time	Survey Duration	Visibility	Cloud Cover Oktas	Rain	Wind Speed Beaufort	Wind Direction	Temperature °C	Observer
05/01/2023	Vantage Point	1	14:15	03:00	Moderate - Good	8	Light Showers	6	S	12	SN
05/01/2023	Vantage Point	2	14:30	03:00	Good	8	Light Showers	5	SW	12	JNM
01/02/2023	Vantage Point	1	07:30	03:00	Good	8	Heavy Showers	4	NW	9	JNM
01/02/2023	Vantage Point	2	07:30	03:00	Good	8	Heavy Showers	5	W	9	AC
01/02/2023	Vantage Point	1	11:00	03:00	Good	8	Heavy Rain	6	NW	9	JNM
01/02/2023	Vantage Point	2	11:00	03:00	Good	8	Heavy Rain	6	W	10	AC
01/03/2023	Vantage Point	2	12:00	03:00	Good	8	Dry	1	E	9	JNM
01/03/2023	Vantage Point	1	12:10	03:00	Good	8	Dry	3	E	7	AC
01/03/2023	Vantage Point	2	15:30	03:00	Good	8	Dry	2	E	9	JNM
01/03/2023	Vantage Point	1	15:40	03:00	Good	8	Dry	4	E	6	AC

Appendix 2 – Target Species Observations

Appendix 2 Table 1 – VP Survey Results

Species Reference Number GIS Maps	Date	Time	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 >200m	Total Duration (s)
BH 001	06/12/22	09:24	Black-headed Gull	1	Flying		12				12
BZ 001	01/11/22	17:05	Buzzard	1	Flying	45					45
CA 001	06/12/22	12:42	Cormorant	1	Flying		27				27
CA 002	01/02/23	09:17	Cormorant	2	Flying	6					6
CA 003	01/02/23	09:27	Cormorant	1	Flying		55				55
CM 001	06/12/22	08:35	Common Gull	1	Flying	6					6
CM 002	06/12/22	12:49	Common Gull	1	Flying	60					60
ET 001	01/02/23	12:58	Little Egret	1	Flying	8					8
H 001	01/11/22	15:44	Grey Heron	1	Flying	130					130
H 002	01/02/23	08:33	Grey Heron	1	Flying			16			16
H 003	01/02/23	09:31	Grey Heron	1	Flying	8					8
H 004	01/02/23	11:13	Grey Heron	1	Flying		46				46
H 005	01/03/23	17:28	Grey Heron	1	Flying	25					25
HG 001	05/01/23	11:39	Herring Gull	2	Flying		10				10
HG 002	05/01/23	13:08	Herring Gull	2	Flying	15					15
HG 003	01/02/23	11:21	Herring Gull	2	Flying			25			25

Species Reference Number GIS Maps	Date	Time	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 >200m	Total Duration (s)
HH 001	10/10/22	10:06	Hen Harrier	1	Flying	3					3
HH 002	10/10/22	10:30	Hen Harrier	1	Hunting	180	60				240
HH 003	10/10/22	11:16	Hen Harrier	1	Flying	25					25
HH 004	06/12/22	09:32	Hen Harrier	1	Hunting	120					120
HH 005	06/12/22	09:34	Hen Harrier	1	Hunting	240					240
HH 006	06/12/22	11:37	Hen Harrier	1	Hunting	60					60
K 001	10/10/22	10:38	Kestrel	1	Hunting		120	120			240
K 002	10/10/22	11:22	Kestrel	1	Perched	30					260
K 003	01/11/22	15:25	Kestrel	1	Hunting	25					25
K 004	01/11/22	16:45	Kestrel	1	Hunting			1440			1440
K 005	06/12/22	09:07	Kestrel	1	Flying/Perched	10					10
K 006	06/12/22	12:40	Kestrel	1	Hunting		240	60			300

Species Reference Number GIS Maps	Date	Time	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 >200m	Total Duration (s)
K 007	05/01/23	11:15	Kestrel	1	Hunting		10				10
K 008	05/01/23	12:23	Kestrel	1	Hunting		10				10
K 009	05/01/23	15:00	Kestrel	1	Hunting/Circling	1000	1000				2000
K 010	01/02/23	09:18	Kestrel	1	Flying	10					10
K 011	01/02/23	11:05	Kestrel	1	Flying		17				17
K 012	01/03/23	15:52	Kestrel	1	Perched	30					30
LB 001	01/11/22	15:36	Lesser Black-backed Gull	1	Flying	25					25
LB 002	06/12/22	09:00	Lesser Black-backed Gull	1	Flying		25				25
LB 003	06/12/22	11:11	Lesser Black-backed Gull	1	Flying		10				10
LB 004	01/02/23	10:12	Lesser Black-backed Gull	1	Flying			50			50
LB 005	01/03/23	13:12	Lesser Black-backed Gull	1	Flying	16					16
MA 001	01/03/23	14:27	Mallard	1	Flying	4					4

Species Reference Number GIS Maps	Date	Time	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 >200m	Total Duration (s)
ML 001	06/12/22	12:00	Merlin	1	Flying	60					60
ML 002	05/01/23	16:31	Merlin	1	Flying	30					30
ML 003	01/02/23	10:56	Merlin	1	Flying	3					3
SH 001	06/12/22	08:36	Sparrowhawk	1	Flying	10					10
SH 002	01/03/23	13:57	Sparrowhawk	1	Hunting	30					30
SN 001	10/10/22	10:50	Snipe	25	Flying		40				40

Appendix 2 Table 2 - Transect A Survey Results

Moanmore Species Count	Transect A			
Date:	14/11/2022	09/01/2023	08/03/2023	Notes
Species	No.	No.	No.	
Herring Gull		3		
Kestrel		1		
Lesser Black-backed Gull	2	1		
Little Egret		1		
Blackbird	3	4	4	
Blue Tit		2		
Chaffinch	5	4		
Dunnock	5	2	1	
Fieldfare		12		
Great Tit		2		
Jackdaw		2	8	
Magpie	2	4		
Meadow pipit	8	3	2	
Mistle Thrush		2		
Pheasant	1			
Pied wagtail	2	1	2	
Redwing		8		
Robin	7	2	2	
Rook		4	12	
Song Thrush		1	1	
Starling (Common)		9		
Stonechat	6		2	
Woodpigeon		2		
Wren	5		3	

Appendix 2 Table 3 - Transect B Survey Results

Moanmore Species Count	Transect B			
Date:	14/11/2022	09/01/2023	08/03/2023	Notes
Species	No.	No.	No.	
Blackbird		1	3	
Chaffinch			2	
Coal Tit			2	
Dunnock		2		
Goldcrest		2		
Hooded Crow			2	
Meadow pipit		2	1	
Robin		1	1	
Skylark		1		
Woodpigeon			2	
Wren		1	2	

Appendix 2 Table 4 - Transect C Survey Results

Moanmore Species Count	Transect C			
Date:	14/11/2022	09/01/2023	08/03/2023	Notes
Species	No.	No.	No.	
Blackbird		3	1	
Coal Tit		1		
Dunnock		2		
Goldcrest			1	
Magpie		1		
Meadow pipit		1	4	
Mistle Thrush		2		
Pheasant			1	
Robin		1	5	
Rook			2	
Song Thrush		2	1	
Wren			2	

Appendix 2 Table 5 – PC1, Poulnasherry

PC1 -Poulnasherry	Dates:		
Species	11/10/2022	16/01/2023	15/03/2023
Bar-tailed Godwit	7		
Brent Goose		6	12
Black-headed Gull	19	3	
Curlew	10	17	2
Dunlin	18	30	10
Spotted Redshank			1
Little Egret	2	3	4
Green Sandpiper	1		
Great Crested Grebe		1	
Greenshank	2	11	4
Golden Plover		63	410
Grey Heron		1	
Herring Gull		1	1
Lapwing	10	51	
Lesser Black-backed Gull	3		
Little Grebe		2	
Mallard	12	2	4
Oystercatcher	6	7	
Pintail		5	82
Redshank	18	25	9
Red-breasted Merganser			2
Snipe		2	8
Shelduck			3
Shoveler	2		
Teal	70	78	131
Turnstone		7	4
Wigeon	180	40	52

Appendix 2 Table 6 – PC2, Poulnasherry

PC2 -Poulnasherry	Dates:		
Species	11/10/2022	16/01/2023	15/03/2023
Bar-tailed Godwit	7		8
Brent Goose	3	117	137
Black-headed Gull	16	11	47
Cormorant	9	1	1
Common Gull	14		7
Curlew	42	69	16

PC2 -Poulnasherry	Dates:		
Species	11/10/2022	16/01/2023	15/03/2023
Dunlin	150		25
Little Egret	11	7	13
Great Black-backed Gull	2	2	1
Great Crested Grebe	4	1	2
Greenshank	2	1	1
Goldeneye		1	
Grey Plover	1	10	
Grey Heron	2	5	2
Herring Gull	7	5	57
Kestrel		1	
Lesser Black-backed Gull	1		
Little Grebe		2	
Mallard	2	14	4
Great Northern Diver		6	2
Oystercatcher	12	33	12
Redshank	15	20	30
Red-breasted Merganser		1	2
Ringed Plover	1	8	
Snipe	2		
Shelduck		2	3
Teal	9	42	27
Turnstone		3	5
Black Guillemot		2	
Wigeon			5

Appendix 2 Table 7 – PC3, Poulnasherry

PC3 -Poulnasherry	Dates:		
Species	11/10/2022	16/01/2023	15/03/2023
Bar-tailed Godwit	21		
Brent Goose	1	18	12
Black-headed Gull	92	28	36
Cormorant	7		6
Common Gull	15	10	19
Curlew	135	200	211
Dunlin	600	450	375
Little Egret	15	5	16
Great Black-backed Gull		4	6
Great Crested Grebe	2	4	2
Greenshank	24	10	12
Golden Plover	4		10

PC3 -Poulnasherry	Dates:		
Species	11/10/2022	16/01/2023	15/03/2023
Grey Plover	10	50	94
Grey Heron	1	2	
Herring Gull	32	12	17
Knot	5		170
Lapwing		140	
Lesser Black-backed Gull	3		2
Little Grebe		4	
Mallard	10	43	
Great Northern Diver		4	1
Oystercatcher	5	20	14
Peregrine Falcon	1		
Pintail		92	
Redshank	42	180	149
Red-breasted Merganser		6	4
Ringed Plover	6		
Snipe	10	15	
Shelduck	80	92	10
Teal	12	180	50
Turnstone		32	27
Black Guillemot		1	
Wigeon		200	78

Appendix 2 Table 8 – Zone A, Kilrush to Knock

Zone A - Kilrush to Knock	Dates:					
Species	12/10/2022	07/11/2022	07/12/2023	12/01/2023	07/02/2023	02/03/2023
Bar-tailed Godwit	6	1			2	
Brent Goose				15	20	7
Black-headed Gull	14	148	50	10	50	14
Cormorant	2	7	8	3	3	2
Common Gull		49	17	12	8	5
Curlew	5	44	21	47	38	10
Dunlin			4			
Little Egret		2	1		1	3
Great Black-backed Gull		2	2	4		
Great Crested Grebe		2	1	2	2	
Greenshank	1	1	2	1	3	
Grey Plover			1			
Grey Heron	2	1	1		1	
Herring Gull	10	36	12	46	16	
Kestrel			1			
Lapwing		26	40			
Lesser Black-backed Gull	3					
Little Grebe			2			
Mallard	2		7	4	5	4
Mute Swan	1					
Great Northern Diver			1	3	2	2
Oystercatcher	3	18	8	7	14	14
Red-throated Diver					1	
Redshank	9	25	26	6	42	13
Ringed Plover			5			
Shag		3	2			
Snipe			14			
Teal	4		15		25	8
Turnstone	2		3			
Black Guillemot			1	1		
Wigeon			9			

Appendix 2 Table 9 – Zone B, Kilrush to Knock

Zone B - Kilrush to Knock	Dates:					
	12/10/2022	07/11/2022	07/12/2023	12/01/2023	07/02/2023	02/03/2023
Bar-tailed Godwit	3					
Brent Goose					12	10
Black-headed Gull	13	80	25		12	
Cormorant	1	15	1			
Common Gull		24	7	17	5	
Curlew	2	5	2	17	10	5
Little Egret					2	1
Great Crested Grebe						4
Grey Heron	1	1				
Herring Gull	4	6	4	5		
Kestrel		1				
Kittiwake			3			
Lapwing	2	72	12			
Lesser Black-backed Gull			1			
Mallard			2			4
Mediterranean Gull		1		1		
Great Northern Diver		1			2	
Oystercatcher	2	8	5	13	14	18
Razorbill		1				
Red-throated Diver	3	4				
Redshank	4	3	5	4	5	6
Ringed Plover			42	52		
Shag		3	1	3		
Snipe			5	12		
Teal			7		6	6
Turnstone		5	8	19	12	
Black Guillemot		1				

Appendix 2 Table 10 – Zone C, Kilrush to Knock

Zone C - Kilrush to Knock	Dates:					
	12/10/2022	07/11/2022	07/12/2023	12/01/2023	07/02/2023	02/03/2023
Bar-tailed Godwit	1			1		
Black-headed Gull		98	133	225	110	6
Cormorant	4		31		1	
Common Gull		30	20	40	18	6
Curlew		70	5	7	54	
Dunlin			17	7		4
Little Egret	1	3	2	47	5	1
Great Black-backed Gull		2	1	2		
Goosander			1			
Grey Heron	1	1		7	2	
Herring Gull	6	7	2	17		
Kittiwake				1		
Lesser Black-backed Gull	4	2				
Little Grebe			2	1		
Little Gull				1		
Mallard	5	10	8	13		8
Mediterranean Gull		2				
Great Northern Diver				2		
Oystercatcher		5	2			
Redshank	12	10	10	35	40	25
Ringed Plover			48		32	
Snipe		3	52		32	
Teal	13	45	20	96	30	26
Turnstone					15	
Wigeon	11	60	34	94	12	

Appendix 2 Table 11 – Zone D, Kilrush to Knock

Zone D - Kilrush to Knock	Dates:					
Species	12/10/2022	07/11/2022	07/12/2023	12/01/2023	07/02/2023	02/03/2023
Black-headed Gull	40	30	20		80	
Black-tailed Godwit	10					
Cormorant	3		6			
Common Gull			6			
Curlew	19	20		8	28	18
Dunlin	16				16	
Little Egret	7	2				2
Great Black-backed Gull	11	4				
Great Crested Grebe			25		30	4
Greenshank	2	3	1	1		1
Grey Heron	3	2	2		10	
Grey Heron			2		1	
Kingfisher					1	
Lapwing				60	78	
Lesser Black-backed Gull	6	1				
Mallard	10	4	6			
Great Northern Diver			3			
Oystercatcher	4	5	5			
Redshank	55	12	7	12	15	12
Ringed Plover			4			
Snipe			12	6		
Shelduck						2
Teal	27		10	4	36	32
Turnstone					7	
Wigeon	100	245	70	36	74	10
Whooper Swan			9			

Appendix 2 Table 12 – Clonderlaw Bay

Clonderlaw Bay	Date:
Species	07/02/2023
Bar-tailed Godwit	22
Curlew	172
Dunlin	2578
Little Egret	16
Greenshank	5
Golden Plover	20
Grey Plover	16
Lapwing	200
Mallard	50
Oystercatcher	28
Redshank	70
Snipe	30
Shelduck	80
Teal	320
Wigeon	40
Whooper Swan	16

Appendix 2 Table 13 – Moanmore Lough

Moanmore Lough	Date:
Species	06/01/2023
Mallard	10
Wigeon	3
Common Gull	6
Black-headed Gull	2
Lesser Black-backed Gull	2
Moorhen	1
Teal	2

Appendix 2 Table 14 – Tullabrack Lough

Tullabrack Lough	Date:
Species	03/02/2023
Wigeon	7
Mallard	4
Moorhen	2
Little Grebe	2
Common Gull	16
Black-headed Gull	43
Herring Gull	12
Snipe	2
Whooper Swan	7
Teal	6
Wigeon	10
Mallard	2
Moorhen	1

Appendix 2 Table 15 – Hinterland Survey Observations

Species Reference Number GIS Maps	Species Common Name	Date	Location	No. of Birds
BH 001	Black-headed Gull	05/10/2022	west of site at Poulnasherry	1
BH 002	Black-headed Gull	05/10/2022	South of site, 4km	1
BH 003	Black-headed Gull	05/10/2022	NE of site, 5km	1
BH 004	Black-headed Gull	02/02/2023	lake, 5km east of site	1
BZ 001	Buzzard	05/10/2022	Open bog area, NE of site, 2km	1
CA 001	Cormorant	05/10/2022	N of site 4.5km	1
CM 001	Common Gull	05/10/2022	west of site at Poulnasherry	1
ET 001	Little Egret	02/02/2023	N of site 4.5km	1
ET 002	Little Egret	02/02/2023	SW of site, east of Poulnasherry	1
HG 001	Herring Gull	05/10/2022	fields, east of Poulnasherry	1
HG 002	Herring Gull	05/10/2022	NE of site, 5km	1
HG 003	Herring Gull	05/10/2022	Fields south of the site, 2km	1
HG 004	Herring Gull	02/02/2023	north of site <1km	1
HG 005	Herring Gull	02/02/2023	east of site <1km	1
HH 001	Hen Harrier	05/10/2022	NW of site, approx 1km.	1
K 001	Kestrel	05/10/2022	NE of site, 4km	1
K 002	Kestrel	05/10/2022	NW of site, 4km	1
K 003	Kestrel	02/02/2023	NW of site, > 4km	1
K 004	Kestrel	02/02/2023	west of site <1km	1
K 005	Kestrel	02/02/2023	south of site 1km	1
K 006	Kestrel	02/02/2023	north of site 4-5km	1
LB 001	Lesser Black-backed Gull	05/10/2022	west of site, Poulnasherry	1
LB 002	Lesser Black-backed Gull	05/10/2022	south of site, 2km	1
LB 003	Lesser Black-backed Gull	05/10/2022	NE of site, 5km	1
LB 004	Lesser Black-backed Gull	05/10/2022	East of site, 5km	1
MA 001	Mallard	02/02/2023	Lake, 4km NE of site	1
MA 002	Mallard	02/02/2023	Lake, 4km east of site	1
PE 001	Peregrine Falcon	02/02/2023	edge of Poulnasherry Bay, 1km west of site	1
TU 001	Tufted Duck	02/02/2023	Lake, 4km east of site	1
WN 001	Wigeon	02/02/2023	Lake, 4km east of site	1

Appendix 2 Table 16 – Incidental Observations

Species Reference Number GIS Maps	Field Map No.	Species Common Name	Date	Location	No. of Birds
BO 001		Barn Owl	26/01/2023	Eirragh South	1
GP 001		Golden Plover	18/01/2023	8km NW. Farrihy Lough	90
GP 002		Golden Plover	18/01/2023	8km N. White Strand Doonbeg	110
GP 003		Golden Plover	23/11/2023	At Farrihy	160
K 001		Kestrel	15/12/2022	2km north of site	1
K 002		Kestrel	15/12/2022	2km north of site	1
L 001		Lapwing	18/01/2023	8km NW. Farrihy Lough	300
SN 001		Snipe	01/03/2023	West of VP1	1
WS 001		Whooper Swan	15/12/2022	2km north of site	4
WS 002		Whooper Swan	18/01/2023	8km NW. Farrihy Lough	13
WS 003		Whooper Swan	10/02/2023	In field, 5km NW.	19

Appendix 2 Table 17 – Hen Harrier Roost Survey Observations

HH Roost VP Location	Date	Time	Species Common Name	No. of Birds	Age	Sex	Activity	Habitat	Flight Path Notes
Tullagher	15/12/22	16:46:00	Hen Harrier	1	Immature	Male	On Ground	Bog/ Willow.	Arrived in from the east flying along the north side of the Carrowmore south road before passing south over the watch point and dropping directly to ground approx. 200m south of watch point into an area of willows.
Tullagher	15/12/22	16:54:00	Hen Harrier	1	Adult	Male	Hunting	Bog/ Willow.	Flew in from the east on the north side of the Carrowmore south road and proceeded to fly off north over the bog hunting low, he was not seen afterwards.
Tullagher	18/01/23	15:44:00	Hen Harrier	1	Adult	Male	Hunting	Bog/ Willow.	Seen hunting to the north side of the VP where it hunted low 4-5m in an easterly direction and then turned west, still hunting then it eventually flew off north at 15:55.

HH Roost VP Location	Date	Time	Species Common Name	No. of Birds	Age	Sex	Activity	Habitat	Flight Path Notes
Tullagher	18/01/23	16:00:00	Hen Harrier	2	Adult	M&F	Hunting	Bog/ Willow.	Low to the north of the VP and was joined by a female briefly, both hunting a section of bog at edge of bog to the north.
Tullagher	18/01/23	16:55:00	Hen Harrier	3	Adult	M&F	Hunting	Bog/Willow	Two males and a female were picked up to the north-west of VP hunting low over an area of old cut over bog that now has replenished with willow scrub. All birds flew throughout this area for 10-15 minutes.
Tullagher	18/01/23	17:05:00	Hen Harrier	1	Adult	Male	On Ground	Bog/Willow	One adult male bird arrived at the scrub just north of the VP watch and dropped down into the vegetation to go to roost. No other birds were spotted dropping to the ground going to roost here at this location.

HH Roost VP Location	Date	Time	Species Common Name	No. of Birds	Age	Sex	Activity	Habitat	Flight Path Notes
Tullagher	06/03/23	16:37:00	Hen Harrier	1	Adult	Male	Hunting	Bog/Willow	Hunting west on the north side of the watch location 2-3m off the ground for 1 min.
Tullagher	06/03/23	18:38:00	Hen Harrier	1	Adult	Male	On Ground	Bog/Willow	Hunting and dropped down to roost.
Runway	15/12/22	14:50:00	Hen Harrier	1	Adult	Female	Hunting	Bog	Female hunting on bog.
Runway	10/02/23	15:45:00	Hen Harrier	1	Adult	M	Flying	Bog	Adult male flew in from the west, hunting the bog south of the VP location at 4-12m before flying off south over spruce plantation and out of sight, 2min duration.
Runway	08/03/23	16:38:00	Hen Harrier	1	Immature	M	Flying	Bog	Sub-adult male observed. Bird was flying at 5-30m. Went out of view to the north behind treeline.
PC3 - Scatterry Island	16/01/23	16:57:00	Hen Harrier	2	Adult	M&F	Flying	Scrub	Male came in over the island from the west, joined by a female at 16:59. Both birds flew over island heading east towards the tower.

HH Roost VP Location	Date	Time	Species Common Name	No. of Birds	Age	Sex	Activity	Habitat	Flight Path Notes
PC3 - Scatterry Island	16/01/23	16:59:00	Hen Harrier	1	Adult	F	Flying	Scrub	Came on to the island from the east and joined the first female from earlier where both females flew around the scrub to the north of the tower and then vanished.

Appendix 3 – Non -Target Species

Appendix 3 Table 1 - VP1 Non-target Species

VP1 - Moanmore 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>	1	2	4	3	11	4
Chaffinch	<i>Fringilla coelebs</i>	1			4		2
Dunnock	<i>Prunella modularis</i>		1		1		
Fieldfare	<i>Turdus pilaris</i>		24	11	29	62	16
Goldcrest	<i>Regulus regulus</i>					3	
Goldfinch	<i>Carduelis carduelis</i>				4		
Hooded Crow	<i>Corvus cornix</i>	5	9	8	4	4	15
Jackdaw	<i>Corvus monedula</i>	4	60		7		26
Magpie	<i>Pica pica</i>		6	6	4		3
Meadow pipit	<i>Anthus pratensis</i>	10	6	10	2	8	6
Mistle Thrush	<i>Turdus viscivorus</i>		2		2		
Pheasant	<i>Phasianus colchicus</i>	1	1				
Pied wagtail	<i>Motacilla alba</i>	2		2			2
Raven	<i>Corvus corax</i>	3	2	2	2		2
Redpoll (Common)	<i>Carduelis flammea</i>					43	
Redwing	<i>Turdus iliacus</i>			7	12		8
Reed Bunting	<i>Emberiza schoeniclus</i>					3	
Robin	<i>Erithacus rubecula</i>	1	3	3	2	2	2
Rook	<i>Corvus frugilegus</i>	36	100	20	12	12	90
Skylark	<i>Alauda arvensis</i>	2			1		
Song Thrush	<i>Turdus philomelos</i>					3	
Starling (Common)	<i>Sturnus vulgaris</i>	33	36	16	12	50	16
Stonechat	<i>Saxicola rubicola</i>	2	2			2	
Woodpigeon	<i>Columba palumbus</i>	1			2	5	8
Wren	<i>Troglodytes troglodytes</i>		1		3	2	1

Appendix 3 Table 2 - VP2 Non-target Species

VP2 - Moanmore 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>		8	10	10	4	6
Blue Tit	<i>Cyanistes caeruleus</i>		6		5	2	6
Bullfinch	<i>Pyrrhula pyrrhula</i>		2				
Chaffinch	<i>Fringilla coelebs</i>		18	5	8	3	10
Dunnock	<i>Prunella modularis</i>			5	2	1	2
Fieldfare	<i>Turdus pilaris</i>		20	23	6	9	25
Goldcrest	<i>Regulus regulus</i>		2				
Goldfinch	<i>Carduelis carduelis</i>			3			
Great Tit	<i>Parus major</i>		1	2		2	3
Hooded Crow	<i>Corvus cornix</i>		4	2	4	11	6
Jackdaw	<i>Corvus monedula</i>		9	10	80	11	8
Magpie	<i>Pica pica</i>		6	2		2	2
Meadow pipit	<i>Anthus pratensis</i>		50	17	7		18
Mistle Thrush	<i>Turdus viscivorus</i>		4				
Pheasant	<i>Phasianus colchicus</i>					1	
Pied wagtail	<i>Motacilla alba</i>		4	2	2	1	
Raven	<i>Corvus corax</i>		2		2	4	2
Redpoll (Common)	<i>Carduelis flammea</i>						2
Redwing	<i>Turdus iliacus</i>		7	30	58	6	17
Reed Bunting	<i>Emberiza schoeniclus</i>		2	2	2	2	5
Robin	<i>Erithacus rubecula</i>		7	7	3	3	3
Rook	<i>Corvus frugilegus</i>		44	26	110	60	34
Song Thrush	<i>Turdus philomelos</i>			5	2	2	2
Starling (Common)	<i>Sturnus vulgaris</i>		41	17	30	100	19
Stonechat	<i>Saxicola rubicola</i>		3	2			2
Woodpigeon	<i>Columba palumbus</i>		14	2			12
Wren	<i>Troglodytes troglodytes</i>		6	3	3	2	3

Appendix 3 Table 3 - Peak Counts VP1 – VP2

Peak Counts VP1-VP2 Moanmore 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>	1	8	10	10	11	6
Blue Tit	<i>Cyanistes caeruleus</i>		6		5	2	6
Bullfinch	<i>Pyrrhula pyrrhula</i>		2				
Chaffinch	<i>Fringilla coelebs</i>	1	18	5	8	3	10
Dunnock	<i>Prunella modularis</i>		1	5	2	1	2
Fieldfare	<i>Turdus pilaris</i>		24	23	29	62	25
Goldcrest	<i>Regulus regulus</i>		2			3	
Goldfinch	<i>Carduelis carduelis</i>			3	4		
Great Tit	<i>Parus major</i>		1	2		2	3
Hooded Crow	<i>Corvus cornix</i>	5	9	8	4	11	15
Jackdaw	<i>Corvus monedula</i>	4	60	10	80	11	26
Magpie	<i>Pica pica</i>		6	6	4	2	3
Meadow pipit	<i>Anthus pratensis</i>	10	50	17	7	8	18
Mistle Thrush	<i>Turdus viscivorus</i>		4		2		
Pheasant	<i>Phasianus colchicus</i>	1	1			1	
Pied wagtail	<i>Motacilla alba</i>	2	4	2	2	1	2
Raven	<i>Corvus corax</i>	3	2	2	2	4	2
Redpoll (Common)	<i>Carduelis flammea</i>					43	2
Redwing	<i>Turdus iliacus</i>		7	30	58	6	17
Reed Bunting	<i>Emberiza schoeniclus</i>		2	2	2	3	5
Robin	<i>Erithacus rubecula</i>	1	7	7	3	3	3
Rook	<i>Corvus frugilegus</i>	36	100	26	110	60	90
Skylark	<i>Alauda arvensis</i>	2			1		
Song Thrush	<i>Turdus philomelos</i>			5	2	3	2
Starling (Common)	<i>Sturnus vulgaris</i>	33	41	17	30	100	19
Stonechat	<i>Saxicola rubicola</i>	2	3	2		2	2
Woodpigeon	<i>Columba palumbus</i>	1	14	2	2	5	12
Wren	<i>Troglodytes troglodytes</i>		6	3	3	2	3

Appendix 4 - Figures

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Clare Planning Authority - Inspection Purposes



Moanmore Bird Surveys

Winter 2022 / 2023



- D** Development Area
- D** 500m Study Area
- Vantage Point Locations

**Figure 1:
Site Layout / VP
Locations**

Author: Tom Ryan

Reviewed By: John Murphy

13/07/2023

Scale: 1:20,000

0 1 km





Moanmore Bird Surveys

Winter 2022 / 2023

A

- D** Development Area
- D** 500m Study Area
- • Transects

Figure 2: Transect Locations

Author: Tom Ryan

Reviewed By: John Murphy

13/07/2023

Scale: 1:20,000

0 1 km





Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Hen Harrier Roost Survey VPs
- Moanmore 5km survey radius

Figure 3 :
Hen Harrier Roost
Survey Locations

Author: Tom Ryan

Reviewed By: John Murphy

18/07/2023

Scale: 1:55,000

0 2km





Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
 - D 500m Study Area
 - Wildfowl Survey Points
 - Wildfowl Survey Sections
- River Shannon and
Fergus Estuaries SPA

**Figure 4:
Waterbird Survey
Sections**

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:110,000

0 5 km





Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- O Hinterland Survey Points
- - Moanmore Hinterland Route
- r - - Moanmore 5km survey radius

**Figure 5:
Hinterland Survey Area**

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:110,000

0 2 km

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Hen Harrier

**Figure 6:
Hen Harrier Flights**

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Merlin

**Figure 7:
Merlin Flights**

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- B 500m Study Area
- Little Egret

Figure 8:
Little Egret Flights

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Black-headed Gull

**Figure 9:
Black-headed Gull
Flights**

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Kestrel

Figure 10 :
Kestrel! Flights

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Snipe

**Figure 11 :
Snipe Flights**

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Buzzard

**Figure 12 :
Buzzard Flights**

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Sparrowhawk

**Figure 13 :
Sparrowhawk Flights**

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Common Gull

Figure 14 :
Common Gull Flights

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Cormorant

Figure 15 :
Cormorant Flights

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Herring Gull

Figure 16 :
Herring Gull Flights

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

IRAE OIINrntOLOGICAL SULrtn GllotUP





Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Lesser Black-backed Gull

**Figure 17 :
Lesser Black-backed
Gull Flights**

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

IRAE OIINrntOLOGICAL SULrtn GiloUP





Moanmore Bird Surveys

Winter 2022 / 2023

A

D Development Area

D 500m Study Area

Mallard

**Figure 18 :
Mallard Flights**

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

- D Development Area
- D 500m Study Area
- Grey Heron

Figure 19 :
Grey Heron Flights

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:15,000

0 250 500 m

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Moanmore Bird Surveys

Winter 2022 / 2023

A

B

Development Area
500m Study Area

r:::

Moanmore 5km survey radius

•

Hinterland Survey Observations

Figure 20 :
Hinterland Survey
Observations

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:50,000

0

2 km





Moanmore Bird Surveys

Winter 2022 / 2023

A

B Development Area
500m Study Area

r Moanmore 5km survey radius

• Incidental Observations

**Figure 21 :
Incidental Observations**

Author: Tom Ryan

Reviewed By: John Murphy

17/07/2023

Scale: 1:50,000

0 2 km

