Winter Bird Survey Report 2021

NDFA Blessington, Co. Wicklow

DOCUMENT DETAILS

Client:	**NDFA**
Project Title:	**NDFA Blessington, Co. Wicklow**
Project Number:	**201231**
Document Title:	**Winter Bird Survey Report 2021**
Document File Name:	**Blessington Winter Bird Survey Report 2021-F-2021.05.18 - 201231**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Draft	11/05/2021	PM	PC
02	Final	18/05/2021	PM/PC	DO'D

Table of Contents

TABLE OF TABLES

1. INTRODUCTION

McCarthy Keville O'Sullivan (MKO) was appointed to carry out bird survey works at Blessington, County Wicklow during the period from January 2021 to March 2021 inclusive. The proposed development scheme consists of a large housing development on a greenfield site dominated by agricultural grassland used for cattle grazing during the summer. The site is approximately 3.24 ha in area and is located east of the N81 and to the south of Blessington (Coordinate: 53°09'37.9"N 6°32'26.7"W). Figure 1 (Appendix 2) provides a map of the location of the proposed development boundary.

This report describes the ornithological survey methods employed and survey data collected at the subject site at Blessington, Co. Wicklow for the period from January 2021 to March 2021 inclusive. This report also contains information compiled during the desktop study. Particular attention has been paid to species of conservation importance and identified target species.

The report is supported by Technical Appendix 1 which contains the raw data from the winter bird surveys in 2021. This includes detail on survey times, weather conditions, surveyors, survey results and other additional information. Maps containing flight data and significant flocks observed during surveys are shown in Appendix 2.

The report is structured as follows:

- An introduction describing the background and statement of authority regarding ornithological works.
- A description of the desktop study carried out with regards to the site.
- A comprehensive description of survey methods.
- A full description of results for all ornithological surveys conducted.
- A discussion of the potential impacts.

The following defines terms used in this report:

- "Zones of Influence" (ZOI) for potential ornithological receptors refers to the zone within which potential effects are anticipated. ZOIs were assigned following best available guidance (SNH 2016 and McGuinness et.al 2015).

1.1 Statement of Authority

This report has been prepared by Patrick Manley (B. Sc.), a Project Ornithologist with MKO and Senior Ornithologist, Padraig Cregg (M.Sc.) and reviewed by Project Director, Dervla O'Dowd (B.Sc.). The field surveys were undertaken in the 2021 winter season by Kathryn Sheridan (M. Sc.), a competent expert in bird surveying.

CVs for the authors of this report and all personnel who carried out survey work are provided in Appendix 3.

2. DESK STUDY

2.1 Desk Study Methods

A comprehensive desk study was undertaken prior to surveys in winter 2021 to search for any relevant information on species of conservation concern which may potentially make use of the study area. The assessment included a thorough review of the available ornithological data including:

- Review of online web-mappers: National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC), Irish Wetland Bird Survey I-WeBS.
- Review of Birds of Conservation Concern (BoCCI) in Ireland 2020 - 2026 (Gilbert et al. 2021).
- Review of Special Protection Areas: including site synopsis, SCI species and conservation objectives.

2.2 Desk Study Results

2.2.1 Identification of Designated Sites within the Likely Zone of Influence

In the absence of any specific European or Irish guidance on the core foraging ranges, the Scottish Natural Heritage (SNH) Guidance, 'Assessing Connectivity with Special Protection Areas (SPA)' (2016) was consulted. This document provides guidance in relation to the identification of connectivity between proposed development proposals and Special Protection Areas. The guidance takes into consideration the distances some species may travel beyond the boundary of their SPAs and outlines information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects. Using GIS software, SPAs within a potential 15km ZOI of the proposed development were identified.

The nearest SPA, the Poulaphouca Reservoir SPA, is located to the east and south of the proposed development. The SPA is located 230m from the proposed development site and comprises the entirety of the Poulaphouca Reservoir.

Designated sites located within the Likely Zone of Influence are listed below in Table 2-1 and illustrated in Appendix 2, Figure 2.

Table 2-1 Special Protection Areas within likely zone of influence

Designated site and code	Distance from proposed development	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (https://www.npws.ie, last viewed 11/05/2021)	Conservation Objectives
Poulaphouca Reservoir SPA (004063)	230m to the east of the proposed development site	› Greylag Goose (*Anser anser*) [A043] › Lesser Black-backed Gull (*Larus fuscus*) [A183]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA" NPWS (2021) Conservation objectives for Wicklow Mountains SPA [004063]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Wicklow Mountains SPA (004040)	5.5km to the east of the proposed development site	› Merlin (*Falco columbarius*) [A098] › Peregrine (*Falco peregrinus*) [A103]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA" NPWS (2021) Conservation objectives for Wicklow Mountains SPA [004040]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

2.2.2 Irish Wetland Bird Survey (I-WeBS) Records

The dataset for the Poulaphouca Reservoir SPA was downloaded from www.birdwatchireland.ie and reviewed. Data from this I-WeBS site has been used to estimate the population of waterbirds in the area surrounding the proposed development area. The most recent 5-season period and mean counts for this period are presented in Table 2-2.

Table 2-2 I-WeBS data for Poulaphouca Reservoir SPA

Species	2013/14	2014/15	2015/16	2016/17	2017/18	5- season mean 2013/14-2017/18:
Mute Swan	10	24		21		18
Whooper Swan	25	44		27		32
Pink-footed Goose		1				0
Greylag Goose	193	150		137		160
Light-bellied Brent Goose				1		0
Wigeon	120	56		99		92
Teal	220	167		243		210
Mallard	198	213		218		210
Tufted Duck	2	1		1		1
Goldeneye	6	4		9		6
Goosander	1	2				1
Little Grebe	2	6		10		6
Great Crested Grebe	4					1
Cormorant	4	4		12		7
Little Egret	1			2		1
Grey Heron	2	4		5		4
Moorhen	4	26		19		16
Coot		5		5		3
Lapwing	36	33		42		37
Snipe	1	4		2		2
Curlew		56		5		20
Common Sandpiper	1			3		1
Greenshank				2		1
Redshank				1		0
Turnstone		1				0
Black-headed Gull	81	55		97		78
Lesser Black-backed Gull	3	34		18		18
Herring Gull	10			10		7
Great Black-backed Gull	1			2		1
Kingfisher	1					0

As previously discussed, data from I-WeBS sites in County Wicklow has been used to estimate County populations of wintering waterbirds discussed in this report. Datasets for the following sites were downloaded from www.birdwatchireland.ie and reviewed:

Wicklow I-WeBS Sites

- Arklow Harbour
- Arklow Ponds
- Avoca River/Arklow
- Bray Harbour
- Britta Bay and Mizen Head
- Buckroney Fen
- Carriggower Bog
- Glendalough - Upper and Lower Lakes
- Lough Bray
- Lough Tay and Dan
- North Wicklow Coastal Marches
- Poulaphouca Reservoir
- Vartry Reservoir

2.2.3 Method of Identification of Target Species

Following a comprehensive desk study by MKO, initial site visit and consultation, a list of "Target species" likely to occur at the site was compiled. The survey work carried out on the site was specifically designed to survey for these identified target species. The target species list was drawn from:

- Annex I of the Birds Directive,
- Special Conservation Interests (SCI) of Special Protection Areas (SPA) within the zone of likely significant effects,
- Red listed birds of Conservation Concern in Ireland,
- Species with the potential to be impacted by this type of development.

All species within these categories were considered as target species for the purpose of these surveys.

3. FIELD SURVEYS

3.1 Field Survey Methods

This section of the report describes the various field survey methods employed. Field surveys were undertaken from January 2021 – March 2021 inclusive. Field survey methodologies have been devised to survey for the bird species composition and assemblages that occur within the study area.

3.1.1 Initial Site Assessment

Based on the results of the desk study, the likely importance of the study area for bird species was determined. Based on the collated information available from the above preliminary assessment and adopting a precautionary approach, a site-specific scope for the ornithological surveys was developed.

3.1.2 Vantage Point Surveys

Vantage Point surveys were undertaken to determine the presence of bird species of high conservation concern within areas of potential suitable habitat in the study area. These surveys were undertaken in the form of a vantage point watch within the proposed development boundary.

The survey was undertaken (onsite) over a six-hour period which included the two hours either side of high tide, as this is the period when birds from the nearby SPAs are most likely to make use of terrestrial habitats, such as those present within the proposed development site. The main aim of the survey was to identify if SCIs from the nearby SPAs were utilising areas onsite for foraging or roosting. Along with target species, all additional species observed were recorded to inform the evaluation of supporting habitat.

Survey effort, including details of survey duration and weather condition, is presented in Appendix 1, Table 1-1. Figure 1 in Appendix 1 shows the survey study area.

3.1.3 Walkover and Habitat Surveys

Transect routes were walked during each survey to assess the quality and composition of habitats at various points (10 maximum) within the proposed development boundary. Transect routes were devised to ensure coverage of different habitat complexes within the study area, during each survey visit. At each point grass sward height, percentage of grass, percentage of forb species and percentage of bare ground was recorded.

A further consideration during the walkover was to identify signs (e.g. droppings) of bird species of high conservation concern within areas of potentially suitable habitat in the study area. The walkover survey was undertaken within the redline boundary. The abundance of droppings present at each transect point was recorded during these surveys. Results of these habitat transects are presented in Table 3-3 below.

3.1.4 Survey Justification

A comprehensive suite of bird surveys was undertaken at the site between January 2021 and March 2021, as detailed in this report.

The surveys undertaken provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the proposed development on avian receptors.

3.2 Field survey results

3.2.1 Survey Effort

Surveys were undertaken between the 19th January 2021 and 19th of March 2021. Two visits per month were undertaken during this period, with six surveys carried out in total. Table 3-1 shows the survey effort for the 2021 winter season.

Table 3-1 Survey Effort

Survey Date	Survey Duration (hours)	Surveyor
19/01/2021	6:00 starting at 10:44	KS
28/01/2021	6:00 starting at 08:20	KS
05/02/2021	6:00 starting at 11:30	KS
17/02/2021	6:00 starting at 11:50	KS
05/03/2021	6:00 starting at 12:20	KS
19/03/2021	6:00 starting at 11:11	KS

3.2.2 Vantage Point Survey Results

As previously discussed, surveys were undertaken at the proposed development between January 2021 and March 2021 inclusive. Summary results from the vantage point surveys are presented below in Table 3-2, and discussed in further detail in Section 4 of this report. Figure numbers refer to figures provided in Appendix 2.

Table 3-2 Total number of each species recorded commuting over the proposed development site during surveys (Peak Counts for each species are presented in bold)

Species	Conservation Status	January		February		March		Figure No.
		19th	28th	5th	17th	5th	19th	
Black-headed Gull	BoCCI Red Listed (Breeding Populations)	-	**42**	22	28	2	-	Figure 1.1
Cormorant	BoCCI Amber Listed	-	-	**1**	-	-	-	Figure 1.2
Grey Heron	BoCCI Green Listed	-	-	**1**	-	-	-	Figure 1.3
Herring Gull	BoCCI Amber Listed	**4**	2	2	1	3	-	Figure 1.4
Lesser Black-backed Gull	BoCCI Amber Listed	-	-	-	1	**7**	-	Figure 1.5
Mallard	BoCCI Amber Listed	3	-	-	2	-	**5**	Figure 1.6
Snipe	BoCCI Red Listed (Breeding and Wintering Populations)	-	-	-	**24**	-	-	Figure 1.7
Teal	BoCCI Amber Listed	-	**2**	-	-	-	-	Figure 1.8

3.2.3 Habitat Survey Results

Habitat quality and composition were recorded along walked transects within the proposed development area and accessed at visits between January and March inclusive. The monthly range and averages of habitat compositions are detailed in Table 3-3 below. Also included are average monthly sward heights and the abundance of brent goose droppings.

Table 3-3 Habitat quality and composition of walked transects within the proposed development. Also included is the abundance of brent geese droppings observed on transects.

Month	Sward Height (cm)	Grass (%)		Forbs (%)		Bare Ground (%)		Number of Droppings
		Range	Average	Range	Average	Range	Average	
January	6	80-95	90.7	0-10	5.4	0-15	3.9	0
February	7.7	85-100	92	0-10	4	0-15	4	0
March	7.7	75-100	90	0-20	7.8	0-10	2.2	0

3.2.4 Other Observations

Several observations of non-target species were recorded during the survey period. The most significant of these observations are detailed in Table 3-4 below and discussed in further detail in Section 4 of this report. Figure numbers refer to figures provided in Appendix 2.

Table 3-4 Other observations during surveys

Species	Number of Observations	Activity of Note	Figure Number
Buzzard	7	Two observations of a pair displaying; all other observations were of individuals travelling	Figure 1.9
Kestrel	1	Hunting	Figure 1.10
Sparrowhawk	3	Hunting	Figure 1.11

4. DISCUSSION

The following provides a synopsis of the findings of the surveys undertaken between January 2021 and March 2021.

Within the proposed development site and/or within 500m of the site, the following key observations were noted:

- Black-headed gull and herring gull were observed frequently commuting over the proposed development.
- A buzzard pair were observed displaying over woodland to the south of the proposed development site.

Key impacts that could result from the proposed development for local avian receptors include habitat loss, disturbance/displacement and water pollution.

The site consists of agricultural grassland, interspersed with areas of wet grassland, which has been subject to grazing by cattle outside the summer season, resulting in a relatively long average grass height at the time of surveying of 6-7.7cm (see Table 3-3). Greylag goose and lesser black-backed gull are the Special Conservation Interest (SCI) species of the closest SPA (Poulaphouca Reservoir SPA (230m to the east)) most likely to use the proposed development area. Of these SCI species, only lesser black-backed gull were observed commuting within 500m of the proposed development. Lesser black-backed gull flocks were observed on three occasions, ranging from an individual to six birds. Lesser black-backed gull were not observed flying directly over the proposed development site. No SCI species were observed on the proposed development site during the comprehensive suite of surveys conducted and no goose droppings were located during habitat surveys.

A pair of buzzards were observed displaying over the woodland area to the south of the proposed development area on two occasions. A single buzzard was also observed flying over the site on a further five occasions. The buzzard pair observed to the south of the proposed development showed territorial behaviour and may use the area of woodland, 150m south of the proposed development site, for nesting. There is therefore the potential for buzzard to be impacted by the proposed development.

The potential for birds commuting over the site (e.g. gull species) to be impacted by construction activities is considered to be limited. There is potential for disturbance/displacement and habitat loss for species observed utilising habitats within the proposed development site during the construction phase, however there were no observations of target species utilising the proposed development site for foraging or roosting. Therefore these impacts are not considered to have the potential to be significant.

5. CONCLUSION

There are two SPAs within the ZOI of the proposed development, the nearest SPA is the Poulaphouca Reservoir SPA (230m to the east). Of the SCI species listed for the SPAs within the ZOI, lesser black-backed gull were the only species recorded commuting within 500m of the proposed development.

The proposed development is not within an SPA, however, given the proximity of several SPAs, potential for impacts to result during construction and operational phases of the proposed development on birds that are associated with this SPA was identified. Potential impacts could include:

- Disturbance/displacement during the construction and operational phases of the proposed development to Special Conservation Interest of the SPA including through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings.
- Water pollution to downstream SPAs.

The maximum likely distance at which disturbance will impact SCIs from an SPA is 300m (Cutts et al., 2013) from the proposed development boundary. Given the separation distance from the Poulaphouca Reservoir SPA, disturbance impacts within the SPA cannot be ruled out. However, given the low levels of activity recorded within 500m of the proposed development site, significant effects on the SCIs of the SPA are not anticipated.

If built, the proposed housing scheme may result in disturbance of SCIs of the SPAs within the likely ZOI, which commute within 500m of the proposed development. However, habituation will likely occur to this new source of disturbance given that the SCIs of the SPA are already accustomed to the disturbance associated with the existing surrounding housing developments in Blessington to the north and west.

A wide range of environmental factors are required to support water bird species including good water quality and clarity and a good supply of food resources. Thus, water quality impacts resulting from the proposed development (i.e. during the construction and operational phases) could result in a reduction in the availability of suitable habitat for water bird species at downstream wetland sites. The effect of such a reduction in water quality has the potential to be ecologically significant. However, best practice design can be implemented to avoid or reduce such impacts.

BIBLIOGRAPHY

Birds Directive (2009/47/EC) – http://ec.europa.eu/environment/nature /legislation/birdsdirective /index _en.htm

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

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011).

Cutts, N., Hemingway, K. and Spencer, J. (2013). *Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning & Construction Projects.* Institute of Estuarine & Coastal Studies (IECS) University of Hull

Estimates of waterbird numbers wintering in Ireland, 2011/12 – 2015/16. *Brian Burke, Lesley J. Lewis, Niamh Fitzgerald, Teresa Frost, Graham Austin, & T. David Tierney*

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

Mullarney, K., Svensson, L., Zetterström, D. and Grant, P. J. (1999).*Collins Bird Guide.*Harper Collins, London.

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

Thaxter, C.B., Lascelles, B., Sugar, K., Cook, A.S.C.P., Roos, S., Bolton, M., Langston, R.H.W. & Burton, N.H.K. (2012). Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas. Biological Conservation, 156, 53–61.

www.npws.ie – Distribution maps and associated information for sites designated for nature conservation by NPWS (i.e. SPAs, SACs, NHAs, pNHAs)

IWeBS (2015). http://f1.caspio.com/dp.asp?AppKey=f4db3000060acbd80db9403f857c. Irish Wetland Bird Survey Records.

APPENDIX 1

TECHNICAL APPENDIX

Table of Contents

TABLE OF TABLES

Table 1 Survey Effort

Date	Duration (hrs)	Weather Conditions	Comments	Surveyor
19/01/2021	6:00 starting at 10:44	Visibility: good; Wind speed and direction: gentle breeze W; Cloud cover and height: 33-66% 150-500m; Rain: none; Frost: none; Snow: none		KS
28/01/2021	6:00 starting at 08:20	Visibility: moderate; Wind speed and direction: moderate breeze NE; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		KS
05/02/2021	6:00 starting at 11:30	Visibility: poor; Wind speed and direction: light breeze E; Cloud cover and height: 66-100% 150-500m; Rain: drizzle; Frost: none; Snow: none		KS
17/02/2021	6:00 starting at 11:50	Visibility: good; Wind speed and direction: moderate breeze N; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		KS
05/03/2021	6:00 starting at 12:20	Visibility: good; Wind speed and direction: light air W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		KS
19/03/2021	6:00 starting at 11:11	Visibility: good; Wind speed and direction: light air S; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		KS

Table 2 Winter Bird Survey Flight Data

Map Ref	Date	Time	Species	Number of birds	Duration of flight (s)	Band 1 (0-10m)	Band 2 (10-20m)	Band 3 (20-30m)	Band 4 (>30m)	Habitat and activity	Surveyor
MA001	19/01/2021	12:15	Mallard	3	60	0	60	0	0	improved agricultural grassland; flying over, landed in water	KS
HG001	19/01/2021	12:48	Herring Gull	2	25	0	25	0	0	improved agricultural grassland; flying over	KS
BH001	19/01/2021	13:39	Black-headed Gull	5	5	5	0	0	0	short rotation coppice; flying over, landed in water	KS
HG002	19/01/2021	14:15	Herring Gull	2	10	0	0	10	0	improved agricultural grassland; flying over	KS
BZ001	19/01/2021	14:16	Buzzard	1	70	0	70	0	0	improved agricultural grassland; flying over, mobbed by HC flew north	KS
BZ002	19/01/2021	14:28	Buzzard	1	60	60	0	0	0	improved agricultural grassland; flying over, flew through	KS
BH002	19/01/2021	15:01	Black-headed Gull	34	45	45	0	0	0	improved agricultural grassland; flying over	KS
T001	28/01/2021	09:59	Teal	2	10	10	0	0	0	wet grassland; flying over, flew from water	KS
HG003	28/01/2021	10:00	Herring Gull	2	5	5	0	0	0	improved agricultural grassland; flying over	KS
BH003	28/01/2021	11:38	Black-headed Gull	1	10	10	0	0	0	improved agricultural grassland; flying over	KS
SH001	28/01/2021	11:56	Sparrowhawk	1	5	5	0	0	0	improved agricultural grassland; flying over, hunting	KS
BH004	28/01/2021	14:07	Black-headed Gull	2	10	10	0	0	0	improved agricultural grassland; flying over	KS
BH005	05/02/2021	11:51	Black-headed Gull	19	20	20	0	0	0	built land and improved agricultural grassland; flying over	KS
HG004	05/02/2021	12:09	Herring Gull	1	5	5	0	0	0	improved agricultural grassland and linear woodland/scrub; flying over	KS
BH006	05/02/2021	12:20	Black-headed Gull	1	10	10	0	0	0	improved agricultural grassland and linear woodland/scrub; flying over	KS

Map Ref	Date	Time	Species	Number of birds	Duration of flight (s)	Band 1 (0-10m)	Band 2 (10-20m)	Band 3 (20-30m)	Band 4 (>30m)	Habitat and activity	Surveyor
SH002	05/02/2021	12:37	Sparrowhawk	1	12	12	0	0	0	improved agricultural grassland and linear woodland/scrub; flying over, hunting	KS
BH007	05/02/2021	12:52	Black-headed Gull	2	15	10	5	0	0	improved agricultural grassland and linear woodland/scrub; flying over	KS
CA001	05/02/2021	13:38	Cormorant	1	28	0	28	0	0	improved agricultural grassland and mixed broadleaved woodland; flying over	KS
H001	05/02/2021	13:42	Grey Heron	1	15	15	0	0	0	improved agricultural grassland and built land; flying over	KS
HG005	05/02/2021	16:35	Herring Gull	1	10	0	10	0	0	improved agricultural grassland and lakes and ponds; flying over	KS
BH008	17/02/2021	12:15	Black-headed Gull	1	10	10	0	0	0	improved agricultural grassland; flying over	KS
BH009	17/02/2021	12:20	Black-headed Gull	1	15	15	0	0	0	improved agricultural grassland; flying over	KS
HG006	17/02/2021	13:27	Herring Gull	1	10	10	0	0	0	improved agricultural grassland and built land; flying over	KS
BH010	17/02/2021	13:50	Black-headed Gull	11	15	15	0	0	0	improved agricultural grassland and built land; flying over	KS
BH011	17/02/2021	14:10	Black-headed Gull	1	20	0	0	20	0	improved agricultural grassland; flying over	KS
BZ003	17/02/2021	14:19	Buzzard	1	80	0	0	80	0	improved agricultural grassland and built land; flying over, gliding	KS
BH012	17/02/2021	14:49	Black-headed Gull	1	10	10	0	0	0	improved agricultural grassland; flying over	KS
MA002	17/02/2021	15:08	Mallard	2	5	5	0	0	0	improved agricultural grassland; flying over, landed on water	KS
LB001	17/02/2021	15:58	Lesser Black-backed Gull	1	30	0	0	30	0	improved agricultural grassland and lakes and ponds; flying over	KS
SN001	17/02/2021	16:00	Snipe	24	10	10	0	0	0	semi-natural grassland; flying over	KS
BH013	17/02/2021	16:01	Black-headed Gull	12	15	15	0	0	0	improved agricultural grassland; flying over	KS

Map Ref	Date	Time	Species	Number of birds	Duration of flight (s)	Band 1 (0-10m)	Band 2 (10-20m)	Band 3 (20-30m)	Band 4 (>30m)	Habitat and activity	Surveyor
BH014	17/02/2021	16:58	Black-headed Gull	1	10	0	10	0	0	improved agricultural grassland; flying over	KS
SH003	05/03/2021	13:28	Sparrowhawk	1	10	10	0	0	0	improved agricultural grassland; flying over, hunting	KS
HG007	05/03/2021	13:42	Herring Gull	1	15	5	10	0	0	improved agricultural grassland; flying over	KS
BH015	05/03/2021	15:07	Black-headed Gull	2	30	0	30	0	0	improved agricultural grassland; flying over	KS
LB002	05/03/2021	17:22	Lesser Black-backed Gull	6	15	0	0	15	0	lakes and ponds and improved agricultural grassland; flying over	KS
HG008	05/03/2021	17:37	Herring Gull	2	20	0	0	29	0	improved agricultural grassland, mixed broadleaved/conifer woodland and built land; flying over	KS
LB003	05/03/2021	17:43	Lesser Black-backed Gull	1	20	0	20	0	0	improved agricultural grassland, built land and lakes and ponds; flying over	KS
BZ004	05/03/2021	17:48	Buzzard	1	20	20	0	0	0	improved agricultural grassland and built land; flying through, mobbed by crows	KS
BZ005	19/03/2021	11:13	Buzzard	1	2	2	0	0	0	mixed broadleaved woodland; perched, perched in tree	KS
BZ006	19/03/2021	11:46	Buzzard	2	36	16	20	0	0	improved agricultural grassland and mixed broadleaved/conifer woodland; flying over, calling/displaying, dropped below treeline	KS
MA003	19/03/2021	13:25	Mallard	1	5	5	0	0	0	improved agricultural grassland; flying over, landed on water pool	KS
K001	19/03/2021	14:00	Kestrel	1	165	0	0	30	135	improved agricultural grassland; flying over, hunting/gliding, rose out of sight	KS
MA004	19/03/2021	15:09	Mallard	1	12	12	0	0	0	improved agricultural grassland and mixed broadleaved/conifer woodland; flying over	KS

Map Ref	Date	Time	Species	Number of birds	Duration of flight (s)	Band 1 (0-10m)	Band 2 (10-20m)	Band 3 (20-30m)	Band 4 (>30m)	Habitat and activity	Surveyor
BZ007	19/03/2021	15:16	Buzzard	2	196	0	20	40	136	improved agricultural grassland and mixed broadleaved/conifer woodland; flying over, displaying, gliding on thermals	KS
MA005	19/03/2021	15:24	Mallard	3	10	0	10	0	0	improved agricultural grassland and mixed broadleaved/conifer woodland; flying over	KS

Table 3 Habitat Survey Results

Date	Time	Sample Point	Habitat Structure	Notes	Surveyor
28/01/2021	00:00	Blessington 1 (160m), point 1	Sward height of 5cm; 85% grass, 5% forbs and 10% bare ground	0 brent goose droppings	KS
28/01/2021	00:00	Blessington 1 (160m), point 2	Sward height of 6cm; 80% grass, 5% forbs and 15% bare ground	0 brent goose droppings	KS
28/01/2021	00:00	Blessington 1 (160m), point 3	Sward height of 5cm; 90% grass, 5% forbs and 5% bare ground	0 brent goose droppings	KS
28/01/2021	00:00	Blessington 1 (160m), point 4	Sward height of 7cm; 94% grass, 5% forbs and 1% bare ground	0 brent goose droppings	KS
28/01/2021	00:00	Blessington 1 (160m), point 5	Sward height of 10cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
28/01/2021	00:00	Blessington 2 (160m), point 1	Sward height of 5cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
28/01/2021	00:00	Blessington 2 (160m), point 2	Sward height of 5cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
28/01/2021	00:00	Blessington 2 (160m), point 3	Sward height of 7cm; 90% grass, 5% forbs and 5% bare ground	0 brent goose droppings	KS
28/01/2021	00:00	Blessington 2 (160m), point 4	Sward height of 10cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
28/01/2021	00:00	Blessington 2 (160m), point 5	Sward height of 12cm; 95% grass, 5% forbs and 9% bare ground	0 brent goose droppings	KS
19/01/2021	13:00	Blessington 1 (160m), point 1	Sward height of 4cm; 90% grass, 5% forbs and 5% bare ground	0 brent goose droppings	KS
19/01/2021	13:00	Blessington 1 (160m), point 2	Sward height of 5cm; 90% grass, 0% forbs and 10% bare ground	0 brent goose droppings	KS
19/01/2021	13:00	Blessington 1 (160m), point 3	Sward height of 3cm; 95% grass, 0% forbs and 5% bare ground	0 brent goose droppings	KS
19/01/2021	13:00	Blessington 1 (160m), point 4	Sward height of 4cm; 90% grass, 5% forbs and 5% bare ground	0 brent goose droppings	KS
19/01/2021	13:00	Blessington 1 (160m), point 5	Sward height of 8cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
19/01/2021	13:00	Blessington 2 (160m), point 1	Sward height of 6cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS

Date	Time	Sample Point	Habitat Structure	Notes	Surveyor
19/01/2021	13:00	Blessington 2 (160m), point 2	Sward height of 5cm; 95% grass, 0% forbs and 5% bare ground	0 brent goose droppings	KS
19/01/2021	13:00	Blessington 2 (160m), point 3	Sward height of 4cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
19/01/2021	13:00	Blessington 2 (160m), point 4	Sward height of 5cm; 85% grass, 4% forbs and 1% bare ground	0 brent goose droppings	KS
19/01/2021	13:00	Blessington 2 (160m), point 5	Sward height of 5cm; 95% grass, 4% forbs and 1% bare ground	0 brent goose droppings	KS
05/02/2021	16:26	Blessington 1 (200m), point 1	Sward height of 5cm; 90% grass, 5% forbs and 5% bare ground	0 brent goose droppings	KS
05/02/2021	16:26	Blessington 1 (200m), point 2	Sward height of 5cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
05/02/2021	16:27	Blessington 1 (200m), point 3	Sward height of 7cm; 95% grass, 0% forbs and 5% bare ground	0 brent goose droppings	KS
05/02/2021	16:27	Blessington 1 (200m), point 4	Sward height of 5cm; 90% grass, 5% forbs and 5% bare ground	0 brent goose droppings	KS
05/02/2021	16:28	Blessington 1 (200m), point 5	Sward height of 10cm; 95% grass, 0% forbs and 5% bare ground	0 brent goose droppings	KS
05/02/2021	16:28	Blessington 2 (200m), point 1	Sward height of 20cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
05/02/2021	16:28	Blessington 2 (200m), point 2	Sward height of 20cm; 100% grass, 0% forbs and 0% bare ground	0 brent goose droppings	KS
05/02/2021	16:29	Blessington 2 (200m), point 3	Sward height of 10cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
05/02/2021	16:29	Blessington 2 (200m), point 3	Sward height of 10cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
05/02/2021	16:30	Blessington 1 (200m), point 5	Sward height of 3cm; 85% grass, 5% forbs and 10% bare ground	0 brent goose droppings	KS
17/02/2021	17:15	Blessington 1 (200m), point 1	Sward height of 6cm; 85% grass, 0% forbs and 15% bare ground	0 brent goose droppings	KS
17/02/2021	17:16	Blessington 1 (200m), point 2	Sward height of 8cm; 90% grass, 5% forbs and 5% bare ground	0 brent goose droppings	KS
17/02/2021	17:18	Blessington 1 (200m), point 3	Sward height of 5cm; 85% grass, 5% forbs and 10% bare ground	0 brent goose droppings	KS

Date	Time	Sample Point	Habitat Structure	Notes	Surveyor
17/02/2021	17:20	Blessington 1 (200m), point 4	Sward height of 5cm; 95% grass, 0% forbs and 5% bare ground	0 brent goose droppings	KS
17/02/2021	17:21	Blessington 1 (200m), point 5	Sward height of 7cm; 90% grass, 5% forbs and 5% bare ground	0 brent goose droppings	KS
17/02/2021	17:23	Blessington 1 (200m), point 6	Sward height of 6cm; 90% grass, 5% forbs and 5% bare ground	0 brent goose droppings	KS
17/02/2021	17:24	Blessington 1 (200m), point 7	Sward height of 5cm; 99% grass, 1% forbs and 0% bare ground	0 brent goose droppings	KS
17/02/2021	17:26	Blessington 1 (200m), point 8	Sward height of 4cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
17/02/2021	17:28	Blessington 1 (200m), point 9	Sward height of 5cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
17/02/2021	17:29	Blessington 1 (200m), point 10	Sward height of 7cm; 85% grass, 10% forbs and 5% bare ground	0 brent goose droppings	KS
05/03/2021	16:47	Blessington 1 (450m), point 1	Sward height of 10cm; 75% grass, 20% forbs and 5% bare ground	0 brent goose droppings	KS
05/03/2021	16:49	Blessington 1 (450m), point 2	Sward height of 8cm; 90% grass, 5% forbs and 5% bare ground	0 brent goose droppings	KS
05/03/2021	16:50	Blessington 1 (450m), point 3	Sward height of 5cm; 99% grass, 0% forbs and 1% bare ground	0 brent goose droppings	KS
05/03/2021	16:52	Blessington 1 (450m), point 4	Sward height of 5cm; 99% grass, 0% forbs and 1% bare ground	0 brent goose droppings	KS
05/03/2021	16:54	Blessington 1 (450m), point 5	Sward height of 7cm; 100% grass, 0% forbs and 0% bare ground	0 brent goose droppings	KS
05/03/2021	16:55	Blessington 1 (450m), point 6	Sward height of 3cm; 98% grass, 1% forbs and 1% bare ground	0 brent goose droppings	KS
05/03/2021	16:57	Blessington 1 (450m), point 7	Sward height of 5cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
05/03/2021	16:58	Blessington 1 (450m), point 8	Sward height of 5cm; 94% grass, 5% forbs and 1% bare ground	0 brent goose droppings	KS
05/03/2021	17:00	Blessington 1 (450m), point 9	Sward height of 10cm; 89% grass, 10% forbs and 1% bare ground	0 brent goose droppings	KS
05/03/2021	17:01	Blessington 1 (450m), point 10	Sward height of 4cm; 85% grass, 10% forbs and 5% bare ground	0 brent goose droppings	KS

Date	Time	Sample Point	Habitat Structure	Notes	Surveyor
19/03/2021	15:18	Blessington 1 (450m), point 1	Sward height of 12cm; 75% grass, 20% forbs and 5% bare ground	0 brent goose droppings	KS
19/03/2021	15:20	Blessington 1 (450m), point 2	Sward height of 10cm; 80% grass, 10% forbs and 10% bare ground	0 brent goose droppings	KS
19/03/2021	15:21	Blessington 1 (450m), point 3	Sward height of 7cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
19/03/2021	15:23	Blessington 1 (450m), point 4	Sward height of 10cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
19/03/2021	15:25	Blessington 1 (450m), point 5	Sward height of 7cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
19/03/2021	15:28	Blessington 1 (450m), point 6	Sward height of 10cm; 85% grass, 10% forbs and 5% bare ground	0 brent goose droppings	KS
19/03/2021	15:29	Blessington 1 (450m), point 7	Sward height of 7cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
19/03/2021	15:30	Blessington 1 (450m), point 8	Sward height of 12cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
19/03/2021	15:31	Blessington 1 (450m), point 9	Sward height of 5cm; 85% grass, 10% forbs and 5% bare ground	0 brent goose droppings	KS
19/03/2021	15:33	Blessington 1 (450m), point 10	Sward height of 12cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS

APPENDIX 2

FIGURES

Map Legend

- Proposed Development Site
- 500m Survey Radius

Microsoft product screen shots reprinted with permission from Microsoft Corporation

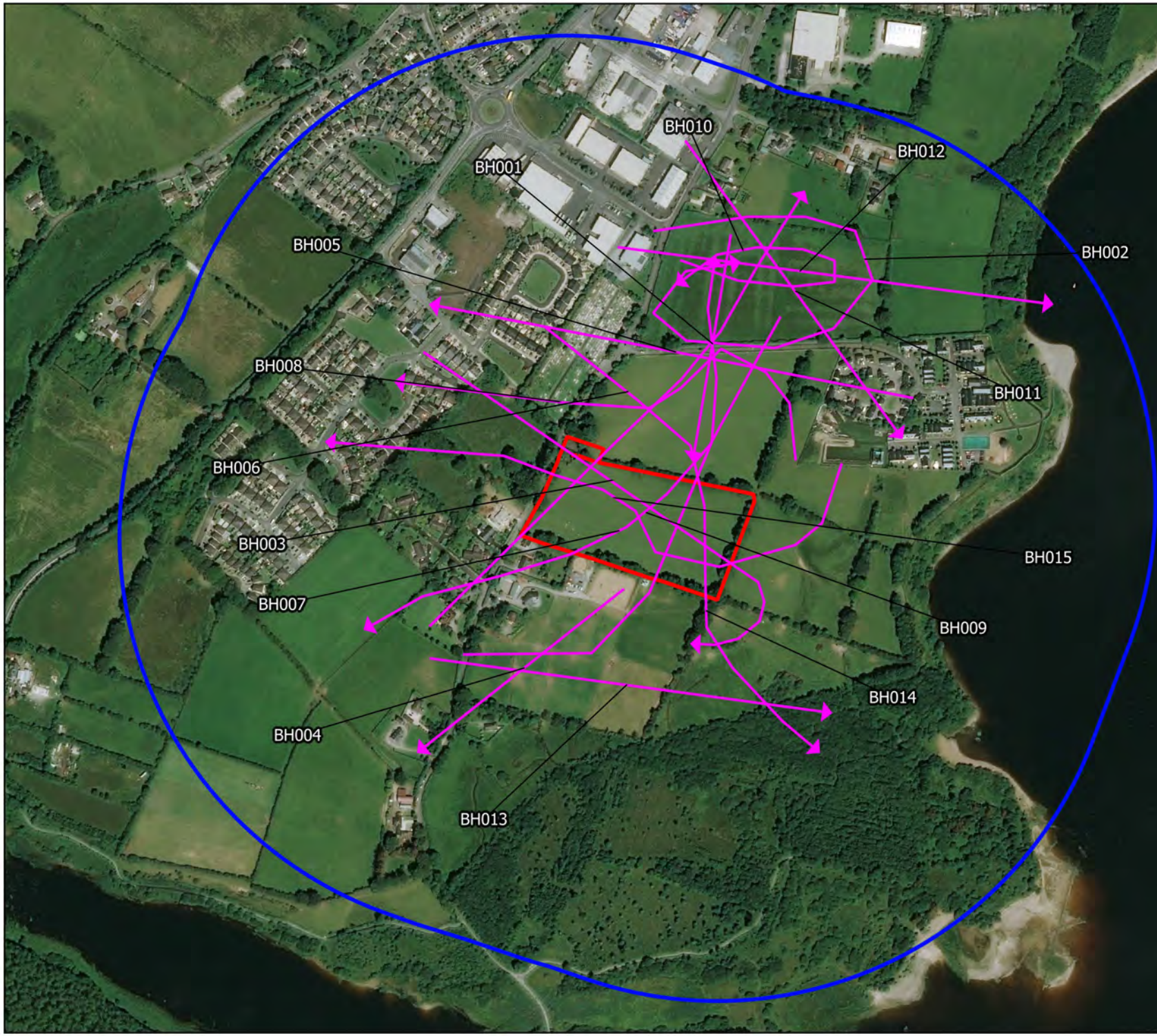
N

Drawing Title: Proposed Development Site

Project Title: NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 1
Scale	Date
1:6500	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: www.mkoireland.ie



Map Legend

- Proposed Development Site
- 500m Survey Radius
- Flight

Microsoft product screen shots reprinted with permission from Microsoft Corporation

N

Drawing Title
Black-headed Gull Observations
Vantage Point Surveys

Project Title
NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 1.1
Scale	Date
1:6500	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: www.mkoireland.ie

Map Legend

- Proposed Development Site
- 500m Survey Radius
- Flight

Microsoft product screen shots reprinted with permission from Microsoft Corporation

N

Drawing Title
Cormorant Observations
Vantage Point Surveys

Project Title
NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 1.2
Scale	Date
1:6500	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Map Legend

- Proposed Development Site
- 500m Survey Radius
- Flight

Microsoft product screen shots reprinted with permission from Microsoft Corporation

N

Drawing Title
Grey Heron Observations
Vantage Point Surveys

Project Title
NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 1.3
Scale	Date
1:6500	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Map Legend

- Proposed Development Site
- 500m Survey Radius
- Flight

Microsoft product screen shots reprinted with permission from Microsoft Corporation

N

Drawing Title	Herring Gull Observations Vantage Point Surveys
Project Title	NDFA Blessington
Drawn By: P. Manley	Checked By: P. Cregg
Project No.: 201231	Drawing No.: Fig. 1.4
Scale: 1:6500	Date: 11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Map Legend

- Proposed Development Site
- 500m Survey Radius
- Flight

Microsoft product screen shots reprinted with permission from Microsoft Corporation

N

Drawing Title
Lesser Black-backed Gull Obs. Vantage Point Surveys

Project Title
NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 1.5
Scale	Date
1:6500	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Map Legend

- Proposed Development Site
- 500m Survey Radius
- Flight

Microsoft product screen shots reprinted with permission from Microsoft Corporation

N

Drawing Title
Mallard Observations
Vantage Point Surveys

Project Title
NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 1.6
Scale	Date
1:6500	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Map Legend

- Proposed Development Site
- 500m Survey Radius
- Flight

Microsoft product screen shots reprinted with permission from Microsoft Corporation

N

Drawing Title
Snipe Observations
Vantage Point Surveys

Project Title
NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 1.7
Scale	Date
1:6500	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Map Legend

- Proposed Development Site
- 500m Survey Radius
- Flight

Microsoft product screen shots reprinted with permission from Microsoft Corporation

N

Drawing Title
Teal Observations
Vantage Point Surveys

Project Title
NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 1.8
Scale	Date
1:6500	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Map Legend

- Proposed Development Site
- 500m Survey Radius
- Flight

Microsoft product screen shots reprinted with permission from Microsoft Corporation

N

Drawing Title
Buzzard Observations
Vantage Point Surveys

Project Title
NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 1.9
Scale	Date
1:6500	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Map Legend

- Proposed Development Site
- 500m Survey Radius
- Flight

Microsoft product screen shots reprinted with permission from Microsoft Corporation

N

Drawing Title
Kestrel Observations
Vantage Point Surveys

Project Title
NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 1.10
Scale	Date
1:6500	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Map Legend

- Proposed Development Site
- 500m Survey Radius
- Flight

Microsoft product screen shots reprinted with permission from Microsoft Corporation

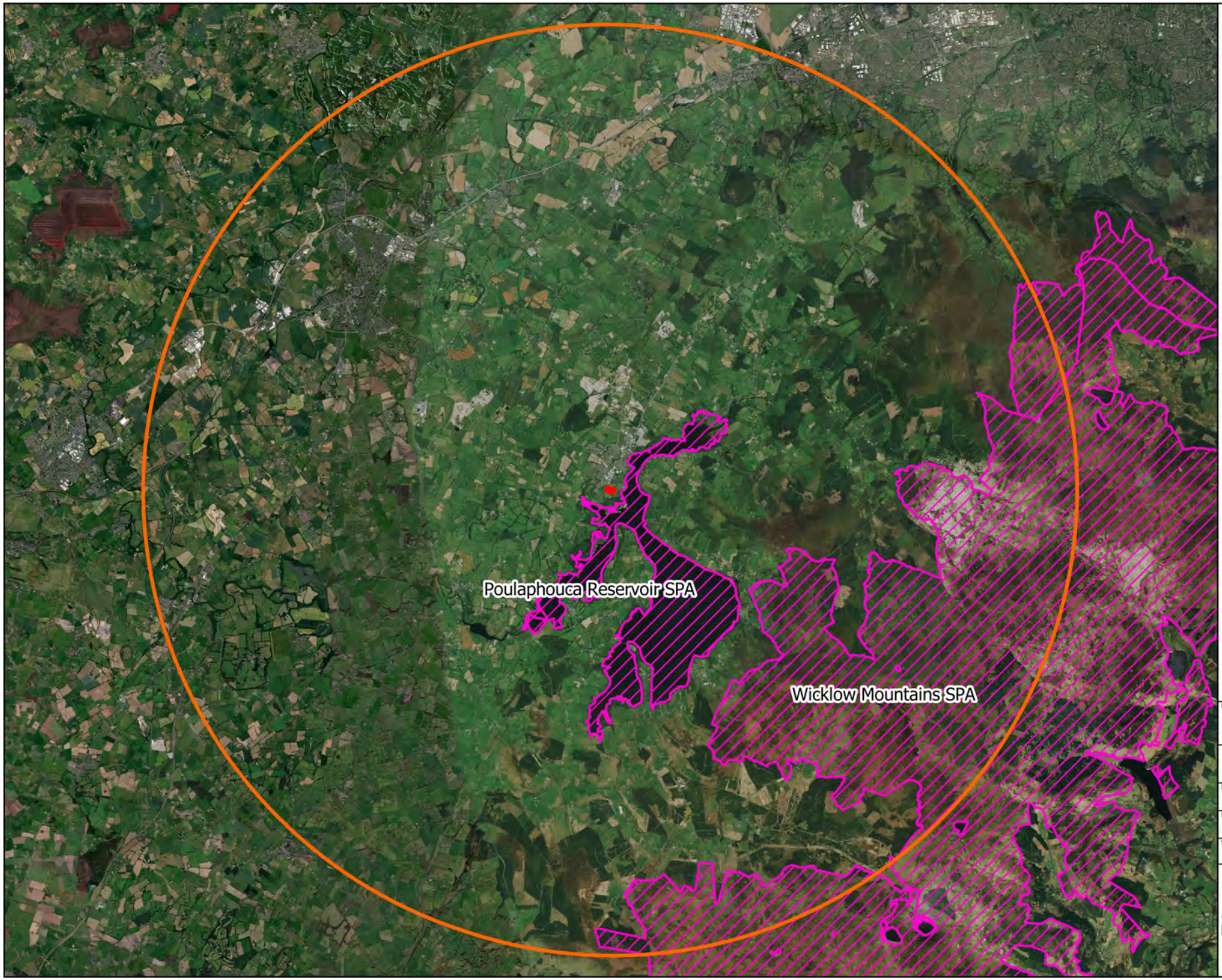
N

Drawing Title
Sparrowhawk Observations
Vantage Point Surveys

Project Title
NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 1.11
Scale	Date
1:6500	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie



Map Legend

- Proposed Development Site
- 15km Zone of Influence
- Special Protection Area

N

Microsoft product screen shots reprinted with permission from Microsoft Corporation

Drawing Title
SPAs within the ZOI of the Proposed Development Site

Project Title
NDFA Blessington

Drawn By	Checked By
P. Manley	P. Cregg
Project No.	Drawing No.
201231	Fig. 2
Scale	Date
1:160000	11.05.2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

APPENDIX 3

CURRICULUM VITAE

Planning and Environmental Consultants

CURRICULUM VITAE

Dervla O'Dowd

Dervla O'Dowd is Project Director with MKO's Ornithology Team with sixteen years of experience in environmental consultancy as a Senior Ecologist and Project Manager. Dervla graduated with a first-class honours B.Sc. in Environmental Science from NUI, Galway in 2005 and joined Keville O'Sullivan Associates in the same year. Dervla has gained extensive experience in the project management and ecological assessment of the impacts of various infrastructural projects including wind energy projects, water supply schemes, road schemes and housing developments nationwide and has also been involved in the compilation of Environmental Impact Reports and acted as EIAR co-ordinator on many of these projects. Dervla has also extensive experience in the provision of ecological site supervision for infrastructural works within designated conservations areas, in particular within aquatic habitats, and has also been involved in the development of environmental/ecological educational resource materials. Currently, Dervla is responsible for the management of MKO's dedicated Ornithology Team coordinating MKO's portfolio of bird survey and assessment work required on major infrastructural projects, with emphasis on wind energy projects. Dervla's key strengths and areas of expertise are in project management, project strategy, business development and survey co-ordination to ensure the efficient operation of the Ornithology team's field survey schedule. Dervla holds full membership of the Chartered Institute of Ecology and Environmental Management and current Safe Pass card.

Current Role	Project Director (Ornithology)
Qualifications	› B.A. (Archaeology & German) (1996), H. Dip. (Education) (1999) › B.Sc. (Environmental Science) (2005) National University of Ireland, Galway
Years of Experience	› 16 years post graduate experience in environmental consultancy.
Relevant Experience	› Currently responsible for the management of a team of approximately 25 inhouse field surveyors undertaking bird surveys nationwide at the sites of c.50 renewable energy projects at various stages of their project life cycle and the delivery of compiled, processed bird survey data to clients based on highest industry standards. › Co-ordination of the ecological component of over 25 Wind Farm projects nationwide at various stages including pre-planning, EISs, appeals, pre-commencement and condition compliance, construction and post-construction stages. Defining the scope of the ecological works required at each stage of projects, scheduling all works, coordinating and managing a team of up to twenty field staff/sub-consultants and overseeing the ecological inputs into all stages of these projects (2014-2016). › Project Manager, Article 6(3) Screening Review of entire OPW Drainage Maintenance Programme 2011. Compilation of 31 screening reports on arterial drainage scheme catchment basis nationwide. › Senior Ecologist on habitat mapping projects for Waterways Ireland on the Royal Canal and Barrow Navigation (2010-2013). › Senior Ecologist; OPW Channel Maintenance Assessments 2009/2010. Co-ordination and completion of assessment of impacts of channel maintenance works within designated sites throughout Ireland. › Project Manager and Senior Ecologist, N59 Moycullen Bypass Preliminary Ecological Assessment/Appropriate Assessments, responsible for all ecological surveying including aquatic and bat survey and habitat mapping. › Project Co-ordinator and Senior Ecologist and; N17 Tuam Bypass; 2009; Design/pre-planning stage; Environmental Report. Responsible for ecological issues including survey requirements, habitat mapping and Appropriate Assessment Screening. › Senior Ecologist; Group Water Scheme Bundles (Galway, Mayo, Roscommon, Clare); 2005 to 2010; Preliminary design through to construction sign off; Assessment of over 75 sites; liaison with statutory consultees, development of approved working methods and

	construction supervision in most sensitive sites. Most were within or adjacent to SACs/SPAs/NHAs with significant constraints. › Senior Ecologist; Appropriate Assessment for Wastewater Treatment Plant Discharge Licence Applications in Co.s Galway and Limerick. Responsible for consultation, surveys, including detailed aquatic surveys, report preparation and appropriate assessment for sites within/adjacent to SACs/SPAs/NHAs with significant ecological constraints. › Project Ecologist on various development-led projects. Responsible for consultation, appropriate assessment, site surveys, report preparation, appropriate assessment and construction site mitigation planning/supervision.
Practical Skills & Aptitudes	› Team management. › Business Development › Project management. › Co-ordination of complex field survey schedules/projects. › Project strategy. › Report-writing. › Ecological surveys including botanical surveys, habitat assessments, aquatic surveys (Stage 1 and 2 Freshwater Pearl Mussel survey licence holder, Crayfish surveys, freshwater invertebrate surveys), mammal surveys, bat surveys etc. › GIS
Management/ Supervision	› Responsible for the management of MKO Ornithology team of c. 25 in-house ornithologists and panel of regular sub-contractors. › Management and coordination of ecological inputs for EISs, FI responses and Grounds of Appeal for c. 20 wind farm projects nationwide (2014-2016) › Project Coordinator for EISs and Environmental Reports for a range of infrastructural and residential developments. › Project manager and senior ecologist on large scale ecological projects. › Extensive experience of ecological assessment and mitigation management of development sites nationwide over past 14 years. › Accustomed to working effectively as part of larger multidisciplinary project design teams.
Interpersonal & Communication Skills	› Experience of coordinating large team of field staff and sub-consultants for ecological works at over 50 wind farm sites currently throughout the country. › Experience co-ordinating project teams for EISs and Environmental reports for projects such as wind energy developments, solar energy projects, road and residential developments. › Extensive experience in successful dealings with statutory ecological consultees including NPWS and IFI, usually regarding sensitive ecological sites. › Significant experience co-ordinating approach to sensitive ecological sites between client and ecological consultees and contractors, etc. › Development of technical working methodologies on behalf of contractors requiring understanding of both proposed works and sensitivities of site › Experience in environmental education presentations and training for contractors, clients and the general public.
Licenses Held	› Wildlife Act Section 22 & 23 Crayfish › Wildlife Act Section 22 & 23 Pearl Mussel › Current Safe Pass holder. › Full member of the Chartered Institute of Ecology & Environmental Management (CIEEM).

Planning and Environmental Consultants

CURRICULUM VITAE

Padraig Cregg

Padraig Cregg is a Senior Ornithologist with MKO with over 8 years of experience in both private practice and NGOs. Padraig holds a BSc (Hons) in Zoology and Masters in Evolutionary and Behavioural Ecology. Prior to taking up his position with MKO in December 2018, Padraig worked as a Senior Ornithologist and held previous posts with TOBIN Consulting Engineers, Energised Environments Ltd in Scotland, WSP Environment and Energy Ltd in Scotland and BirdWatch Ireland. Padraig has specialist knowledge in designing, executing and project managing ornithological assessments, primarily in the renewable industry. Padraig's key strengths and areas of expertise are in ornithology and ecology surveying and in writing Natura Impact Statements (NIS) and the Biodiversity chapter of Environmental Impact Assessment Reports (EIAR) to accompany planning applications. Since joining MKO Padraig has been involved in designing, executing and project managing the ornithological assessment on over 20 proposed wind farm developments. He has played a key role in project managing these planning applications through the statutory planning system, with more projects in the pipeline. Within MKO Padraig plays a large role in the management and confidence building of junior members of staff and works as part of a large multi-disciplinary team to produce EIAR and NIS Reports. Padraig has project managed a range of infrastructure projects, with an emphasis on wind and solar energy projects across the Ireland and the UK.

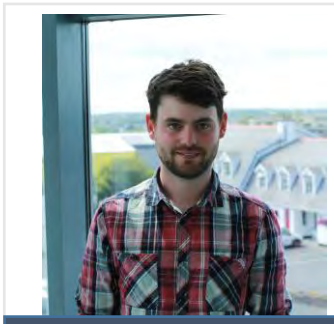
Current Role	Senior Ornithologist
Qualifications	› M.Sc Evolutionary and Behavioural Ecology (University of Exeter, 2008). › B.Sc Zoology (National University of Ireland, Galway, 2007).
Years of Experience	› Padraig has over seven years' experience working in both the UK and Ireland primarily in the renewable industry. Padraig has a strong technical background in ornithology and ecology surveying and in writing Natura Impact Statements (NIS) and sections of Environmental Impact Assessment Reports (EIAR) to accompany planning applications.
Relevant Experience	› Wind Farm Projects. Padraig has worked on over 40 wind farm projects in both Ireland and the UK. From his time working in the UK, Padraig provides expert experience in interpreting and implementing Scottish ornithological guidance documents (SNH, 2017) for the surveying of wind farms in an Irish context. Padraig's key responsibilities included: managing the in-house team and sub-consultants, directly liaising with the client and landowner, consulting with the Planning Departments and the Development Applications Unit (DAU), writing sections of and reviewing the Environmental Impact Assessment Reports and Appropriate Assessment (AA) Screening and Natura Impact Statements (NIS) Reports (as appropriate), reviewing GIS mapping and Planning Application drawings. › Solar Farm Projects. Padraig has acted as Senior Ecologist and Project Manager for several Solar Farm Planning Applications. Key responsibilities include liaising directly with client, attending preplanning meetings with local county council, consulting with Development Application Unit (DAU), designing surveys, writing sections of the Planning and Environmental Considerations Reports and Appropriate Assessment (AA) Screening Report and Natura Impact Statement, as appropriate. › Water Supply Project Eastern and Midlands Region (Irish Water). Padraig acted as the Senior Ornithologist for the Water Supply Project. He was responsible for the review and design of breeding and wintering bird surveys for this project: October 2016 to October 2018. He has undertaken consultation with Development Application Unit

	(DAU) and wrote sections of the Environmental Impact Assessment Report and Natura Impact Statement. › Mining Projects. Padraig was the Natura Impact Statement Expert Witness at Boliden Tara Mines Oral Hearing for a tailings extension and integrated constructed wetland for which Planning Permission was partially granted. › Road Projects. Padraig has acted as Senior Ecology on several roads projects in both Ireland and the UK. Project work included the design and execution of various ecological surveys, e.g. badger and bat surveys. The resultant outputs from this work include environment impact assessments and appropriate assessment reports.
Key Strengths & Areas of Expertise	› Padraig has a strong technical background in ornithology and ecology surveying and in writing Natura Impact Statements (NIS) and the Biodiversity chapter of Environmental Impact Assessment Reports (EIAR) to accompany planning applications.
Practical Skills & Aptitudes	**Field Skills:** › Padraig's ornithological experience has involved carrying out a diverse catalogue of bird surveys throughout Ireland including multi-year studies (breeding, migratory and winter) for various environmental projects. In Scotland he spent two and a half years implementing bird surveys using Scottish Natural Heritage guidance documents to complete his survey work to best scientific practice. Many of his studies involved designing surveys to capture the seasonal change in avian communities at a site. Examples of this include; Breeding Raptor Surveys (following SNH & Hardey methods for species including Hen Harrier, Merlin, Peregrine, Barn Owl, White-tailed Eagle & Golden Eagle), Breeding Wader Surveys (following SNH, Brown & Shepherd and O'Brien & Smith for species including Golden Plover, Curlew, Lapwing, Dunlin & Snipe), Breeding Woodcock (following Gilbert methods), Migratory/Wintering Waterfowl (Following SNH and I-WeBS methods for species including (but not limited to) Whooper Swan, Greenland White-fronted Goose and wintering waders), Red Grouse Tape Lure Survey (following NPWS & BWI methods) Breeding diver species (following SNH & Gilbert methods) Woodland and Coastal species (following SNH and Gilbert methods). › Padraig also has experience of habitat surveying: Phase 1 habitat survey. Padraig has ecological assessment experience in undertaking mammal surveys (common & protected) including bat species, badger, otter and reptiles. Habitats present are also assessed in terms of their potential to support Irish mammals.
Management/ Supervision	› Project manager and lead ecologist on large scale ecological projects. › Accustomed to working effectively as part of larger multidisciplinary project design teams. › Supervision of a team of ten internal ornithologist and the management of sub-consultants to coordinate the bird survey programme at MKO. › Within MKO Padraig plays a key role in mentoring junior members of staff.
Interpersonal & Communication Skills	› Extensive experience in successful consulting with statutory ecological consultees including NPWS, Birdwatch Ireland and Inland Fisheries Ireland usually regarding sensitive ecological sites.

	› Significant experience coordinating approach to sensitive ecological sites between client and ecological consultees and on-site contractors, etc. › Development of technical working methodologies on behalf of contractors requiring understanding of both proposed works and sensitivities of site.
Licenses Held	› Padraig has been a licence holder for the surveying of protected avian species on both the Red List of Bird of Conservation Concern in Ireland and Annex 1 of the EU Birds Directive, e.g. Red Grouse tape lure licence.
Physical / Other	› Full Clean Driving Licence › Current Safe Pass Holder

Planning and Environmental Consultants

CURRICULUM VITAE



Patrick Manley

Patrick Manley is a Project Ornithologist at MKO. He attended University College Dublin where he completed a BSc (Hons) in Geology. Patrick has over five years' experience working with MKO in designing and executing ornithological surveys, primarily within the renewables sector. Patrick has also worked on ornithological chapters of Environmental Impact Assessment Report (EIAR) to accompany planning applications. Prior to joining the company Patrick worked as part of the conservation team in BirdWatch Ireland, on projects such as the Dublin bay birds project, Kilcoole Little Tern conservation project and the results based agri-environmental scheme for breeding waders. He has extensive experience surveying birds through other projects such as the Irish wetlands bird survey, the Inishmurray all-island breeding birds survey, the national Hen Harrier survey and the countryside bird survey.

Current Role	Project Ornithologist
Qualifications	› BSc Geology, University College Dublin (2013).
Years of Experience	› 7 years post graduate experience in wildlife conservation and monitoring.
Relevant Experience	**Relevant Work Experience:** › Field ornithologist as part of the Little Tern Conservation Project with BirdWatch Ireland for two breeding seasons (2015 & 2016). Patrick gained experience in monitoring and protecting a vulnerable species and in the collection, collation and analyses of large data sets. He was also responsible for liaising with the public, the writing of weekly reports and full technical reports at the end of each breeding season. › Agri-Environmental Liaison Officer for the Results Based Agri-Environmental Payment Scheme with BirdWatch Ireland. Patrick gained experience in liaising with land owners, coordinating and finalizing terms with participants of the scheme. He also gained skills in the ecological applications for GIS, in training landowners in land management for breeding birds and in carrying out breeding bird surveys. › Conservation Team Intern with the Dublin Bay Birds Project for BirdWatch Ireland. Patrick gained experience in compiling, proofing and analysing large datasets, as well as waterbird monitoring during various tidal and weather conditions and writing technical reports. › Field Assistant with the Dublin Bay Birds Project with BirdWatch Ireland. Patrick gained experience doing waterbird surveys, radio tracking surveys and the tracking of colour ringed waders. He also gained experience in collating, proofing and validating large datasets. He was also responsible for fitting colour rings to waders during multiple catching sessions. › Volunteer Bird Surveyor on various projects including the Irish wetlands bird survey, the Inishmurray all-island breeding bird survey, the national Hen Harrier survey and the countryside bird survey. **Relevant Experience within MKO:** › Wind Farm Projects Patrick has worked on over 30 wind farm projects across Ireland. Patrick has expert experience in interpreting and implementing Scottish Natural Heritage (SNH, 2017) guidance for ornithological surveys of wind farms, in an Irish context. Patrick's key responsibilities within MKO include: designing and executing ornithological surveys at wind farm site, writing reports such as interim report, end-of-season reports, client updates etc.,

	designing mitigation measures for ornithologically sensitive species, and drafting ornithology chapters for Environmental Impact Assessment Reports (EIAR). › Solar Farm Projects Patrick has worked been responsible for conducting ornithological surveys at solar farm sites during both the breeding and winter seasons. › Large Scale Bird Monitoring Projects Patrick has been involved in a number of large scale bird monitoring projects whilst working for MKO, for clients such as the National Parks and Wildlife Service and Clare County Council. Such projects include the Shannon-Fergus Estuary waterfowl usage surveys and Lough Derg bird usage surveys. Patrick was involved in designing and conducting surveys, as well as writing the final reports for these surveys.
Practical Skills & Aptitudes	› Planning and carrying out ornithological surveys. › Working Independently and effectively in the field. › Planning surveys with sub-contractors and management. › Data presentation. › Proficient in MS Office, GIS and MapInfo software. › Adhering to required guidelines and SOP's on bird survey methodologies. › Experience surveying birds using line transects, vantage point counts, flush counts, mist netting, radio tracking and GSM trackers
Management/ Supervision	› Management of all bird surveys carried out on site. › Demonstrated ability to manage workload and plan surveys based on own initiative. › Experience managing field sites and coordinating large teams of volunteers for the Little Tern Conservation Projects 2015 and 2016 › Experience coordinating and supervising volunteers during the all-island seabird survey on Inishmurray. › Experience coordinating and liaising with volunteers/surveyors with BirdWatch Ireland and Irish Midlands Ringing Group on various projects.
Interpersonal & Communication Skills	› Extensive dealings with ecology team in planning of bird survey work and standard operating procedures. › Effective and clear communicator. › Proven ability to manage extensive survey requirements and collation of data upon completion. › Planning surveys with team members and sub-contractors. › Experience coordinating workloads and delegating tasks as a member of both large and small teams of volunteers on a number of different projects with BirdWatch Ireland and the Irish Midlands Ringing Group, often in challenging fieldwork environments. › Experience as lead author or co-author on technical project reports. › Managed public relations and public outreach for the Little Tern Conservation Project in 2015 and 2016 (including an appearance on RTE series "EcoEye" in January 2016). › Experience giving bird ringing demonstrations to various groups including BirdWatch Ireland branch members, Dublin Field Naturalist club and during heritage week.
Licenses Held	› Full Clean Driving Licence. › Current Safe Pass Holder.

Physical / Other	› Ability to plan and organize fieldwork in line with published survey methodologies and company SOP's. › Qualified bird ringer and ringing trainer with British Trust for Ornithology

Planning and Environmental Consultants

CURRICULUM VITAE

Kathryn Sheridan

Kathryn is an Ornithologist at MKO who took up her position in December 2020. Kathryn has experience of working on a wide range of bird species, beginning with her M. SC. thesis on breeding hen harrier. From this, Kathryn has gone on to work as Curlew Champion as part of the Curlew Conservation Programme, and Swift fieldworker with BirdWatch Ireland. As a sub-consultant, Kathryn has completed wintering wildfowl surveys across Ireland, as well as completing bat and mammal surveys. Throughout this work experience, Kathryn has continued to build her skills in writing and the use of GIS.

Current Role	Ornithologist
Qualifications	› M. Sc., Wildlife Conservation and Management, First Class Honours. University College Dublin. › BA Natural Science: Zoology, Second Class, First Division Honours. Trinity College Dublin.
Years of Experience	› 1 – 2 years
Relevant Experience	› Bird survey experience carrying out a range of bird survey methodology such as vantage point surveys, wintering wildfowl surveys, breeding bird surveys (including breeding raptor surveys). › Data management and GIS experience: as part of an M. Sc. Thesis and continuing into professional work. › Writing experience: one scientific paper on breeding hen harrier and several end of breeding season reports.
Practical Skills & Aptitudes	› Bird identification skills (visual & aural) › Further experience in the identification of mammals, butterflies and bats
Interpersonal & Communication Skills	› Experience of liaising with landowners for the allowance of site access › Experience of communicating with members of the public when conducting surveys and gathering bird sighting reports
Licenses Held	› Full, clean driving license