



SSE RENEWABLES

SECOND YEAR OF ORNITHOLOGICAL SURVEYS - INCHAMORE/GORTYRAHILLY WIND FARM SUMMER 2018 AND WINTER 2018 / 19

June 2019



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User is Responsible for Checking the Revision Status of This Document

Rev. Nr.	Description of Changes:	Prepared by:	Checked by:	Approved by:	Date:
0	For Client Review	LM/MG	JK	JH	11/06/2019

Client: SSE Generation

Keywords: Year 2, Ornithological Surveys, Wind Farm, Inchamore, Gortyrhilly

Abstract: This document is comprised of the second year ornithological surveys at the proposed Inchamore / Gortyrhilly Wind Farm, Co. Cork. This Ornithology report is required to assess the impacts of the proposed development on bird species within and surrounding the site. This development is to consist of 30 no. wind turbines across the above townlands.

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EXECUTIVE SUMMARY

The methodology for the 2018/2019 ornithological survey at Inchamore / Gortyrhilly Wind Farm adhered to Scottish Natural Heritage guidance (SNH, 2017) for assessing the impact of proposed wind farm developments on the local target species breeding and wintering populations. Two timed watches of three hours duration were carried out from each VP every month from April to September 2018 and October 2018 to March 2019 inclusive, totalling 72 hours of observation time at each VP over the survey period. Breeding & winter bird transect survey, hinterland survey and Merlin surveys were also assessed during this period.

During vantage point surveys, across the surveyed summer and winter periods of 2018/19, a total of 67 species of bird were noted. Of these species six are Red-listed under the BoCCI, these include; Meadow Pipit, White-tailed Eagle, Grey Wagtail, Eurasian Curlew, Herring Gull and European Golden Plover. Twenty-five are of Amber-listed and the remaining thirty-six are Green-listed. An additional six of these species are protected under Annex I of the EU Birds Directive, these Annex I species include; Merlin, Peregrine Falcon, White-tailed Eagle, Hen Harrier, Whooper Swan and European Golden Plover.

During moorland surveys in 2018, no breeding wader target species were observed. Non-target species observed within this survey included; Kestrel, Hooded Crow, Raven, Swallow, Chaffinch, Robin, Blackbird, Skylark, Merlin, Meadow Pipit, Mistle Thrush, Song Thrush and Whitethroat. These observations include one Red-listed species (Meadow Pipit) and six Amber-listed species (Merlin, Kestrel, Swallow, Skylark, Robin and Mistle Thrush).

During hinterland surveys surrounding the proposed site, six Red-listed species were identified as being present, namely; White-tailed Eagle, Golden Plover, Lapwing, Black-headed Gull, Grey Wagtail and Wigeon. Ten Amber-listed bird species were identified, these include; Coot, Cormorant, Great Black-backed Gull, Greylag Goose, Kingfisher, Mute Swan, Snipe, Starling, Teal and Whooper Swan. Five Green-listed bird species were identified as being present during hinterland surveys namely; Grey Heron, Little Egret, Mallard, Moorhen and Sparrowhawk. Of these birds, five are protected under Annex I of the EU Birds Directive, these Annex I species include; Golden Plover, Kingfisher, Little Egret, White-tailed Eagle and Whooper Swan.

During Merlin surveys no evidence or live sightings of the species were found. Merlin were observed on twelve occasions during surveys in both the summer and winter seasons, of 2018/2019, throughout the site. Nine Merlin observations occurred during vantage point surveys in summer 2018. On the 26th of July 2018 a pair of Merlin were noted flying for 277s at a height of between 0-20m within the site at VP6. The majority of Merlin observations in summer 2018 were recorded at VP6 in the townland of Gortyrhilly with two observations occurring during the winter vantage point survey period 2018/2019, also in Gortyrhilly. The additional Merlin observation occurred during breeding moorland surveys on the 30th of April 2018.

Nine bird species were recorded during Merlin surveys across the site. These species include; one Red-listed species (Meadow Pipit), three Amber (Mistle Thrush, Robin and Skylark), and five Green-listed species.

During Red Grouse surveys, across the proposed development site, there were eight records of Red Grouse or field signs of Red Grouse. This includes four live sightings of Red Grouse individuals identified across the site. Of these sightings, two were confirmed to be male, with the sex undetermined for the remaining two sightings. A male and two unsexed grouse individuals were recorded within transect T1a and T1b, along with feathers of the species. A live sighting of a male, whom later flew off, along with fresh droppings / pellets were recorded in transect square 3 (T6a). Fresh dropping pellets were also identified within transect square 4 (T4b). No grouse evidence or observations were recorded in transect squares 2 and 5.

1. INTRODUCTION

Fehily Timoney & Company (FT) were appointed by SSE Generation to undertake ornithological surveys at the proposed Inchamore - Gortyrhilly Wind Farm from 2018-2019. This report presents the results of the second year of ornithological surveys and summarises the activity of specific target bird species during survey periods in 2018 and 2019. The study area of Inchamore - Gortyrhilly Wind Farm forms two separate site locations near Ballyvourney, Co. Cork. The site encompasses parts of the townlands of Derreenaling, Milleeny, Inchamore, Bardinch, Coumaclovane, Gortyrhilly, Rath West, Rath West, Derryfineen, Gortnabinna and Cahernacaha. This study area is located to the west of the town of Ballyvourney and adjacent to the N22 roadway.

This Avian assessment, for surveys completed over the second year in summer 2018 and winter 2018/19, includes the assessment of target bird species potentially occurring within the proposed site boundary, surveys of surrounding potentially bird-rich habitats and the assessment of individual specific species of interest. Surveys adhered to Scottish Natural Heritage guidance (SNH, 2017). The following surveys were carried out:

- Vantage Point Surveys (Breeding and Non-Breeding Season);
- Breeding Moorland Survey;
- Breeding & winter Bird Transect Survey;
- Hinterland Survey;
- Red Grouse Survey and
- Merlin survey.

The monthly assessment of bird species, during the breeding and winter season, within the site was completed using vantage point survey watches. Surveys took place within 9 vantage point (VP) locations from April to August 2018 (inclusive) and October 2018 to March 2019 (inclusive). Each VP was subject to two watches per month, each consisting of 3 hours in length (6 hours surveyed per VP per month).

Hinterland surveys were completed in potential favourable bird habitats within 10 km radius of the proposed wind farm development. This survey method was used to assess species populations surrounding the proposed development site. Breeding Bird Surveys were completed along transects within both sites. This survey technique was used in order to assess the presence of breeding waders within the area.

Merlin surveys, specifically for this bird of prey (*Falco columbarius*), were used in order to assess presence of the species within the proposed development site. Specific survey transects were used in order to accurately assess for the species. This report details the methodology used as well as findings for the period of April, May, June and July 2018.

Red Grouse surveys, specifically for this upland bird (*Lagopus lagopus*), were completed in order to assess the presence of the species within the proposed development site. Species specific survey squares, containing survey transects, were used to assess the breeding territories of this species. This report details the methodology used as well as findings during the period of February 2019.

1.1 Study Area

The proposed Inchamore – Gortyrhilly Wind Farm is within and surrounding the townlands of Inchamore and Gortyrhilly. This development is proposed to be located in two sections, one (Inchamore) along Cork-Kerry boarder, an estimated 18km south-east of the town of Killarney and 5km west of the town of Ballyvourney, and the other further to the south (Gortyrhilly) located approximately 3.2 km north of Ballingeary. Surrounding habitats and land uses are described by Corine 2012 as 'Forest' and 'semi-natural areas with transitional woodland scrub and Conifer Plantation' (324 & 314), 'Wetlands' (412) and 'Agricultural Areas' (243). Figure 2-1 displays the site location and vantage points within the study area.

During site survey, habitats such as heath (HH), peatlands (PB), conifer plantation (WD4) and agricultural lands (GA/ GS) were noted (Fossitt, 2000).

Areas of dry siliceous heath (HH1), dominant in Heather (Ling *Calluna vulgaris* and Bell Heather *Erica cinerea*) were identified throughout the site, particularly around turbine number 1. Areas of degraded heath were also present. Such heather dominant habitats have the potential to provide suitable habitat species such as Red Grouse (*Lagopus scoticus*) and for the prey species of birds of prey, such as Kestrels (*Falco tinnunculus*).

Areas of conifer plantation (WD4) are widespread throughout the site, with crops largely consisting non-native pine species (*Pinus* sp.). This habitat appears to be largely planted upon areas of degraded bog (PB) and heath (HH). The edges of such habitats have to potential to provide nesting and feeding opportunities for Merlin (*Falco columbarius*).

Upland blanket bog (PB2) along with degraded areas of cutover bog (PB4) habitat were also present throughout the site. Areas of bog and flush (PB/PF) habitat were present to the west of turbine number 4. These habitats have potential to provide roosting and foraging for wader species.

Cultivated (BC) and built land (BL3) is present throughout the site with dwellings and agricultural sheds being most prominent. Areas of agricultural grassland (GA1) are particularly dominant throughout the lowland areas within and surrounding the site. Wet grassland areas (GS4) were also identified at the edges of such agricultural areas.

Protected European and national sites within the area include; Sillahertane Bog NHA (Site Code: 001882), St. Gobnet'S Wood NHA & SAC (Site Code: 000106), Killarney National Park, Macgillycuddy'S Reeks and Caragh River Catchment NHA & SAC (Site Code: 000365), Roughty River NHA (Site Code: 001376), Mullaghanish to Musheramore Mountains SPA (Site Code: 004162) and Mullaghanish Bog SAC (Site Code: 001890).

Musheramore Mountains SPA (Site Code: 004162), located approximately 2.95km north east of Inchamore, is designated for Hen Harrier (*Circus cyaneus*). During the latest national survey conducted in 2015, it was noted that there has been an 80% decline recorded in the Mullaghanish to Musheramore Mountains SPA since 2005. Five confirmed Hen Harrier territories were noted within the SPA during the 2005 national survey (Barton *et al*, 2006), two confirmed and one possible territory during the third national survey in 2010 (Ruddock *et al*, 2012) and only one confirmed Hen Harrier territory in 2015 (Ruddock *et al*, 2016). The site also supports a breeding population of Merlin. The site synopsis¹ states that '*the population size is not well known but is likely to be one or two pairs.*'

¹ NPWS (2012). *Site Synopsis for the Mullaghanish to Musheramore Mountains SPA (Site Code: 004162)*. published 25/01/2012

2. SURVEY METHODOLOGY

The avian surveys carried out at the proposed wind farm adhered to Scottish Natural Heritage guidance (SNH, 2017) methodologies of the following survey types:

- Vantage Point Surveys (Breeding and Non-Breeding Season);
- Breeding Moorland Survey;
- Breeding & winter Bird Transect Survey;
- Hinterland Survey;
- Merlin Survey and
- Red Grouse Survey.

2.1 Vantage Point Surveys

Vantage Point (VP) surveys were carried out at the proposed Inchamore-Gortyrhilly Wind Farm site from April 2018 to March 2019 (inclusive) during the non-breeding and breeding seasons, in accordance with the Scottish Natural Heritage Methodology for onshore wind farms (SNH, 2017). These surveys were divided into summer (April - September) 2018 and winter (October - March) 2018/ 2019 seasons. Nine fixed VP locations (VP1 to VP9) overlooking the study area were used during the VP surveys. VPs 1, 2, 3 and 4 covered the northern Inchamore section of the study area whereas, VPs 5, 6, 7, 8 and 9 covered the southern Gortyrhilly section. Table 2-2 gives the VP locations. Vantage points were chosen to cover a specific viewshed of the proposed development site. Each was chosen specifically to encompass the view of all the proposed turbines. Figure 2-1 displays the site location and vantage points within the study area.

The main purposes of vantage point survey watches are to collect data on *target species* that will enable estimates to be made of:

- a. The time spent flying over the defined survey area;
- b. The relative use of different parts of the defined survey area; and
- c. The proportion of flying time spent within the upper and lower height limits as determined by the rotor diameter and rotor hub height.

The specific vantage points and turbines within their viewsheds can be seen in the table, below.

Table 2-1: Vantage point viewshed and turbines encompassed

Vantage Point	Turbine number(s) covered in viewshed
VP1	1, 5, 6, 4, 10, 8, 7, 12, 11, 16, 15, 21 and 13
VP2	14, 17 and 18
VP3	9, 2 and 3
VP4	19, 22, 24, 25, 23, 21 and 20
VP5	31, 32, 33 and 34
VP6	58, 57 and 53
VP7	46, 47, 44, 43, 41, 40, 38, 37, 35, 26 and 27
VP8	30, 29, 28 and 36
VP9	48, 50, 49, 45, 51, 54, 55, 52, 42, 53, 56, 39, 57 and 58

Vantage point locations were based on observations from walkover/reconnaissance surveys, viewshed analysis (using GIS) and collated information on known feeding and roosting sites from both desktop review and consultation. The number and location of vantage points was selected in order to achieve visibility of the entire study area and important features for birds in close proximity to the site (e.g. lakes, wetlands).

In line with recommended best practice (SNH, 2017 and Band *et al.* 2007), viewshed analysis was undertaken using ARCMAP 10.3, to calculate a theoretical zone of visibility from each vantage point. Visibility is calculated from each vantage point along an invisible layer suspended at the predicted lowermost height passed through by the rotor blade tips, using an observer height of 1.5m. We note the following from SNH guidance in respect of priority areas for viewshed analysis (emphasis added):

*"Where the key purpose is to estimate the risk of collision with turbines, **it is the visibility of the airspace to be occupied by the turbine rotors (the collision risk volume) that is of prime importance.** Therefore it is recommended that visibility be calculated using the least visible part of this airspace, i.e. an imaginary layer suspended at the lowermost height passed through by the rotor blade tips (typically about 20-30m above ground level). Predicting visibility at this level is a simple task using GIS, however it should be noted that the baseline should take account of any forestry or other features that will potentially obstruct the view. For example, forestry may be 10-30m high and if viewshed height is taken as 20-30m ground level the visible area could be overestimated if there is forestry within the viewshed. Being able to view all or most of the site to ground level can be helpful in gauging overall bird activity and usage of the site, but is not as important as being able to view the collision risk volume."*

Following SNH guidance (2017), watches were conducted to sampling diurnal, crepuscular and nocturnal activity of target species, and exceeding the required effort from SNH.

Data recorded included flight activity of target species (flight height, duration, directionality) in addition to metrics such as flock size (per recorded transit) and time of observation relative. Detailed notes of each observation of a target bird species was recorded including behaviour, gender (where possible), numbers, flight height, associated habitat and the period of time spent within the study area. Successful foraging events were also noted if they arose. Other bird species seen or heard during the VP surveys were also recorded on a casual basis and were considered separately in the analysis as additional species. Flight activity was annotated onto field maps. Total numbers of birds present both on arrival at the vantage point (when relative) and on departure (when relative) is noted. Details of each flight-path observations are provided in Section 3. Binoculars are used to scan for target species. Dictaphones are utilised to dictate bird heights whilst tracking flight events.

Flight heights are estimated visually as allowed for in SNH (2017) guidance. Flight height estimation using a clinometer or rangefinder is accepted as an *alternative* means of determining flight height however this is often not practicable (equipment may be clumsy and birds may be lost from view whilst trying to focus additional equipment on a target species rapidly moving out of sight); it should be noted that in practice many flocks of swans do not fly close enough to a surveyor for a rangefinder to be used, resulting in most flights heights being estimated in any case. As is often the case an experienced observer will be able to record accurate observations at a higher frequency resulting in a larger dataset for analysis.

As previously mentioned VP surveys were carried out at the site from April 2018 to March 2019 inclusive and involved carrying out 2 x 3-hour VPs at each VP every month. As per SNH guidance (2014) thirty-six hours of vantage point effort was carried out at each vantage point during the wintering period and breeding period. The proportion of survey time that activity was recorded inside and outside the wind farm site boundary was used as part of the overall analysis and assessment of target species usage of the study area. Vantage point locations can be found in Table 2-2, below. All surveys were conducted during suitable weather conditions.

Table 2-2: Grid References for VP locations at Inchamore/Gortyrhilly Wind Farm

Vantage Point	Location (ITM)
VP1	512600 578973
VP2	512393 578592
VP3	514385 579799

Vantage Point	Location (ITM)
VP4	510657 576557
VP5	511897 572251
VP6	518270 572901
VP7	515686 572534
VP8	515184 574573
VP9	516014 570969

2.2 Hinterland Surveys

Hinterland surveys were undertaken following methodology (Bibby *et al*, 2000). The surveys were carried out in suitable wetland habitats and lakes in the area surrounding the proposed wind farm site. To determine the numbers and species of wetland birds in the area, a hinterland survey was undertaken over an area of 10 km from the proposed wind farm site and was comprised of eight lake/wetland sites. Surveys were carried out between April 2018 and March 2019. The following sites were checked regularly across this period; Grousemount, the Gearagh, Inchigeelagh, Lough Allua (Ballingeary), Lough Nabuddoga, Sillahtane Wind Farm, lee Valley and Ballyvourney North. The species and abundance of the wetland birds were monitored using short Vantage Point watches (of between 1 hr and 3 hr 50 mins duration). Table 2-3 indicates where within the 10 km area around the proposed Wind Farm hinterland surveys were carried out. Figure 2-2 displays the location of these hinterland areas.

Table 2-3: Hinterland Survey Locations

Location	Grid reference	Dates visited
Lough Nabuddoga	506728 573791	10/05/2018, 22/08/2018, 13/09/2018, 11/07/2018 and 04/02/2019.
Inchigeelagh	522331 566141	11/07/2018, 04/02/2019, 15/02/2019 and 06/03/2019.
Grousemount	509274 569529	26/04/2018, 24/05/2018, 10/05/2018, 22/08/2018, 13/09/2018 and 11/07/2018.
Gearagh	531400 570836	18/10/2018, 26/11/2018, 01/02/2019, 15/02/2019 and 06/03/2019.
Lough Allua	518735 565624	04/02/2019, 15/02/2019 and 06/03/2019.
Sillahtane Windfarm entrance	510719 573143	24/05/2018, 10/05/2018, 22/08/2018, 13/09/2018,

Location	Grid reference	Dates visited
		11/07/2018, 04/02/2019, 15/02/2019 and 06/03/2019.
Lee Valley	523471 566494	26/11/2018, 04/02/2019, 15/02/2019 and 06/03/2019.
Ballyvourney North	520276 578290	26/04/2018, 18/10/2018 and 26/11/2018.

2.3 Breeding Moorland Surveys

Survey transects to assess the presence of breeding moorland populations were completed during the months of April, May, June, July and August 2018. Breeding birds were surveyed using methodology of the breeding wader survey and breeding moorland survey, following Bibby *et al.*, (2000) and Gilbert *et al.*, (1998). Two transects, of approximately 5km, were used within the site.

All species encountered (seen or heard) on the transect were recorded and their abundance noted. Any species occurring more than 100 m from the observer, or flying over the site and not using it, were recorded as 'additional' species to further inform the baseline survey. Table 2-4, below, details the survey dates, weather condition and transects walked. Figure 2-3 displays the locations of the breeding moorland survey transects.

Table 2-4 Breeding Moorland Transect - Survey Details

Date	Location	Cloud (Okta)	Precipitation	Wind
30/04/2018	A	6/8	N/A	F0
26/07/2018	A	7/8	N/A	F1-2
21/06/2018	A	3/8	N/A	F0
08/08/2018	A	7/8	Light drizzle	F2
04/05/2018	B	5/8	Dry	F2 SW
16/05/2018	B	0/8	Dry	F4 NE
28/06/2018	B	0/8	Dry	NE

2.4 Merlin Surveys

Merlin surveys were carried out, specifically for the bird of prey (*Falco columbarius*), in order to assess the presence of the species within the proposed development site. Specific Merlin survey transects were used in order to accurately assess for the species (Gilbert, G. *et al.*, 1998). Seven visits, of potential Merlin habitat, were completed between April and August 2018. Such habitat types included areas of heather, moorland, forestry plantation edges, young conifer plantations and open woodland below, 600m in altitude (Gilbert, G. *et al.*, 1998). Within all Merlin suitable areas, Merlin observations, nests and evidence were recorded.

Two Merlin-specific transects were surveyed A (13047/ 78511) and B (16262/ 72808). Weather conditions, including, precipitation, cloud cover and wind were measured at the start of all surveys. Table 2-5 displays the survey details of Merlin surveys within the site. Figure 2-4 displays the locations of the Merlin survey transects.

Table 2-5: Merlin Transect - Survey Details

Date	Transect	Cloud (Okta)	Precipitation	Wind
28/04/2018	A	0/8	Dry	F0
11/05/2018	A	0/8	Dry	F0
14/05/2018	B	2/8	Dry	F4 NE
14/06/2018	B	2/8	N/A	F3-4 SW
21/06/2018	A	0/8	Dry	F0
10/07/2018	B	0/8	Dry	F1-2 SW
07/08/2018	A	0/8	Dry	F0

2.5 Breeding Bird Surveys

For general breeding birds the method utilised was based on the existing British Trust for Ornithology (BTO) Breeding Bird Survey (BBS or CBS) (Bidby *et al*, 2000). The study area for this survey comprised a total of 8 no. c. 1 kilometre transects which were selected and centred on different habitats present within the subject sites (See Figure 2-5 for the location of transects.). Four transects each were located in both the Inchamore and Gortyrhilly Wind Farm sites. For each site birds were counted over two visits, each timed to coincide with the early part of the breeding season (April to mid-May 2018) and later part of the season (mid- May to late June 2018) with visits at least four weeks apart. Surveyors recorded all birds seen or heard as they walked methodically along the transect routes. Birds were noted in four distance categories, measured at right angles to the transect line (within 25m, between 25m-100m and over 100m from the transect line) and those seen in flight only. Recording birds in distance bands gives a measure of bird detectability and allows relative population densities to be estimated if required (BTO, 2018).

SNH guidance on recommended bird survey methods to inform impact assessment of onshore wind farms states:

"Surveys of farmland passerines especially on more intensive arable habitat are generally not required." (SNH, 2017).

The breeding bird transect schedule is available in Table 2.6. Figure 2-5 displays the transects for the breeding bird survey. The results are presented in Table 3.6 and 3.7.

Table 2-6: Breeding Bird Transect Survey Details

Date	Transect	Time	Weather Conditions
27/06/2018	1N	06:01	Cloud: 2/8 oktas, Rain: Dry, Wind: Beaufort 1, Visibility: Good
19/05/2018	1N	05:59	Cloud: 6/8 oktas, Rain: Dry, Wind: Beaufort 1, Visibility: Good
27/06/2018	2N	06:30	Cloud: 3/8 oktas, Rain: Dry, Wind: Beaufort 1, Visibility: Good
19/05/2018	2N	07:50	Cloud: 4/8 oktas, Rain: Dry, Wind: Beaufort 1, Visibility: Good
27/06/2018	3N	07:30	Cloud: 2/8 oktas, Rain: Dry, Wind: Beaufort 1, Visibility: Good

Date	Transect	Time	Weather Conditions
19/05/2018	3N	08:00	Cloud: 6/8 oktas, Rain: Dry, Wind: Beaufort 1, Visibility: Good
27/06/2018	4N	08:05	Cloud: 2/8 oktas, Rain: Dry, Wind: Beaufort 1, Visibility: Good
19/05/2018	4N	08:45	Cloud: 4/8 oktas, Rain: Dry, Wind: Beaufort 1, Visibility: Good
14/06/2018	1S	11:05	Cloud: 2/8 oktas, Rain: Dry, Wind: Beaufort 4-5 SW, Visibility: Good
25/05/2018	1S	14:00	Cloud: 0/8 oktas, Rain: Dry, Wind: Beaufort 2-3 NE, Visibility: Good
14/06/2018	2S	12:45	Cloud: 2/8 oktas, Rain: Dry, Wind: Beaufort 3-4, Visibility: Good
25/05/2018	2S	14:50	Cloud: 0/8 oktas, Rain: Dry, Wind: Beaufort 2-3 NE, Visibility: Good
14/06/2018	3S	12:00	Cloud: 2/8 oktas, Rain: Dry, Wind: Beaufort 4-5 SW, Visibility: Good
25/05/2018	3S	14:10	Cloud: 0/8 oktas, Rain: Dry, Wind: Beaufort 2-3 NE, Visibility: Good
14/06/2018	4S	10:15	Cloud: 4/8 oktas, Rain: Dry, Wind: Beaufort 5-6 SW, Visibility: Good
25/05/2018	4S	14:50	Cloud: 0/8 oktas, Rain: Dry, Wind: Beaufort 0, Visibility: Good

2.6 Wintering Bird Survey

For general wintering birds the method utilised was based on the existing British Trust for Ornithology (BTO) Breeding Bird Survey (BBS or CBS) (Bidby *et al*, 2000). The study area for this survey comprised a total of 8 no. c. 1 kilometre transects which were selected and centred on different habitats present within the subject sites (See Figure 2-5 for the location of transects). Four transects were located in both the Inchamore and Gortyrally Wind Farm sites. For each site birds were counted over three visits, across the winter period (between January and March 2019). Surveyors recorded all birds seen or heard as they walked methodically along the transect routes. Birds were noted in four distance categories, measured at right angles to the transect line (within 25m, between 25m-100m and over 100m from the transect line) and those seen in flight only. Recording birds in distance bands gives a measure of bird detectability and allows relative population densities to be estimated if required (BTO, 2018).

SNH guidance on recommended bird survey methods to inform impact assessment of onshore wind farms states:

“Surveys of farmland passerines especially on more intensive arable habitat are generally not required” (SNH 2014).

The wintering bird transect schedule is available in Table 2.7. Figure 2-5 displays the transects for the wintering bird survey. The results are presented in Tables 3.8, 3.9, 3.10 and 3.11.

Table 2-7: Winter Bird Transect Survey Details

Date	Transect	Time	Weather Conditions
01/02/2019	1N	09:34	Cloud: 4/8 oktas, Rain: Dry, Wind: Beaufort 0, Visibility: Excellent
11/02/2019	1N	16:10	Cloud: 6/8 oktas, Rain: Dry, Wind: Beaufort F2 NW, Visibility: Very Good
01/03/2019	1N	12:50	Cloud: 8/8 oktas, Rain: Light rain, Wind: Beaufort F0, Visibility: OK
01/02/2019	2N	11:20	Cloud: 4/8 oktas, Rain: Dry, Wind: Beaufort 3 NE, Visibility: Excellent
11/02/2019	2N	15:00	Cloud: 6/8 oktas, Rain: Dry, Wind: Beaufort F2 SW, Visibility: Very Good
01/03/2019	2N	10:59	Cloud: 8/8 oktas, Rain: Light rain, Wind: Beaufort F0, Visibility: OK
01/02/2019	3N	10:20	Cloud: 5/8 oktas, Rain: Dry, Wind: Beaufort 2 N, Visibility: Excellent
11/02/2019	3N	14:00	Cloud: 6/8 oktas, Rain: Dry, Wind: Beaufort F2 SW, Visibility: Very Good
01/03/2019	3N	10:31	Cloud: 8/8 oktas, Rain: Light rain, Wind: Beaufort F0, Visibility: OK
01/02/2019	4N	09:05	Cloud: 5/8 oktas, Rain: Dry, Wind: Beaufort 3 NE, Visibility: Excellent
11/02/2019	4N	15:40	Cloud: 6/8 oktas, Rain: Dry, Wind: Beaufort F3 SW, Visibility: Very Good
01/03/2019	4N	12:16	Cloud: 8/8 oktas, Rain: Light rain, Wind: Beaufort F0, Visibility: OK
01/02/2019	1S	13:45	Cloud: 2/8 oktas, Rain: Dry, Wind: Beaufort 3 NE, Visibility: Excellent
11/02/2019	1S	10:40	Cloud: 7/8 oktas, Rain: Dry, Wind: Beaufort F2 SW, Visibility: Very Good
01/03/2019	1S	16:30	Cloud: 8/8 oktas, Rain: Light rain, Wind: Beaufort F1, Visibility: OK
01/02/2019	2S	12:53	Cloud: 3/8 oktas, Rain: Dry, Wind: Beaufort 1, Visibility: Great
11/02/2019	2S	13:25	Cloud: 6/8 oktas, Rain: Dry, Wind: Beaufort F2 SW, Visibility: Excellent
01/03/2019	2S	14:40	Cloud: 8/8 oktas, Rain: Light rain, Wind: Beaufort 0-2, Visibility: OK
01/02/2019	3S	12:45	Cloud: 5/8 oktas, Rain: Dry, Wind: Beaufort 3 NE, Visibility: Very Good
11/02/2019	3S	12:35	Cloud: 6/8 oktas, Rain: Dry, Wind: Beaufort F2 SW, Visibility: Excellent
01/03/2019	3S	15:00	Cloud: 8/8 oktas, Rain: Light rain, Wind: Beaufort 0-1, Visibility: Good
01/02/2019	4S	13:12	Cloud: 3/8 oktas, Rain: Dry, Wind: Beaufort 1, Visibility: Excellent
11/02/2019	4S	11:35	Cloud: 7/8 oktas, Rain: Dry, Wind: Beaufort F2 SW, Visibility: Very Good
01/03/2019	4S	16:00	Cloud: 8/8 oktas, Rain: Light rain, Wind: Beaufort 0-2 S, Visibility: OK

2.7 Red Grouse Survey

Red Grouse specific surveys were based on methodology discussed under a number of sources (Bibby, C. J. *et al.*, 2000; BWI, 2007; Cummins, S. *et al.*, 2010). The study area for this survey type comprised a total of 5 no. 1km x 1km survey squares, chosen due to their potential habitat favourability to Red Grouse. Each of these squares was sub-divided into transect lines, of multiples of two, running east to west across the landscape.

Line transect methodology was used with tape lures across each 1km² survey square. This methodology was completed by two FT ecologists, each surveyor used a field map of the survey square and a recording sheet in order to record grouse signs, calls and habitats. One of the observers used a tape lure in order to entice the calls of nearby grouse (+t = with tape). The other (-t = without tape) listened for responses and sightings as a result of the lure being played. At the end of each of these surveys the ecologists agreed as to the end results of each of these survey squares.

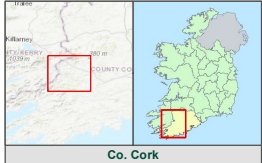
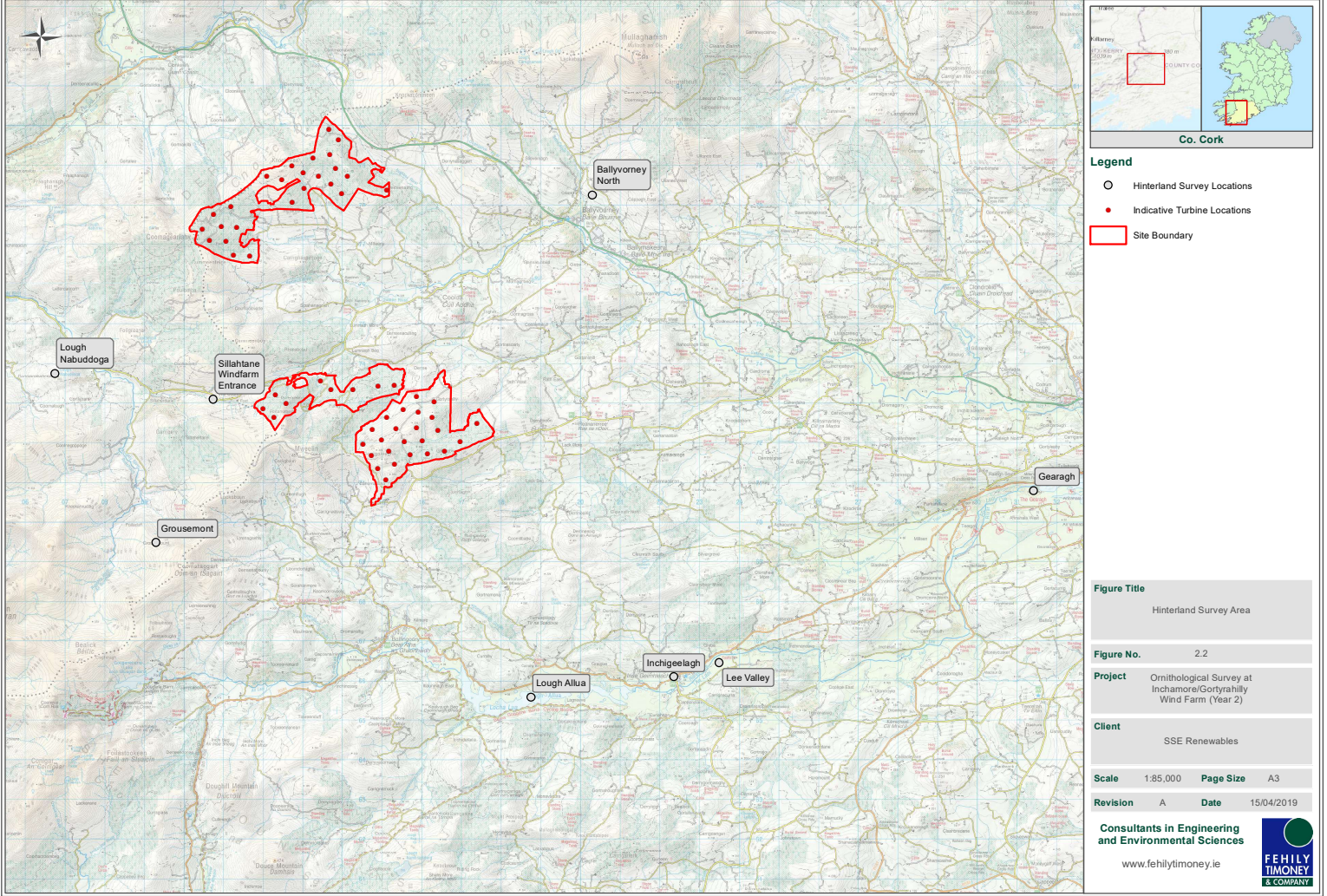
Each of the surveyors were positioned 250m apart, at the designated transects, and walked both sets of parallel linear transects across the square. These transects followed a general straight line, where landscape features permitted. The first transect started at 125m and 375m in from the square corner and the second at 625m and 875m, where applicable. The tape lure was played at 250m intervals along each alternate transect for approximately 30 seconds, with both observes stopping and scanning for birds as the lure played. If no response was elicited after a further 30 seconds, the lure was played again for an additional 30 seconds. The observers then waited and scanned for a further 30 seconds before moving on.

Any birds heard/ seen, or any signs were marked on field sheets, along with their transect and general location. The presence or absence of droppings was also indicated along with feathers. The land use in terms of grazing forestry and turf cutting were also noted along with the presence or absence of grit. Conditions underfoot were classed as between dry, damp or waterlogged.

Each of these five survey squares were visited in February 2019 during the recommended weather conditions; during daylight hours (approximately between 1 hour after dawn till 1 hour before dusk), when calm and bright. Surveyors recorded all individuals seen or heard as both surveyors walked methodically along each transect routes within each survey square. Figure 2-6 displays the survey locations and transects for the Red Grouse surveys.

Table 2-8: Red Grouse Survey Conditions

Date	Square No.	Transect No. s	Square Location	Time	Weather Conditions
25.02.2019	1	T1a, T1b, T2a and T2b	W1278	12:00	Cloud: 7/8 oktas, Rain: Dry, Wind: Beaufort 2 South, Visibility: Moderate
27.02.2019	2	T3a and T3b	W1176	09:20	Cloud: 8/8 oktas, Rain: Dry, Wind: Beaufort 0 West, Visibility: OK
26.02.2019	3	T6a and T6b	W1272	11:30	Cloud: 3/8 oktas, Rain: Dry, Wind: Beaufort 3 South-East, Visibility: Very good
25.02.2019	4	T5a, T5b, T4a and T4b	W1572	14:30	Cloud: 7/8-3/8 oktas, Rain: Dry, Wind: Beaufort 2 South, Visibility: Very good
26.02.2019	5	T7a and T7b	W1570	09:30	Cloud: 8/8 oktas, Rain: Dry, Wind: Beaufort 2 North-West, Visibility: OK

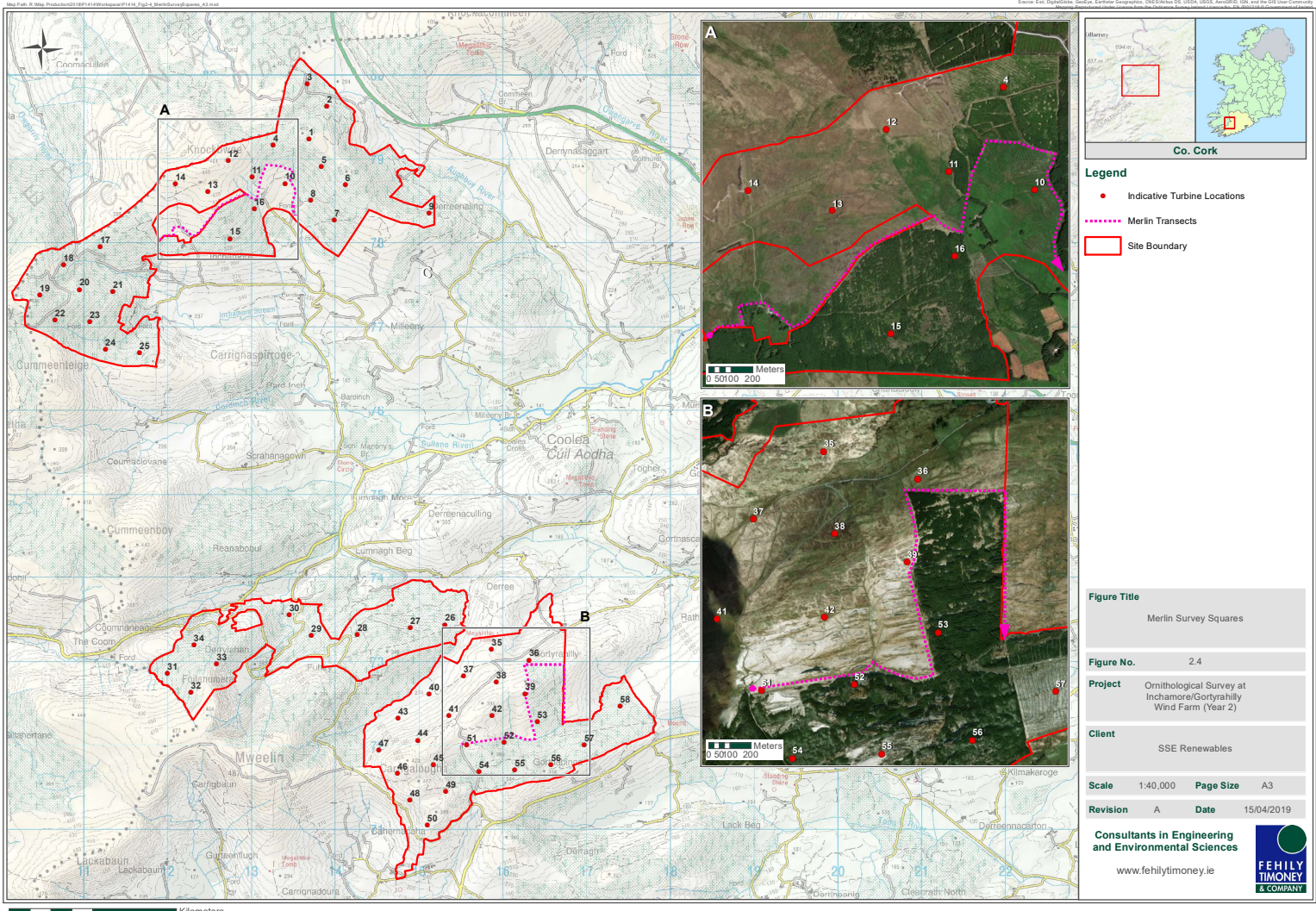


Legend

- Hinterland Survey Locations
- Indicative Turbine Locations
- Site Boundary

Figure Title	Hinterland Survey Area		
Figure No.	2.2		
Project	Ornithological Survey at Inchamore/Gortyrally Wind Farm (Year 2)		
Client	SSE Renewables		
Scale	1:85,000	Page Size	A3
Revision	A	Date	15/04/2019
Consultants in Engineering and Environmental Sciences www.fehillytimoney.ie			

0 0.5 1 2 Kilometers



Legend

- Indicative Turbine Locations
- Merlin Transects
- Site Boundary

Figure Title	Merlin Survey Squares
Figure No.	2.4
Project	Ornithological Survey at Inchamore/Gortyrally Wind Farm (Year 2)
Client	SSE Renewables
Scale	1:40,000
Page Size	A3
Revision	A
Date	15/04/2019

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0 0.5 1 2 Kilometers

3. RESULTS

3.1 Avian usage of the Study Area – Vantage point

Two timed watches of three hours duration each were carried out at each of the nine vantage points every month from April 2018 to March 2019, inclusive. This surveying effort totals to 72 hours of observation time at each VP over the entire survey period (see Appendix 3). Bird activity was recorded from the VPs every month. Table 3.1 shows all of the species recorded during surveys. In total there were 170 individual flight lines of 16 target species were observed during the survey period.

In total 67 species of bird were noted. Of these species 6 are Red-listed under the BoCCI, these include; Meadow Pipit, White-tailed Eagle, Grey Wagtail, Eurasian Curlew, Herring Gull and European Golden Plover. Twenty-five species are Amber-listed and the remaining thirty-six are of Green-listed status. An additional 6 of these species are protected under Annex I of the EU Birds Directive, these species include; Merlin, Peregrine Falcon, White-tailed Eagle, Hen Harrier, Whooper Swan and European Golden Plover. Table 3.1, below, details the protection of all 64 species.

3.1.1 Summary Results Summer 2018 (April - August)

Inchamore was the quieter of the two sites during the summer 2018 season in term of bird activity. There were however a number of observations, particularly of Kestrel, Peregrine, Merlin, Hen Harrier and Buzzard during this period. Kestrels were observed on twenty-five occasions, Peregrine on two, Merlin on three, Hen Harrier on two and Buzzard on one occasion during summer vantage point surveys 2018.

More activity was noted at the Gortyrhilly site, with pairs of both Merlin and Kestrel observed during the summer period. Target species observed during this survey period include; Kestrel, Merlin, White-tailed Eagle and Glaucous Gull. There was a single observation of a sub-adult White-tailed Eagle commuting and foraging around the greater area both within and outside the site at Gortyrhilly. Kestrel were recorded on twenty occasions during this period in Gortyrhilly at all vantage point locations bar VP 8. Merlin were observed on seven occasions throughout the summer survey period at Gortyrhilly, particularly at vantage points 6, 7 and 9. A single observation of Glaucous Gull was noted at VP6 in July 2018.

3.1.2 Summary Results Winter 2018/19 (Oct - Mar)

Golden Plover (Annex I species)

During the first two months of winter surveys only single and pairs of Golden Plover were observed within the site, primarily at Gortyrhilly with one pair noted at Inchamore. In December and January 2018/19 flocks of the species were shown to be larger in both sites, with flocks of between 30-35 individuals, being noted at Inchamore, as opposed to between 15 and 20 at Gortyrhilly. The month of March saw the largest of the flocks with 48 individuals being noted in that month at Inchamore.

Golden Plover were noted at five vantage point locations during the months of October, November and December namely VPs 1, 2, 4, 6 and 7. Ten observations were noted during these months with the majority being inside the site at Gortyrhilly with numbers observed ranging from 1 to 35. Greater numbers of Golden Plover were noted between January and March with sixteen observations in total and numbers ranging from 1 to 48.

The majority of Golden Plover sightings were noted within and near the Inchamore site with greater flock numbers also recorded in this location. The maximum number recorded throughout this survey period occurred at both Inchamore and Gortyrhilly. A flock of 48 was noted on two occasions at both VP1 (Inchamore) and 7 (Gortyrhilly) during the March and February surveys. Within the Gortyrhilly site observation of Golden Plover were less frequent. The main records of note were the flight of 48 individuals at vantage point no 7, as discussed above.

Hen Harrier (Annex I species)

There were only two observations of Hen Harrier over the winter period at VP 7, Gortyrhilly. Both observations were of a single male Hen Harrier hunting and commuting over and near the site.

There were three observations of Hen Harrier from vantage points at the Inchamore site. Two of these were females and one sighting of a male. There was no roosting recorded in either site although, the area does make up part of a larger territory for one family.

White-tailed Eagle (Red listed species)

White-tailed Eagle was noted on one occasion at Inchamore over the survey period. One juvenile individual was noted from VP 2 in December 2018 recorded flying for one minute primarily between 0-40m in height both inside and outside of the site. This individual rose from a concealed conifer area.

There were two observations of the species at Gortyrhilly over the survey period. A single juvenile individual was observed at VP 9 on the 13th of February 2019. This individual, on both occasions spent over 120 seconds flying within the site, being mobbed by corvids. Both observations of this juvenile were located within the site.

Five eagle observations were noted during hinterland surveys in 2018/19. These observations range from months of May to September, inclusive. For more information concerning hinterland surveys see Section 3.3.

Chough (Annex I species)

A single Chough call was heard once throughout the entire site across the winter survey period. This call was heard on the 23rd of March 2019 at VP 9 (Gortyrhilly). Historical records concerning the species breeding around Baile Bhuirne were investigated during hinterland surveys in 2018. Efforts during these Chough-specific hinterland surveys were not fruitful, and none were found. The species is an occasional visitor which may on occasion forage within the site. For more information concerning hinterland surveys see Section 3.3.

Other species

Although no Red Grouse were identified during vantage point survey, evidence in the form of field signs were noted. Red Grouse droppings were recorded at VP 5 (Gortyrhilly) in January 2019. Red Grouse surveys were completed in February 2018, results from these surveys can be found in Section 3.5.

A single Buzzard call was noted from VP 1 (Inchamore) in October 2018. One live observation of the species was also recorded but in Gortyrhilly (VP5). Curlew were noted on three occasions during winter vantage point surveys in 2018/ 19. All three records described the species calling, although individuals were not observed. Two of these records occurred at VP 6 with the remaining one at VP 8, all in October 2018.

A single Great Black-backed Gull and Common Gull observation were each recorded during the survey period. In March 2019 at VP 6 (Gortyrhilly) a pair of Great Black-backed Gulls were observed commuting over the site. In January 2019 at VP 3 (Inchamore) a pair of Common Gulls were observed also commuting over the site. Both observations were noted as being both inside and outside of the site.

Table 3-1: Status of species observed

Scientific name	Common name	*BoCCI status	**Annex I status
Barn Swallow	<i>Hirundo rustica</i>	Amber	No
Blackbird	<i>Turdus merula</i>	Green	No
Blackcap	<i>Larus ridibundus</i>	Green	No
Blue Tit	<i>Cyanistes caeruleus</i>	Green	No
Bullfinch	<i>Pyrrhula pyrrhula</i>	Green	No
Buzzard	<i>Buteo buteo</i>	Green	No
Chaffinch	<i>Fringilla coelebs</i>	Green	No
Chiffchaff	<i>Phylloscopus collybita</i>	Green	No
Coal Tit	<i>Parus ater</i>	Green	No
Collared Dove	<i>Streptopelia decaocto</i>	Green	No
Common Gull	<i>Larus canus</i>	Amber	No
Common Kestrel	<i>Falco tinnunculus</i>	Amber	No
Common Linnet	<i>Carduelis cannabina</i>	Amber	No
Common Snipe	<i>Gallinago gallinago</i>	Amber	No
Common Starling	<i>Sturnus vulgaris</i>	Amber	No
Crossbill	<i>Loxia curvirostra</i>	Green	No
Cuckoo	<i>Cuculus canorus</i>	Green	No
Dunnock	<i>Prunella modularis</i>	Green	No
Eastern Jackdaw	<i>Corvus monedula</i>	Green	No
Eurasian Curlew	<i>Numenius arquata</i>	Red	No
Eurasian Sparrowhawk	<i>Accipiter nisus</i>	Amber	No
Eurasian Teal	<i>Anas crecca</i>	Amber	No
European Golden Plover	<i>Pluvialis apricaria</i>	Red	Yes
European Greenfinch	<i>Carduelis chloris</i>	Amber	No
European Robin	<i>Erithacus rubecula</i>	Amber	No
Fieldfare	<i>Turdus pilaris</i>	Green	No
Glaucous Gull	<i>Larus hyperboreus</i>	Green	No
Goldcrest	<i>Regulus regulus</i>	Amber	No
Goldfinch	<i>Carduelis carduelis</i>	Green	No
Great Black-backed Gull	<i>Larus marinus</i>	Amber	No
Great Tit	<i>Parus major</i>	Green	No
Grey Heron	<i>Ardea cinerea</i>	Green	No
Grey Wagtail	<i>Motacilla cinerea</i>	Red	No
Hen Harrier	<i>Circus cyaneus</i>	Amber	Yes
Herring Gull	<i>Larus argentatus</i>	Red	No
Hooded Crow	<i>Corvus corone cornix</i>	Green	No
House Martin	<i>Delichon urbicum</i>	Amber	No
House Sparrow	<i>Passer domesticus</i>	Amber	No
Jay	<i>Garrulus glandarius</i>	Green	No
Lesser Black-backed Gull	<i>Larus fuscus</i>	Amber	No
Lesser Redpoll	<i>Carduelis flammea cabaret</i>	Green	No

Scientific name	Common name	*BoCCI status	**Annex I status
Long-tailed Tit	<i>Aegithalos caudatus</i>	Green	No
Magpie	<i>Pica pica</i>	Green	No
Mallard	<i>Anas platyrhynchos</i>	Green	No
Meadow Pipit	<i>Anthus pratensis</i>	Red	No
Merlin	<i>Falco columbarius</i>	Amber	Yes
Mistle Thrush	<i>Turdus viscivorus</i>	Amber	No
Peregrine Falcon	<i>Falco peregrinus</i>	Green	Yes
Pheasant	<i>Phasianus colchicus</i>	Green	No
Pied Wagtail	<i>Motacilla alba yarrellii</i>	Green	No
Raven	<i>Corvus corax</i>	Green	No
Redwing	<i>Turdus iliacus</i>	Green	No
Reed Bunting	<i>Emberiza schoeniclus</i>	Green	No
Rook	<i>Corvus frugilegus</i>	Green	No
Sand Martin	<i>Riparia riparia</i>	Amber	No
Siskin	<i>Carduelis spinus</i>	Green	No
Skylark	<i>Alauda arvensis</i>	Amber	No
Song Thrush	<i>Turdus philomelos</i>	Green	No
Stonechat	<i>Saxicola torquata</i>	Amber	No
Swift	<i>Apus apus</i>	Amber	No
Wheatear	<i>Oenanthe oenanthe</i>	Amber	No
White-Tailed Eagle	<i>Haliaeetus albicilla</i>	Red	Yes
Common Whitethroat	<i>Sylvia communis</i>	Green	No
Whooper Swan	<i>Cygnus cygnus</i>	Amber	Yes
Willow Warbler	<i>Phylloscopus trochilus</i>	Green	No
Woodpigeon	<i>Columba palumbus</i>	Green	No
Wren	<i>Troglodytes troglodytes</i>	Green	No

* refers to the conservation status of the species according to Birds of Conservation Concern in Ireland

**refers to species listed on Annex I of the EU Birds Directive

3.2 Target Species observations

3.2.1 Grey Wagtail

Seventeen observations of this Red-listed species were observed during summer and winter vantage point surveys within the site. One observation, in May 2018, noted a male in his breeding plumage at VP5. Four of the seventeen observations noted a pair of Grey Wagtail at VPs 4 and 5. This species is strongly associated with waterways and was observed within close proximity to streams draining the site. The species are considered to be breeding in the streams draining the Inchamore and Gortyrally site. Two Grey Wagtail individuals were observed at The Gearagh Reserve on the 6th of March 2019. See hinterland survey results (Section 3.3) for more information.

3.2.2 Meadow Pipit

This Red-listed species was noted 142 times during both summer and winter vantage point surveys in 2018 and 2019, often in multiples.

An abundance of 20 individuals, the highest recorded abundance of the species throughout both sites, was noted during winter surveys at VP 4 on the 26th of March 2019. The species is present within the site all year round.

3.2.3 Golden Plover

This Red-listed and Annex I species was noted primarily during winter surveys in 2018/19, no Golden plover observations were made during Summer 2018. Golden Plover were observed from VPs 1, 2, 4, 5, 6 and 7, with the greatest number of observations being noted at VP 1. Flock sizes at VP 1 ranged from 12 – 48, a series of Golden Plover observations at VP 1 in March 2019 noted how 2 flocks, one of 20 and the other 28 individuals, merged to form a larger flock of 48. This flock remained on site for a number of minutes before flying eastwards out of the site. Flight lines during observations on this occasion were concentrated to between 0-20m but ranged to greater than 150m.

Across the site Golden Plover was observed between the months of October 2018 to March 2019 inclusive. Golden Plover were recorded on twenty-six occasions during this survey period. Twenty of these observations occurred within the site, four occurred outside and 2 occurred both inside and outside of the site. Many observations throughout the survey period were noted as flying and landing within the site, with 6 of the 24 observations staying within the site, either flying within or resting, for greater than 120 seconds. The maximum observation duration was of a single individual resting within the bog habitat of VP7 for 7,200 seconds. On nine separate occasions Golden Plover calls were heard during surveys although flocks were not observed. Some species observations during winter surveys were flushed from the site, indicating the bird's presence and potential use of the area.

A single Golden Plover was observed in March 2019, during hinterland surveys, at The Gearagh Reserve. See hinterland survey results (Section 3.3) for more information.

3.2.4 Grey Plover

This Amber-listed species was noted on one occasion during winter surveys in 2018/19, no Grey Plover observations were noted during summer surveys in 2018. This single observation occurred on the 16th of January 2019 at VP2 (Inchamore) and noted the flight of 30 individuals flying within the site both within and outside of the site. The flock flew up from bog habitat for a duration of 28 seconds as they travelled in a south-westerly direction across the site, with the majority of flight time spent at 40-80m.

3.2.5 Snipe

Snipe, an Amber-listed bird species, was noted a total of thirteen times during winter surveys in 2018/19. No Snipe observations were noted during summer surveys in 2018. During winter surveys observations were primarily of individuals with one pair and a single flock of three.

These flight lines noted 5 observations within the site and 7 outside, flightlines for one individual on the 19th of October were not recorded. It is likely that snipe over winters within the overall site, although a greater number of Snipe observations were found to occur within the Gortyrhilly site as opposed to that of Inchamore. The species was noted during all six months of the winter survey period of 2018/19 and across VPs 1, 2, 4, 5, 6 and 8. The majority of species observations during winter surveys were flushed from the Gortyrhilly site, indicating the bird's presence and potential use of the area for feeding. Gortyrhilly was most prominent with nine observations as oppose to four at Inchamore. Two observations of Snipe were identified during hinterland surveys in 2019. These individuals were observed at The Gearagh and Sillahtane Wind Farm entrance. See hinterland survey results (Section 3.3) for more information.

3.2.6 White-tailed Eagle

White-tailed Eagle, a Red-listed and Annex I protected species, was observed on four occasions during both summer and winter vantage point surveys in 2018 and 2019. During winter surveys a single White-tailed Eagle observation was noted at Inchamore. This observation details the flight of a juvenile eagle, with a red band on its left wing, flying at heights of <80m for a total of 45 seconds. The flight of the individual passed both inside and outside of the site from VP2 in December 2018.

Two observations of the same juvenile eagle were noted in Gortyrhilly also during the winter survey period. Both of these observations occurred at VP9 in February 2019 and detailed the flight of the individual within the site at height ranges of <80m for a maximum duration of 180 seconds.

There was one observation of White-tailed Eagle during the summer survey period of 2018. This observation, at VP 5 (Gortyrhilly), noted the flight of a tagged sub-adult for durations of 10 and 5 seconds between 0-20m both within and outside of the site respectively. This is likely to be the same sub-adult also noted during hinterland surveys in 2018/19 within Sillahtane Wind Farm entrance, adjacent to VP 5. See the hinterland survey results section for more details (Section 3.3).

[3.2.7 Hen harrier](#)

Hen Harrier, an Amber-listed and Annex I protected species, was predominantly recorded during the winter survey period of 2018/19 as opposed to the summer survey period of 2018. Five individuals were observed during the winter survey period as opposed to two records of the species during the summer.

A total of seven observations were noted during the entire survey period, with six of the seven observations identified as being inside the site. The remaining 7th observation noted the flight of an individual ringtail in September 2018 travelling both within and outside of the site. All observations of this species were of single Hen Harriers during the survey period. The observations above detail the flights of adult males (4), females (2) and a single observation of a ringtail (juvenile).

[3.2.8 Merlin](#)

Merlin associated observations during this period have been included below in Section 3-4.

[3.2.9 Sparrowhawk](#)

Sparrowhawk, an Amber-listed species in Ireland, was observed on two occasions during the winter period at VPs 5 and 6, the Gortyrhilly portion of the proposed site. There were no observations of Sparrowhawk during the summer survey period. One observation was noted as outside of the site and the other of a Sparrowhawk travelling both inside and outside of the site.

[3.2.10 Curlew](#)

Curlew, a Red-listed species, was noted on three occasions during winter vantage point surveys in 2018/19 all at the Gortyrhilly Wind farm site. All three occasions were of the species calling with no observations of Curlew. Two of these records occurred at VP 6 with the remaining one at VP 8, all in October 2018.

[3.2.11 Peregrine Falcon](#)

Two observations of Peregrine Falcon, an Annex I protected bird species, were noted one each during both summer and winter vantage point surveys in 2018 and 2019. Both of these observations were noted at vantage points Inchamore Wind Farm. Of these observations, one during the summer period, was noted both within and outside of the site, this observation noted an individual flying for a duration of 600 seconds at a height of between 10 and 150m. The remaining observation, during the winter period, was noted as being within the site and lasted for a duration of 15 seconds at <20m.

[3.2.12 Lesser-Black backed gull](#)

Lesser Black-backed Gull, an Amber-listed species, was observed on one occasion, across both the summer and winter survey period, at VP 3 (Inchamore). This observation noted on the 20th of July 2018 details the flight of an individual outside of the site. This species was also noted during hinterland surveys in 2018 and 2019, see hinterland survey results (Section 3.3) for more information.

3.2.13 Buzzard

Two Buzzard observations were noted throughout the site across both the summer and winter survey periods 2018/19. In July 2018 an individual was recorded at VP 2 at Inchamore, during summer surveys. This observation noted a single individual gliding over the brow of a hill and then down the valley for a duration of 93 seconds and at heights of between 20-40m, the individual then glided outside of the site for 10 seconds. This observation was noted as being both inside and outside of the site.

In winter a single Buzzard observation was also noted. This observation at VP 5 (Gortyrhilly) on the 20th of October, details the flight of an individual in an easterly direction over blanket bog towards forestry, pursued by two Hooded Crows. This observation was within the site and lasted for 35 seconds with 15 seconds at between 0-20m and 20s at between 20-40m. A Buzzard call was also heard on the 18th of October during vantage point surveys at VP1 (Inchamore).

3.2.14 Kestrel

This Amber-listed species was noted fifty-eight times during both summer (45) and winter (13) vantage point surveys in 2018/19, with the majority being observed during the summer period. It is likely that this species resides within the both sites all year round with Inchamore (34) displaying a higher abundance of observations of Kestrel as opposed to Gortyrhilly (24). Forty-three observations were noted as being inside, ten were noted as being outside and five as being both inside and outside of the site. Twelve of the total fifty-eight Kestrel observations were made at VP 6 (Gortyrhilly).

During breeding moorland surveys on the 16th of May 2018, a single male Kestrel was observed hunting at west of transect B (Gortyrhilly) to the south of the proposed site. This male was observed to be hunting along habitats such as upland bog and conifer plantation before disappearing into forestry.

3.2.15 Mallard

Mallard was observed on one occasion during this survey period. This individual was observed on the 22nd of May 2019 during the summer survey period at VP 3 (Inchamore). During hinterland surveys in 2018/19 fifty-three individual Mallards were observed within wetland habitats in the greater hinterland of the proposed development. This species was also noted during hinterland surveys in 2018 and 2019, see hinterland survey results (Section 3.3) for more information.

3.2.16 Red Grouse

Red Grouse associated observations during this period have been included below in Section 3.5.

3.2.17 Glaucous Gull

This Green-listed species of Gull was observed on one occasion during summer survey in July 2018. A single Glaucous Gull was observed flying within the site for a period of 35 seconds at a height of <20m. It is likely that this individual was passing through the site, it is unlikely that the species would utilise the proposed development site.

3.2.18 Whooper Swan

Amber-listed, and Annex I listed. No Whooper Swans, an Amber-listed and Annex I species, were observed during vantage point surveys across the entire survey period. A single observation however noted a small flock of two adults and five juveniles grazing in a field adjacent to the village of Coolea, by an FT ecologist 4.5km from VP2. Whooper Swans were also observed on numerous occasions, and in great numbers, throughout the surrounding hinterland sites. Whooper Swan was also noted during hinterland surveys in 2018 and 2019, see hinterland survey results (Section 3.3) for more information.

3.2.19 Starling

This Amber-listed bird species was observed, particularly in the winter months, forming large murmuration flocks at VP 6 (Gortyrhilly). A flock of 200 individuals was observed on the 10th of January 2019 at VP 6. No starling flock observations were noted as being within either site.

3.2.20 Common Gull

This Amber-listed gull species was observed on one occasion during winter surveys in January 2019. During this observation, a single individual was noted to be commuting both within and outside of the site at VP3 (Inchamore), for 19 seconds at heights of between 20-40m.

3.2.21 Great Black-backed Gull

This Amber-listed gull species was observed on one occasion during winter surveys in March 2019 at VP 6 (Gortyrhilly). A pair of individuals was noted flying for 40 seconds at heights of between 80-150m both inside and outside of the site.

3.2.22 Herring Gull

This Red-listed gull species was noted on two occasions during winter surveys 2018/19. One observation in March of 2019 noted two individuals flying both within and outside of the site for 120 seconds at 40-80m, at VP9 (Gortyrhilly). The second observation in December 2018 was noted as being outside of the proposed development site, at VP6 (Gortyrhilly).

3.2.23 Lesser Black-backed Gull

This Amber-listed gull species was identified once during the summer survey period in July 2018. This observation was composed of an individual flying outside of the site at VP 3 (Inchamore). This species has been observed on occasion, during hinterland surveys, utilising wetland sites in the greater hinterland area of the proposed development site. See hinterland results (Section 3.3) for more details.

3.2.24 Chough

An unspecified number of Chough individuals (an Annex I and Amber listed species) were heard during winter surveys on the 23rd of March 2019. The bird(s) were/was heard from VP9 but were not observed. In order to accurately assess the site, and its surroundings, for the presence of Chough a Chough-specific hinterland survey site was utilised. FT ornithologists continuously visited these areas surrounding the proposed development noted as having significance for the species in the previous Chough survey in 1992. No Chough were found during the Chough-specific hinterland survey site or during vantage point surveys across the proposed development site.

3.3 Hinterland Survey

Hinterland surveys to establish breeding occupancy and wintering sites within a 10 km radius of the site were carried on a total of twelve days over 9-month period across 2018 and 2019. The survey schedule and locations of the hinterland watches are shown in Table 2-3, of Section 2.2 Methodology. The hinterland surveys established the presence of eight territories within an approximately 10 km radius of Inchamore – Gortyrhilly Wind Farm. Twenty-one bird species were identified during hinterland surveys within this 9-month period.

For site-specific Hinterland survey results see Appendix 5 of this report.

Six Red-listed species were identified as being present during hinterland surveys, these include; White-tailed Eagle, Golden Plover, Lapwing, Black-headed Gull, Grey Wagtail and Wigeon.

Ten Amber-listed bird species were identified, these include; Coot, Cormorant, Great Black-backed Gull, Greylag Goose, Kingfisher, Mute Swan, Snipe, Starling, Teal and Whooper Swan. Five Green-listed bird species were identified as being present during hinterland surveys. These include; Grey Heron, Little Egret, Mallard, Moorhen and Sparrowhawk. A synopsis of these species can be found in Table 3-2, over.

White-tailed Eagle was recorded on five occasions during hinterland surveys. These observations, all in 2018, were noted at Sillahtane Wind farm and Grousemount. Three of the five observations concerned a sub-adult in its primary molting stage. These observations occurred 11th of July 22nd of August and 13th of September 2018. All observations were outside of the proposed development site. The remaining two observations consisted of a single individual being mobbed, on the 10th and 24th of May 2018.

Whooper Swan was observed during the months of November, February and March across three of the hinterland survey sites, these sites include; The Gearagh, Lough Allua and Lee Valley. Lough Allua, on both the 4th and 15th of February 2019 were noted as holding a flock of 10 individuals. Flocks of up to 18 individuals were noted at The Gearagh on the 6th of March, grazing within a flooded grassland to the western edge of the protected site. Abundances of between 21 and 69 individual Whooper Swans were noted between the months of November 2018 and March 2019 within the Lee Valley. The peak number (no. 69) was counted on the 4th of February, during this period Whooper Swans are observed grazing in improved agricultural grassland fields in the Lee Valley.

Observations of Whooper Swan, an Annex I and Amber-listed species, were typically joined by those of Greylag Goose and Mute Swan during hinterland surveys. Mute Swan, an Amber-listed species, was observed at four of the eight hinterland survey sites. The peak number of this species was observed at the Lee Valley site on the 15th of February 2019, where 25 individuals were counted. Greylag Geese were observed at three of the eight hinterland survey sites, particularly The Gearagh and Lee Valley. Abundance of the species within these sites ranged from one individual to forty-six. The peak number of Greylag Geese was observed at the Lee Valley site on the 4th of February 2019. This observation noted a total of 46 individuals grazing within improved agricultural grassland amongst Mute and Whooper Swans.

Chough was recorded once throughout the previous year's hinterland surveys, in December 2017. Although a Chough-specific hinterland survey site was visited on a number of occasions throughout the survey period, no Chough were found during surveys in 2018. A single Golden Plover was observed during hinterland surveys throughout the entire 2018/19 survey period. This individual was observed at The Gearagh on the 6th of March 2019 grazing within the wetland habitats within this SPA site.

A single flock of 188 Lapwing individuals was observed at The Gearagh on the 18th of October 2018. Wigeon, another Red-listed bird species, were observed at the same hinterland survey site in the 1st of February 2019. During a hinterland survey at the Gearagh SPA, twelve Wigeon, both male and female, were identified.

Of the twenty-one bird species observed during hinterland surveys, five were identified as being protected under Annex I of the Birds Directive. These species include; Golden Plover, Kingfisher, Little Egret, White-tailed Eagle and Whooper Swan.

Flightlines of target species such as the White-tailed Eagle, during hinterland surveys, can be found in Figure 2-7 of this report.

Table 3-2: Bird Species Recorded During Hinterland Surveys

Common Name	Scientific Name	Conservation Status	
		BoCCI*	Annex I**
Black-headed Gull	<i>Larus ridibundus</i>	Red	No
Coot	<i>Fulica atra</i>	Amber	No
Cormorant	<i>Phalacrocorax carbo</i>	Amber	No
Golden Plover	<i>Pluvialis apricaria</i>	Red	Yes
Great Black-backed Gull	<i>Larus marinus</i>	Amber	No
Grey Heron	<i>Ardea cinerea</i>	Green	No
Grey Wagtail	<i>Motacilla cinerea</i>	Red	No
Greylag Goose	<i>Anser anser</i>	Amber	No
Kingfisher	<i>Alcedo atthis</i>	Amber	Yes
Lapwing	<i>Vanellus vanellus</i>	Red	No
Little Egret	<i>Egretta garzetta</i>	Green	Yes
Mallard	<i>Anas platyrhynchos</i>	Green	No
Moorhen	<i>Gallinula chloropus</i>	Green	No
Mute Swan	<i>Cygnus olor</i>	Amber	No
Snipe	<i>Gallinago gallinago</i>	Amber	No
Sparrowhawk	<i>Accipiter nisus</i>	Green	No
Starling	<i>Sturnus vulgaris</i>	Amber	No
Teal	<i>Anas crecca</i>	Amber	No
White-tailed Eagle	<i>Haliaeetus albicilla</i>	Red	Yes
Whooper Swan	<i>Cygnus cygnus</i>	Amber	Yes
Wigeon	<i>Anas penelope</i>	Red	No

* refers to the conservation status of the species according to Birds of Conservation Concern in Ireland

**refers to species listed on Annex I of the EU Birds Directive

3.4 Merlin Survey

No Merlin were observed during Merlin surveys throughout both sites. Similarly, no indicator signs of Merlin, such as pellets, droppings and feathers were identified during Merlin surveys. Merlin were observed on twelve occasions during vantage point surveys in both the summer and winter seasons, of 2018/2019, throughout the site.

Two Merlin observations, during winter surveys in December 2018 and January 2019, noted individuals hunting/ commuting at vantage points 8 and 9 (Gortyrhilly). On the 10th of December 2018, at VP 8, a single Merlin was noted flying for 40 seconds at heights of between 0 and 80m within the site. The remaining Merlin observation, noted at vantage point number 9 on the 17th of January 2019, displays an individual flying both outside the rotor envelope for 3 seconds at a height of <20m. A possible Merlin observation, during summer surveys, was recorded in March 2019 noted a possible individual flying for 5 seconds at <20m outside of the site buffer.

Nine Merlin observations occurred during summer 2018. These observations noted nine Merlin individuals, including a single pair commuting and utilising the areas within and surrounding the proposed development. On the 26th of July 2018 a pair of Merlin were noted flying for 277 seconds at a height of <20m within the site at VP 6 (Gortyrhilly). On the 19th of June 2018 a single Merlin was noted flying at heights of over 150m for 245 seconds at VP 9 (Gortyrhilly). The majority of Merlin observations in summer 2018 were recorded at VP6 in the townland of Gortyrhilly.

A single Merlin was observed on the 30th of April 2018 during a breeding moorland survey. This observation was taken during surveys at site transect A in Inchamore. Abundant habitat types within this transect include; peatland based heath and conifer plantation. Nine bird species were recorded during Merlin surveys across the site. These species include; one Red-listed species, three Amber and five Green listed species. These can be found in Table 3-3, below.

Table 3-3: Non-Target Avian Species recorded During Merlin Survey

		Conservation Status	
Common Name	Scientific Name	BoCCI	Annex I*
Chaffinch	<i>Fringilla coelebs</i>	Green	No
Hooded Crow	<i>Corvus cornix</i>	Green	No
Meadow Pipit	<i>Anthus pratensis</i>	Red	No
Mistle Thrush	<i>Turdus viscivorus</i>	Amber	No
Raven	<i>Corvus corax</i>	Green	No
Robin	<i>Erithacus rubecula</i>	Amber	No
Siskin	<i>Carduelis spinus</i>	Green	No
Skylark	<i>Alauda arvensis</i>	Amber	No
Willow Warbler	<i>Phylloscopus trochilus</i>	Green	No
Total number of species: 9			

3.5 Red Grouse Survey

Red Grouse surveys were carried out between the 25th and 27th of February 2019. These five survey squares were chosen due their habitat and potential ability to support Red Grouse. This survey methodology followed the relevant guidelines as set out by Cummins, S. *et al.*, 2010. Squares number 1 and 2 covered areas within the Inchamore (North) of the proposed development. Squares number 3, 4 and 5 covered areas within the Gortyrhilly (South) of the proposed development.

Table 3-4: Red Grouse Transect Square habitats

Square No.	Transect No.	Square Location	Habitat (% heather cover, habitat, land use, grit presence, dampness, altitude)
1	T1a, T1b, T2a and T2b	W1278	70%, raised bog, exposed rock, wet, 410m Above Sea Level (ASL)
2	T3a and T3b	W1176	50%, raised bog, agriculture and forestry, n/a, wet, 458m ASL
3	T6a and T6b	W1272	80%, upland heath, grazing sheep, exposed rock, wet, 460m ASL
4	T5a, T5b, T4a and T4b	W1572	2%, agricultural grassland, sheep grazing, wet, some exposed rocks, 320m ASL
5	T7a and T7b	W1570	25%, upland grassland, sheep grazing, wet, some exposed rocks, 303m ASL

In total, across the proposed development site, there were eight records of Red Grouse and Red Grouse field signs. This includes four live sightings of Red Grouse individuals identified across the site. Of these, two were confirmed to be male, with the determination of gender not possible on the remaining two. Three of the four live sightings occurred at transect square no.1 (T1a and b) in the townland of Inchamore, north of the proposed development. A single grouse call and feathers were also recorded within this square (T1a and b).

A live sighting of a male, whom later flew off, along with fresh dropping pellets were recorded in transect square 3 (T6a). Fresh dropping pellets were also identified within transect square 4 (T4b). No grouse evidence or observations were recorded in transect squares 2 and 5.

Inchamore displayed Red Grouse evidence such as feathers (T1b) and three live sightings, T1b, T1a and T1b, of the species, along with a red grouse call being heard (T1a). At Gortyrhilly two locations of Red Grouse evidence in the form of pellets and droppings (T6a and T4b) were noted, along with the live sighting of a single male (T6a).

Table 3-5: Red Grouse Transect Square results

Transect Square	Transect No.	Site	Record No.	Record Type	Record Details
1	T1b	Inchamore	1	Feathers	Feather blew away before collected
1	T1b	Inchamore	2	Sighting	Unsexed adult, flying not calling, medium darkness
1	T1a	Inchamore	3	Sighting	Male adult, flying not calling, medium darkness
1	T1b	Inchamore	4	Sighting	Unsexed adult, flying not calling
1	T1a	Inchamore	5	Call	Red Grouse call heard at T1a
2	N/A	Inchamore	N/A	No Grouse detected	N/A
3	T6a	Gortyrhilly	1	Sighting	Male adult flew off with no call
3	T6a	Gortyrhilly	2	Droppings	Pellets, fresh
4	T4b	Gortyrhilly	1	Droppings	Pellets, fresh
5	N/A	Gortyrhilly	N/A	No Grouse detected	N/A

3.6 Breeding Moorland Survey

Breeding moorland surveys were carried out over the months of April, May, June, July and August 2018 across suitable habitats within both sites. Transect areas were chosen due to their habitat and potential ability to support waders. Breeding birds were surveyed using methodology of the breeding moorland survey, following Bibby *et al.* (2000) and Gilbert, G. *et al.*, (1998). Breeding moorland transects within the three locations have been listed in table 3-6, below.

Table 3-6: Breeding Moorland Transect locations

Transect Name	Location	Area
A	12000 78200	Inchamore
B	16000 72600	Gortyrhilly

During Moorland surveys in 2018, no breeding moorland target species were observed. Non-target species observed within this survey include; Kestrel, Hooded Crow, Raven, Swallow, Chaffinch, Robin, Blackbird, Skylark, Merlin, Meadow Pipit, Mistle Thrush, Song thrush and Common Whitethroat. These observations include one Red listed species (Meadow Pipit) and six Amber listed species (Merlin, Kestrel, Swallow, Skylark, Robin and Mistle Thrush).

Twenty-seven Meadow Pipit, a Red-listed bird species, territories were also identified during survey on the 4th of May in Gortyrhilly. Later upon return on the 16th of May twenty-two Meadow Pipit territories were identified. Fourteen Skylark, an Amber-listed species, territories were identified on the 4th of May 2018 within the, also in Gortyrhilly.

A single Merlin was observed during surveys in Inchamore on the 30th of April 2018. This Merlin associated observation was identified between conifer and upland cutover bog habitat and has been included in Section 3-4. A single Kestrel was observed on the 16th of May 2018 at Gortyrhilly. This male kestrel was observed to be hunting towards the west of the transect. This Kestrel associated observation has been included in the target species observation section of this report (Section 3-2).

3.7 General Breeding Bird Survey

3.7.1 Inchamore

The results of the breeding bird transect survey at Inchamore are shown in Table 3.7. A total of twenty-nine species were recorded along the transects. Two Red-listed species were recorded during surveys, namely Meadow Pipit and Grey Wagtail. A single Grey Wagtail was recorded during late summer surveys on the 27th of June 2018 during the late visit on transect 1N. Additional records of the species were also noted whilst accessing the site, particularly in winter 2018/2019. Meadow pipit were recorded multiple times across the northern section of the site, particularly at transects 1N, 2N and 4N.

Five Amber-listed species were recorded; Goldcrest, Robin, Skylark, Starling and Swallow.

3.7.2 Gortyrhilly

The results of the breeding bird transect survey at Gortyrhilly are shown in Table 3.8. A total of nineteen species were recorded along the transects. Meadow Pipit was the only Red-listed species recorded during surveys. Twenty-two Meadow Pipits were recorded throughout the southern section of the site, with multiple individuals being identified at all transects except 2S.

Three Amber-listed species were recorded; Goldcrest, Robin and Skylark.

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Table 3-7: Results of breeding bird transects surveys of Inchamore during Summer 2018

Common Name	Scientific Name	Early			Late			Early			Late			Early			Late								
		1N			2N			3N			4N			Late											
		0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F						
Blackbird	<i>Turdus merula</i>	2	2		2	1	6	4	4	5	3	2	2	4		2	1			1					
Blue Tit	<i>Parus caeruleus</i>												1			4			1					1	
Bullfinch	<i>Pyrrhula pyrrhula</i>	1								1						1									
Chaffinch	<i>Fringilla coelebs</i>	5	2		1	3		1		2	2	1	1	4		2	1		2					2	
Chiffchaff	<i>Phylloscopus collybita</i>												2			1									
Coal Tit	<i>Parus ater</i>	3	1		4		7	2	1	1	3		6	1		1	1								
Crossbill	<i>Loxia curvirostra</i>	2			2																				
Cuckoo	<i>Cuculus canorus</i>		1	1											1					1					
Dunnock	<i>Prunella modularis</i>	2	2										1	2		1	1		1	1		2			
Goldcrest	<i>Regulus regulus</i>	4			3		7			2			5	1		1	2		1						
Great Tit	<i>Parus major</i>						2	1		1	2		2	1		2									
Grey Wagtail	<i>Motacilla cinerea</i>				1																				
Hooded Crow	<i>Corvus cornix</i>			1		1			2			1	2				1	1	2						1
Long-tailed Tit	<i>Aegithalus caudatus</i>											1				2									
Magpie	<i>Pica pica</i>			1		2	2	1		1		1		2			1			1				1	
Meadow Pipit	<i>Anthus pratensis</i>		1			1	1				1									1				3	
Pheasant	<i>Phasianus colchicus</i>			1		1			5			2			2		2			1	1				1
Raven	<i>Corvus corax</i>		1	1		1		1					1												
Redpoll	<i>Carduelis flammea cabaret</i>		1		1	3					1														

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Common Name	Scientific Name	Early			Late			Early			Late			Early			Late			Early			Late		
		1N						2N						3N						4N					
		0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F
Reed Bunting	<i>Emberiza schoeniclus</i>		1		1																				
Robin	<i>Erithacus rubecula</i>	3			5			10	2	1	6	2		6			3	3		1					1
Siskin	<i>Carduelis spinus</i>	2			1			1						2											
Skylark	<i>Alauda arvensis</i>		1			2														1					1
Song Thrush	<i>Turdus philomelos</i>	1		1			1	4	8	2	3	1	1		2		1	1			1				
Starling	<i>Sturnus vulgaris</i>																							1	
Swallow	<i>Hirundo rustica</i>	2	4	5													1				1				
Willow Warbler	<i>Phylloscopus trochilus</i>		2		2	4		2	5	2	2	2		1	3		2	1			1			1	1
Woodpigeon	<i>Columba palumbus</i>	1	1	1	1		3	7	4	5	1	5	1	1	3		1	1			1			1	
Wren	<i>Troglodytes troglodytes</i>	4	5	1	7	4		9	2	1	6	2		8	1		3	2		2				1	2
Total number of species	29																								

Table 3-8: Results of breeding bird transects surveys of Gortyrhilly during Summer 2018

Common Name	Scientific Name	Early			Late			Early			Late			Early			Late		
		1S			2S			3S			4S								
		0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F
Blackbird	<i>Turdus merula</i>				1							1							
Blackcap	<i>Sylvia atricapilla</i>						2	1			1								
Chaffinch	<i>Fringilla coelebs</i>	1			1		2	2	3		1	2	1		1		1		2
Coal Tit	<i>Parus ater</i>						1										2		2
Crossbill	<i>Loxia curvirostra</i>									4									
Goldcrest	<i>Regulus regulus</i>						2			1			1				1		2
Hooded Crow	<i>Corvus cornix</i>		1			1								1			2		2
Magpie	<i>Pica pica</i>	2	1		3											1			1
Meadow Pipit	<i>Anthus pratensis</i>	2		1	4										3	1	5	1	4
Pied Wagtail	<i>Motacilla alba yarrellii</i>																2		1
Raven	<i>Corvus corax</i>													1					4
Redpoll	<i>Carduelis flammea cabaret</i>	1	1			1													
Robin	<i>Erithacus rubecula</i>												2						
Siskin	<i>Carduelis spinus</i>						1				2			1					
Skylark	<i>Alauda arvensis</i>		1			1											1	2	7
Whitethroat	<i>Sylvia communis</i>														1				

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Common Name	Scientific Name	Early			Late			Early			Late			Early			Late								
		1S						2S						3S						4S					
		0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F			
Willow Warbler	<i>Phylloscopus trochilus</i>	1	1	1	2	3		1				1	1	1											
Woodpigeon	<i>Columba palumbus</i>														1										
Wren	<i>Troglodytes troglodytes</i>	2			4					1	1		3	1		1		1	1			2			
Total number of species	19																								

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3.8 Winter Bird Survey

3.8.1 Inchamore

The results of the winter bird transect survey at Inchamore are shown below, Table 3.9 details bird transects 1N and 2N of Inchamore during Winter 2018/2019 and Table 3.10 details bird transects N3 and N4 also of Inchamore during the same period.

A total of twenty species were recorded along the transects. One Red-listed species was recorded during surveys, namely Meadow Pipit. Meadow Pipit were recorded multiple times across the northern section of the site, particularly at transects 3N and 4N. Five Amber-listed species were recorded; Goldcrest, Robin, Linnet, Mistle Thrush and Snipe.

3.8.2 Gortyrhilly

The results of the wintering bird transect survey at Gortyrhilly are shown below, Table 3.11 details bird transects 1S and 2S at Gortyrhilly during Winter 2018/2019 and Table 3.12 details bird transects surveys 3S and 4S at Gortyrhilly during the same year.

A total of twenty-two species were recorded along the transects. One Red-listed species was recorded during surveys, namely Meadow Pipit. Meadow Pipit were recorded multiple times across the northern section of the site, particularly at transects 1S and 4S. Five Amber-listed species were recorded; Goldcrest, Robin, Linnet, Mistle Thrush and Snipe.

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Table 3-9: Results of bird transects Inchamore Winter 2018/2019 (1N & 2N)

Common Name	Scientific Name	1N									2N								
		01/02/2019			11/02/2019			01/03/2019			01/02/2019			11/02/2019			01/03/2019		
		0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F
Blue Tit	<i>Parus caeruleus</i>				2			1									4		
Chaffinch	<i>Fringilla coelebs</i>				1									2					
Coal Tit	<i>Parus ater</i>	1	1		1														
Goldcrest	<i>Regulus regulus</i>	1	1		1			1									1		
Goldfinch	<i>Carduelis carduelis</i>							1									1		
Great Tit	<i>Parus major</i>			1															
Linnet	<i>Carduelis cannabina</i>										1								
Mistle Thrush	<i>Turdus viscivorus</i>							1										1	
Pheasant	<i>Phasianus colchicus</i>																		1
Raven	<i>Corvus corax</i>			1			1			1	1		1			4			2
Robin	<i>Erithacus rubecula</i>	1			1			4	1		2				1		4	1	
Snipe	<i>Gallinago gallinago</i>	1																	
Song Thrush	<i>Turdus philomelos</i>									1								1	
Woodpigeon	<i>Columba palumbus</i>															1			1
Wren	<i>Troglodytes troglodytes</i>	3						2									2		
Total number of species	15																		

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Table 3-10: Results of bird transects Inchamore Winter 2018/2019 (N3 & N4)

Common Name	Scientific Name	3N									4N								
		01/02/2019			11/02/2019			01/03/2019			01/02/2019			11/02/2019			01/03/2019		
		0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F
Blackbird	<i>Turdus merula</i>						1	1		1				1					
Blue Tit	<i>Parus caeruleus</i>						1	1	1								2		
Chaffinch	<i>Fringilla coelebs</i>									1			2						
Coal Tit	<i>Parus ater</i>			1									1						
Dunnock	<i>Prunella modularis</i>							1											
Goldcrest	<i>Regulus regulus</i>									1									
Great Tit	<i>Parus major</i>	1		1				1											
Jay	<i>Garrulus glandarius</i>									1									
Linnet	<i>Carduelis cannabina</i>												1						
Meadow Pipit	<i>Anthus pratensis</i>							3								2	1	1	
Mistle Thrush	<i>Turdus viscivorus</i>							1											
Pied Wagtail	<i>Motacilla alba yarrellii</i>															1			
Raven	<i>Corvus corax</i>	1	1			1								2				1	
Robin	<i>Erithacus rubecula</i>						1	2		1						2			
Snipe	<i>Gallinago gallinago</i>					1													
Song Thrush	<i>Turdus philomelos</i>									1	1			1					
Wren	<i>Troglodytes troglodytes</i>	2		1			2	2		1			1			2			
Total number of species	17																		

Table 3-11: Results of bird transects Gortyrhilly Winter 2018/2019 (1S & 2S)

Common Name	Scientific Name	1S									2S								
		01/02/2019			11/02/2019			01/03/2019			01/02/2019			11/02/2019			01/03/2019		
		0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F
Blackbird	<i>Turdus merula</i>							1											
Blue Tit	<i>Parus caeruleus</i>							5									1		
Chaffinch	<i>Fringilla coelebs</i>				4		1	1			1			2					
Coal Tit	<i>Parus ater</i>				1														
Dunnock	<i>Prunella modularis</i>							3											
Fieldfare	<i>Turdus pilaris</i>									1									
Goldcrest	<i>Regulus regulus</i>										2			1			3		
Great Tit	<i>Parus major</i>				1						2						2		
Hooded Crow	<i>Corvus cornix</i>												1						
Linnet	<i>Carduelis cannabina</i>		1																
Meadow Pipit	<i>Anthus pratensis</i>						4												
Mistle Thrush	<i>Turdus viscivorus</i>							1											
Raven	<i>Corvus corax</i>			2			3			1						1			
Robin	<i>Erithacus rubecula</i>	6	4		2			3			2			1			2		
Song Thrush	<i>Turdus philomelos</i>				1														
Wren	<i>Troglodytes troglodytes</i>	3						1			1								
Total number of species	16																		

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Table 3-12: Results of bird transects Gortyrally Winter 2018/2019 (3S & 4S)

Common Name	Scientific Name	3S									4S								
		01/02/2019			11/02/2019			01/03/2019			01/02/2019			11/02/2019			01/03/2019		
		0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F	0-25m	25-100m	>100/F
Blackbird	<i>Turdus merula</i>				1									1					
Blue Tit	<i>Parus caeruleus</i>	2						2						2				1	
Chaffinch	<i>Fringilla coelebs</i>		1											1					
Coal Tit	<i>Parus ater</i>	1		1											1				
Dunnock	<i>Prunella modularis</i>	1						2	2								1		
Goldcrest	<i>Regulus regulus</i>							1				2		1					
Great Tit	<i>Parus major</i>	2						2				1		1			1		
Hooded Crow	<i>Corvus cornix</i>													3	2				
Jackdaw	<i>Corvus monedula</i>								1										
Magpie	<i>Pica pica</i>													1					
Meadow Pipit	<i>Anthus pratensis</i>											1				5	1		
Mistle Thrush	<i>Turdus viscivorus</i>							3	1									1	
Raven	<i>Corvus corax</i>			2								1	1		5				
Robin	<i>Erithacus rubecula</i>	4	2		2			4	1			3		1	1		2		
Snipe	<i>Gallinago gallinago</i>									1									
Song Thrush	<i>Turdus philomelos</i>				1														
Sparrowhawk	<i>Accipiter nisus</i>															1			
Stonechat	<i>Saxicola torquata</i>							1											
Wood Pigeon	<i>Columba palumbus</i>															1			1
Wren	<i>Troglodytes troglodytes</i>	1						2					1						
Total number of species	20																		

4. DISCUSSION

FT carried out the second year of annual ornithological surveys at the proposed Inchamore – Gortyrally Wind Farm over a one-year period between April 2018 and March 2019, inclusive. Surveys completed during this time include; vantage point surveys (breeding and non-breeding season), breeding & winter bird transect surveys, hinterland surveys, breeding moorland, Red Grouse and Merlin surveys. Vantage point surveys were completed in accordance with the Scottish Natural Heritage Methodology for bird surveys at onshore wind farms (SNH, 2017), hinterland surveys were undertaken following methodology by Bibby *et al.*, (2000), Breeding birds were surveyed using methodology of the breeding moorland survey and breeding bird surveys, following Bibby *et al.*, (2000) and Gilbert *et al.*, (1998). Red Grouse surveys were carried out following BirdWatch Ireland (BWI, 2007). Specific Merlin Survey transects carried out also following methods by Gilbert *et al.*, (1998).

4.1.1 [Inchamore](#)

Winter survey 2018/19 and comparison between Winter 2017/18

During winter surveys (2018/19) at Inchamore, target species included Golden Plover, Snipe, White-tailed Eagle, Hen Harrier, Peregrine, Grey Plover, Kestrel and Common Gull. During the winter surveys of 2017/18, target species included Golden Plover, Snipe, White-tailed Eagle, Hen Harrier, Woodcock, Sparrowhawk, Kestrel and Teal.

There were three observations of Hen Harrier over the winter period. Two of the three observations were of a female, with the remaining a male. There was no evidence of Hen Harrier roosting or breeding within the site at Inchamore. This displays a decrease of half in the number of observations in the second year of surveys (2018/19) as opposed to that of the first year (2017/18) at Inchamore. It is considered likely that the Hen Harrier in question are breeding within the Musheramore Mountains SPA (Site Code: 004162) located approximately 2.95km north east of Inchamore. Hen Harrier utilise young conifer plantation for nesting with a window of between 2 and 10 years following planting offering potential nesting habitat. Once the canopy becomes enclosed it is not suitable for nest Hen Harrier. The mature forestry within the site currently is of low value for the species. In winter 2017/18 there were six observations of Hen Harrier at Inchamore, most of these observations consisted of males and ringtails hunting and commuting within or surrounding the site.

The majority of Golden Plover sightings were noted within and near the Inchamore site. Flock sizes observed range from 2 to 48. The species is occasionally roosting within the heath inside the site during the winter period. In winter 2017/18 the majority of Golden Plover sightings were noted within and near the Inchamore site, with flocks being flushed from VP1 and 2 and with flock sizes ranging from 1 to 40. This was found to be the same in 2018/19, although slightly larger flock sizes were observed. Although flock size increased in 2018/19, the number of observations of Golden Plover decreased (36 observations during winter 2017/18 surveys as opposed to 17 during the winter 2018/19 surveys at Inchamore). Golden plovers have been recorded in low numbers as collision fatalities at wind farms (Hotker *et al.*, 2006 & Grunkorn, 2011); the published avoidance rate by SNH for collision risk modelling for the species is 98% (SNH, 2010) indicating a high micro avoidance rate in regard to collision with turbines. A study in the Netherlands of three operational wind farms where golden plovers were active both diurnally and nocturnally found no fatalities, supporting a high micro-avoidance rate (Krijgsveld *et al.*, 2009).

A single White-tailed Eagle observation was noted at Inchamore over the survey period on the 18th of December 2018 from VP2. This individual is thought to be the same juvenile observed during last year's survey effort. Observations are infrequent within Inchamore, although the species likely occasionally commutes around the site. Only one observation of White-tailed Eagle was noted during each of the two winter survey periods (18th December 2017/18 and 22nd January 2018/19). Observations of this species were found to be infrequent across both periods at Inchamore.

An unspecified number of Chough individuals (an Annex I and Amber listed species) were heard during winter surveys on the 23rd of March 2019. The bird(s) were/was heard from VP9 but were not observed. No Chough were found during the Chough-specific hinterland survey site or during vantage point surveys across the proposed development site. There was one observation of Chough within the Inchamore area during survey in 2017/18.

There was one observation of Grey Plover, an Amber-listed species, during winter surveys in Inchamore. Due to the general coastal nature of Grey Plover it is likely that the occurrence of this individual is a once-off. The species are not likely to be utilising the site. No observations of this species were noted during winter 2017/18.

Red Grouse specific surveys at Inchamore noted three live sightings, of one male and two 'unsexed' individuals, one Red Grouse feather and a response call. All of these results were noted at Transect 1 of the Inchamore site. During the winter survey period of 2017/18 Red Grouse observations and evidence were noted within the Inchamore area, particularly at VPs 2 and 4, and the species was found to be breeding in the peatland area surrounding VP4.

Snipe was observed one four occasions during this period in 2018/19. In the same period in 2017/18 eight observations were noted. Grey wagtail pairs and individuals were observed on a number of occasions at VP3 leading to a total of four observations during winter surveys in Inchamore. During winter surveys in 2017/18 it was considered that the species was foraging in the streams draining the Inchamore site.

Summer 2018 and comparison between Summer 2017

Inchamore was the quieter of the two sites during the summer 2018 season with less activity than that of Gortyrhilly. Activity in Inchamore mainly consisted of Kestrel, Buzzard, Hen Harrier, Merlin and Peregrine foraging around the site, with other wetland species also present. During summer surveys in 2017, bird activity in Inchamore consisted of Kestrel (8 observations), Peregrine (1 observation) and Sparrowhawk (4 observations) whereas during the same period in 2018 the number of observations and target species was greater, Kestrel (23 observations), Buzzard (1 observation), Hen Harrier (2 observations), Merlin (3 observations) and Peregrine (1 observation). Although there were observations of Cormorant at VP3 in 2017 there were none across Inchamore in 2018.

A single Buzzard observation was noted during the summer survey period at Inchamore in 2018. This observation noted an individual flying both inside and outside of the site for 103 seconds at a height of between 20-40m. This species is reportedly slowly colonising areas to the south and west of Ireland. Two Hen Harrier observations were noted during this period in Inchamore. On the 6th of July a male Hen Harrier was recorded at VP4, this individual was flying within the site at heights of <20m for 137 seconds in total. The second observation was noted at VP2 on the 27th of September and details the flight of a raingtail flying over a conifer plantation within the site for 214 seconds at varying height intervals. There were no records of the species noted during the 2017 breeding season. There was no evidence of breeding or frequent foraging within the Inchamore site during the two years of surveys.

Three Merlin observations were recorded during this period in Inchamore. Of these observations two of the three were recorded as being within the site with the remaining being outside. Historical Field signs of Merlin recorded within the site during the previous Merlin survey in 2017 indicated that the species is utilising the area. Merlin nesting sites in Ireland are often old disused corvid nests in conifer plantations on the edge of heath / bog habitat habitats which are present within the study area. However, no Merlin nests or evidence were recorded during the Merlin surveys in 2018 or 2017.

Peregrine falcon was observed on one occasion during the summer within Inchamore in 2018. The site is of very low value to nesting Peregrine. A single observation of Peregrine Falcon was observed during both survey periods in 2017 and 2018. Grey wagtail, Lesser Black-backed Gull and Mallard were also observed within the site, these three species are commonly associated with waterbodies and waterways.

4.1.2 Gortyrhilly

Winter survey 2018/19

This site during both winter periods, 2017/18 and 2018/19, showed higher levels of bird activity than Inchamore. In 2017/18 the main target species included; Chough, Cormorant, Curlew, Golden Plover, Grey Wagtail, Hen Harrier, Kestrel, Mallard, Merlin, Peregrine, Red Grouse, Snipe, Sparrowhawk and White-tailed Eagle. In 2018/19 the main target species included; Buzzard, Cormorant, Curlew, Golden Plover, Black-headed Gull, Grey Wagtail, Hen Harrier, Herring Gull, Kestrel, Merlin, Snipe, Sparrowhawk, Red grouse and White-tailed Eagle. Species such as Buzzard, Black-headed Gull and Herring Gull were recorded during surveys in 2018/19 but not in 2017/18. Cormorant, Peregrine and Mallard were recorded during surveys in 2017/18 but not during the winter of 2018/19.

White-tailed Eagle was observed on three occasions in Gortyrhilly during the winter survey period of 2017/18 as opposed to two observations of the species in 2018/19. The observations in 2018/19 occurred at VP9 and consisted of a juvenile bird being harassed by corvids whilst hunting and commuting within the site. The observations in 2017/18 all occurred at VP5 and consisted of adults feeding and commuting within the site. The species is not roosting in the site they are nesting near the Grousemount site to the west. This site is closer to the Grousemount site than Inchamore and therefore would be expected to have more incidental observations of the species.

Snipe was more abundant during winter surveys in 2017/18 as opposed to those in 2018/19, with the earlier year (2017/18) showing twelve snipe observations and the later (2018/19) showing one. Most observations in 2017/18 were noted at VP5 where as the sole observation in 2018/19 was at VP9.

One Merlin observation was noted during winter surveys in Gortyrhilly in 2017/18. This observation of a female was identified as being within the site and at a flight height of <20m. This is in comparison to that of two observations in 2018/19, both observations describe two un-sexed individuals one flying within and one outside of the site in December 2018 and January 2019.

Golden Plover was the most commonly observed species during the winter period (2018/19) in Gortyrhilly. In total there were nine observations of this species across the site during this period with varying levels of flight height and duration observed. Birds during this time were either observed traveling or feeding within the site, with seven of the nine observations noting flocks/ individuals within the site. In 2017/18, Golden Plover were observed across the site during this period with varying levels of flight height and duration observed. Buzzard was observed on one occasion across the 2018/19 winter period at Gortyrhilly. This observation detailed an individual flying for 35 seconds at height of <40m within the site.

Great Black-backed was observed on one occasion during winter surveys in Gortyrhilly. This observation noted a pair commuting for 40s both inside and outside of the site at heights of between 80-150m. Herring Gull were observed on two occasions during this period in Gortyrhilly. One of these observations also noted a pair commuting both within and outside of the site at heights of between 40 and 80m for 120s. it is not likely that either of these species regularly utilise that habitats within the site.

In 2017/18 Kestrel was most commonly observed (13 observations) target species travelling both within and outside of the site during this survey period. In 2018/19 the species was observed on four occasions during this period.

In 2017/18 ten observations of Hen Harrier were noted. These observations were composed of seven males and three ringtails hunting throughout the territories, no roosting was noted within the site (particularly at VPs 5, 6, 8 and 9). Only two observations of Hen Harrier were noted during surveys at Gortyrhilly in 2018/19 both on the 16th of January 2019 at VP7.

Ten observations of Golden Plover were noted during the winter survey period in 2018/19, in comparison; during the same period in 2017/18 fifteen observations were taken. Twelve Observations in the earlier year (2017/18) were primarily within the site whereas seven were within the site in the late year (2018/19). Flocks during the winter period of 2018/19 showed to have a larger range of flocks (1-48) as opposed to those of the same period in 2017/18 (1-30).

Choughs were only heard on one occasion during winter period surveys in 2018/19, no observations were made during this time. Ten Chough observations were noted during the winter survey period in 2017/18. There are historic records which indicates that Chough were breeding in the Ballingearry area in 1992 (Berrow *et al*, 1993).

Three Curlew calls were heard during surveys in 2018/19 as opposed to one call heard during surveys in 2017/18. A single flightline was noted during this survey period in 2017/18, this individual had been flushed from VP5. Four Red Grouse observations were recorded in Gortyrhilly during this survey period in 2017/18. No Red Grouse were recorded during vantage point surveys during the same period in 2018/19. Red Grouse specific surveys were completed in February 2019 throughout the Gortyrhilly and Inchamore site, no live sightings of Red Grouse were recorded in Gortyrhilly.

Summer 2018

The main target species observed during the summer survey period in 2018/19 include; Glaucous Gull, Grey Wagtail, Kestrel, White-tailed Eagle and Merlin. The main target species during the previous year's summer survey period include; Buzzard, Cormorant, Kestrel, Lesser Black-backed Gull, Snipe, Sparrowhawk and White-tailed eagle. Glaucous Gull, Grey Wagtail and Merlin were observed in surveys during the summer period in 2018 and not in 2017. Buzzard, Cormorant, Lesser Black-backed Gull, Snipe and Sparrowhawk were observed in surveys in 2017 and not in 2018. There are more target species observations, during the summer survey period in Gortyrahilly, in 2017 as opposed to that in 2018.

Glaucous Gull was observed on a single occasion on the 4th of July at VP6. This individual was noted as passing within the site at a height of between 0-20m for 35 seconds. No Glaucous Gulls were identified during surveys in 2017/18.

Kestrels were observed on thirty occasions during the summer survey period at Gortyrahilly in 2017. This is in comparison to twenty in during the same period in 2018. There was one observation of a Kestrel pair in 2018, this observation notes a male and female hunting in a valley over improved agricultural grassland. Observations of kestrel pairs in 2017 were composed of separate individuals not flying together.

Merlin were recorded on seven occasions during summer surveys in Gortyrahilly in 2018 with no observation of the species in 2017. The species was identified as being inside the site in five of the seven observations in total in 2018. Of these observations one was identified as a male and another as a female (July and August 2018), the sex of the remaining five individuals was undetermined.

There were four White-tailed Eagle observations during the breeding season in 2017 and two during the same period in 2018. All observations of the species were observed at VP5 during the summer period across both years (2017 and 2018). In August 2018 a single tagged juvenile was observed for 15 seconds travelling both inside and outside of the site. Three of the four species observations in 2017 were noted as being outside of the site, with the remaining, a pair, observed to be flying within the site mainly at a height of between 80-150m.

5. REFERENCES

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Appendix 1

VP Summer 2018 - Survey Details



VP Summer 2018 - Survey Details

Date	VP	Time	Duration (hours)	Cloud (okta)	Precipitation	Wind	Visibility
09/04/2018	3	09:50	03:00	6/8-8/8	Dry	F2 SE	Excellent
09/04/2018	3	12:50	03:00	8/8	Dry	F2/3 SE	Excellent
19/04/2018	2	10:35	03:00	8/8-4/8	Dry	F2-3 SW	Excellent
19/04/2018	2	13:35	03:00	4/8	Dry	F2 SW	Excellent
20/04/2018	7	10:30	03:00	4/8	Dry	F2-3 W-NW	Excellent
20/04/2018	7	13:45	03:00	4/8	Dry	F2/W F0 var	Excellent
21/04/2018	9	09:00	03:00	0/8	N/A	SW veering S F1-2	Excellent
21/04/2018	8	12:20	03:00	2/8	N/A	S-SW F2-3	Excellent
22/04/2018	9	09:15	03:00	4/8	Occasional light showers	SW F4-5 occ. 5-6	Excellent
22/04/2018	8	12:55	03:00	3/8-5/8	Occasional heavy shower	SW F5-6	Good
26/04/2018	5	09:05	05:55	6/8	Occasional Shower	W F2-3 occ 4-5	Excellent
29/04/2018	1	07:45	07:00	3/8	N/A	4	Good
30/04/2018	6	10:00	06:00	4/8	Nil	SW 2-3	Good
08/05/2018	4	12:00	06:00	2/8	Nil	W/NW 2-3	Good
10/05/2018	5	13:00	03:00	6/8	Occasional shower	W F4-5	Excellent
10/05/2018	6	12:00	03:00	3/8	Nil	WSW 2	Good
11/05/2018	1	09:30	06:00	8/8-3/8	N/A	SW	Moderate/ low cloud at first - cleared at 13:00
17/05/2018	5	14:00	03:00	6/8	N/A	SW F1-2	Excellent
22/05/2018	3	10:55	03:00	2/8	Dry	F1 NW	Excellent
22/05/2018	3	13:55	03:00	1/8	Dry	F1 NW	Excellent
23/05/2018	7	10:30	03:00	1/8-3/8	Dry	F2-3 SE	Excellent
23/05/2018	7	13:30	03:00	3/8	Dry	F3 SE	Excellent - v. good
24/05/2018	9	14:00	03:00	4-5/8	N/A	NE F1-2	Excellent
25/05/2018	2	10:30	03:00	3/8	Dry	F2-4N	Excellent
30/05/2018	6	09:00	03:00	0/8	Nil	ESE 3	Good
31/05/2018	8	12:00	06:00	8/8	N/A	SE F1-2	Excellent

Date	VP	Time	Duration (hours)	Cloud (okta)	Precipitation	Wind	Visibility
01/06/2018	9	10:00	03:00	8/8	N/A	SE F1-2	Poor to Fair
05/06/2018	3	12:05	03:00	5/8	Dry	F2 SE	Excellent
05/06/2018	3	15:05	03:00	4/8	Dry	F2 SE	V. good (slight haze)
15/06/2018	5	12:30	03:00	8/8	N/A	-	Excellent
19/06/2018	9	12:20	03:00	8/8-4/8	N/A	W F3-4	Excellent
19/06/2018	1	13:00	06:00	8/8	N/A	SW 3	Moderate, low cloud
19/06/2018	5	09:00	03:00	8/8	Drizzle		Fair to Poor
21/06/2018	4	12:00	06:00	6/8	Nil	SW 1	Good
29/06/2018	9	12:35	03:00	0/8	N/A	SE F2-3	Excellent
29/06/2018	8	09:15	03:00	0/8	N/A	SE F2-3	Excellent
29/06/2018	6	11:00	06:00	1/8	Nil	ESE 1	Good
30/06/2018	8	09:05	03:00	0/8	N/A	SE F1-2	Excellent
03/07/2018	1	11:00	06:00	2/8	N/A	E 2	Good
04/07/2018	6	12:00	06:00	7/8	Nil	E1	Good
06/07/2018	4	15:00	06:00	7/8	Nil	F1-2	Good
08/07/2018	2	10:00	06:00	4/8	Nil	WNW	Good
10/07/2018	5	10:20	03:00	0/8	N/A	SW F1-2	Excellent
11/07/2018	9	14:00	03:00	6/8	N/A	NE F1-2	Excellent
17/07/2018	2	13:00	06:00	-	Nil	SSW1	Good
18/07/2018	9	13:20	03:00	7/8	N/A	NW F1-2	Excellent
18/07/2018	1	14:00	06:00	7/8	N/A	SSW 1	Good
18/07/2018	5	10:00	03:00	6/8	N/A	NW <F-1	Excellent
19/07/2018	8	10:00	03:00	7/8	N/A	W F1-2	Excellent
20/07/2018	3	09:55	03:00	8/8	Occ. Light misty drizzle	F0-1 W	V. Good
20/07/2018	3	12:55	03:00	7/8	Dry	F2 WNW	Excellent
23/07/2018	2	12:45	03:00	8/8	light	F2-3 W	Ok-Poor-Fair
23/07/2018	2	09:15	03:00	8/8	V. light	F2-3 W/SW	Good-Poor-OK, very misty at times
24/07/2018	7	08:55	03:00	7/8	Dry	F0-2W	Excellent
24/07/2018	7	12:25	03:00	6/8-5/8	Dry	F4W	Excellent
25/07/2018	8	12:40	03:00	3/8	N/A	SW F3-4 Occ. F4-5	Excellent
26/07/2018	4	11:00	06:00	7/8	Nil	S3	Good
26/07/2018	6	12:00	06:00	1/8	Nil	S3	Good
31/07/2018	7	12:00	06:00	8/8	Showers	SW 5	Good

Date	VP	Time	Duration (hours)	Cloud (okta)	Precipitation	Wind	Visibility
31/07/2018	3	08:11	03:19	8/8-7/8	Light-medium-clear with showers at times	F2-3 W at times	Ok-Good with poor- ok during intermittent showers
31/07/2018	3	12:00	03:00	8/8-7/8	Light-medium-clear with showers at times	F2-3 W at times	Ok-Good with poor- ok during intermittent showers
04/08/2018	7	10:00	06:00	7/8	N/A	NNW 1	Good
07/08/2018	1	11:00	06:00	6/8	N/A	WSW 2	Good
08/08/2018	4	11:00	06:00	7/8	Light drizzle	WNW 2	Good
16/08/2018	2	14:00	06:00	5/8	Nil	W2-3	Good
16/08/2018	3	09:10	03:00	6/8-7/8	Changeable, bright to light showers	F0-1 NW - 3-4NW	Good-Ok
16/08/2018	3	12:40	03:00	6/8-7/8	Changeable, bright to light showers	F0-1 NW - 3-4NW	Good-Ok
17/08/2018	2	09:00	03:00	8/8	Light showers	F3-4W 5 at times	OK-light mist at times
20/08/2018	9	13:05	02:55	8/8	Light but persistent	S F1	Fair to Good
20/08/2018	7	13:40	03:00	8/8	N/A	F0-3W	Good
20/08/2018	5	11:30	03:00	7/8	N/A	SW F2-3	Excellent
21/08/2018	9	10:00	03:00	4/8	N/A	SW F2-3	Excellent
21/08/2018	8	13:30	03:00	3/8	N/A	SW F2-3	Excellent
21/08/2018	7	10:40	03:00	7/8	N/A	F0-3W	V. Good, mist cleared from viewshed
23/08/2018	5	09:00	03:00	8/8	Spells	NW F3-4	Poor to Good
23/08/2018	5	09:00	03:00	8/8	Spells	NW F3-4	Poor to Good
25/08/2018	6	09:00	06:00	2/8	Nil	NW 1	Good
29/08/2018	9	12:40	03:00	8/8	Occasional showers	NW F3-4	Good to Excellent
29/08/2018	8	09:15	03:00	5/8	Occasional light showers	NW F1-2 occ. F3-4	Excellent
12/09/2018	5	09:45	03:00	8/8	N/A	SW F1-2	Excellent
13/09/2018	5	13:10	03:00	7/8	N/A	SW F1-2 veering W 2-3	Excellent

Date	VP	Time	Duration (hours)	Cloud (okta)	Precipitation	Wind	Visibility
16/09/2018	4	08:30	06:00	5/8	Dry	W F3-4	Moderate - Good after 10:00
18/09/2018	9	10:05	03:05	4/8	Occasional light showers	SW F4-5 occ. 5-6	Excellent
18/09/2018	9	10:05	03:05	4/8	Occasional light showers	SW F4-5 occ. 5-6	Excellent
18/09/2018	8	13:30	03:00	7/8	Occasional showers	SW F5-6	Excellent
20/09/2018	8	09:35	03:05	8/8	Persistent at times	E F1	Poor at times improving gradually
26/09/2018	1	12:30	06:00	8/8 at 12:30, 2/8 at 15:00	Nil	SW 1-2	Good
27/09/2018	2	11:00	04:30	1/8	Nil	WNW 2-3	Mod-good
27/09/2018	2	11:00	04:30	1/8	Nil	WNW 2-3	Mod-good

Appendix 2

VP Winter 2018/2019 - Survey Details



VP Winter 2018/2019 - Survey Details

Date	VP	Time	Duration (hours)	Cloud (okta)	Precipitation	Wind	Visibility
26/09/2018	1	12:30	06:00	8/8 at 12:30, 2/8 at 15:00	Nil	SW 1-2	Good
11/10/2018	3	10:30	03:00	6/8-8/8-4/8	Mainly dry, 1 light misty shower	F1	Excellent-v. good
11/10/2018	3	13:30	03:00	3/8	Dry	F1-2	Excellent
15/10/2018	6	09:45	03:00	1/8	None	W2 NE	Excellent
15/10/2018	6	13:00	03:00	3/8	None	W F2-3	Excellent
16/10/2018	7	12:30	03:00	4/8	None	SW F4-5	Good
16/10/2018	7	09:30	03:00	8/8	Drizzle until 11:00	F5 SW	Poor, misty
17/10/2018	8	12:45	03:00	4/8	N/A	SW F2-3	Good
17/10/2018	2	10:20	03:00	4/8-8/8	Misty rain - none	F3-4W	OK, low lying mis, cleared at start of VP
17/10/2018	2	13:50	03:00	4/8-8/8	Misty rain - none	F3-4W	OK, low lying mis, cleared at start of VP
17/10/2018	4	09:30	03:00	8/8-5/8	Dry	F3-4	V. good-mod/occ. Poor-Ex
17/10/2018	4	12:30	03:00	5/8	Dry	F3-4	Excellent
18/10/2018	1	08:50	03:00	1/8	Dry	F0, building to F1	V. good
19/10/2018	9	11:15	03:00	8/8	N/A	F3-4 SW	Excellent to Good
19/10/2018	5	14:40	03:00	8/8	N/A	F1-2 SW	Excellent
20/10/2018	9	13:20	02:40	8/8	Drizzle	F2-3 SW	Poor-Fair-Good
20/10/2018	5	10:00	03:00	8/8	Drizzle at times	SW F1	Fair to Good
15/11/2018	3	09:30	03:00	8/8	Light at start	F0-4 S-SE-SE-W	Ok-Fair
15/11/2018	3	13:00	03:00	8/8	Light at start	F0-4 S-SE-SE-W	Ok-Fair
16/11/2018	2	09:10	03:00	8/8 low lying fog in areas	Light rain throughout	F2-4	Fair to OK to Poor at times
19/11/2018	6	10:35	03:00	8/8	Dry	F1-occ. F2	V. good
20/11/2018	8	10:30	03:00	3/8-6/8	Dry	F1-2	V. good
20/11/2018	8	13:30	03:00	7/8	Occ. light showers	F2-3	V. good
21/11/2018	2	11:30	03:00	8/8	Dry	F0-1	Mod-v. good
22/11/2018	7	09:55	06:30	7/8-5/8	Light rain throughout	F5-4 S	Good reducing with distance, light mist

Date	VP	Time	Duration (hours)	Cloud (okta)	Precipitation	Wind	Visibility
27/11/2018	9	12:55	03:00	7/8	Frequent showers	SW - SE F4-5	Excellent
27/11/2018	5	09:40	03:00	7/8	Frequent showers	F4 SW	Good
28/11/2018	9	12:50	03:00	4/8	Rain at times	F5 SW	Fair
28/11/2018	5	09:30	03:00	8/8	Heavy rain at times	F5-6 SW	Fair
30/11/2018	1	10:00	06:15	6/8 -8/8	Showers	F5-6 Strong	Full - poor
30/11/2018	4	10:00	03:00	6/8-8/8	50/50 dry/ showers	F4-6	V. good to moderate
30/11/2018	4	13:00	03:00	8/8-7/8	50/50 dry/ showers	F6-5-4	Moderate
10/12/2018	8	09:40	03:00	8/8	Light misty drizzle	F1-3	Moderate-Good
10/12/2018	8	12:40	03:00	8/8	N/A	F3-4	Moderate-Good
10/12/2018	3	08:25	06:20	8/8-7/8	Light from 09:00 onwards	F0-F1 calm	OK. Some morning haze light, poor vis 10:30-11:45 with changeable, then good thereafter
12/12/2018	6	12:25	03:25	8/8-7/8	Misty to showers	F2-3S	Poor - changeable to good
18/12/2018	7	09:00	03:00	5/8-8/8	Passing showers	F3-4	V. good to moderate
18/12/2018	7	12:00	03:00	6/8-8/8	Passing showers mostly clear	F3	Excellent-Occ. Moderate
18/12/2018	2	10:10	06:00	8/8-6/8-2/8 (at times)	Light rain showers passing over	F3S	Excellent to OK at times
20/12/2018	6	09:00	03:00	7/8	Drizzle	F4-5	Moderate
20/12/2018	1	09:30	03:00	8/8-6/8	Intermediate misty showers	F3-4	V. good
20/12/2018	1	12:30	03:00	8/8	Dry	F3-4	V. good
08/01/2019	6	09:50	06:25	5/8-7/8-3/8	N/A	F2 NW	Good, ok at times
08/01/2019	3	09:30	03:00	7/8	None	F2 NW	Good
08/01/2019	3	13:00	03:00	8/8-7/8	None	F2 NW	Good- v. good
10/01/2019	8	09:00	07:00	8/8-7/8-8/8	N/A	F1-2N	Good
11/01/2019	8	10:45	02:00	8/8-7/8	Slight	F2NW	OK
14/01/2019	4	10:10	06:15	3/8-8/8	N/A	F2 W	OK
16/01/2019	7	09:15	06:30	1/8-2/8-5/8-8/8	Intermittently	F3W	Excellent
16/01/2019	2	09:30	03:00	2/8-4/8	Some brief showers	F2-3W	V. good
16/01/2019	2	12:30	03:00	5/8-7/8	Some brief heavy showers	F3W	V. good-good
17/01/2019	9	09:15	06:30	7/8-8/8	N/A	F0-1-0 N-NW	Excellent

Date	VP	Time	Duration (hours)	Cloud (okta)	Precipitation	Wind	Visibility
17/01/2019	1	09:30	03:00	3/8	None	F1-2 NE	Good-v. good
17/01/2019	1	12:30	03:00	3/8-7/8	None	F1 NE	V. good
22/01/2019	4	09:30	03:00	8/8	Some brief sleet showers	F3 NW	Good
22/01/2019	4	12:30	03:00	8/8	Some brief sleet showers	F3 NW	Good
04/02/2019	5	13:20	03:00	4/8	N/A	F0	Excellent
12/02/2019	6	13:45	03:00	8/8	Misty drizzle	F2-3	Moderate
12/02/2019	5	12:20	03:00	8/8	Light rain throughout	F2-4	OK
12/02/2019	2	10:00	03:00	8/8	Misty drizzle clearing	F2-3	Moderate-good
12/02/2019	3	09:30	03:00	8/8	Some light drizzle	F1-3 SW	Good
12/02/2019	3	12:30	03:00	7/8	None-some drizzle	F2-3SW	V. good
13/02/2019	8	10:40	06:00	8/8	Dry	F4-5	Mod
13/02/2019	9	09:36	06:30	8/8	Light-n/a	F3SW	Good
14/02/2019	6	14:00	03:00	8/8	Light	F3 S	OK
14/02/2019	2	10:15	02:30	8/8	N/A	F4S	Good-poor
15/02/2019	1	10:10	01:00	8/8	Light throughout	F3-4 S	OK
25/02/2019	5	10:30	03:00	8/8-6/8	N/A	F3 SE	Good
26/02/2019	7	13:30	03:00	1/8	N/A	F2 SE	Excellent
26/02/2019	4	10:00	03:00	8/8-4/8	N/A	3-4 SE	Good
26/02/2019	4	14:00	03:00	4/8	N/A	F3-4 SE	Excellent to fair
27/02/2019	7	13:20	03:00	8/8	N/A	F1-2 SE	Good
27/02/2019	5	10:00	03:00	8/8	N/A	F1-2 SE	Fair to Good
04/03/2019	1	11:50	02:30	8/8	N/A	F3-4W	Good
04/03/2019	1	14:50	02:30	8/8	Heavy sleet with snow	F2-3 W	OK-Good
04/03/2019	2	14:20	00:30	8/8	Light	F0-2 W	Good
05/03/2019	3	07:25	03:00	8/8-5/8	Light showers constantly	F0-2 at times	Excellent
05/03/2019	3	10:55	03:00	8/8	Light showers constantly	F0-2 at times	Excellent
06/03/2019	9	09:00	03:00	8/8	Occasional light drizzle	F3-4 NW	Moderate
07/03/2019	5	10:00	06:30	3/8-5/8	Light @ start, showers at times	F2-3W	Excellent
11/03/2019	9	12:00	03:00	7/8	Few brief showers	F3-4 SW	V good
14/03/2019	8	09:30	06:00	8/8	Light-v. light	F3 W	OK
20/03/2019	6	11:15	06:00	8/8 light fog	Light	F0-1 SW	Good

Date	VP	Time	Duration (hours)	Cloud (okta)	Precipitation	Wind	Visibility
22/03/2019	5	14:00	03:00	8/8	N/A	F2-3 NNE	Excellent
23-Mar	9	13:30	03:00	8/8	N/A	F2-3 NE	Excellent
23/03/2019	4	10:00	03:00	8/8	N/A	F2-3 NE	Excellent
25/03/2019	2	09:25	06:30	1/8	N/A	F1	Excellent
25/03/2019	9	14:00	03:00	3/8	N/A	<F1 NW, veered to E the S F2	Excellent
26/03/2019	4	10:00	03:00	0/8	N/A	F1-2 SW	Excellent
27/03/2019	7	13:20	02:00	0/8	N/A	F2 SW	Excellent
27/03/2019	5	10:00	03:00	0/8	N/A	F1 SW	Excellent
28/03/2019	7	09:45	03:00	1/8	N/A	F2-3 SW	Excellent
29/03/2019	1	09:25	06:00	6/8-1/8	N/A	F2	Excellent
29/03/2019	7	12:30	03:00	1/8	None	F1-2SW	Excellent
29/03/2019	7	09:30	03:00	5/8-1/8	None	F2SW	V. good

Appendix 3

Bird Survey Observations 2018-2019



Summer Survey 2018 Bird Flightline Data

VP	Date	Observation No.	FL	Species	Species Quantity	Start Time	Inside/ Outside Buffer	Duration	Flightline Map	Flightline No.
2	27/09/2018	1	1	Buzzard_BZ	1	11:26	In	93	2-8-A-1	1
2	27/09/2018	1	1	Buzzard_BZ	1	11:26	Out	10	2-8-A-1	1
6	04/07/2018	1	1	Glaucous Gull_LX	1	12:18	In	35	2-8-C-1	1
4	06/07/2018	2	2	Hen harrier_HH	1	18:28	In	137	2-8-A-2	1
2	27/09/2018	4	4	Hen harrier_HH	1	15:06	In	214	2-8-A-2	2
2	27/09/2018	4	4	Hen harrier_HH	1	15:06	Out	5	2-8-A-2	2
9	18/09/2018	1	1	Kestrel_K.	2	12:52	In	900	2-8-C-3	19
7	20/04/2018	1	1	Kestrel_K.	1	11:44	In	395	2-8-C-2	10
7	20/08/2018	1	1	Kestrel_K.	1	13:57	In	120	2-8-C-3	11
7	20/08/2018	2	2	Kestrel_K.	2	13:59	In	120	2-8-C-3	12
7	20/08/2018	2	2	Kestrel_K.	2	13:59	Out	20	2-8-C-3	12
7	20/08/2018	3	3	Kestrel_K.	1	14:58	In	110	2-8-C-3	13
7	20/08/2018	3	3	Kestrel_K.	1	14:58	Out	10	2-8-C-3	13
7	20/08/2018	4	4	Kestrel_K.	1	15:12	In	240	2-8-C-3	14
7	20/08/2018	5	5	Kestrel_K.	1	15:25	In	5	2-8-C-3	15
7	20/08/2018	6	6	Kestrel_K.	1	15:30	In	90	2-8-C-3	16
7	20/08/2018	7	7	Kestrel_K.	2	15:40	In	300	2-8-C-3	17
7	20/08/2018	8	8	Kestrel_K.	1	15:53	Out	60	2-8-C-3	18
2	23/07/2018	1	1	Kestrel_K.	2	13:16	Out	15	-	-
2	23/07/2018	1	1	Kestrel_K.	2	13:16	In	600	-	-
2	08/07/2018	1	1	Kestrel_K.	1	13:42	In	791	2-8-A-3	1
2	08/07/2018	2	2	Kestrel_K.	1	15:45	In	296	2-8-A-3	2
2	16/08/2018	1	1	Kestrel_K.	1	18:15	In	293	2-8-A-3	4
2	17/07/2018	1	1	Kestrel_K.	1	15:33	In	429	2-8-A-3	3
3	22/05/2018	1	1	Kestrel_K.	1	13:21	In	160	2-8-A-3	7
3	22/05/2018	2	2	Kestrel_K.	1	13:59	In	94	2-8-A-3	8

VP	Date	Observation No.	FL	Species	Species Quantity	Start Time	Inside/ Outside Buffer	Duration	Flightline Map	Flightline No.
3	22/05/2018	3	3	Kestrel_K.	1	14:22	In	52	2-8-A-3	9
4	21/06/2018	1	1	Kestrel_K.	1	17:41	In	573	2-8-A-3	13
4	26/07/2018	1	1	Kestrel_K.	1	14:59	In	247	2-8-A-4	24
4	26/07/2018	2	2	Kestrel_K.	2	15:26	In	754	2-8-A-4	25
4	08/08/2018	1	1	Kestrel_K.	1	11:07	In	358	2-8-A-4	18
4	08/08/2018	2	2	Kestrel_K.	1	12:34	In	117	2-8-A-4	19
4	08/08/2018	3	3	Kestrel_K.	1	12:36	Out	23	2-8-A-4	20
4	08/08/2018	4	4	Kestrel_K.	1	16:31	In	747	2-8-A-4	21
4	08/08/2018	5	5	Kestrel_K.	1	16:43	Out	133	2-8-A-4	22
4	08/08/2018	6	6	Kestrel_K.	1	16:46	In	160	2-8-A-4	23
4	06/07/2018	1	1	Kestrel_K.	1	18:15	In	245	2-8-A-4	14
4	06/07/2018	3	3	Kestrel_K.	1	19:01	In	307	2-8-A-4	15
4	06/07/2018	3	3	Kestrel_K.	1	19:01	Out	42	2-8-A-4	16
4	06/07/2018	5	5	Kestrel_K.	1	20:28	In	70	2-8-A-4	17
5	13/09/2018	1	1	Kestrel_K.	1	15:35	In	45	2-8-C-2	1
5	13/09/2018	1	1	Kestrel_K.	1	15:35	Out	5	2-8-C-2	1
6	26/07/2018	1	1	Kestrel_K.	1	13:17	In	71	2-8-C-2	9
6	25/08/2018	1	1	Kestrel_K.	1	09:46	In	443	2-8-C-2	4
6	25/08/2018	2	2	Kestrel_K.	1	09:53	Out	175	2-8-C-2	5
6	25/08/2018	3	3	Kestrel_K.	1	10:04	Out	197	2-8-C-2	6
6	25/08/2018	4	4	Kestrel_K.	1	12:19	Out	15	2-8-C-2	7
6	25/08/2018	5	5	Kestrel_K.	1	12:20	In	442	2-8-C-2	8
6	30/04/2018	1	1	Kestrel_K.	1	15:11	In	212	2-8-C-2	2
6	04/07/2018	4	4	Kestrel_K.	1	17:49	In	401	2-8-C-2	3
2	27/09/2018	2	2	Kestrel_K.	1	12:01	In	7	2-8-A-3	5
2	27/09/2018	3	3	Kestrel_K.	1	12:05	In	207	2-8-A-3	6
1	26/09/2018	1	1	Kestrel_K.	1	13:46	In	7	2-8-A-3	10
1	26/09/2018	2	2	Kestrel_K.	1	14:28	In	11	2-8-A-3	11
1	26/09/2018	3	3	Kestrel_K.	1	14:29	In	12	2-8-A-3	12

VP	Date	Observation No.	FL	Species	Species Quantity	Start Time	Inside/ Outside Buffer	Duration	Flightline Map	Flightline No.
9	19/06/2018	1	1	Merlin_ML	1	12:45	In	45	2-8-C-4	1
9	19/06/2018	2	2	Merlin_ML	1	14:20	In	245	2-8-C-4	2
7	04/08/2018	1	1	Merlin_ML	1	10:18	In	29	2-8-C-4	3
3	20/07/2018	1	1	Merlin_ML	1	10:18	Out	20	2-8-A-5	1
4	16/09/2018	1	1	Merlin_ML	1	10:37	In	28	2-8-A-5	2
4	16/09/2018	2	2	Merlin_ML	1	12:38	In	17	2-8-A-5	3
6	26/07/2018	2	2	Merlin_ML	2	15:48	In	277	2-8-C-4	4
6	30/05/2018	1	1	Merlin_ML	1	09:00	Out	5	2-8-C-4	7
6	04/07/2018	2	2	Merlin_ML	1	16:47	In	23	2-8-C-4	6
6	04/07/2018	3	3	Merlin_ML	1	17:11	Out	88	2-8-C-4	5
2	19/04/2018	1	1	Peregrine_PE	1	16:31	In	590	2-8-A-6	1
2	19/04/2018	1	1	Peregrine_PE	1	16:31	Out	10	2-8-A-6	1
5	23/08/2018	1	1	White-tailed Eagle _WE	1	10:05	Out	10	2-8-C-5	1
5	23/08/2018	1	1	White-tailed Eagle _WE	1	10:05	In	5	2-8-C-5	1

Winter Survey 2018/19 Bird Flightline Data

VP	Date	Observation No.	FL	Species	Species Quantity	Start Time	Inside/ Outside Buffer	Duration	Flightline Map	Flightline No.
6	12/12/2018	2	2	Bird of prey sp.	1	12:25	Out	20	2-8-D-2	1
6	20/03/2019	2	2	Bird of prey sp.	1	12:20	Out	5	-	-
5	20/10/2018	1	1	Buzzard_BZ	1	12:09	In	35	2-8-D-3	1
9	23/03/2019	1	1	Chough	-	13:30	-	Heard only	-	-
3	08/01/2019	3	3	Common Gull_CM	2	11:27	In	9	2-8-B-1	1
3	08/01/2019	3	3	Common Gull_CM	2	11:27	Out	10	2-8-B-1	1
7	22/11/2018	1	1	Golden Plover_GP	2	10:20	In	60	2-8-D-4	2
7	22/11/2018	2	2	Golden Plover_GP	1	10:21	In	7200	2-8-D-4	3
7	22/11/2018	3	3	Golden Plover_GP	1	12:26	In	5	2-8-D-4	4
7	22/11/2018	-	-	Golden Plover_GP	1	15:30	In	-	-	-
7	16/10/2018	2	2	Golden Plover_GP	1	12:34	In	17	2-8-D-4	1
4	30/11/2018	1	1	Golden Plover_GP	2	14:36	In	35	2-8-B-2	9
2	18/12/2018	1	1	Golden Plover_GP	35	10:40	In	25	2-8-B-2	10
2	18/12/2018	2	2	Golden Plover_GP	10	11:21	In	120	2-8-B-2	11
6	12/12/2018	-	-	Golden Plover_GP	1	12:30	Out	-	-	-
6	20/03/2019	4	4	Golden Plover_GP	-	13:20	Out	Heard only	-	-
7	16/01/2019	2	2	Golden Plover_GP	20	09:11	In	20	2-8-D-4	5
7	16/01/2019	4	4	Golden Plover_GP	15	12:56	Out	10	2-8-D-4	6
7	16/01/2019	4	4	Golden Plover_GP	15	12:56	In	20	2-8-D-4	6
6	14/02/2019	-	-	Golden Plover_GP	-	16:45	Out	Heard only	-	-
6	12/02/2019	1	1	Golden Plover_GP	1	16:50	Out	5	2-8-D-4	7
6	08/01/2019	-	-	Golden Plover_GP	-	09:58	Out	Heard only	-	-
6	08/01/2019	-	-	Golden Plover_GP	1	13:05	Out	Heard only	-	-
1	29/03/2019	-	-	Golden Plover_GP	-	09:26	In	Heard only	-	-

VP	Date	Observation No.	FL	Species	Species Quantity	Start Time	Inside/ Outside Buffer	Duration	Flightline Map	Flightline No.
4	14/01/2019	-	-	Golden Plover_GP	-	10:47	-	Heard only	-	-
4	14/01/2019	-	-	Golden Plover_GP	-	11:54	-	Heard only	-	-
5	04/02/2019	-	-	Golden Plover_GP	-	14:33	-	Heard only	-	-
1	20/12/2018	2	2	Golden Plover_GP	30	15:33	In	25	2-8-B-2	1
1	15/02/2019	1	1	Golden Plover_GP	12	10:05	In	25	2-8-B-2	2
1	04/03/2019	1	1	Golden Plover_GP	28	12:03	In	300	2-8-B-2	3
1	04/03/2019	1	1	Golden Plover_GP	28	12:08	In	240	2-8-B-2	3
1	04/03/2019	2	2	Golden Plover_GP	20	12:12	In	10	2-8-B-2	4
1	04/03/2019	2	2	Golden Plover_GP	20	12:12	In	1,680	2-8-B-2	4
1	04/03/2019	1	1	Golden Plover_GP	28	12:12	In	1,680	2-8-B-2	5
1	04/03/2019	3	3	Golden Plover_GP	20	12:40	In	5	2-8-B-2	6
1	04/03/2019	3	3	Golden Plover_GP	48	12:40	In	5	2-8-B-2	6
1	04/03/2019	4	4	Golden Plover_GP	48	13:12	In	25	2-8-B-2	7
1	04/03/2019	5	5	Golden Plover_GP	48	13:13	In	35	2-8-B-2	8
1	04/03/2019	5	5	Golden Plover_GP	48	13:13	Out	5	2-8-B-2	8
1	04/03/2019	6	6	Golden Plover_GP	48	13:29	In	20	2-8-B-2	9
1	04/03/2019	6	6	Golden Plover_GP	48	13:29	Out	40	2-8-B-2	9
2	14/02/2019	-	-	Golden Plover_GP	-	12:00	In	Heard only	-	-
7	26/02/2019	1	1	Golden Plover_GP	26	13:52	In	25	2-8-D-4	8
7	26/02/2019	2	2	Golden Plover_GP	48	14:08	In	40	2-8-D-4	9
9	13/02/2019	-	-	Golden Plover_GP	1	10:10	Out	Heard only	-	-
6	20/03/2019	5	5	Great black-backed Gull_GB	2	14:28	Out	10	2-8-D-5	1
6	20/03/2019	5	5	Great black-backed Gull_GB	2	14:28	In	30	2-8-D-5	1
2	16/01/2019	1	1	Grey Plover_GV	30	09:59	In	28	2-8-B-3	1
2	16/01/2019	1	1	Grey Plover_GV	30	09:59	Out	2	2-8-B-3	1

VP	Date	Observation No.	FL	Species	Species Quantity	Start Time	Inside/ Outside Buffer	Duration	Flightline Map	Flightline No.
2	17/10/2018	1	1	Hen Harrier_HH	1	13:59	In	5	2-8-B-4	1
3	11/10/2018	1	1	Hen Harrier_HH	1	14:15	In	20	2-8-B-4	2
7	16/01/2019	1	1	Hen Harrier_HH	1	09:10	In	20	2-8-D-6	2
7	16/01/2019	3	3	Hen Harrier_HH	1	09:12	In	20	2-8-D-6	1
2	16/01/2019	2	2	Hen Harrier_HH	1	10:07	In	5	2-8-B-4	3
9	11/03/2019	2	2	HerringGull_HG	2	13:44	In	110	2-8-D-7	1
9	11/03/2019	2	2	HerringGull_HG	2	13:44	Out	10	2-8-D-7	1
1	30/11/2018	-	-	Hooded Crow_HC	2	13:11	In	36	-	-
1	26/09/2018	1	1	Kestrel_K.	1	13:46	In	7	2-8-A-3	10
1	26/09/2018	2	2	Kestrel_K.	1	14:28	In	11	2-8-A-3	11
1	26/09/2018	3	3	Kestrel_K.	1	14:29	In	12	2-8-A-3	12
6	08/01/2019	3	3	Kestrel_K.	1	11:01	In	5	2-8-D-8	3
1	18/10/2018	1	1	Kestrel_K.	1	14:02	In	150	2-8-B-5	1
1	18/10/2018	2	2	Kestrel_K.	1	14:14	In	480	2-8-B-5	2
3	11/10/2018	2	2	Kestrel_K.	1	15:58	In	289	2-8-B-5	3
3	15/11/2018	1	1	Kestrel_K.	1	12:24	Out	5	2-8-B-5	4
6	12/12/2018	3	3	Kestrel_K.	1	13:21	Out	25	2-8-D-8	1
6	08/01/2019	2	2	Kestrel_K.	1	10:46	Out	60	2-8-D-8	2
6	08/01/2019	2	2	Kestrel_K.	1	10:46	In	180	2-8-D-8	2
6	08/01/2019	4	4	Kestrel_K.	1	10:06	Out	30	2-8-D-8	4
3	12/02/2019	2	2	Kestrel_K.	1	13:13	In	25	2-8-B-5	5
3	05/03/2019	1	1	Kestrel_K.	1	09:49	In	5	2-8-B-5	6
8	17/10/2018	2	2	Meadow pipit_MP	1	10:33	Out	6	2-8-D-9	-
8	17/10/2018	3	3	Meadow pipit_MP	3	10:47	Out	4	2-8-D-9	-
8	17/10/2018	5	5	Meadow pipit_MP	2	12:03	Out	3	2-8-D-9	-
8	17/10/2018	1	N/A	Meadow pipit_MP	1	12:45	Out	300	2-8-D-9	-
8	17/10/2018	2	1	Meadow pipit_MP	1	13:15	Out	6	2-8-D-9	-
6	15/10/2018	1	1	Meadow pipit_MP	7	10:15	Out	5	2-8-D-9	-
6	15/10/2018	3	3	Meadow pipit_MP	4	10:39	Out	130	2-8-D-9	-

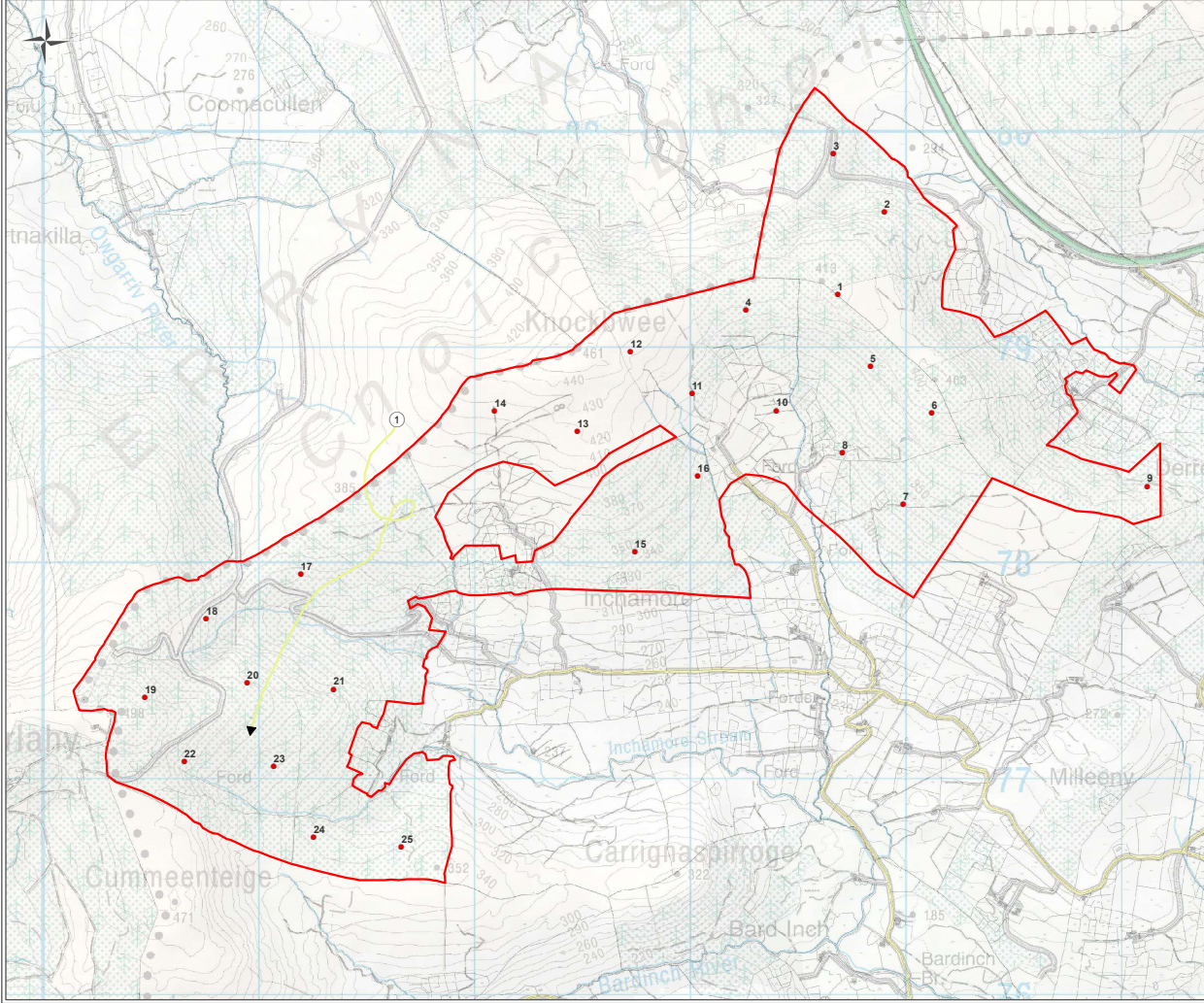
VP	Date	Observation No.	FL	Species	Species Quantity	Start Time	Inside/ Outside Buffer	Duration	Flightline Map	Flightline No.
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6	15/10/2018	5	5	Meadow pipit_MP	3	12:00	Out	10	2-8-D-9	-
6	15/10/2018	2	2	Meadow pipit_MP	2	13:45	Out	300	2-8-D-9	-
6	15/10/2018	3	3	Meadow pipit_MP	1	13:58	Out	20	2-8-D-9	-
6	15/10/2018	5	5	Meadow pipit_MP	1	14:20	Out	5	2-8-D-9	-
6	15/10/2018	6	6	Meadow pipit_MP	1	14:22	Out	5	2-8-D-9	-
6	15/10/2018	7	7	Meadow pipit_MP	1	15:04	Out	8	2-8-D-9	-
7	16/10/2018	1	1	Meadow pipit_MP	6	12:30	In	5	2-8-D-9	-
7	16/10/2018	3	3	Meadow pipit_MP	1	13:06	In	5	2-8-D-9	-
7	16/10/2018	4	4	Meadow pipit_MP	1	13:51	In	5	2-8-D-9	-
7	16/10/2018	1	2	Meadow pipit_MP	1	09:30	In	2	2-8-D-9	-
7	16/10/2018	2	2	Meadow pipit_MP	1	09:40	In	5	2-8-D-9	-
9	11/03/2019	1	1	Meadow pipit_MP	5	12:05	Out	5	2-8-D-9	-
2	16/01/2019	1	1	Meadow pipit_MP	1	13:25	In	5	2-8-B-6	1
3	08/01/2019	1	1	Meadow pipit_MP	13	09:54	In	4	2-8-B-6	2
3	08/01/2019	1	1	Meadow pipit_MP	13	09:54	Out	7	2-8-B-6	2
3	08/01/2019	2	2	Meadow pipit_MP	15	10:52	In	1	2-8-B-6	3
3	08/01/2019	2	2	Meadow pipit_MP	15	10:52	Out	8	2-8-B-6	3
3	12/02/2019	1	1	Meadow pipit_MP	1	12:55	In	27	2-8-B-6	4
8	10/12/2018	1	1	Merlin_ML	1	14:27	In	40	2-8-D-10	2
9	17/01/2019	1	1	Merlin_ML	1	15:01	Out	3	2-8-D-10	1
4	17/10/2018	2	2	Peregrine_PE	1	12:00	In	15	2-8-B-7	1
8	14/03/2019	1	1	Pheasant_PH	1	11:15	Out	5	2-8-D-11	1
6	15/10/2018	4	4	Raven_RN	1	14:09	Out	10	-	-
6	15/10/2018	1	1	Robin_R.	1	13:41	Out	10	2-8-D-12	1
4	30/11/2018	-	-	Rook_RO	1	11:51	In	30	-	-
8	20/11/2018	1	1	Snipe_SN	1	14:32	Out	4	2-8-D-13	3
2	16/11/2018	1	1	Snipe_SN	1	09:05	In	5	2-8-B-8	4
4	17/10/2018	1	1	Snipe_SN	1	09:25	In	6	2-8-B-8	3

VP	Date	Observation No.	FL	Species	Species Quantity	Start Time	Inside/ Outside Buffer	Duration	Flightline Map	Flightline No.
6	19/11/2018	1	1	Snipe_SN	4	13:16	Out	15	2-8-D-13	1
6	19/11/2018	2	2	Snipe_SN	1	13:38	Out	4	2-8-D-13	2
6	12/12/2018	1	1	Snipe_SN	2	09:25	Out	5	2-8-D-13	5
6	20/03/2019	1	1	Snipe_SN	3	11:15	Out	5	2-8-D-13	7
6	20/03/2019	3	3	Snipe_SN	1	12:53	Out	5	2-8-D-13	8
6	08/01/2019	1	1	Snipe_SN	1	10:15	Out	5	2-8-D-13	6
5	12/02/2019	1	1	Snipe_SN	1	15:19	In	5	2-8-D-13	4
1	20/12/2018	1	1	Snipe_SN	1	10:18	In	2	2-8-B-8	1
1	17/01/2019	1	1	Snipe_SN	1	13:20	In	3	2-8-B-8	2
6	15/10/2018	2	2	Sparrowhawk_SH	1	10:28	Out	20	2-8-D-14	1
5	04/02/2019	1	1	Sparrowhawk_SH	1	16:13	Out	5	2-8-D-14	2
5	04/02/2019	1	1	Sparrowhawk_SH	1	16:13	In	5	2-8-D-14	2
8	17/10/2018	1	1	Starling_SG	16	09:42	Out	120	2-8-D-15	1
8	17/10/2018	4	4	Starling_SG	5	11:00	Out	3	2-8-D-15	2
8	10/01/2019	1	1	Starling_SG	200	12:00	Out	30	2-8-D-15	3
8	10/01/2019	2	2	Starling_SG	200	13:50	Out	30	2-8-D-15	4
8	10/01/2019	-	-	Starling_SG	200	13:51	Out	-	-	-
2	18/12/2018	3	3	White-tailed Eagle_WE	1	13:32	In	45	2-8-B-9	1
2	18/12/2018	3	3	White-tailed Eagle_WE	1	13:32	Out	15	2-8-B-9	1
9	13/02/2019	1	1	White-tailed Eagle_WE	1	13:11	In	180	2-8-D-16	1
9	13/02/2019	2	2	White-tailed Eagle_WE	1	15:55	In	120	2-8-D-16	2
1	30/11/2018	-	-	Woodpigeon_WP	1	15:18	In	12	-	-

Appendix 4

Figures

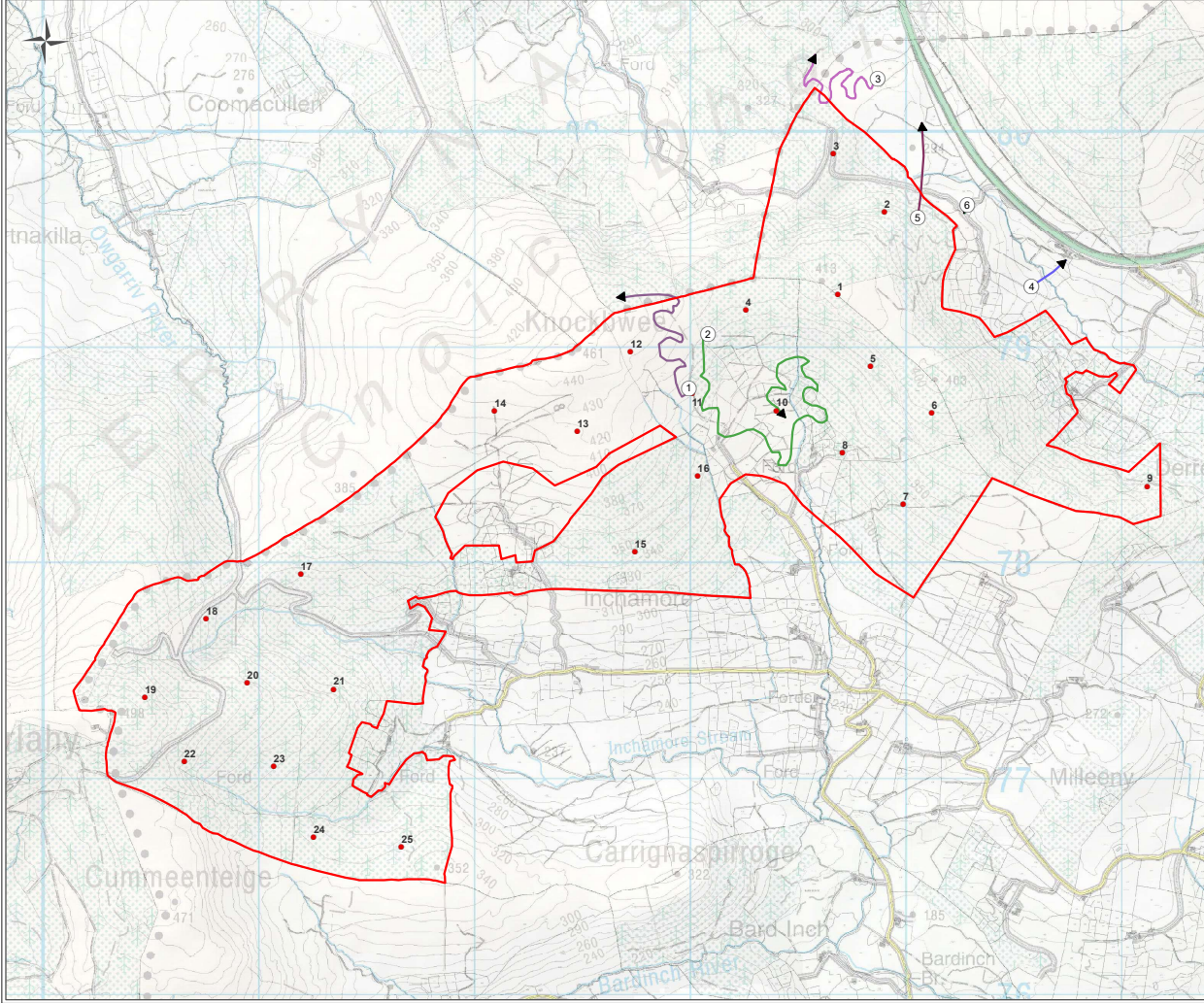




- Legend**
- Indicative Turbine Locations
 - ▭ Site Boundary
 - ID, Species, Date
 - ▶ 1, Grey Plover (GV), 16/01/2019

Figure Title	Flightlines Inchamore Winter 2018/19		
Figure No.	2.8 B3		
Project	Ornithological Survey at Inchamore/Gortyrallyilly Wind Farm (Year 2)		
Client	SSE Renewables		
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Revision	A	Date	15/04/2019
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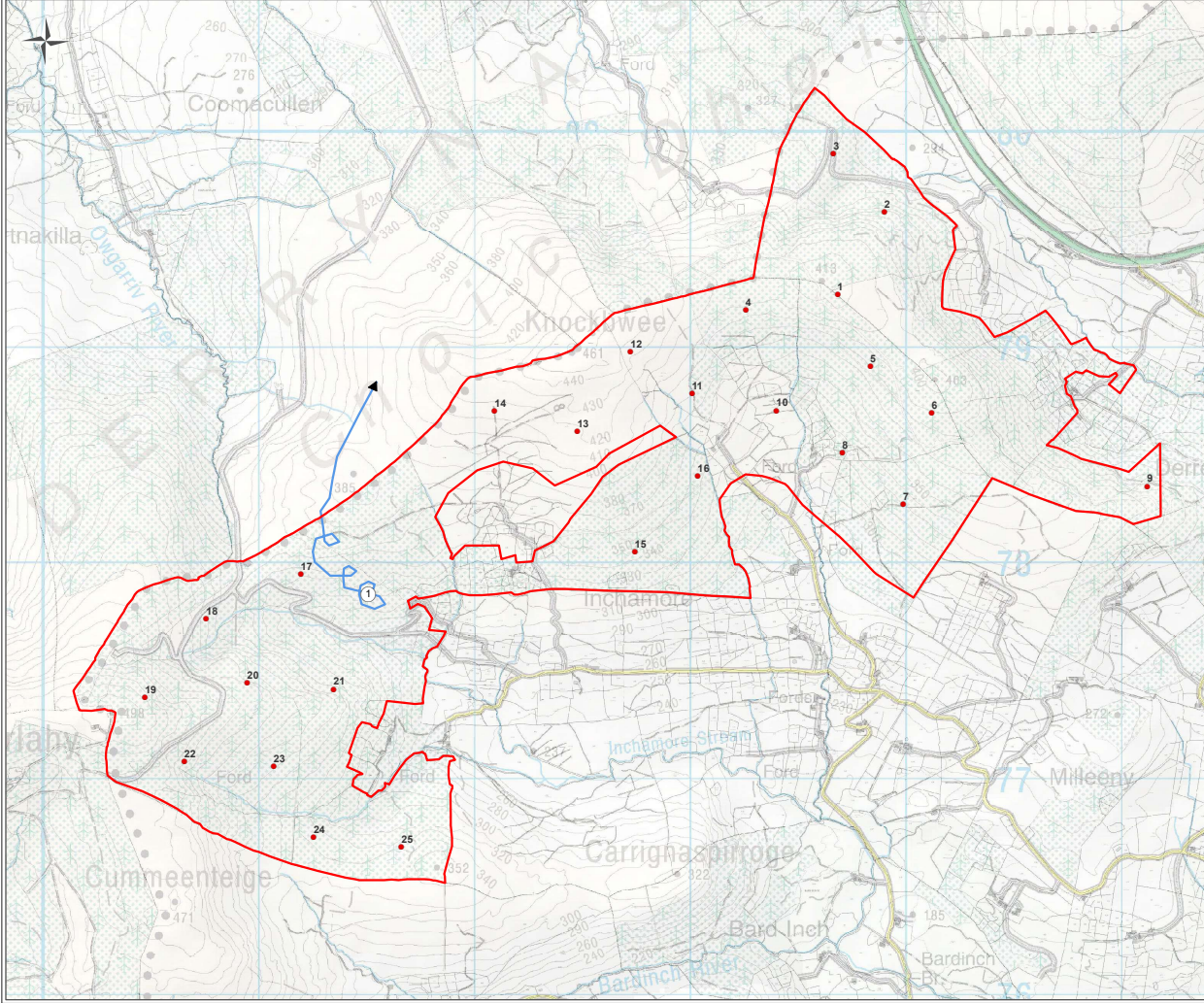


Legend

- Indicative Turbine Locations
- ▭ Site Boundary
- ID, Species, Date
- 6, Kestrel (K.), 05/03/2019
- 5, Kestrel (K.), 12/02/2019
- 4, Kestrel (K.), 15/11/2018
- 3, Kestrel (K.), 11/10/2018
- 2, Kestrel (K.), 18/10/2018
- 1, Kestrel (K.), 18/10/2018

Figure Title	Flightlines Inchmore Winter 2018/19		
Figure No.	2.8 B5		
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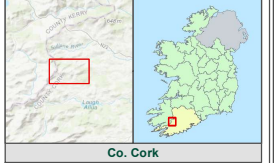
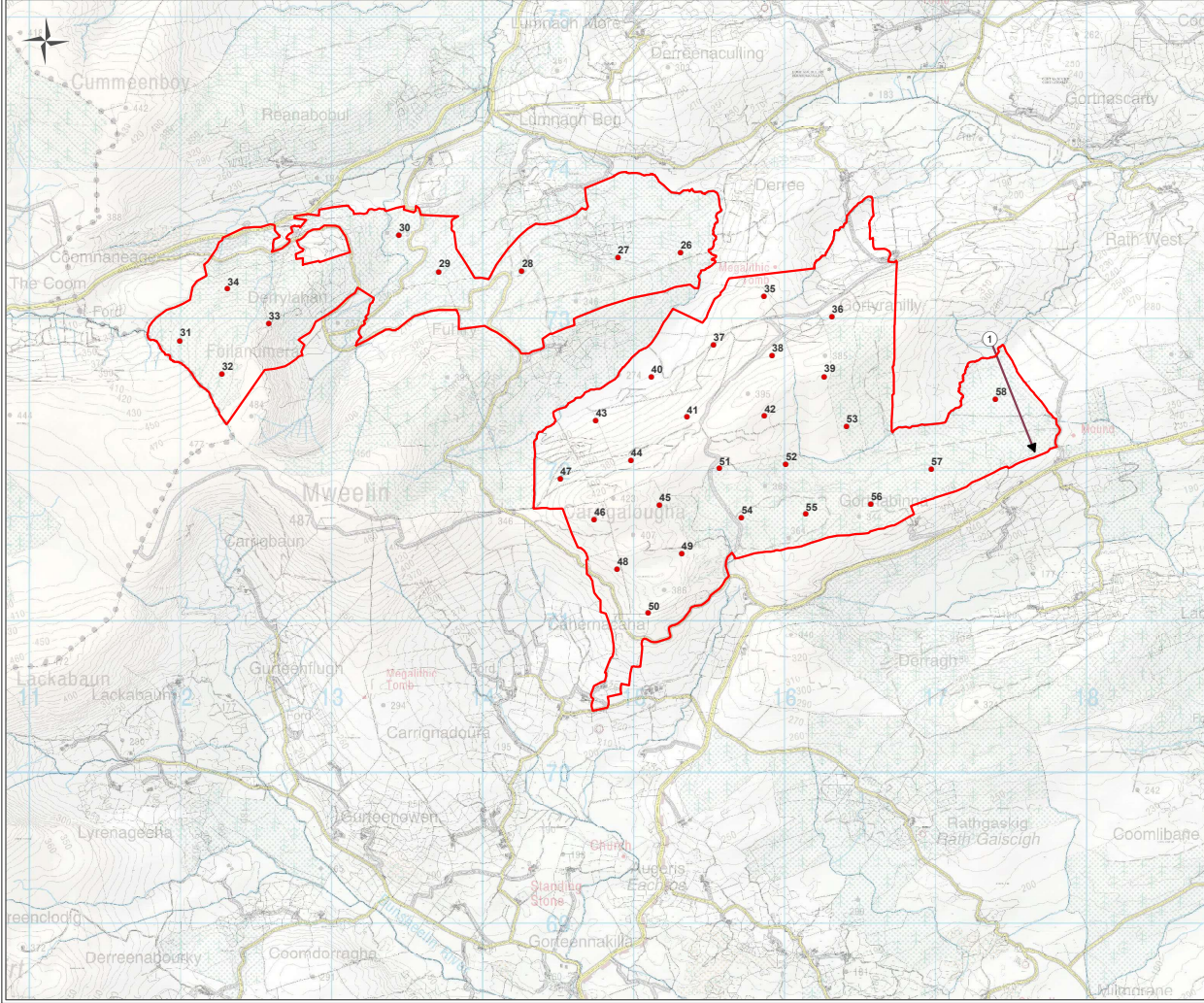




- Legend**
- Indicative Turbine Locations
 - ▭ Site Boundary
 - ID, Species, Date
 - ➔ 1, White-tailed Eagle (WE), 19/12/2018

Figure Title	Flightlines Inchamore Winter 2018/19		
Figure No.	2.8 B9		
Project	Ornithological Survey at Inchamore/Gortyrallyilly Wind Farm (Year 2)		
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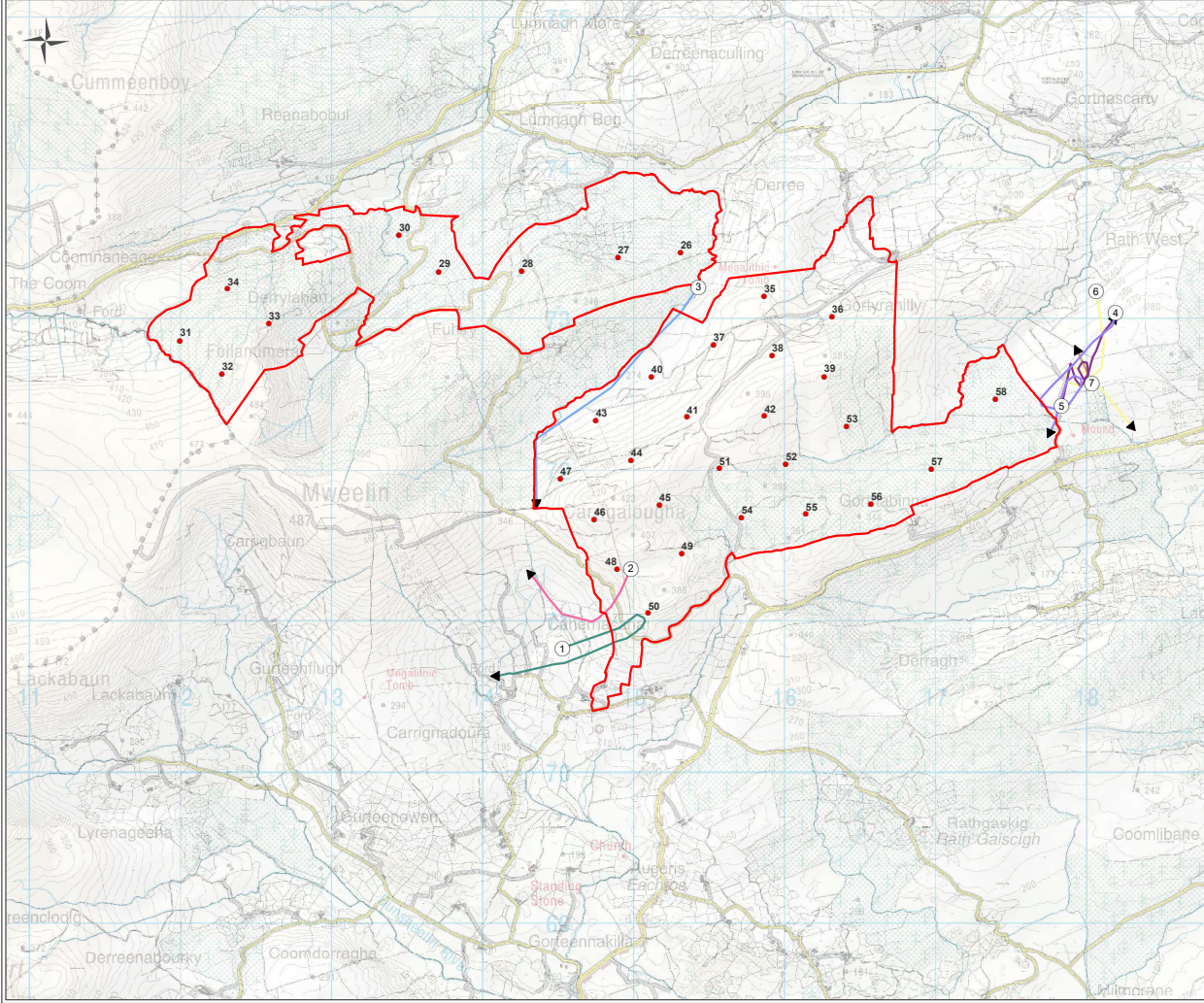




- Legend**
- Indicative Turbine Locations
 - ▭ Site Boundary
 - ID, Species, Date*
 - ➔ 1, Glaucous Gull (LX), 04/07/2018

Figure Title	Flightlines Gortyrallyl Summer 2018
Figure No.	2.8 C1
Project	Ornithological Survey at Inchamore/Gortyrallyl Wind Farm (Year 2)
Client	SSE Renewables
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Date	15/04/2019
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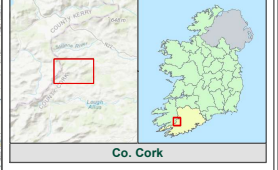
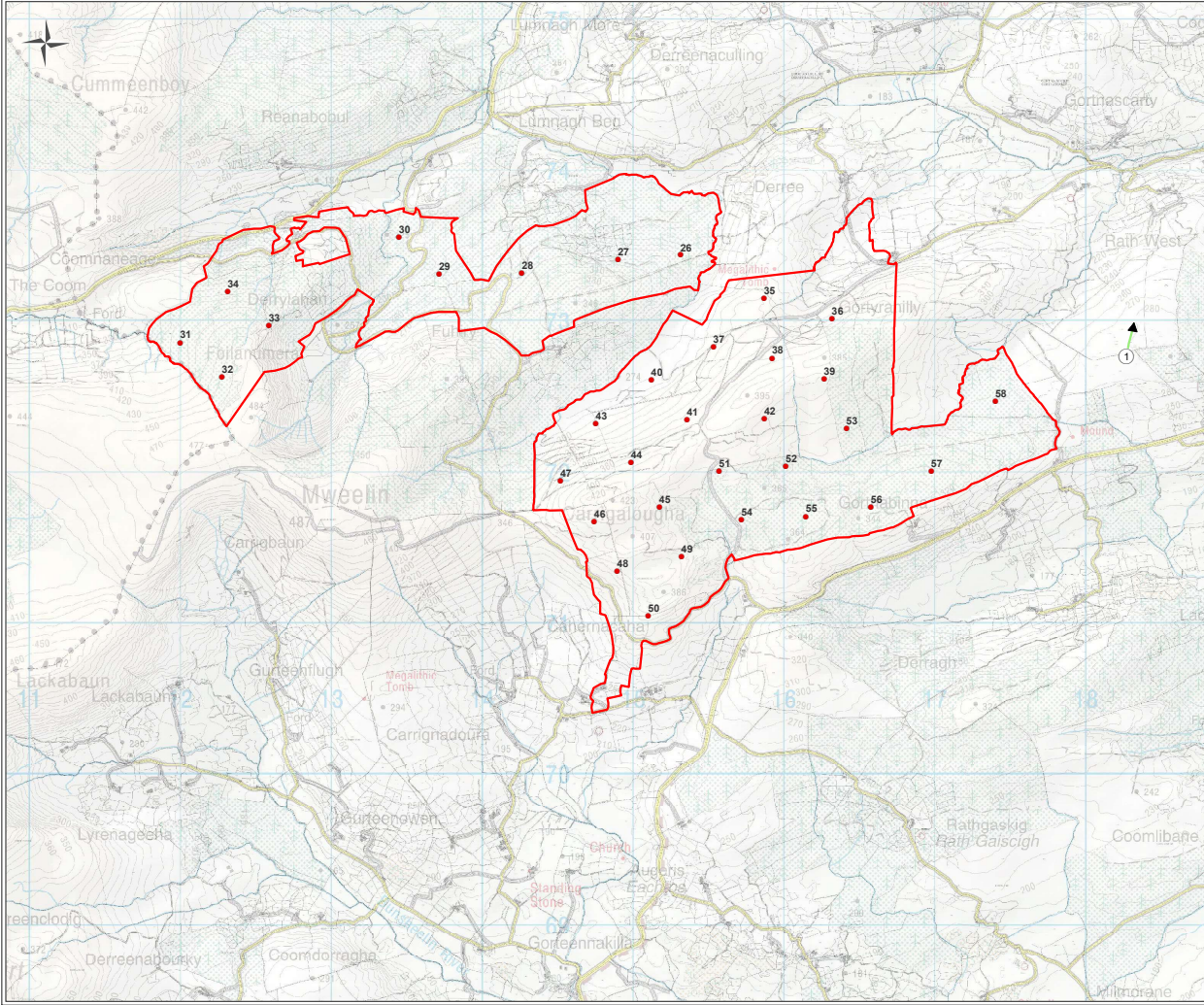


Legend

- Indicative Turbine Locations
- ▭ Site Boundary
- ID, Species, Date*
- 1, Merlin (ML), 19/06/2018
- 2, Merlin (ML), 19/06/2018
- 3, Merlin (ML), 04/08/2018
- 4, Merlin (ML), 26/07/2018
- 5, Merlin (ML), 04/07/2018
- 6, Merlin (ML), 04/07/2018
- 7, Merlin (ML), 30/05/2018

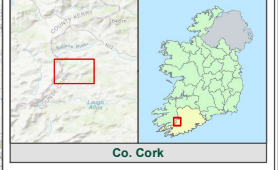
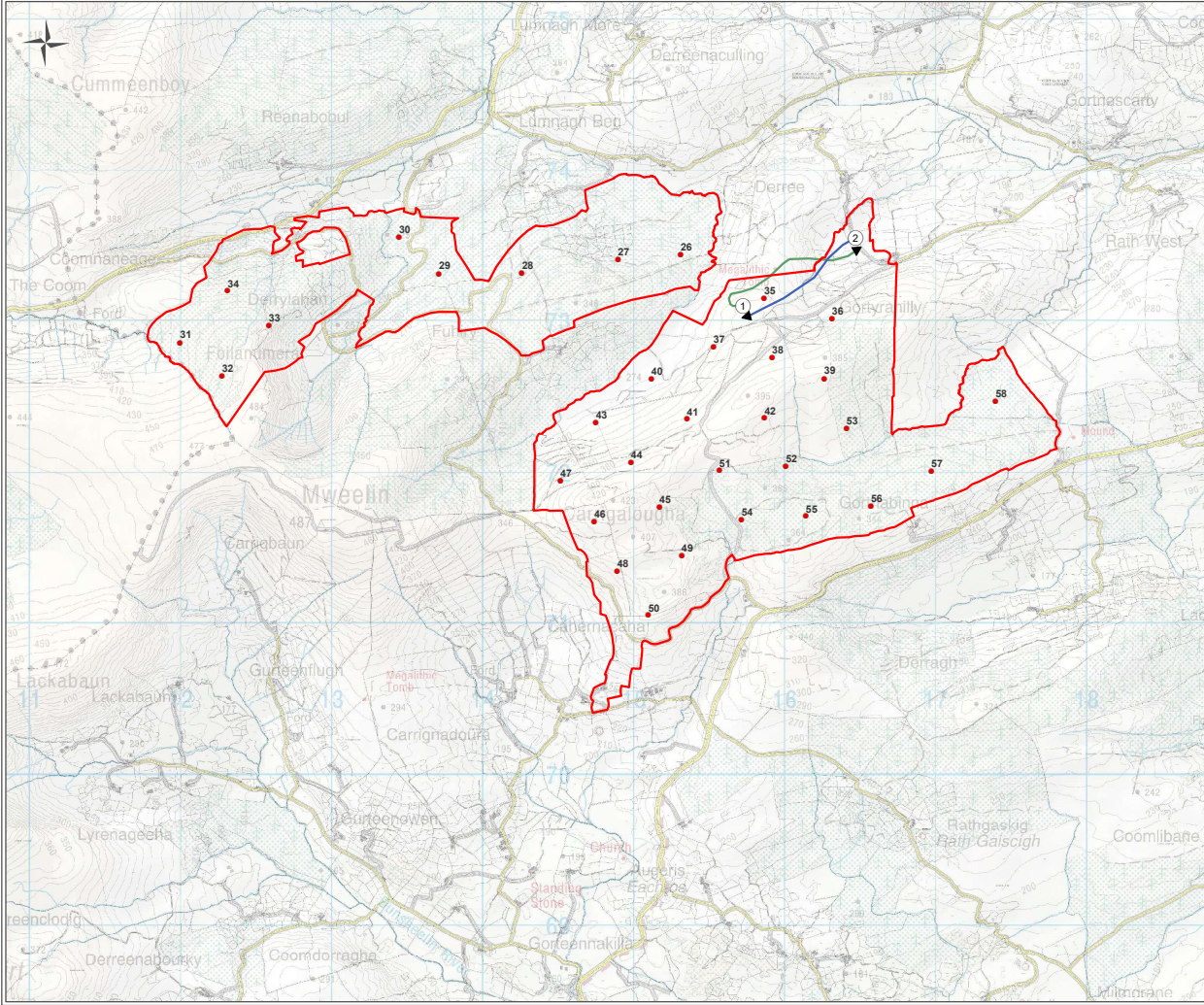
Figure Title	Flightlines Gortyrally Summer 2018
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Client	SSE Renewables
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Page Size	A3
Revision	A
Date	15/04/2019

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- Legend**
- Indicative Turbine Locations
 - Site Boundary
 - ID, Species, Date
 - 1, Unknown, 20/03/2019

Figure Title	Flightlines Gortyrallylly Winter 2018/19
Figure No.	2.8 D1
Project	Ornithological Survey at Inchamore/Gortyrallylly Wind Farm (Year 2)
Client	SSE Renewables
Scale	1:25,000
Page Size	A3
Revision	A
Date	15/04/2019
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Legend

- Indicative Turbine Locations
- Site Boundary
- ID, Species, Date*
- 2, Hen Harrier (HH), 16/01/2019
- 1, Hen Harrier (HH), 16/01/2019

Figure Title Flightlines Gortyrally Winter 2018/19

Figure No. 2.8 D6

Project Ornithological Survey at Inchamore/Gortyrally Wind Farm (Year 2)

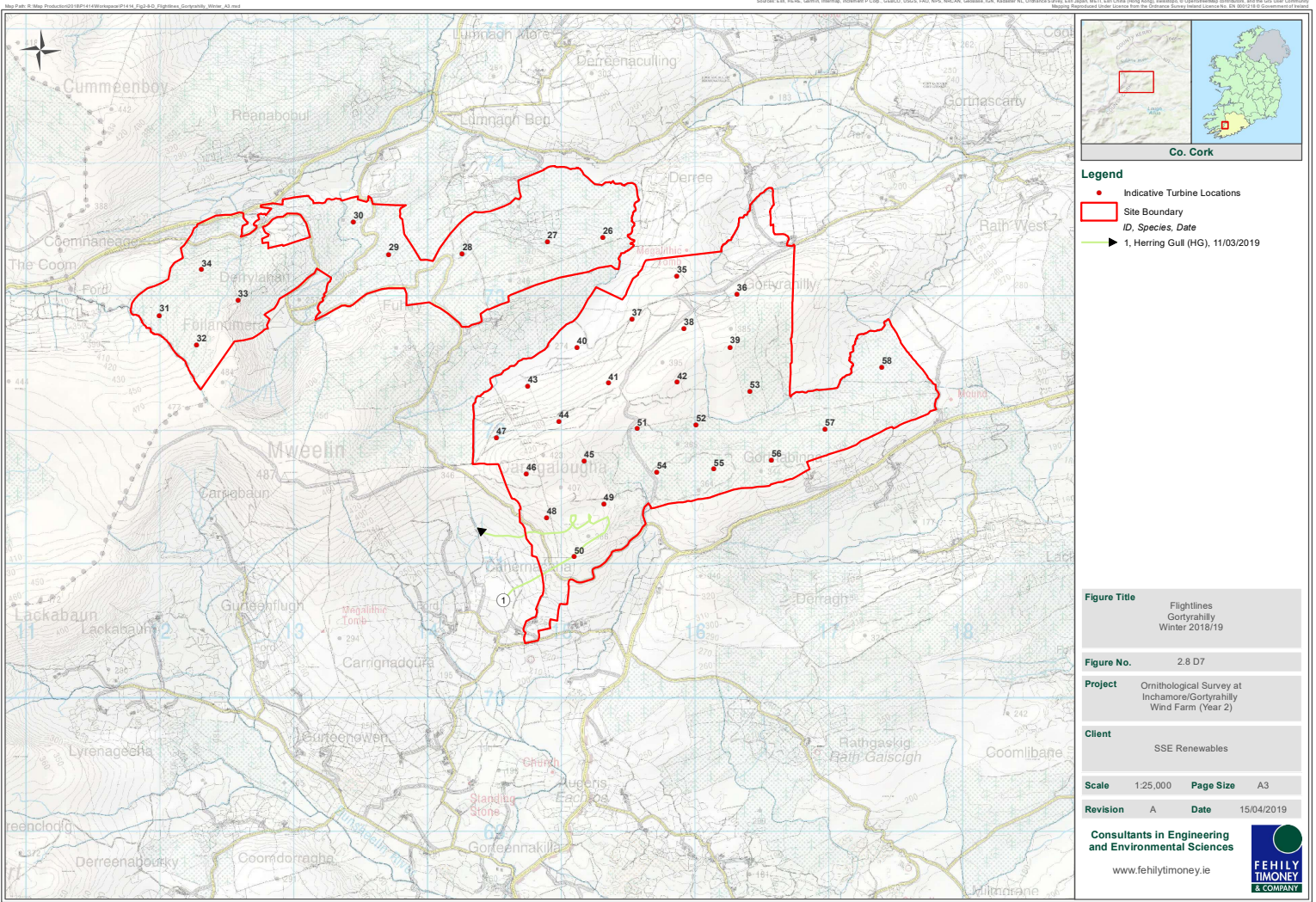
Client SSE Renewables

Scale 1:25,000 **Page Size** A3

Revision A **Date** 15/04/2019

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Map Path: R:\Map Producers\2018\1416\Waste\2018\1416_Eng.dwg, Flightlines, Gortyrachilly, Winter_A3.mxd


Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBC, IGN, Kataster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, © OpenStreetMap contributors, and the GIS User Community

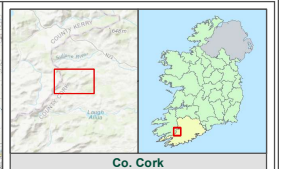
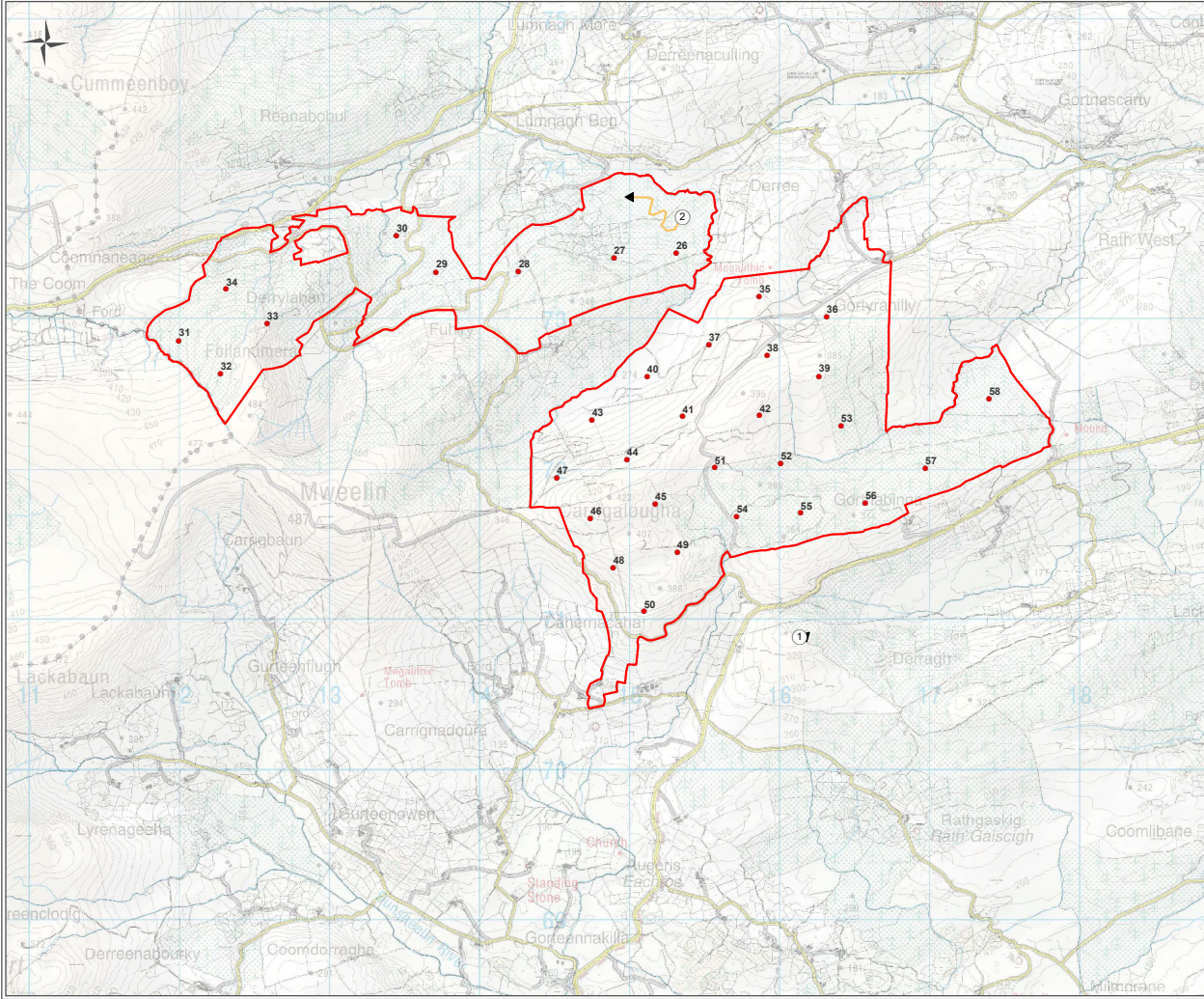
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- Legend**
- Indicative Turbine Locations
 - Site Boundary
 - ▶ ID, Species, Date
 - ▶ 1, Herring Gull (HG), 11/03/2019

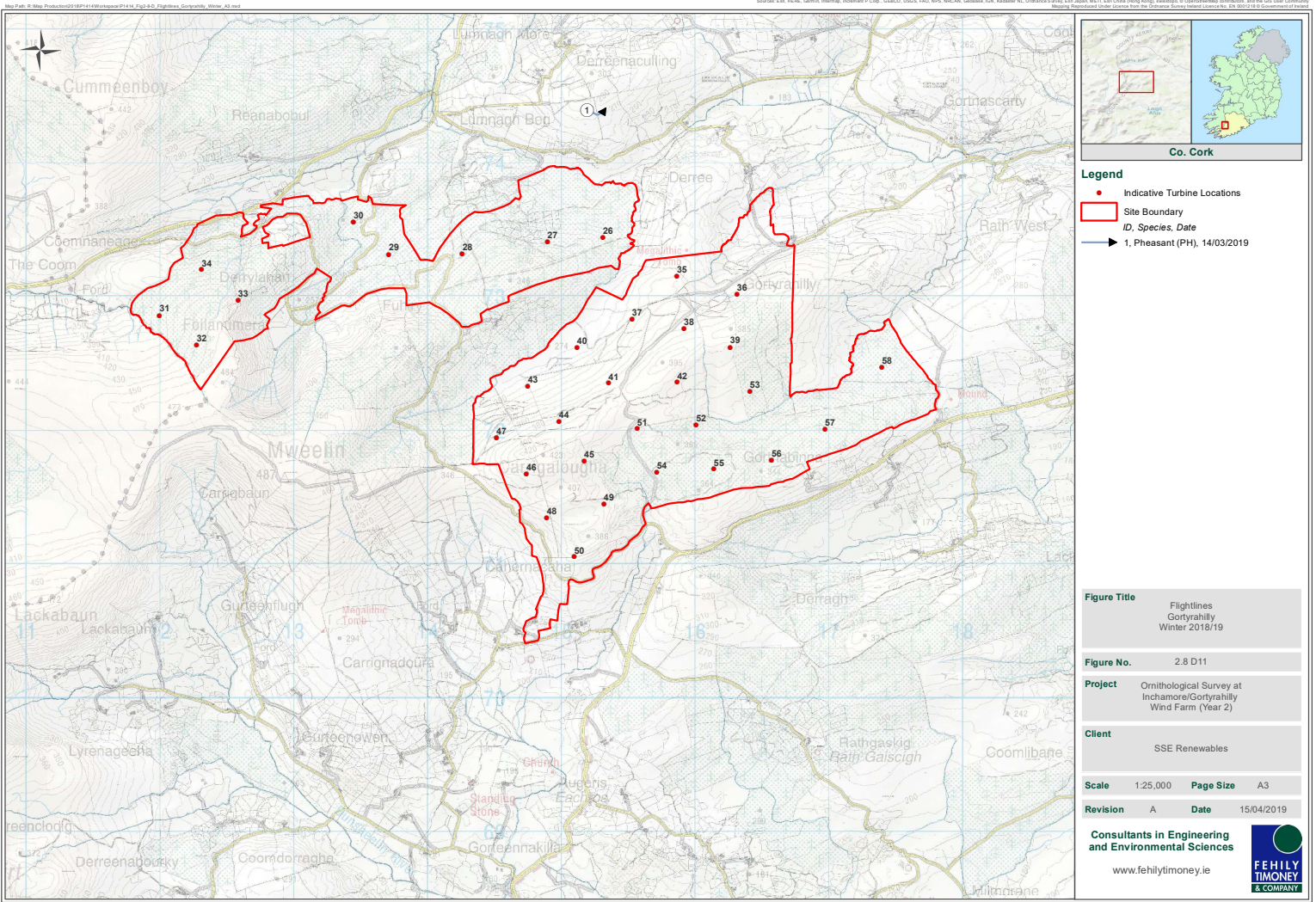
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Figure No.	2.8 D7
Project	Ornithological Survey at Inchamore/Gortyrachilly Wind Farm (Year 2)
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- Legend**
- Indicative Turbine Locations
 - ▭ Site Boundary
 - ID, Species, Date
 - 2, Merlin (ML), 10/12/2018
 - 1, Merlin (ML), 17/01/2019

Figure Title	Flightlines Gortyrally Winter 2018/19
Figure No.	2.8 D10
Project	Ornithological Survey at Inchamore/Gortyrally Wind Farm (Year 2)
Client	SSE Renewables
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Revision	A
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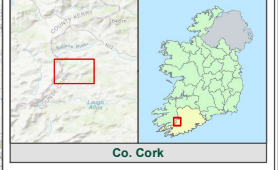
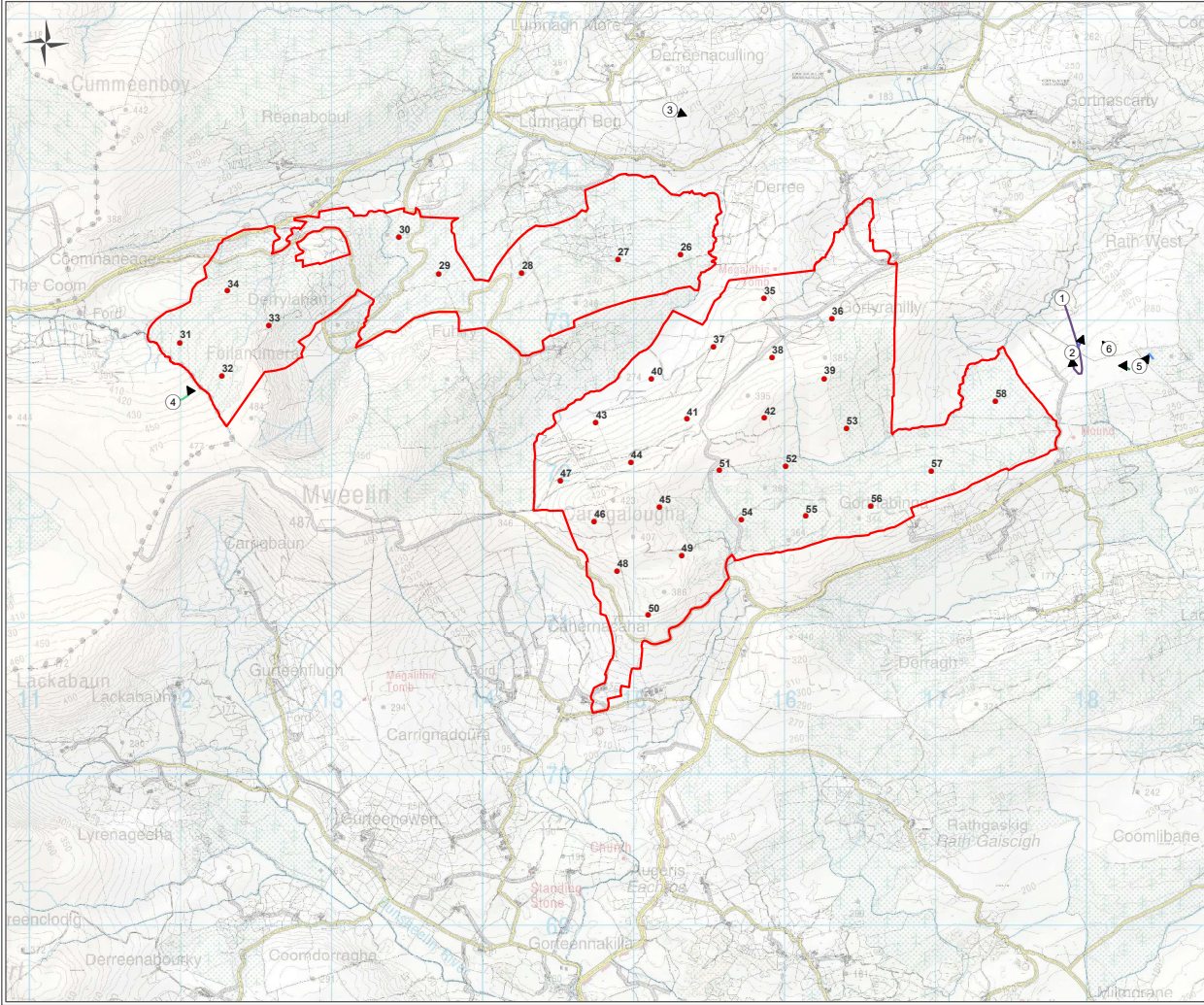


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 Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBC, IGN, Kataster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, © OpenStreetMap contributors, and the GIS User Community
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- Legend**
- Indicative Turbine Locations
 - ▭ Site Boundary
 - ID, Species, Date
 - 1, Pheasant (PH), 14/03/2019

Figure Title	Flightlines Gortyrähilly Winter 2018/19
Figure No.	2.8 D11
Project	Ornithological Survey at Inchamore/Gortyrähilly Wind Farm (Year 2)
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Legend

- Indicative Turbine Locations
- Site Boundary
- ID, Species, Date
- 8, Snipe (SN), 20/03/2019
- 7, Snipe (SN), 20/03/2019
- 6, Snipe (SN), 08/01/2019
- 5, Snipe (SN), 12/12/2018
- 4, Snipe (SN), 12/02/2019
- 3, Snipe (SN), 20/11/2018
- 2, Snipe (SN), 19/11/2018
- 1, Snipe (SN), 19/11/2018

Figure Title Flightlines Gortyrallyl Winter 2018/19

Figure No. 2.8 D13

Project Ornithological Survey at Inchamore/Gortyrallyl Wind Farm (Year 2)

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Appendix 5

Additional Bird Survey Data



Hinterland Survey Data 2018/19

Site	Location	Date	Observer	Start Time	Cloud	Visibility	Rain	Wind	Species	Species Quantity
Inchamore Gortyrahilly	Inchigeelagh	04/02/2019	LM	09:40	1/8	Excellent	None	F0-1 SW	Mute Swan	2
Inchamore Gortyrahilly	Inchigeelagh	04/02/2019	LM	09:40	1/8	Excellent	None	F0-1 SW	Little Egret	1
Inchamore Gortyrahilly	Inchigeelagh	04/02/2019	LM	09:40	1/8	Excellent	None	F0-1 SW	Moor Hen	1
Inchamore Gortyrahilly	Inchigeelagh	04/02/2019	LM	09:40	1/8	Excellent	None	F0-1 SW	Mallard	1
Inchamore Gortyrahilly	Lee Valley	04/02/2019	LM	09:40	1/8	Excellent	None	F0-1 SW	Mute Swan	11
Inchamore Gortyrahilly	Lee Valley	04/02/2019	LM	09:40	1/8	Excellent	None	F0-1 SW	Whooper Swan	69
Inchamore Gortyrahilly	Lee Valley	04/02/2019	LM	09:40	1/8	Excellent	None	F0-1 SW	Greylag Goose	46
Inchamore Gortyrahilly	Lough Allua	04/02/2019	LM	09:40	1/8	Excellent	None	F0-1 SW	Mute Swan	2
Inchamore Gortyrahilly	Lough Allua	04/02/2019	LM	09:40	1/8	Excellent	None	F0-1 SW	Whooper Swan	10
Inchamore Gortyrahilly	Lough Allua	04/02/2019	LM	09:40	1/8	Excellent	None	F0-1 SW	Cormorant	5
Inchamore Gortyrahilly	Lough Allua	04/02/2019	LM	09:40	1/8	Excellent	None	F0-1 SW	Mallard	5
Inchamore Gortyrahilly	Gearagh	01/02/2019	LM + JD	14:30	4/8	Good	Light rain	F2	Teal	24
Inchamore Gortyrahilly	Gearagh	01/02/2019	LM + JD	14:30	4/8	Good	Light rain	F2	Long-tailed tit	1
Inchamore Gortyrahilly	Gearagh	01/02/2019	LM + JD	14:30	4/8	Good	Light rain	F2	Wigeon	12
Inchamore Gortyrahilly	Gearagh	01/02/2019	LM + JD	14:30	4/8	Good	Light rain	F2	Greylag Goose	1
Inchamore Gortyrahilly	Gearagh	01/02/2019	LM + JD	14:30	4/8	Good	Light rain	F2	Mute Swan	1
Inchamore Gortyrahilly	Gearagh	01/02/2019	LM + JD	14:30	4/8	Good	Light rain	F2	Gull sp.	1
Inchamore Gortyrahilly	Gearagh	01/02/2019	LM + JD	14:30	4/8	Good	Light rain	F2	Mallard	2

Site	Location	Date	Observer	Start Time	Cloud	Visibility	Rain	Wind	Species	Species Quantity
Inchamore Gortyrhillly	Gearagh	01/02/2019	LM + JD	14:30	4/8	Good	Light rain	F2	Snipe	1
Inchamore Gortyrhillly	Gearagh	01/02/2019	LM + JD	14:30	4/8	Good	Light rain	F2	Grey Herron	1
Inchamore Gortyrhillly	Gearagh	01/02/2019	LM + JD	14:30	4/8	Good	Light rain	F2	Cormorant	1
Inchamore Gortyrhillly	Sillahtane WFE	04/02/2019	LM	10:40	1/8	Excellent	None	F0-1 SW	N/A	-
Inchamore Gortyrhillly	Lough Nabuddoga	04/02/2019	LM	10:40	1/8	Excellent	None	F0-1 SW	N/A	-
Inchamore Gortyrhillly	Sillahtane WFE	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Snipe	1
Inchamore Gortyrhillly	Lough Allua	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Cormorant	1
Inchamore Gortyrhillly	Lough Allua	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Mute Swan	2
Inchamore Gortyrhillly	Lough Allua	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Mallard	4
Inchamore Gortyrhillly	Lough Allua	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Whooper Swan	10
Inchamore Gortyrhillly	Inchigeelagh	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Mallard	1
Inchamore Gortyrhillly	Inchigeelagh	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Moor Hen	1
Inchamore Gortyrhillly	Lee Valley	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Mute Swan	25
Inchamore Gortyrhillly	Lee Valley	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Whooper Swan	55
Inchamore Gortyrhillly	Lee Valley	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Greylag Goose	22
Inchamore Gortyrhillly	Gearagh	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Whooper Swan	2
Inchamore Gortyrhillly	Gearagh	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Mallard	11
Inchamore Gortyrhillly	Gearagh	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Mute Swan	3
Inchamore Gortyrhillly	Gearagh	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Cormorant	2

Site	Location	Date	Observer	Start Time	Cloud	Visibility	Rain	Wind	Species	Species Quantity
Inchamore Gortyrahilly	Gearagh	15/02/2019	LM	11:35	8/8	Excellent	None	F3 S	Black-headed Gull	6
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Cormorant	5
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Mallard	17
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Great Black-backed Gull	2
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Teal	37
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Golden Plover	1
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Swan Sp. (too far)	1
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Grey Herron	5
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Grey wagtail	2
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Sparrowhawk	1
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Starling	30
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Whooper Swan	18
Inchamore Gortyrahilly	Gearagh	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Greylag Goose	19
Inchamore Gortyrahilly	Lee Valley	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Mute Swan	2
Inchamore Gortyrahilly	Lee Valley	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Black-headed Gull	50
Inchamore Gortyrahilly	Lee Valley	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Whooper Swan	64
Inchamore Gortyrahilly	Lee Valley	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Grey Herron	1
Inchamore Gortyrahilly	Lough Allua	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Mallard	12
Inchamore Gortyrahilly	Lough Allua	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Whooper Swan	5

Site	Location	Date	Observer	Start Time	Cloud	Visibility	Rain	Wind	Species	Species Quantity
Inchamore Gortyrhillly	Lough Allua	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Teal	3
Inchamore Gortyrhillly	Lough Allua	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Cormorant	3
Inchamore Gortyrhillly	Lough Allua	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	Grey Herron	2
Inchamore Gortyrhillly	Sillahtane WFE	06/03/2019	LM	10:44	8/8	OK	Light rain	F3	N/A	-
Inchamore Gortyrhillly	Sillahtane WFE	26/04/2018	JA	-	0/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Lough Nabuddoga	26/04/2018	JA	-	0/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Grousmont	26/04/2018	JA	-	0/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Sillahtane WFE	24th May 2018	JA	-	0/8	Good	None	F1	WE	1
Inchamore Gortyrhillly	Lough Nabuddoga	24th May 2018	JA	-	0/8	Good	None	F3	N/A	-
Inchamore Gortyrhillly	Grousmont	24th May 2018	JA	-	0/8	Good	None	F3	N/A	-
Inchamore Gortyrhillly	Lough Allua	24th May 2018	JA	-	0/8	Good	None	F3	N/A	-
Inchamore Gortyrhillly	Inchigeelagh	24th May 2018	JA	-	0/8	Good	None	F3	N/A	-
Inchamore Gortyrhillly	Gearagh	24th May 2018	JA	-	0/8	Good	None	F3	N/A	-
Inchamore Gortyrhillly	Sillahtane WFE	10/05/2018	JA	-	0/8	Good	None	F3	WE	1
Inchamore Gortyrhillly	Sillahtane WFE	10/05/2018	JA	-	0/8	Good	None	F3	WE	1
Inchamore Gortyrhillly	Lough Nabuddoga	10/05/2018	JA	-	0/8	Good	None	F3	N/A	-
Inchamore Gortyrhillly	Grousmont	10/05/2018	JA	-	0/8	Good	None	F3	N/A	-
Inchamore Gortyrhillly	Lough Allua	10/05/2018	JA	-	0/8	Good	None	F3	N/A	-
Inchamore Gortyrhillly	Inchigeelagh	10/05/2018	JA	-	0/8	Good	None	F3	N/A	-

Site	Location	Date	Observer	Start Time	Cloud	Visibility	Rain	Wind	Species	Species Quantity
Inchamore Gortyrhillly	Gearagh	10/05/2018	JA	-	0/8	Good	None	F3	N/A	-
Inchamore Gortyrhillly	Sillahtane WFE	22/08/2018	JA	-	5/8	OK	Slight	F3	WE	1
Inchamore Gortyrhillly	Lough Nabuddoga	22/08/2018	JA	-	5/8-	OK	Slight	F3	N/A	-
Inchamore Gortyrhillly	Grousmont	22/08/2018	JA	-	5/8-	OK	Slight	F3	N/A	-
Inchamore Gortyrhillly	Lough Allua	22/08/2018	JA	-	5/8-	OK	Slight	F3	N/A	-
Inchamore Gortyrhillly	Inchigeelagh	22/08/2018	JA	-	5/8-	OK	Slight	F3	N/A	-
Inchamore Gortyrhillly	Gearagh	22/08/2018	JA	-	5/8-	OK	Slight	F3	N/A	-
Inchamore Gortyrhillly	Sillahtane WFE	13/09/2018	JA	-	0/8	Good	None	F2	WE	1
Inchamore Gortyrhillly	Lough Nabuddoga	13/09/2018	JA	-	0/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Grousmont	13/09/2018	JA	-	0/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Lough Allua	13/09/2018	JA	-	0/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Inchigeelagh	13/09/2018	JA	-	0/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Gearagh	13/09/2018	JA	-	0/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Sillahtane WFE	11/07/2018	JA	-	1/8	Good	None	F2	WE	1
Inchamore Gortyrhillly	Lough Nabuddoga	11/07/2018	JA	-	1/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Grousmont	11/07/2018	JA	-	1/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Lough Allua	11/07/2018	JA	-	1/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Inchigeelagh	11/07/2018	JA	-	1/8	Good	None	F2	N/A	-
Inchamore Gortyrhillly	Gearagh	11/07/2018	JA	-	1/8	Good	None	F2	N/A	-

Site	Location	Date	Observer	Start Time	Cloud	Visibility	Rain	Wind	Species	Species Quantity
Inchamore Gortyrhillly	Gearagh	26/11/2018	JA	-	8/8	Good-excellent	Occasional shower	F4-5 SE	Teal	8
Inchamore Gortyrhillly	Lee Valley	26/11/2018	JA	-	8/8	Good-excellent	Occasional shower	F4-5 SE	Whooper Swan	21
Inchamore Gortyrhillly	Coolea town	26/11/2018	JA	-	8/8	Good-excellent	Occasional shower	F4-5 SE	mallard	7
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Little Egret	3
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Lapwing	188
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Grey Heron	4
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Mute swan	4
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Cormorant	4
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Teal	87
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Coot	1
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Kingfisher	2
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Lesser black-backed Gull	9
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Curlew	1
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Black-headed gull	13
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	Snipe	1
Inchamore Gortyrhillly	Gearagh	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	mallard	4
Inchamore Gortyrhillly	Ballyvorney	18/10/2018	JA	-	8/8	Excellent	None	F1-2 SW	N/A Chough	-
Inchamore Gortyrhillly	Ballyvorney	26/11/2018	JA	-	8/8	Good-excellent	occasional shower	F4-5 SE	N/A Chough	-
Inchamore Gortyrhillly	Ballyvorney	26/04/2018	JA	-	8/8	Good-excellent	occasional shower	F4-5 SE	N/A Chough	-

Merlin Survey Data 2018

Site	Location Transect/ Square No.	Date	Observer	Start Time	Cloud	Visibility	Rain	Wind	Merlin	General Notes
Inchamore	13047/ 78511	28/04/2018	KW	06:30	0/8	Good	Dry	F2	No	Tree felling in progress
Inchamore	13176/ 78927	28/04/2018	KW	06:30	0/8	Good	Dry	F2	No	
Inchamore	13488/ 78865	28/04/2018	KW	06:30	0/8	Good	Dry	F2	No	
Inchamore	13505/ 788345	28/04/2018	KW	06:30	0/8	Good	Dry	F2	No	
Inchamore	13047/ 78511	11/05/2018	KW	06:30	0/8	Good	N/A	F3	No	
Inchamore	13176/ 78927	11/05/2018	KW	06:30	0/8	Good	N/A	F3	No	
Inchamore	13488/ 78865	11/05/2018	KW	06:30	0/8	Good	N/A	F3	No	
Inchamore	13505/ 788345	11/05/2018	KW	06:30	0/8	Good	N/A	F3	No	
Inchamore	13047/ 78511	21/06/2018	KW	08:15	0/8	Good	Dry	F2	No	
Inchamore	13176/ 78927	21/06/2018	KW	08:15	0/8	Good	Dry	F2	No	
Inchamore	13488/ 78865	21/06/2018	KW	08:15	0/8	Good	Dry	F2	No	
Inchamore	13505/ 788345	21/06/2018	KW	08:15	0/8	Good	Dry	F2	No	
Inchamore	13047/ 78511	07/08/2018	KW	08:15	3/8	Good	Dry	F3	No	
Inchamore	13176/ 78927	07/08/2018	KW	08:15	3/8	Good	Dry	F3	No	
Inchamore	13488/ 78865	07/08/2018	KW	08:15	3/8	Good	Dry	F3	No	
Inchamore	13505/ 788345	07/08/2018	KW	08:15	3/8	Good	Dry	F3	No	
Gortyrähilly	16262/ 72808	14/05/2018	JA	13:00	2/8, bright warm, sunny 15oC	Excellent	None	NE F4	No	Male K. hunting at centre of site, HC 2x, RN 9x, MT 2x, S. 3x, CH 8x, R. 6x, WW 1x SK 1x, No MP observed, No ML activity. Habitat excellent for breeding ML! Route was walked for 30m from forest edge, checking for nests. Forest edge was surveyed by stopping at intervals and checking for activity. In addition, outcropping was observed for nests, white was and remains of prey items/ pluckings posts. Fence lines were checked for plucking posts. No evidence of ML activity was observed, despite the area being

Site	Location Transect/ Square No.	Date	Observer	Start Time	Cloud	Visibility	Rain	Wind	Merlin	General Notes
										favourable for ML plenty of prey items. No old HC nests found.
Gortyrhilly	16262/ 72808	14/06/2018	JA	14:15	2/8, Humid sunny 18oC	Excellent	Nil	SW F3-4	N/A	Same route as May 14th. S. 5x, MP 4x, MT 2x, RN 8, HC 3x, CH 4x, No evidence of Merlin
Gortyrhilly	16262/ 72808	10/07/2018	JA	14:00	0/8	Excellent	Not indicated	SW F1-2	N/A	S. 4x, MT 8x, CH 4x, MP 7x, RN 6x, HC 2x, No signs of Merlin

Red Grouse Survey Data 2019

Transect No.	Grid Coordinates	Date	Start Time	Record number	Record Type	Transect # of record	Record details (Sex, ad/juv, behav, colour, pellet, old?)	Habitat (H%, hab, landuse, grid, damp, alt)	Non-grouse records
W1278	T1a, T1b, T2a, T2b	25/02/2019	12:00	1	Feathers	T1b	Feather blew away before collected	70%, raised bog, Stones around, wet, 410m ASL	S. flying and singing, Rn present
W1278	T1a, T1b, T2a, T2b	25/02/2019	12:00	2	Sighting	T1b	Unsexed adult, flying not calling, medium darkness	70%, raised bog, Stones around, wet, 440m ASL	S. flying and singing, Rn present
W1278	T1a, T1b, T2a, T2b	25/02/2019	12:00	3	Sighting	T1a	Male adult, flying not calling, medium darkness	70%, raised bog, Stones around, wet, 450m ASL	S. flying and singing, Rn present
W1278	T1a, T1b, T2a, T2b	25/02/2019	12:00	4	Sighting	T1b	Unsexed adult, flying not calling	70%, raised bog, Stones around, wet, 440m ASL	S. flying and singing, Rn present
W1278	T1a, T1b, T2a, T2b	25/02/2019	12:00	5	Call	T1a	-	70%, raised bog, Stones around, wet, 410m ASL	S. flying and singing, Rn present
W1076	T3a, T3b	27/02/2019	09:20	No Grouse Detected			-		
W1272	T6a, T6b	26/02/2019	11:30	1	Sighting	T6a	Male adult, flew off with no call	80%, upland heath, grazing sheep, exposed rock, wet, 460m asl	
W1272	T6a, T6b	26/02/2019	11:30	2	Droppings	T6a	pellets, fresh	80%, upland heath, grazing sheep, exposed rock, wet, 460m asl	
W1572	T5b, T5a, T4b, T4a	25/02/2019	14:30	1	Droppings	T4b	pellets, fresh	2%, agricultural grassland, sheep grazing, wet, some exposed rocks, 320m asl	
W1570	T7a, T7b	26/02/2019	09:30	No Grouse Detected			-		



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CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE &
PLANNING

INCHAMORE BIRD SURVEYS

**Baseline Ornithological Surveys - Inchamore
Wind Farm Summer 2020 and Winter
2020/2021**

Prepared for:

Inchamore Wind DAC



Date: March 2023

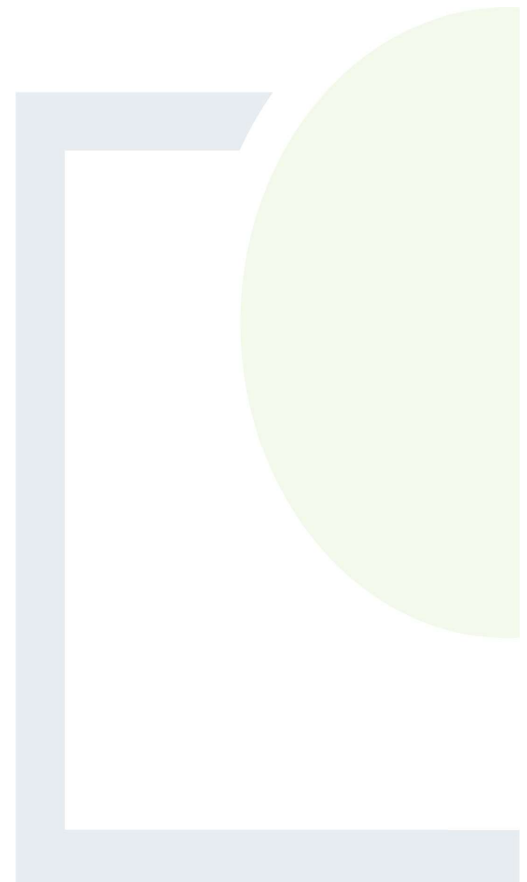
**NOTE: THIS REPORT CONTAINS SENSITIVE INFORMATION
ON LOCATIONS OF BREEDING ANNEX I BIRDS**

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Baseline Ornithological Surveys - Inchamore Wind Farm Summer 2020 and Winter 2020/2021

REVISION CONTROL TABLE, CLIENT, KEYWORDS AND ABSTRACT

User is responsible for Checking the Revision Status of This Document

Rev. No.	Description of Changes	Prepared by:	Checked by:	Approved by:	Date:
0	Issue to Client	KOR/SJ	JK	JH	08/03/2023

Client: Inchamore Wind DAC

Keywords: Baseline, Ornithological Surveys, Wind Farm, Inchamore

Abstract: This document comprises of year three baseline ornithological surveys at the proposed wind farm site at Inchamore, Co. Cork.

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1. INTRODUCTION

Fehily Timoney & Company (FT) undertake ornithological surveys at the proposed Inchamore wind farm in Co. Cork for Inchamore Wind DAC between 2020 to 2021 comprising one full year (summer 2020 to winter 2020/2021) of surveys. This report presents the results of the ornithological surveys and summarises the activity of specific target bird species during each survey period.

The assessment of bird activity within the site during the breeding and winter seasons was completed using vantage point survey watches. Surveys took place at four vantage point (VP) locations from May 2020 to February 2021 (inclusive). Six hours of surveying was completed at each VP for every survey round. Surveys followed Scottish Natural Heritage guidance (SNH, 2017).

Hinterland surveys were completed in potential favourable bird habitats within a 10 km radius of the proposed wind farm development. These surveys were used to assess species populations surrounding the proposed development site. Breeding bird surveys were completed along transects within the site.

1.1 Study Area

Inchamore is located along along Cork-Kerry border, an estimated 18km south-east of the town of Killarney and 5km west of the town of Ballyvourney. Surrounding habitats and land uses are described by Corine 2018 as 'Forest' and 'semi-natural areas with transitional woodland scrub and Conifer Plantation' (324 & 312), 'Peat bogs' (412), 'Land principally occupied by agriculture with significant areas of natural vegetation' (243) and 'Pastures' (231). Figure 2-1 displays the site location and survey area.

Protected European and national sites within the area include Sillahertane Bog NHA (Site Code: 001882), St. Gobnet's Wood pNHA & SAC (Site Code: 000106), Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment NHA & SAC & SPA (Site Code: 000365), Roughty River NHA (Site Code: 001376), Mullaghanish to Musheramore Mountains SPA (Site Code: 004162), Mullaghanish Bog SAC & NHA (Site Code: 001890), Kilgarvan Wood pNHA (Site Code: 001787), Kilgarvan Ice House SAC (Site Code: 000364), Ballagh Bog pNHA, Glanlough Woods SAC (Site Code: 002315) and the Gearagh SAC (Site Code: 000108).

Musheramore Mountains SPA (Site Code: 004162), located to the northeast of Inchamore, is designated for hen harrier (*Circus cyaneus*). During the latest national survey conducted in 2015, it was noted that there has been an 80% decline recorded in the Mullaghanish to Musheramore Mountains SPA since 2005. Five confirmed hen harrier territories were noted within the SPA during the 2005 national survey (Barton et al, 2006), two confirmed and one possible territory during the third national survey in 2010 (Ruddock et al, 2012) and only one confirmed hen harrier territory in 2015 (Ruddock et al, 2016). The Hen Harrier Programme – Hen Harrier Monitoring 2020² reported five confirmed breeding pair in this SPA. The site also supports a breeding population of Merlin. The site synopsis¹ states that '*the population size is not well known but is likely to be one or two pairs.*'

¹ NPWS (2012). *Site Synopsis for the Mullaghanish to Musheramore Mountains SPA (Site Code: 004162)*. published 25/01/2012

² The Hen Harrier Project EIP (2017–2022), funded by the Department of Agriculture, Food and the Marine (DAFM) under the European Innovation Partnership (EIP) for Agriculture Productivity and Sustainability (EIP-AGRI), is a results-based, locally-led scheme that has built strong partnerships with farmers and offers participants additional opportunities to earn an income from their land. The HHP specifically targets farmers with land in the six hen harrier SPAs to develop an effective model for the sustainable management of lands critical for breeding hen harrier.



2. SURVEY METHODOLOGY

The avian surveys carried out at the proposed wind farm used the methods described in Scottish Natural Heritage guidance (SNH, 2017). The following surveys were completed:

- Vantage point surveys (breeding and non-breeding season);
- Hinterland surveys (hen harrier winter roost; I-WeBS and geese/swan census; and breeding target species); and
- Breeding & winter bird transect surveys.

2.1 Vantage Point Surveys

VP surveys were carried out at the proposed Inchamore Wind Farm site from May 2020 to February 2021 during the non-breeding and breeding seasons, following the Scottish Natural Heritage Methodology for onshore wind farms (SNH, 2017). These surveys were divided into summer (May, June, and August 2020) winter (October and December 2020 and February 2021). Four fixed VP locations overlooking the study area were used during the VP surveys. VPs were chosen to cover a specific viewshed of the proposed development site. Each was chosen specifically to encompass the view of a 500 m circular buffer drawn around each of the proposed turbines (known as the 'flight activity survey area'), per SNH (2017) guidance.

The main purposes of VP survey watches are to collect data on target species that will enable estimates to be made of:

- a) The time spent flying over the defined survey area;
- b) The relative use of different parts of the defined survey area; and
- c) The proportion of flying time spent within the upper and lower height limits as determined by the rotor diameter and rotor hub height.

The specific vantage points and their viewsheds can be seen in Figure 2-2 below.

Vantage point locations were based on observations from walkover/reconnaissance surveys, viewshed analysis (using GIS) and collated information on known feeding and roosting sites from both desktop review and consultation. The number and location of vantage points was selected in order to achieve visibility of the entire flight activity survey area and important features for birds in close proximity to the site (e.g. lakes, wetlands).

In line with recommended best practice (SNH, 2017 and Band et al. 2007), viewshed analysis was undertaken using ARCMAP 10.3, to calculate a theoretical zone of visibility from each vantage point. Visibility is calculated from each vantage point along an invisible layer suspended at the predicted lowermost height passed through by the rotor blade tips, using an observer height of 1.5 m.



We note the following from SNH guidance in respect of priority areas for viewshed analysis (emphasis added):

“Where the key purpose is to estimate the risk of collision with turbines, it is the visibility of the airspace to be occupied by the turbine rotors (the collision risk volume) that is of prime importance. Therefore, it is recommended that visibility be calculated using the least visible part of this airspace, i.e. an imaginary layer suspended at the lowermost height passed through by the rotor blade tips (typically about 20-30 m above ground level). Predicting visibility at this level is a simple task using GIS. Being able to view all or most of the site to ground level can be helpful in gauging overall bird activity and usage of the site but is not as important as being able to view the collision risk volume.”

Following SNH guidance (2017), watches were conducted to sampling diurnal, crepuscular and nocturnal activity of target species, and exceeding the required effort from SNH.

The method of observing was via constant search effort, mostly through quality binoculars, or a telescope and a tripod used to scan the horizon back and forth in search of target species combined with short spells of eyeballing the foreground. In this way, smaller target species such as kestrel can be found and tracked up to the 2 km limit of each viewshed in most weather conditions. Dictaphones were utilised to dictate bird heights whilst tracking flight events.

Data recorded included flight activity of target species (flight height, duration, directionality), in addition to metrics such as flock size (per recorded transit) and time of observation. Detailed notes of each observation of a target bird species were recorded including behaviour, gender (where possible), numbers, flight height, associated habitat and the period spent within the study area. Successful foraging events were also noted if they arose. Other bird species seen or heard during the VP surveys were also recorded on a casual basis and were considered separately in the analysis as additional species. Flight activity was annotated onto field maps. Total numbers of birds present both on arrival at the vantage point and on departure was noted. Details of each flight-path observation are provided in Section 3.

When a flock of the same species were located, one individual within the flock was identified and tracked to record the times within each height band.

Flight heights are estimated visually as allowed for in SNH (2017) guidance. Flight height estimation using a clinometer or rangefinder is accepted as an alternative means of determining flight height; however, this is often not practicable (equipment may be clumsy and birds may be lost from view whilst trying to focus additional equipment on a target species rapidly moving out of sight). It should be noted that in practice many birds do not fly close enough to a surveyor for a rangefinder to be used, resulting in most flights heights being estimated in any case. An experienced surveyor was used, resulting in a more robust dataset.

As previously mentioned, VP surveys were carried out at the site from May 2020 to February 2021 and involved completing 6 hours per VP survey round. Surveys were carried out during May, June, August, October and December 2020 and February 2021.

A total of thirty hours of VP effort was carried out at each vantage point across the breeding and non-breeding survey periods. The proportion of survey time that activity was recorded inside and outside the wind farm site boundary was used as part of the overall analysis and assessment of target species usage of the study area. VP locations can be found in Table 2-1 below. All surveys were conducted during suitable weather conditions and a proportion of surveys spanned dawn and dusk periods.



Table 2-1: Grid References for VP locations at Inchamore Wind Farm

Vantage Point	Easting, Northing (ITM)
VP1	512600, 578973
VP2	512393, 578592
VP3	514385, 579799
VP4	510657, 576557

2.2 Hinterland Surveys (IWeBS, hen harrier winter roost and breeding target species)

Hinterland surveys were carried out between May 2020 and March 2021.

The surveys were conducted in suitable woodland and wetland habitats in the area surrounding the proposed wind farm site. These sites were chosen as they had suitable habitat for the following target species: raptors, waders, geese, swans and waterfowl.

For the winter IWeBS-style census surveys, this comprised of fifteen sites within 10 km of the proposed wind farm site. These sites included Ballyvourney North and South, Gearagh, Gortyrhilly, Gougane Barra, Grousemount, Inchigeelagh, Kilgarvan North, Lee Valley, Lough Allua, Lough Nabuddoga, Roughty River Sillahertane, and Toon Valley/Killeens. (see Figure 2-3). Hinterland IWeBS-style surveys were carried out following a ‘look-see’ methodology as outlined in BirdWatch Ireland/NPWS’s counter manual².

Details of hinterland survey locations and dates are shown below in Table 2-2 and Figure 2-3.

Table 2-2: Hinterland Survey Locations

Hinterland Site	Easting, Northing (ITM)	Dates visited
Ballyvourney North	520276 578290	28/05/2020, 30/06/2020, 26/08/2020, 20/10/2020, 13/11/2020, 5/12/2020, 8/01/2021, 2/02/2021, 11/3/2021
Ballyvourney South	513456 573844	20/10/2020
Gearagh	531400 570836	28/05/2020, 09/06/2020, 30/06/2020, 26/08/2020, 20/10/2020, 13/11/2020, 05/12/2020, 08/01/2021, 02/02/2021, 11/03/2021

² <https://birdwatchireland.ie/app/uploads/2019/03/IWeBS-Counter-Manual.pdf>. Accessed March 2023.

*Location approximate – hen harrier roost counts conducted at numerous points in vicinity – locations withheld due to sensitivity.



Hinterland Site	Easting, Northing (ITM)	Dates visited
Gortyrhilly*	517317 571249	13/11/2020, 05/12/2020, 08/01/2021, 02/02/2021, 11/03/2021
Gougane Barra	508767 566076	28/05/2020, 09/06/2020, 30/06/2020, 22/07/2020 26/08/2020, 20/10/2020, 13/11/2020, 05/12/2020, 08/01/2021, 02/02/2021, 11/03/2021
Grousemount	509274 569529	28/05/2020, 09/06/2020, 30/06/2020, 26/08/2020, 20/10/2020, 13/11/2020, 05/12/2020, 08/01/2021, 02/02/2021, 11/03/2021
Inchigeelagh	522331 566141	28/05/2020, 30/06/2020, 26/08/2020, 20/10/2020, 13/11/2020, 05/12/2020, 08/01/2021, 02/02/2021, 11/03/2021
Kilgarvan North	500889 576879	28/05/2020, 09/06/2020
Lee Valley	523471 566494	28/05/2020, 09/06/2020, 30/06/2020, 26/08/2020, 20/10/2020, 13/11/2020, 05/12/2020, 08/01/2021, 02/02/2021, 11/03/2021
Lough Allua	518735 565624	28/05/2020, 09/06/2020, 30/06/2020, 26/08/2020, 20/10/2020, 13/11/2020, 05/12/2020, 08/01/2021, 02/02/2021, 11/03/2021
Lough Nabuddoga	506728 573791	28/05/2020, 09/06/2020, 30/06/2020, 26/08/2020, 20/10/2020, 13/11/2020, 05/12/2020, 08/01/2021, 02/02/2021, 11/03/2021
Roughly River	507548 574079	30/06/2020
Sillahertane	510719 573143	28/05/2020, 09/06/2020, 30/06/2020, 26/08/2020, 20/10/2020, 13/11/2020, 05/12/2020, 08/01/2021, 02/02/2021, 11/03/2021
Toon Valley/Killeens	524163 569753	28/05/2020, 09/06/2020, 30/06/2020, 26/08/2020, 20/10/2020, 13/11/2020, 05/12/2020, 08/01/2021, 02/02/2021, 11/03/2021



2.3 Breeding Bird Surveys

For breeding bird surveys, the method utilised was based on the existing British Trust for Ornithology (BTO) Breeding Bird Survey (BBS; Bibby et al, 2000). The study area for this survey comprised a total of four no. c. 1 km transects which were selected and centred on different habitats present within the subject site (see Figure 2-4 for the location of transects). Birds were counted over two visits, each timed to coincide with the early part of the breeding season (June 2020) and later part of the season (July 2020), with visits at least four weeks apart (transect order and direction were reversed between surveys to avoid confounding transect order and direction with time of day). Surveyors recorded all birds seen or heard as they walked methodically along the transect routes. Birds were recorded in four distance categories, measured at right angles to the transect line (within 25 m, between 25 m - 100 m and over 100 m from the transect line) and those seen in flight only. Recording birds in distance bands gives a measure of bird detectability and allows relative population densities to be estimated if required (BTO, 2018).

The breeding bird transect schedule is available in Table 2-3 and locations illustrated in Figure 2-4:

Table 2-3: Breeding Bird Transect Survey Details

Date	Transect	Time	Weather Conditions
8/06/2020	1	08:20-09:10	Cloud: 8\8 Rain: Dry Visibility: Good Wind: F1 N
17/06/2020	2, 3 & 4	09:30-10:45	Cloud: 8\8 Rain: Dry Visibility: Good Wind: F W
		09:05-09:25	Cloud: 8\8 Rain: Dry Visibility: Good Wind: F2 NW
		11:28-12:05	Cloud: 8\8 Rain: Dry Visibility: Good Wind: F2 NW
22/07/2020	1,2,3, 4	09:15-10:02	Cloud: 8\8 Rain: Drizzle Visibility: Poor Wind: F2 SW
		12:17-13:02	Cloud: 8\8 Rain: Dry Visibility: Good Wind: F3 SW
		11:35-12:08	Cloud: 1\8 Rain: Dry Visibility: Good Wind: F3 SW
		07:38-08:15	Cloud: 8\8 Rain: Light mist Visibility: Good Wind: F1 SW



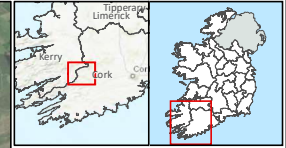
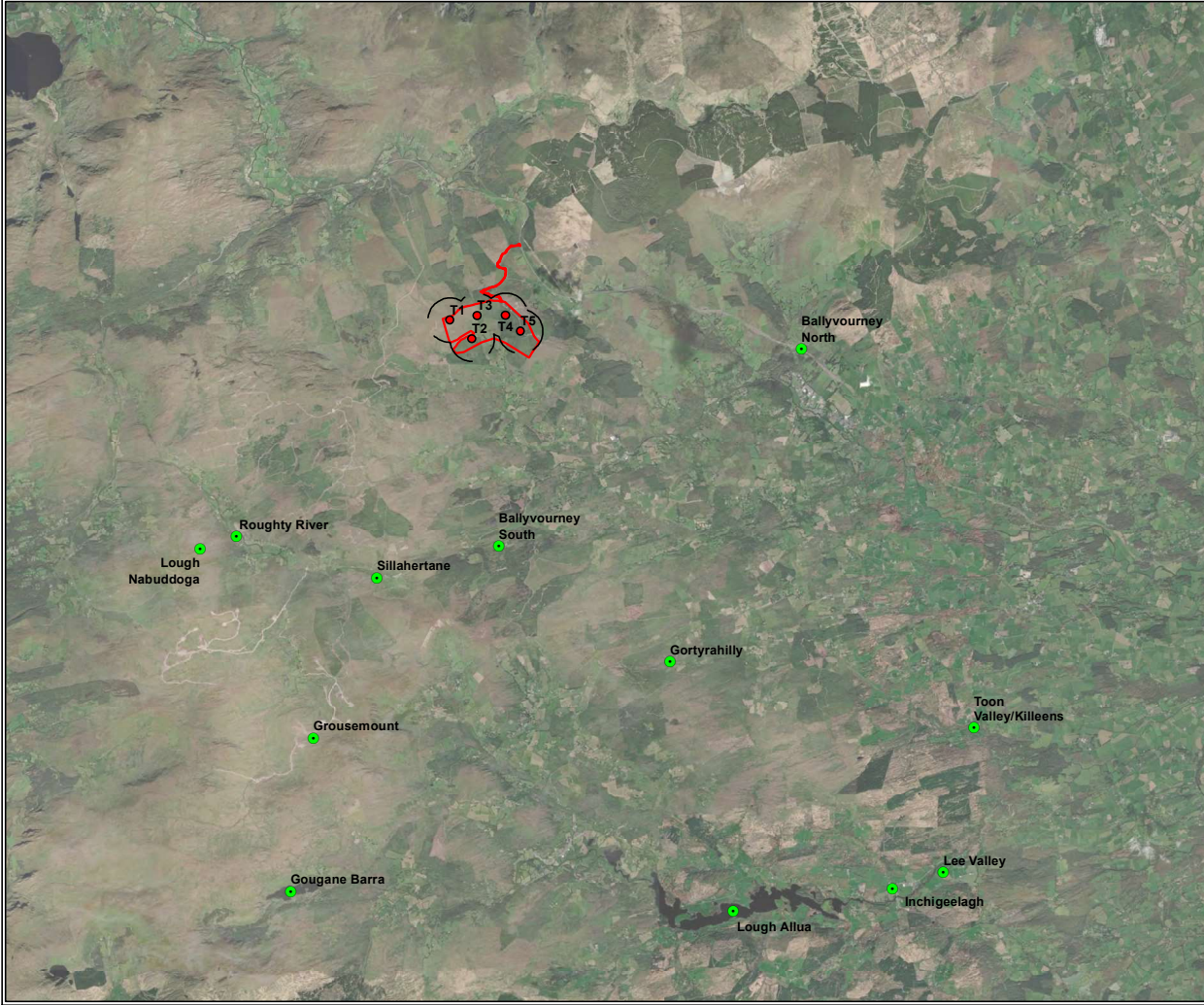
2.4 Wintering Bird Survey

For the general wintering bird survey, the method utilised was the same as for the breeding bird transects, except it was undertaken in the winter season. Here, winter bird surveys were carried out in October 2020 and March 2021 in year three. See Figure 2-4 for the location of transects.

The wintering bird transect schedule is available in Table 2-4.

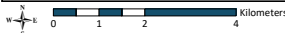
Table 2-4: Wintering Bird Transect Survey Details

Date	Transect	Time	Weather Conditions
17/10/2020	1,2,3,4	10:30-11:25 12:37-13:25 12:15-12:36 11:30-12:00	Cloud: 8/8 Rain: Showers Visibility: Poor Wind: f3
25/03/2021	1, 2, 3, 4	08:25-09:12 11:10-12:20 10:20-11:00 09:20-10:00	Cloud: 8/8 Rain: Rain Visibility: good Wind: f2 W Cloud: 7/8 Rain: Dry Visibility: good Wind: f4 SW Cloud: 5/8 Rain: Dry Visibility: good Wind: f3 SW Cloud: 6/8 Rain: Dry Visibility: good Wind: f3 SW



- Legend**
- Site Boundary
 - SNH Buffer
 - Turbine Locations
 - Hinterland Sites

TITLE: Hinterland Site Location	
PROJECT: Inchamore Wind Farm, Co. Cork	
FIGURE NO: 2.3	
CLIENT: Inchamore Wind DAC	
SCALE: 1:85000	REVISION: 0
DATE: 3/8/2023	PAGE SIZE: A3





3. RESULTS

3.1 Avian usage of the Study Area – Vantage Point surveys

3.1.1 Summary Results Summer 2020 (May, June, and August 2020)

Over the summer survey period 19 species in total were recorded. There were eight individual flight lines of three target species observed during the Summer 2020 survey period.

Of these target species, one is red-listed (kestrel), one is amber-listed (lesser black-backed gull) and one is green-listed (sparrowhawk).

Flight lines are shown for each target species in Appendices 2 and 3.

All species recorded during year 3 VP surveys are listed in Table 3-1 below.

3.1.2 Summary Results Winter 2020/21 (October, December 2020 and February 2021)

Over the winter survey period 41 species in total were recorded. There were 16 individual flight lines of seven target species observed during the Winter 2020/2021 survey period.

Of these target species, two are Red-listed (kestrel and golden plover), one is amber-listed (lesser black-backed gull) and four are green-listed (buzzard, great black-backed gull, peregrine falcon and sparrowhawk). Golden plover is also listed on Annex I of the EU Birds Directive.

Flight lines are shown for each target species in Appendices 2 and 3.

All species recorded during year 3 VP surveys are listed in Table 3-1 below.

3.2 Target Species Observations

3.2.1 Buzzard

There were three observations of this green-listed species during winter 2020/21 VP surveys. The first one occurred on 26th February 2021 from VP 1. This was a single bird recorded inside the SNH buffer and spent 43 seconds flying over peatland but below a height of 30m. The second and third observation occurred on 28th February 2021 from VP 2, the first of which flew for 46 seconds between 20-50m outside the SNH buffer and the second flew for 25 seconds between 50-100m inside the SNH buffer. Both of these latter observations were recorded over peatland. There were no observations noted during summer VP surveys.

3.2.2 Golden Plover

This red-listed and Annex I species was recorded on three occasions during winter 2020/21 VP surveys. On one occasion the bird was only heard and not observed. This was noted from VP 2 over heath bog on the 28th February 2021. The two sightings of the species were recorded on the 26th February 2021 from VP 1 inside the SNH buffer. The first one noted a single bird flying for 12 seconds between 20-30m while the second record noted 25 individuals flying for 20 seconds below 10m. There were no summer VP records of this species.



3.2.3 Great Black-backed gull

This green-listed species was recorded on one occasion during winter 2020/21 VP surveys. This observation was recorded on the 18th February 2021 from VP 4 and note one adult gull flying for 68 seconds below 50m. This occurred outside the SNH buffer.

3.2.4 Kestrel

Summer

This red-listed species was recorded on five occasions during summer 2020 VP surveys. The first observation occurred on the 28th May 2020 from VP 3 and noted a single bird flying for 42 seconds below 50m inside the SNH buffer. Three observations were recorded on the 7th August from VP 3, one of which noted an individual flying inside the SNH for five seconds as it was stooping for prey. A second observation on this date saw two birds interacting with one another and spending 248 seconds below 50m, while another recorded one bird hunting for 165 seconds between 30-50m. These both occurred outside the SNH buffer. The final sighting was found on the 29th August 2020 from VP 2 and recorded a single bird flying for seven minutes below 20m, inside the SNH buffer.

Winter

Kestrels were recorded on six occasions during winter 2020/21 VP surveys. The first three observations were recorded on the 9th October 2020 from VP 3 and noted single birds hunting and flying below 100m outside the SNH buffer. There was one sighting on the 9th December 2020 from VP 3 of one individual commuting outside the SNH buffer and spending 13 seconds between 20-30m. The final two observations were made on the 28th February 2021 from VP 2. The first recorded one female flying for 12 seconds below 10m, inside the SNH buffer and hunting over peatland. The second of these observations noted a male kestrel hunting over peatland inside the SNH buffer and spending 55 seconds below 50m.

3.2.5 Lesser Black-backed Gull

Summer

This amber-listed species was noted on four occasions during summer 2020 VP surveys. The first two occurred on the 30th August 2020 from VP 1 one of which observed three gulls flying inside the SNH buffer for 350 seconds between 50-185m, while the other recorded six gulls outside the buffer for 300 seconds flying between 50-185m.

The other two records were gulls that were only heard and not seen. These occurred on the 28th May 2020 from VP 3 and VP 4 on the 8th June 2020.

Winter

There was one observation of the lesser black-backed gull during winter VP surveys. This occurred on the 18th February 2021 from VP 4. This noted one immature gull flying for 10 seconds between 30-50m outside the buffer.



3.2.6 Peregrine Falcon

There was one observation of this green-listed species from VP 2 on the 28th February 2021. This noted a pair interacting inside the SNH buffer for 88 seconds between 50-185m height band. There were no summer VP records of this species.

3.2.7 Sparrowhawk

Summer

During summer 2020 VP surveys, there was one observation made of this green-listed species. This single bird spent five seconds below 10m outside the SNH buffer.

Winter

This green-listed species was observed twice during winter 2020/21 VP surveys. The first occasion occurred on the 13th December 2020 from VP 4 and noted one bird flying for 28 seconds between 20-30m outside the SNH buffer and appeared to be commuting. The second observation was recorded on the 4th February 2021 from VP 3 and noted a single female hunting for 5 seconds below 10m outside the buffer.

Table 3-1: Status of species observed in year three VP Surveys (summer 2020 and winter 2020/21)³

Common name (BTO code)	Scientific name	*BoCCI status	**Annex I status
Blackbird (B.)	<i>Turdus merula</i>	Green	No
Blackcap (BC)	<i>Sylvia atricapilla</i>	Green	No
Blue tit (BT)	<i>Cyanistes caeruleus</i>	Green	No
Buzzard (BZ)	<i>Buteo buteo</i>	Green	No
Chaffinch (CH)	<i>Fringilla coelebs</i>	Green	No
Coal tit (CT)	<i>Periparus ater</i>	Green	No
Dunnock (D.)	<i>Prunella modularis</i>	Green	No
Fieldfare (FF)	<i>Turdus pilaris</i>	Green	No
Goldcrest (GC)	<i>Regulus regulus</i>	Amber	No
Golden Plover (GP)	<i>Pluvialis apricaria</i>	Red	Yes
Goldfinch (GO)	<i>Carduelis carduelis</i>	Green	No
Great tit (GT)	<i>Parus major</i>	Green	No
Greenfinch (GR)	<i>Chloris chloris</i>	Amber	No
Grey heron (H.)	<i>Ardea cinerea</i>	Green	No
Grey wagtail (GL)	<i>Motacilla cinerea</i>	Red	No
Hooded crow (HC)	<i>Corvus cornix</i>	Green	No
Jackdaw (JD)	<i>Coloeus monedula</i>	Green	No

³ Species listed under Annex I of the EU Birds Directive shown in bold.



Common name (BTO code)	Scientific name	*BoCCI status	**Annex I status
Jay (J.)	<i>Garrulus glandarius</i>	Green	No
Kestrel (K.)	<i>Falco tinnunculus</i>	Red	No
Lesser black-backed gull (LB)	<i>Larus fuscus</i>	Amber	No
Long-tailed tit (LT)	<i>Aegithalos caudatus</i>	Green	No
Magpie (MG)	<i>Pica pica</i>	Green	No
Meadow pipit (MP)	<i>Anthus pratensis</i>	Red	No
Mistle thrush (M.)	<i>Turdus viscivorus</i>	Green	No
Pheasant (PH)	<i>Phasianus colchicus</i>	Green	No
Peregrine (PE)	Falco peregrinus	Green	Yes
Pied wagtail (PW)	<i>Motacilla alba</i>	Green	No
Raven (RN)	<i>Corvus corax</i>	Green	No
Redpoll (LR)	<i>Acanthis flammea</i>	Green	No
Redwing (RE)	<i>Turdus iliacus</i>	Red	No
Robin (R.)	<i>Erithacus rubecula</i>	Green	No
Rook (RO)	<i>Corvus frugilegus</i>	Green	No
Siskin (SK)	<i>Spinus spinus</i>	Green	No
Skylark (S.)	<i>Alauda arvensis</i>	Amber	No
Snipe (SN)	<i>Gallinago gallinago</i>	Red	No
Song thrush (ST)	<i>Turdus philomelos</i>	Green	No
Sparrowhawk (SH)	<i>Accipiter nisus</i>	Green	No
Starling (SG)	<i>Sturnus vulgaris</i>	Amber	No
Stonechat (SC)	<i>Saxicola rubicola</i>	Green	No
Swallow (SL)	<i>Hirundo rustica</i>	Amber	No
Willow warbler (WW)	<i>Phylloscopus trochilus</i>	Amber	No
Woodpigeon (WP)	<i>Columba palumbus</i>	Green	No
Wren (WR)	<i>Troglodytes troglodytes</i>	Green	No

* refers to the conservation status of the species according to Birds of Conservation Concern in Ireland.

**refers to species listed on Annex I of the EU Birds Directive; shown in bold.



3.3 Hinterland Survey (IWeBS, Hen Harrier winter roosts and breeding target species)

3.3.1 Summer 2020

Hinterland surveys to establish occupancy and quantity of target species that could potentially cross the site whilst moving to and from roosting and feeding grounds within a 10 km radius were carried out monthly between May and August 2020. These surveys were for breeding target species. The survey schedule and locations of the hinterland watches are shown in Table 2-2 of Section 2.2.

Species recorded are shown below in Table 3-2. For site-specific hinterland survey results see Appendix 5 of this report.

During the summer season, 52 bird species were recorded in total across hinterland surveys including 23 target species. Of these target species recorded three are red-listed (dunlin, kestrel, and snipe), fifteen are amber-listed (black-headed gull, common sandpiper, coot, cormorant, great-crested grebe, greylag goose, lesser black-backed gull, mallard, mute swan, ringed plover, ruff, shag, sparrowhawk, teal, and whooper swan) and five are green-listed (great black-backed gull, grey heron, little egret, mallard, and peregrine). Little egret, peregrine, ruff, and whooper swan are also listed on Annex I of the Birds Directive.

These target species were mainly recorded at 3 hVP (hinterland vantage point) sites: Gearagh, Gougane Barra and Lough Allua.

3.3.2 Winter 2020/2021

Winter hinterland surveys were carried out from October 2020 to March 2021. These surveys were for wintering target species. The survey schedule and locations of the hinterland watches are shown in Table 2-2 of Section 2.2. Species recorded are shown below in see Table 3-2. For site-specific hinterland survey results see Appendix 5 of this report.

During the winter season, 65 bird species in total were recorded including 32 target species. Of these target species seven are red-listed (curlew, dunlin, golden plover, kestrel, lapwing, snipe, and woodcock), fifteen are amber-listed (barnacle goose, black-headed gull, cormorant, goosander, great crested grebe, greylag goose, hen harrier, lesser black-backed gull, mallard, merlin, mute swan, sparrowhawk, teal, whooper swan and wigeon) and ten are green-listed (buzzard, great black-backed gull, great white egret, grey heron, little egret, little grebe, long-eared owl, peregrine, pink footed goose and white-fronted goose). Barnacle goose, golden plover, hen harrier, little egret, merlin, peregrine, great white egret, white-fronted goose and whooper swan are also listed on Annex I of the Birds Directive.

The hen harrier observation arose from a hen harrier roost watch carried out at Gortyrhilly in early December 2020. A male was seen circling over suitable roost habitat, but it flew out of sight and was not observed landing.

These target species were mainly recorded at two hVP sites: Gearagh and Toon Valley/Killeens.



Table 3-2: Target Bird Species Recorded During Year Three Hinterland Surveys (IWeBS and Breeding Target Species)

Common Name	Scientific Name	Conservation Status	
		BoCCI*	Annex I**
Barnacle Goose	Branta leucopsis	Amber	Yes
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Amber	No
Buzzard	<i>Buteo buteo</i>	Green	No
Common Sandpiper	<i>Actitis hypoleucos</i>	Amber	No
Coot	<i>Fulica atra</i>	Amber	No
Cormorant	<i>Phalacrocorax carbo</i>	Amber	No
Curlew	<i>Numenius arquata</i>	Red	No
Dunlin	<i>Calidris alpina</i>	Red	No
Golden Plover	Pluvialis apricaria	Red	Yes
Goosander	<i>Mergus merganser</i>	Amber	No
Great Black-backed Gull	<i>Larus marinus</i>	Green	No
Great Crested Grebe	<i>Podiceps cristatus</i>	Amber	No
Great White Egret	Ardea alba	Green	Yes
Grey Heron	<i>Ardea cinerea</i>	Green	No
Greenland White-fronted goose	Anser albifrons flavirostris	Amber	Yes
Greylag Goose	<i>Anser anser</i>	Amber	No
Hen Harrier	Circus cyaneus	Amber	Yes
Kestrel	<i>Falco tinnunculus</i>	Red	No
Lapwing	<i>Vanellus vanellus</i>	Red	No
Lesser Black-backed Gull	<i>Larus fuscus</i>	Amber	No
Little Egret	Egretta garzetta	Green	Yes
Little Grebe	<i>Tachybaptus ruficollis</i>	Green	No
Long eared owl	<i>Asio otus</i>	Green	No
Mallard	<i>Anas platyrhynchos</i>	Amber	No
Merlin	Falco columbarius	Amber	Yes
Moorhen	<i>Gallinula chloropus</i>	Green	No
Mute Swan	<i>Cygnus olor</i>	Amber	No
Peregrine	Falco peregrinus	Green	Yes
Pink footed Goose	<i>Anser brachyrhynchus</i>	Green	No
Ringed Plover	<i>Charadrius hiaticula</i>	Amber	No
Ruff	Philomachus pugnax	Amber	Yes



Common Name	Scientific Name	Conservation Status	
		BoCCI*	Annex I**
Shag	<i>Phalacrocorax aristotelis</i>	Amber	No
Snipe	<i>Gallinago gallinago</i>	Red	No
Sparrowhawk	<i>Accipiter nisus</i>	Amber	No
Teal	<i>Anas crecca</i>	Amber	No
Whooper Swan	Cygnus cygnus	Amber	Yes
Wigeon	<i>Anas penelope</i>	Amber	No
Woodcock	<i>Scolopax rusticola</i>	Red	No

* refers to the conservation status of the species according to Birds of Conservation Concern in Ireland.

**refers to species listed on Annex I of the EU Birds Directive; shown in bold.

3.4 Breeding Bird Survey

The results of the breeding bird transect survey in Summer 2020 at Inchamore are shown in Table 3-3.

A total of 25 species were recorded along the transects. Two red-listed species were recorded: grey wagtail and meadow pipit, five amber-listed species: goldcrest, starling, skylark, swallow and willow warbler. The remaining 18 species are Green-listed.

No birds listed under Annex I of the EU Birds Directive were recorded breeding within the proposed wind farm site during breeding transect surveys.

Meadow pipit is considered to be breeding within the site and was recorded within 25m of the transects in early and late summer. These records were frequently recorded at transect 1, 3 and 4 in groups of two to eight individuals.

Goldcrest, skylark, swallow and willow warbler were all recorded within 25m of the transects and can be assumed to be breeding on the site. The site contains suitable habitats for willow warbler (hedgerows and dense vegetation), goldcrest which inhabit a broad range of habitats including dense coniferous woodland and skylark which are commonly found breeding in peatland habitats.



Table 3-3: Results of breeding bird transects surveys during summer 2020⁴

Common Name	Scientific Name	Early			Late			Early			Late			Early			Late			Early			Late		
		T1			T2			T3			T4			T5			T6			T7			T8		
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO
Blackbird	<i>Turdus merula</i>	1					1								1										
Blackcap	<i>Sylvia atricapilla</i>	2																							
Blue Tit	<i>Cyanistes caeruleus</i>	1					1																		
Carrion Crow	<i>Corvus corone</i>																								
Chaffinch	<i>Fringilla caelebs</i>	15	7		2			1		3				1		2									
Coal Tit	<i>Periparus ater</i>	1					1																	1	
Common Crossbill	<i>Loxia curvirostra</i>													12											
Dunnock	<i>Prunella modularis</i>				2																				
Goldcrest	<i>Regulus regulus</i>				1		1																		
Grey Wagtail	<i>Motacilla cinerea</i>	2				1																			
Hooded Crow	<i>Corvus cornix</i>			3																				1	
Jay	<i>Garrulus glandarius</i>						2			1															
Maggie	<i>Pica pica</i>														1										
Meadow Pipit	<i>Anthus pratensis</i>	4			3									8		5					8	1		2	2
Mistle Thrush	<i>Turdus viscivorus</i>						1																		
Raven	<i>Corvus corax</i>																								1
Robin	<i>Erithacus rubecula</i>	2				1	3	5		1															
Starling	<i>Sturnus vulgaris</i>																							70	
Siskin	<i>Carduelis spinus</i>				2		5																		
Skylark	<i>Alauda arvensis</i>													1										2	
Song Thrush	<i>Turdus philomelos</i>						1																		
Swallow	<i>Hirundo rustica</i>																						1		1

⁴ Zero values are not shown to increase readability.
 P20-114



3.5 Wintering Bird Survey

The results of the wintering bird transect survey at Inchamore are shown in Table 3-4.

A total of eleven species were recorded along the transects. One red-listed species was recorded during surveys, namely meadow pipit and there was one amber listed species; house sparrow. The remaining nine species are green listed.

Meadow pipit was recorded on four occasions at all transects, three observations which occurred within 25m of the transects in groups of 1-4. A single bird was also found within 100m of transect 4. These all occurred in March 2021.



Table 3-4: Results of wintering bird transects winter 2020/2021⁵

Common Name	Scientific Name	Early			Late			Early			Late			Early			Late			Early			Late			
		T1			T2			T3			T4			T5			T6			T7			T8			
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	
Blackbird	<i>Turdus merula</i>		1																					1	1	
Chaffinch	<i>Fringilla caelebs</i>				3	4				1		1						1						1	1	1
Coal Tit	<i>Parus ater</i>							1			3															
Common Crossbill	<i>Loxia curvirostra</i>																									
Duncock	<i>Prunella modularis</i>																								1	
Hooded Crow	<i>Corvus cornix</i>			2																1			6	2		
House Sparrow	<i>Passer domesticus</i>																								1	
Meadow Pipit	<i>Anthus pratensis</i>				2						1							4						1		
Raven	<i>Corvus corax</i>																			2						
Robin	<i>Erithacus rubecula</i>		1		3					1								1						1		
Wren	<i>Troglodytes troglodytes</i>					1																		2	1	
Total Number of Species		11																								

⁵ Zero values are not shown to increase readability.
P20-114



4. DISCUSSION

FT carried out ornithological surveys at the proposed Inchamore Wind Farm between May 2020 and March 2021 for Inchamore Wind DAC. Surveys completed during this time included: vantage point surveys (breeding and non-breeding season), breeding and winter bird transect surveys and hinterland surveys (including I-WeBS style surveys, and surveys for breeding target species). Vantage point surveys were completed following SNH methodology for bird surveys on onshore wind farms (SNH, 2017). Hinterland surveys were undertaken following methodology by Bibby et al. (2000), Hardey et al. (2013) and NPWS/BirdWatch Ireland's guidance for I-WeBS surveys. Breeding bird and winter bird transect surveys followed the methodology of Bibby et al. (2000).

Year Three Summer survey (breeding season) 2020

Target bird species recorded at Inchamore within the flight activity survey area consisted of the following: kestrel, sparrowhawk, and lesser black-backed gull. Of these species, the most frequently recorded was the red-listed kestrel (five observations) exhibiting mainly hunting behaviours. The level of activity and behaviour recorded for this species is indicative of a breeding territory in the vicinity of the site, and suitable hunting habitat is present within the site. The habitats within the site are likely to form part of a larger mosaic of hunting grounds incorporating upland habitats and more intensively managed lowland farmed areas. Kestrels are also using the wider area, with confirmed hunting recorded at Sillahertane and presence noted in Grousemount, Gougane Barra and Ballyvourney North.

Th amber-listed lesser black-backed gull were recorded five times (three observations, heard on two occasions) within the flight activity survey area during this period. Gulls may traverse the site and could forage occasionally in farmland and lowland areas within and surrounding the site. Lesser black-backed gulls were found at Lough Nabuddoga, Sillahertane, Lough Allua and the Gearagh during summer hinterland surveys and at the Gearagh, Toon Valley and Lee Valley during winter hinterland surveys. This indicates that this species is also likely foraging in the wider area nearby the site.

There was one observation of the green-listed sparrowhawk during VP surveys throughout the 2020 summer season. This species is cryptic, often waiting in ambush and making short dashing flights when travelling or in pursuit of prey. Sparrowhawk could potentially breed in the vicinity of the site and may occasionally hunt within the site. Sparrowhawks were also observed with prey at Sillahertane indicating that this is a hunting ground for raptors.

The red-listed and ground-nesting passerine meadow pipit was recorded twice along transect 1, 3 and 4 in groups of two to eight individuals within 25m of the transects. The peatland and upland grassland habitats at the site provide suitable breeding habitat for this species which often occurs in high concentrations in the uplands. This site is also likely a breeding ground for the amber-listed willow warbler, goldcrest, skylark and swallow that were recorded within 25m of transects. The peatland provides suitable breeding habitat for willow warbler and goldcrests are known to breed within dense conifer plantations such as those present at this site.

Other important species of conservation including red-listed dunlin and snipe and Annex I species little egret, peregrine falcon, ruff and whooper swan were recorded in the surrounding area during summer hinterland surveys but were not found inside the site.



Year Three Winter survey (non-breeding season) 2020/2021

Target species recorded at Inchamore during winter VP surveys included the following: buzzard, golden plover, great black-backed gull, lesser black-backed gull, peregrine falcon and kestrel. The most frequently observed of these species was kestrel, with a total of six observations. Individuals were mainly observed hunting or commuting over the site. Coupled with the observed breeding season activity levels for this species, the winter observations demonstrate a regular and established kestrel presence in the area. During winter hinterland surveys, kestrels were also found in the surrounding area at Lee Valley, Ballyvourney North and Sillahertane.

Annex I-listed golden plover was recorded in flight twice during this period in groups of one to twenty-five flying within the survey area over heath bog. The large flock size recorded here suggests that this site is an important wintering ground for golden plovers. This species was also detected at the Gearagh in flocks with up to 86 individuals during winter hinterland surveys.

This site could be a wintering ground for Annex I species peregrine falcon with a pair detected within the SNH buffer. This species also utilises the wider surrounding area the summer with one individual recorded at Ballyvourney north in May 2020 during summer hinterland surveys.

Sparrowhawk was observed twice during winter, which when coupled with summer observations is consistent with their regular presence in the area. This species also utilizes the wider area with its presence detected in Gougane Barra during winter hinterland surveys.

Records of large gull species, lesser black-backed gull and great black-backed gull in the area during the winter suggest that these species have an established presence in the vicinity of this proposed development site.

The presence of meadow pipit in winter transect surveys indicates the regular presence of this species within the area.

Other species of conservation interest were recorded in surrounding areas during winter hinterland surveys including red-listed curlew, dunlin, snipe, lapwing and woodcock and Annex I species barnacle goose, hen harrier, little egret, merlin and whooper swan. Snipe were also recorded during winter VP surveys at VP 1, 2 and 4. The remaining species were absent from VP surveys and so are unlikely to traverse the site.

4.1 Conclusion

In conclusion, FT conducted a third year of ornithological surveys at the proposed Inchamore Wind Farm between May 2020 and March 2021. These surveys revealed a variety of species occurring at the site. Although not confirmed, it is possible that red-listed kestrel is breeding within or close to the site as it was the most frequently observed target species during both summer and winter VP surveys. This site is also a potential breeding ground for the green-listed sparrowhawk and red-listed passerine species; meadow pipit.



5. REFERENCES

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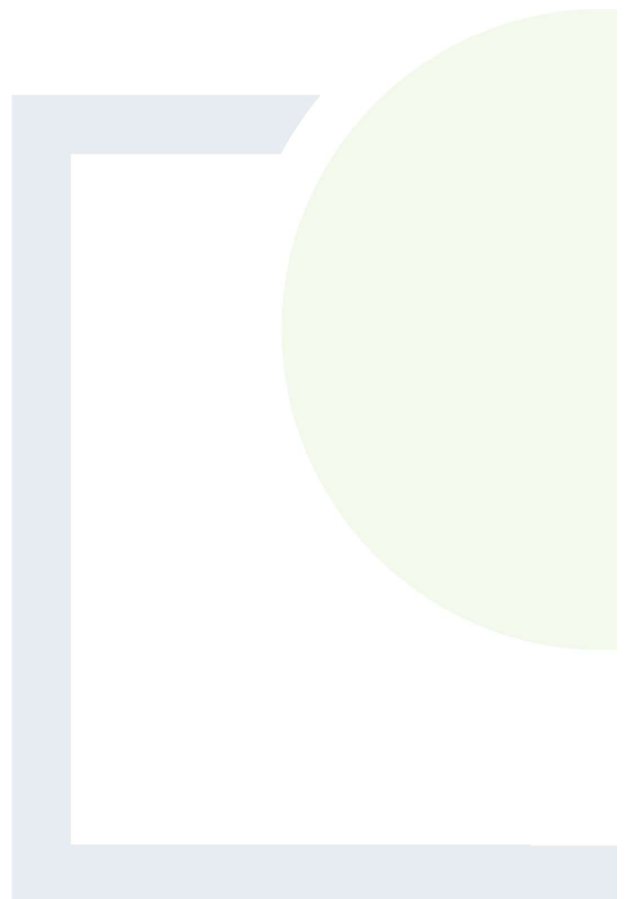


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APPENDIX 1

VP Summer 2020

Survey Details



VP Summer 2020/21 - Survey Details

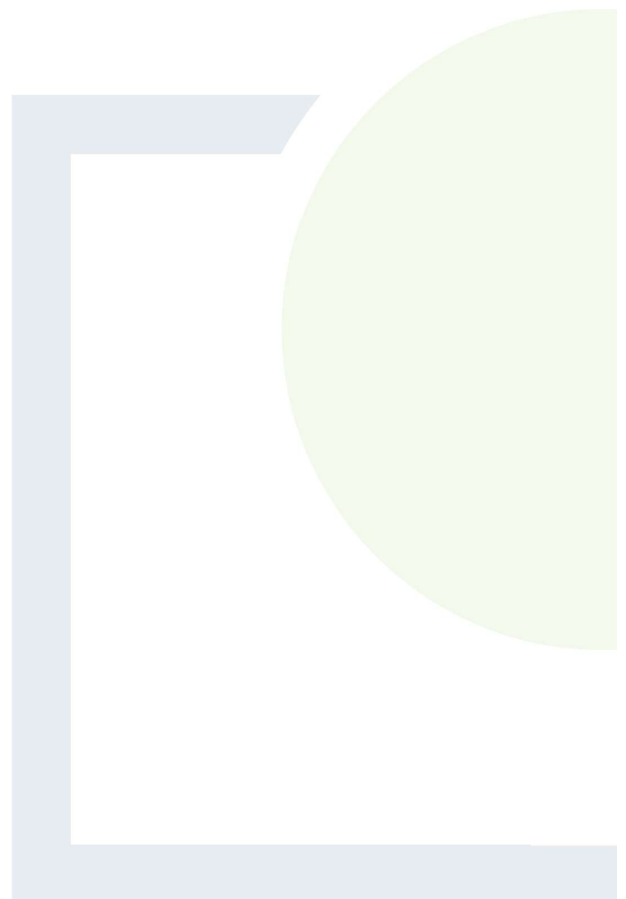
VP no.	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind
1	06/06/2020	09:15	15:15	7\8	Good	Showers	F3
2	07/06/2020	11:20	17:20	6\8	Very Good	Dry	F3-4
2	29/08/2020	09:30	15:30	6\8	Very Good	Dry	F2
1	30/08/2020	11:10	17:10	7\8	Very Good	Dry	F 1-2
3	07/08/2020	11:00	17:00	5\8	Good	Dry	F2 W
4	27/08/2020	10:30	16:30	5\8-8\8	Very Good	Showers	F3 SW
4	08/06/2020	10:00	16:00	8\8	Good	Dry	F2 NW
3	28/05/2020	12:30	18:30	2\8	Very Good	Dry	F4 SE



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APPENDIX 2

Flight Line Data 2020/21



VP no.	Date	Mapnote / Flightline No.	Common Name	Species Quantity	Sex	Time of Obs.	SNH Buffer (In/Out)	Total Duration (s)	0-10 m (s)	10-20 m (s)	20-30 m (s)	30-50 m (s)	50-100 m (s)	100-185 m (s)	>185 m (s)	Bird Notes
1	30/08/2020	1	Lesser Black-backed Gull	3		12:12	In	350					250	100		
1	30/08/2020	2	Lesser Black-backed Gull	6		13:42	Out	300					100	200		
1	26/02/2021	3	Golden Plover	1		10:58	In	12			12					Flying over heath bog
1	26/02/2021	4	Golden Plover	25		12:50	In	20	20							Flying over heath bog
1	26/02/2021	5	Buzzard	1		15:55	In	43	3	20	20					Flying over heath bog
2	29/08/2020	6	Kestrel	1		11:22	In	7 min	120	300						Flew out of view below brow of hill
2	28/02/2021	7	Buzzard	1		11:54	Out	46			20	26				Flying over heath bog
2	28/02/2021	8	Kestrel	1	Female/imm	12:03	In	12	12							Hunting over heath bog
2	28/02/2021	9	Kestrel	1	Male	15:25	In	55		10	20	25				Hunting over heath bog
2	28/02/2021	10	Peregrine	2	Pair	15:33	In	88					70	18		Pair interacting over site
2	28/02/2021	11	Buzzard	1		15:36	In	25					25			Flying over heath bog
3	28/05/2020	12	Sparrowhawk	1		13:40	Out	5	5							Flew out of view below brow of hill
3	28/05/2020	13	Kestrel	1		17:19	In	42			36	6				

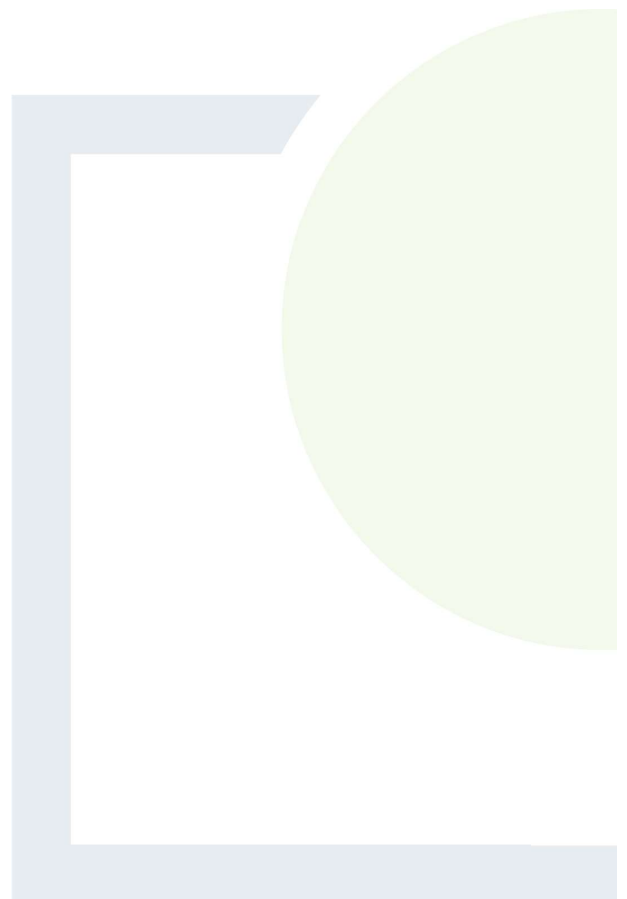
VP no.	Date	Mapnote / Flightline No.	Common Name	Species Quantity	Sex	Time of Obs.	SNH Buffer (In/Out)	Total Duration (s)	0-10 m (s)	10-20 m (s)	20-30 m (s)	30-50 m (s)	50-100 m (s)	100-185 m (s)	>185 m (s)	Bird Notes
3	07/08/2020	14	Kestrel	1		13:03	Out	165				165				hunting
3	07/08/2020	15	Kestrel	2		13:50	Out	248				248				Interacting
3	07/08/2020	16	Kestrel	1		14:08	In	5	1	2	2					Stooping for prey
3	09/10/2020	17	Kestrel	1		11:43	Out	56	56							hunting and perched
3	09/10/2020	18	Kestrel	1		14:28	Out	64				14	50			hunting
3	09/10/2020	19	Kestrel	1		16:15	Out	48					48			hunting
4	18/02/2021	20	Great Black-backed Gull	1		14:40	Out	68	10	20	20	18				Adult
4	18/02/2021	21	Lesser Black-backed Gull	1		15:30	Out	10				10				Immature
3	09/12/2020	22	Kestrel	1		09:09	Out	13			13					Commuting
4	13/12/2020	23	Sparrowhawk	1		10:34	Out	28			28					Commuting
3	04/02/2021	24	Sparrowhawk	1	Female	10:56	Out	5	5							hunting flight



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APPENDIX 3

Flightline Figures

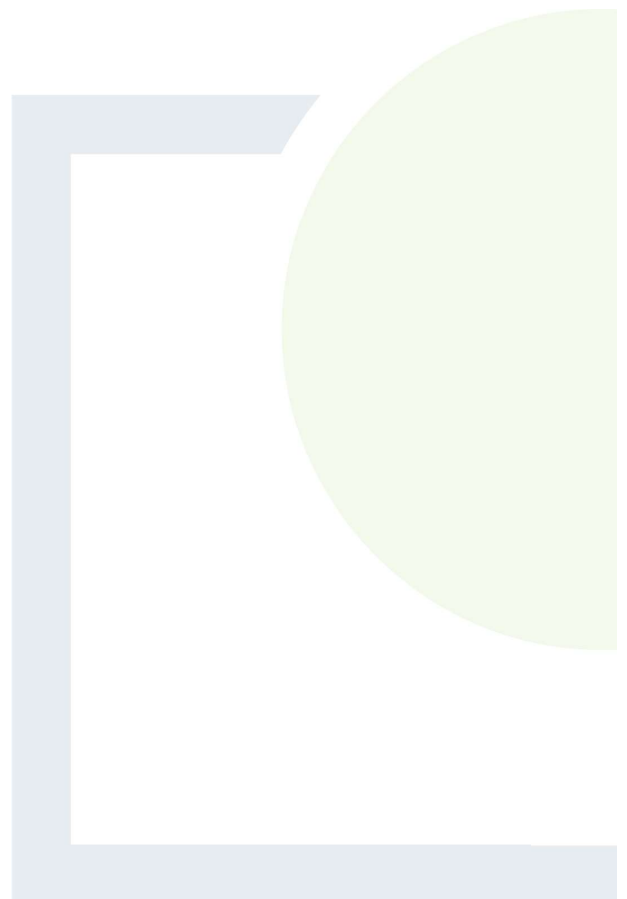




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APPENDIX 4

VP Winter 2020/2021 Survey
Details



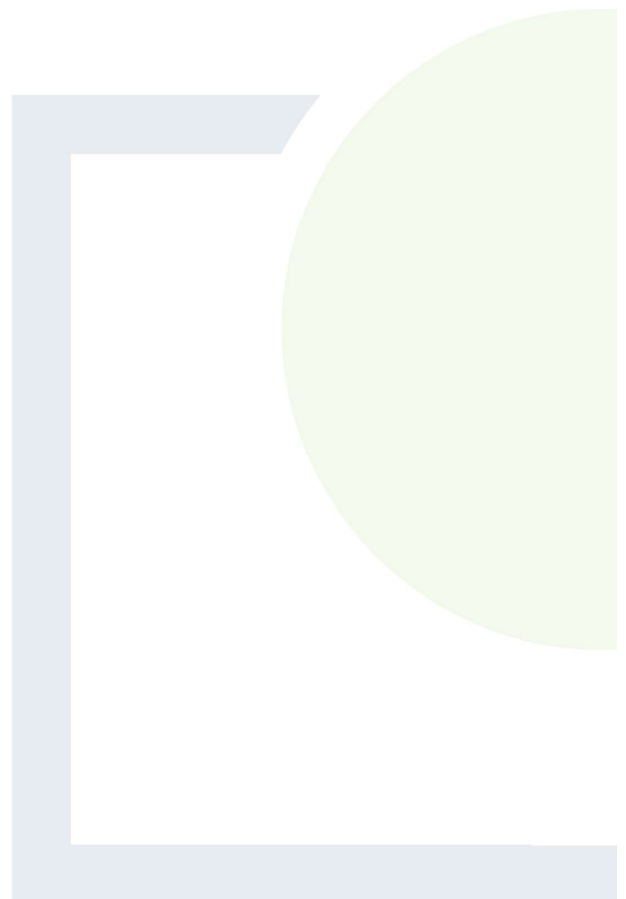
VP no.	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind
1	30/10/2020	10:15	16:15	8/8	good	dry	f2 SW
2	27/10/2020	10:30	16:30	5/8-8/8	good	showers	f4 W
3	09/10/2020	10:25	16:25	8/8	good	showers	f4 W
4	28/10/2020	10:00	16:00	3/8-8/8	good	heavy showers	f4 NW
3	09/12/2020	08:42	12:42	8/8	3-5KM	Shower	F2-3 S
4	13/12/2020	10:22	16:22	8/8	3-5KM	shower	F4 SW
2	11/12/2020	09:04	15:04	7/8	Excellent	Dry - rain last hour	F4 SW
1	07/12/2020	09:32	15:32	3/8	low cloud cleared	None	F3 N
4	18/02/2021	11:05	17:05	5/8	Excellent	None	F4 W
1	26/02/2021	10:24	16:24	8/8	Excellent	None	F4 SW
2	28/02/2021	11:11	17:11	3/8	Excellent	None	F2-4E
3	04/02/2021	10:15	16:15	8/8	frequent showers	good	f2 SW



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APPENDIX 5

Hinterland Survey Data



Hinterland Survey Data Summer 2020

Date	Site	Common Name	Quantity
28/05/2020	Gearagh	Great Crested Grebe	28
28/05/2020	Gearagh	Greylag Goose	6
28/05/2020	Lee Valley	No species of note	
28/05/2020	Inchigeelagh	Grey wagtail	4
28/05/2020	Inchigeelagh	Swift	1
28/05/2020	Inchigeelagh	Sand Martin	1
28/05/2020	Inchigeelagh	House Martin	1
28/05/2020	Lough Allua	Mute Swan	1
28/05/2020	Lough Allua	Jay	1
28/05/2020	Lough Allua	Lesser Black-backed Gul	1
28/05/2020	Gougane Barra	Cormorant	1
28/05/2020	Sillahertane	Lesser Black-backed Gul	28
28/05/2020	Grousemount	No species of note	
28/05/2020	Lough Nabuddoga	Lesser Black-backed Gul	1
28/05/2020	North Kilgarvan	No species of note	
28/05/2020	Ballyvourney North	Peregrine	1
09/06/2020	Gearagh	Great Crested Grebe	11
09/06/2020	Gearagh	Mallard	26
09/06/2020	Gearagh	Mute Swan	7
09/06/2020	Gearagh	Stonechat	1
09/06/2020	Gearagh	Grey wagtail	2
09/06/2020	Lee Valley	Sand Martin	20
09/06/2020	Lee Valley	Spotted Flycatcher	2
09/06/2020	Lough Allua	Mute Swan	2
09/06/2020	Lough Allua	Cormorant	3
09/06/2020	Lough Allua	Mallard	1
09/06/2020	Lough Allua	Grey Heron	1
09/06/2020	Lough Allua	Lesser Black-backed Gul	1
09/06/2020	Lough Allua	Moorhen	1
09/06/2020	Gougane Barra	Cuckoo	1
09/06/2020	Gougane Barra	Kestrel	1
09/06/2020	Sillahertane	No species of note	
09/06/2020	Grousemount	Kestrel	1

Date	Site	Common Name	Quantity
09/06/2020	Lough Nabuddoga	No species of note	
09/06/2020	Kilgarvan North	No species of note	
09/06/2020	Ballyvourney North	No species of note	
30/06/2020	Gearagh	Great Crested Grebe	13
30/06/2020	Gearagh	Coot	2
30/06/2020	Gearagh	Moorhen	6
30/06/2020	Gearagh	Mute Swan	52
30/06/2020	Gearagh	Whooper Swan	1
30/06/2020	Gearagh	Snipe	1
30/06/2020	Gearagh	Mallard	6
30/06/2020	Lee Valley	Mallard	5
30/06/2020	Lee Valley	Grey wagtail	2
30/06/2020	Inchigeelagh	House Martin	
30/06/2020	Inchigeelagh	Sand Martin	10
30/06/2020	Inchigeelagh	Heron	1
30/06/2020	Lough Allua	Heron	5
30/06/2020	Lough Allua	Lesser Black-backed Gul	1
30/06/2020	Lough Allua	Stonechat	1
30/06/2020	Lough Allua	Mallard	3
30/06/2020	Lough Allua	Cormorant	3
30/06/2020	Gougane Barra	Sandpiper	2
30/06/2020	Gougane Barra	Greater Black-backed Gull	
30/06/2020	Gougane Barra	Lesser Black-backed Gul	
30/06/2020	Gougane Barra	Jay	4
30/06/2020	Sillahertane	No species of note	
30/06/2020	Grousemount	No species of note	
30/06/2020	Roughly River	Common Sandpiper	
30/06/2020	Roughly River	Sand Martin	
30/06/2020	Lough Nabuddoga	Mallard	2
30/06/2020	Ballyvourney North	No species of note	
22/07/2020	Gearagh	Great Crested Grebe	12
22/07/2020	Lee Valley	Mallard	6
22/07/2020	Lee Valley	Grey Heron	1
22/07/2020	Inchigeelagh	Common Sandpiper	2

Date	Site	Common Name	Quantity
22/07/2020	Inchigeelagh	Grey Wagtail	1
22/07/2020	Inchigeelagh	Spotted Flycatcher	3
22/07/2020	Inchigeelagh	Dipper	1
22/07/2020	Inchigeelagh	Moorhen	1
22/07/2020	Lough Allua	Sparrowhawk	1
22/07/2020	Lough Allua	Cormorant	2
22/07/2020	Lough Allua	Lesser Black-backed Gull	1
22/07/2020	Gougane Barra	Kestrel	1
22/07/2020	Gougane Barra	Moorhen	1
22/07/2020	Gougane Barra	Stonechat	1
22/07/2020	Gougane Barra	Grey Heron	1
22/07/2020	Sillahertane	Sparrowhawk	1
22/07/2020	Sillahertane	Kestrel	1
22/07/2020	Grousemount	No species of note	
22/07/2020	Lough Nabuddoga	Sparrowhawk	2
22/07/2020	Ballyvourney North	Kestrel	1
22/07/2020	Ballyvourney North	Swifts	2
26/08/2020	Gearagh	Shag	1
26/08/2020	Gearagh	Ruff	1
26/08/2020	Gearagh	Dunlin	2
26/08/2020	Gearagh	Ringed Plover	4
26/08/2020	Gearagh	Greylag Goose	17
26/08/2020	Gearagh	Teal	27
26/08/2020	Gearagh	Mallard	43
26/08/2020	Gearagh	Little egret	6
26/08/2020	Gearagh	Great Crested Grebe	21
26/08/2020	Gearagh	Heron	2
26/08/2020	Ballyvourney North	No species of note	
26/08/2020	Lough Nabuddoga	No species of note	
26/08/2020	Grousemount	No species of note	
26/08/2020	Sillahertane	No species of note	
26/08/2020	Gougane Barra	Cormorant	1
26/08/2020	Lough Allua	Mute Swan	2
26/08/2020	Lough Allua	Great Black-backed Gull	1

Date	Site	Common Name	Quantity
26/08/2020	Inchigeelagh	No species of note	
26/08/2020	Lee Valley	No species of note	



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