

- Legend**
- Site Boundary
 - Turbine Layout
 - ▲ Met Mast
 - Substation
 - Construction Compound
 - Underground Cable Route
 - Hen Harrier Recce Survey
- Hinterland Survey Sites**

- ID and Name:
- ⊗ 1: Ballinvonear Ponds pNHA
 - ⊗ 2: Ballyhoura Mountains pNHA
 - ⊗ 3: Ballyhoura Mountains SAC
 - ⊗ 4: Castle Lake (Milltown)
 - ⊗ 5: Eagle Lough pNHA
 - ⊗ 6: Glanmore Flats
 - ⊗ 7: Kilcolman Bog SPA
 - ⊗ 8: Large Quarry Lake (Ballinadrideen)
 - ⊗ 9: River Awbeg
 - ⊗ 10: River Blackwater SAC/ Buttevant
 - ⊗ 11: River Blackwater SAC/Annagh Bridge
 - ⊗ 12: Small Quarry Lake (Ballyroe)
 - ⊗ 13: Western Plantation (Aughrim)

TITLE:	Hinterland Survey Area
PROJECT:	Annagh Wind Farm
FIGURE NO:	2.2
CLIENT:	EMP Group
SCALE:	1:90000
REVISION:	0
DATE:	12/10/2021
PAGE SIZE:	A3





2.3 Breeding Waders Surveys

Survey transects to assess the presence of breeding wader populations were completed during the months of April, May, July and August 2019. A number of methods were combined from published literature including Bibby *et al*, (2000), Gilbert *et al*, (1998), O’Brien & Wilson (2011) and SNH 2017 to estimate numbers of target species breeding within this envelope.

Methods utilised were grouped into 2 categories; those for breeding lapwing *Vanellus* and those for other species such as Curlew *Numenius arquata*, Snipe *Gallinago*, Redshank *Tringa totanus*, Woodcock *Scolopax rusticola*, Common Sandpiper *Actitis hypoleucos* and Ringed Plover *Charadrius hiaticula*. For each species, a pre-defined matrix of suitable habitats was created and used to select target habitats for survey.

Table 2-4: Target Species and Associated Suitable Breeding Habitat

Target Species	Suitable Breeding Habitat
Lapwing	Lowland wet grassland, arable farmland, cutover bog with pools and wet grassland
Snipe	Wet pastures, marsh, bogs (intact and cutover) and fens
Redshank	Bog
Curlew	Bog
Common Sandpiper	Streams/rivers in bog
Woodcock	Woodland, bog woodland
Ringed Plover	Cutover bog, milled peat with exposed gravel

Survey methods for Lapwing followed those in Bibby *et al*. 2000 wherein the primary count unit for breeding birds is defined as an incubating female; in addition, displaying birds, birds standing guard near nests or distraction displays were also recorded as indications of occupied territories. Extensive areas of open ground were covered from roads, farm tracks or roadsides (where possible); larger areas of open ground not visible from easily accessible vantage points were walked using transects.

Surveys were carried out during the time periods recommended in Bibby *et al*. 2000 although territorial behaviour noted outside these periods was also utilised in the assessment. For all additional species of wader the employed method was essentially the same and utilised transects walked through suitable habitat within 3 hours of dawn or dusk. Count units (see Table 2-5) were predefined for each target species and included in the method statement provided to surveyors.

All suitable habitats for waders were visited, at four week intervals, during the months of April, May, July and August 2019. Observations from each visit were annotated onto maps (locations of territories or breeding attempts) and a final, summary map produced at the end of the survey season using ARCMAP 10.4.1. Breeding wader summary sheets were also compiled at the end of the breeding season, indicating in each case the minimum number of breeding pairs/occupied territories known to occur.



Table 2-5: Count Units for each Wading Species

Species	Count Unit
Lapwing	Incubating Bird
Common Snipe	Drumming or Chipping Bird
Redshank	Alarming Bird
Woodcock	Displaying Male
Ringed Plover	Presence or Absence/ Fledged Young late in season
Common Sandpiper	Presence or Absence/ Fledged young late in season
Curlew	Territorial Activity

All species encountered (seen or heard) were recorded and their abundance, behaviour, sex/age and breeding status 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 2-6 below, details the survey dates and weather conditions.

Table 2-6: Breeding Waders Survey Details

Date	Location	Cloud (Okta)	Precipitation	Visibility	Wind
26/04/2019	Annagh WF	5/8	Dry	Excellent	F2
15/05/2019	Annagh WF	4/8	Dry	Excellent	F4
02/08/2019	Annagh WF	2/8	Showers	Excellent	F2-3
28/08/2019	Annagh WF	2/8	Light Shower	Excellent	F1-2

2.4 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; Bibby *et al*, 2000). The study area for this survey comprised a total of two no. c. 1 km transects which were selected and centred on different habitats present within the subject sites (See Figure 2-3 for the location of transects). Birds were counted over two visits, each timed to coincide with the early part of the breeding season (April to mid-May 2019) and later part of the season (mid- May to late June 2019) 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 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).



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 summer breeding bird transect schedule is available in Table 2-7. The results are presented in Table 3-4.

Table 2-7: Breeding bird summer transect Survey Details

Date	Transect	Time	Weather Conditions
15/05/2019	TR1 and TR2	07:30 – 09:25	Cloud: 4/8 oktas; rain: none; wind: F1; visibility: excellent
29/06/2019	TR1 and TR2	10:00 – 12:30	Cloud: 3/8 oktas; rain: none; wind: F2; visibility: excellent

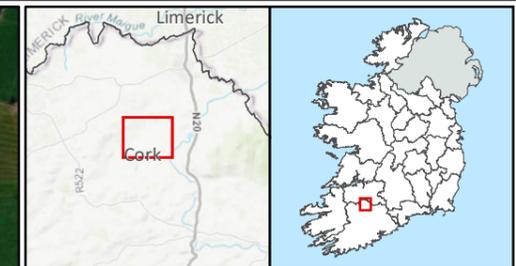
2.5 Wintering Bird Survey

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.

The wintering bird transect schedule is available in Table 2-8. The results are presented in Table 3-5.

Table 2-8: Breeding bird winter transect survey details

Date	Transect	Time	Weather Conditions
20/12/2019	TR1 and TR2	07:45 – 10:30	Cloud: N/A oktas, Rain: occ., showers, Wind: F1, Visibility: Excellent
21/01/2020	TR1 and TR2	09:10 – 10:40	Cloud: 7/8 oktas, Rain: Dry, Wind: F1, Visibility: very good



Legend

- Site Boundary
- Turbine Layout
- Bird Survey Transect
- Construction Access
- Turbine Hardstanding Area
- Construction Compound
- Substation
- Internal Access Track

TITLE: Breeding/Wintering Bird and Wader Survey Transects	
PROJECT: Annagh Wind Farm, Co. Cork	
FIGURE NO:	2.3
CLIENT:	EMPower
SCALE: 1:12500	REVISION: 0
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3. RESULTS

3.1 Avian usage of the Study Area – Vantage point

A total of 2 timed watches of 3 hours duration each were carried out at each of the 2 vantage points every month from April 2019 to March 2020, inclusive. This surveying effort totals to 72 hours of observation time at each VP over the survey period (see Appendix 3). Bird activity was recorded from the VPs every month. Table 3.1 shows all the species recorded during surveys. In total there were 49 individual flight lines of 11 target species observed during VP surveys completed over the survey period.

It is noted that a total of 8 additional flight lines for 4 species (1 additional species) were also recorded during winter transect surveys.

In total, 57 species of bird were noted (including additional target species records from transect surveys). Of these species, 6 are of Red-list status under the BoCCI: Grey Wagtail, Kestrel, Meadow Pipit, Redwing, Snipe and Swift. A total of 16 are Amber-listed and the remaining 35 are Green-listed. A total of 2 species are protected under Annex I of the EU Birds Directive: Hen Harrier and Little Egret. Table 3-1 details the conservation status of all 57 species.

3.1.1 Summary Results Summer 2019 (April - September)

Target species observed during this survey period at Annagh include Buzzard, Little Egret, Great Black-backed Gull, Grey Heron, Kestrel, and Lesser Black-backed Gull. Buzzard was recorded on 5 occasions, Grey Heron on 9, Kestrel on 6 and Lesser Black-backed Gull on 2 occasions during summer vantage point surveys in 2019.

3.1.2 Summary Results Winter 2019/20 (October - March)

Target species observed during this survey period included: Black-headed Gull, Buzzard, Cormorant, Common Gull, Grey Heron, Kestrel, Lesser Black-backed Gull, Mute Swan, Sparrowhawk, and Snipe. During VP surveys in winter 2019-20, Black-headed Gull was recorded on 2 occasions, Buzzard 9, Cormorant 2, Common Gull 1, Grey Heron 6, Kestrel 4, Lesser Black-backed Gull 1, Mute Swan 1, Sparrowhawk 1, and Snipe on 1 occasion. The following target species observations were recorded incidentally during winter transect surveys on 21st January 2020: Grey Heron (3 observations), Buzzard (1 observation), Hen Harrier (1 observation) and Snipe (3 observations).

Table 3-1: Bird species recorded during VP surveys and additional target species records from transect surveys

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
Black-headed Gull (BH)	<i>Chroicocephalus ridibundus</i>	Amber	No
Blue Tit (BT)	<i>Cyanistes caeruleus</i>	Green	No
Bullfinch (BF)	<i>Pyrrhula pyrrhula</i>	Green	No



Common name (BTO code)	Scientific name	*BoCCI status	**Annex I status
Buzzard (BZ)	<i>Buteo buteo</i>	Green	No
Chaffinch (CH)	<i>Fringilla coelebs</i>	Green	No
Chiffchaff (CC)	<i>Phylloscopus collybita</i>	Green	No
Coal Tit (CT)	<i>Parus ater</i>	Green	No
Common Gull (CM)	<i>Larus canus</i>	Amber	No
Coot (CO)	<i>Fulica atra</i>	Amber	No
Cormorant (CA)	<i>Phalacrocorax carbo</i>	Amber	No
Cuckoo (CK)	<i>Cuculus canorus</i>	Green	No
Dunnock (D.)	<i>Prunella modularis</i>	Green	No
Feral Pigeon (FP)	<i>Columba livia</i>	Green	No
Fieldfare (FF)	<i>Turdus pilaris</i>	Green	No
Goldcrest (GC)	<i>Regulus regulus</i>	Amber	No
Goldfinch (GF)	<i>Carduelis carduelis</i>	Green	No
Great Black-backed Gull (GB)	<i>Ardea cinerea</i>	Green	No
Great Tit (GT)	<i>Parus major</i>	Green	No
Grey Heron (H.)	<i>Ardea cinerea</i>	Green	No
Grey Wagtail (GL)	<i>Motacilla cinerea</i>	Red	No
Hen Harrier	<i>Circus cyaneus</i>	Amber	Yes
Hooded Crow (HC)	<i>Corvus cornix</i>	Green	No
House Martin (HM)	<i>Delichon urbicum</i>	Amber	No
House Sparrow (HP)	<i>Passer domesticus</i>	Amber	No
Jackdaw (JD)	<i>Corvus monedula</i>	Green	No
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
Lesser Redpoll (LR)	<i>Carduelis cabaret</i>	Green	No
Linnet (LI)	<i>Carduelis cannabina</i>	Amber	No
Little Egret (ET)	<i>Egretta garzetta</i>	Green	Yes
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
Mute Swan (MS)	<i>Cygnus olor</i>	Amber	No
Pheasant (PH)	<i>Phasianus colchicus</i>	Green	No



Common name (BTO code)	Scientific name	*BoCCI status	**Annex I status
Pied/White Wagtail (PW)	<i>Motacilla alba</i>	Green	No
Raven (RN)	<i>Corvus corax</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
Sand Martin (SM)	<i>Riparia riparia</i>	Amber	No
Siskin (SK)	<i>Carduelis 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 torquatus</i>	Green	No
Swallow (SL)	<i>Hirundo rustica</i>	Amber	No
Swift (SI)	<i>Apus apus</i>	Red	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

3.2 Target Species observations

3.2.1 Black-headed Gull

A total of 2 observations of this Amber-listed species were recorded during winter vantage point surveys, both of which were below the rotor-swept height band (25-175m). The first observation was in December 2019 at VP 2 where a large flock was recorded flying in from the south-west and foraging in a field for 145 minutes, outside the 500m buffer zone. The second observation was in February 2020 at VP 1 where 10 birds were recorded foraging in a field for 60 minutes before flying east, outside the 500m buffer zone.

During hinterland surveys, Black-headed Gull was recorded on 3 occasions in the summer season (May, June & July 2019), and once in the winter season, with a maximum count of 4 in June. All hinterland records come from site 12 (Large Quarry Lake – Ballinadridden).



3.2.2 Buzzard

A total of 14 observations of this Green-listed species were made during VP surveys (5 in summer, 9 in winter). One additional flight line was recorded during winter transect surveys.

Five observations of Buzzard were recorded in Summer 2019. Four of these flight paths were both in and outside the 500m buffer. Two of the observations inside/outside the 500m buffer in summer 2019 were single birds and two of the observations were of two birds. The fifth sighting (single bird) was outside of the buffer zone. All recorded flight paths within the buffer zone were within the rotor-swept height band (25-175m).

A total of nine observations of this Green-listed species were made during winter VP surveys 2019-20. During this period there was one instance of five birds sighted together (15/01/2020, at VP 1 inside/outside the buffer zone). The other eight sightings of Buzzard were of single birds, three of which were within the 500m buffer zone, five of which were inside/outside and one which was outside. Of the birds observed within the buffer zone, two flew within the rotor-swept height band (25-175m). One additional flight line was recorded during winter transect surveys. This incidentally recorded flight line was inside the 500m buffer, below the rotor-swept height band.

across both seasons, most of the observations were of single birds, with occasional sightings of 2 birds and one instance of 5 birds (15/01/2020, at VP 1).

There were no nests of Buzzards recorded on site or in the surrounding area, but given the frequency of recordings, it is likely that the species is breeding nearby.

3.2.3 Common Gull

This Amber-listed gull species was observed on 1 occasion during winter 2019-20 surveys in February 2020 at VP1. A group of 15 birds were recorded foraging as part of a mixed flock in an improved agricultural grassland (GA1) field for 60 minutes outside the 500m buffer zone before flying away low (0-10m) to the east.

3.2.4 Cormorant

A total of two sightings of this Amber-Listed species were recorded during winter 2019-20 VP surveys, at both VP1 and VP2, in January and February 2020. Both were outside the buffer zone. No sightings were recorded within the rotor-swept height band (25-175m).

3.2.5 Grey Heron

This Green-listed species was recorded as a flight-line during VP surveys on ten occasions at VPs 1 and 2, with seven records for summer VP surveys, and three during winter VP surveys.

A total of seven observations of Grey Heron in flight were recorded during summer 2019. Of the flight lines recorded as part of the summer surveys, one was inside the buffer, one was outside, and five were inside/outside. Four were single individuals flying between 0-20m height. One of these sightings was of an adult and a juvenile flying together at 0-20m height on 29/04/2019. Two observations were of single birds flying within the rotor-swept height band (25-175m). The five remaining observations were of single birds flying below the rotor-swept height band. One record of Grey Heron calling but not seen was also made.



Three Grey Heron flight lines were recorded during December 2019 as part of the winter 2019-20 surveys. Each sighting was of birds within the buffer zone flying at heights between 0-20m. A total of three incidental flight lines were also recorded during winter transect surveys. All were inside the 500m buffer, below the rotor-swept height band. A further three observations of Grey Heron were also made where flight activity was not recorded because they were either perched or on the ground during the VP.

3.2.6 Kestrel

This red-listed species was recorded 4 times in winter and 6 in the summer. All sightings involved single birds, with one record inside the 500m buffer zone, 4 out, and 5 in and out. Most of these records involved birds flying in the 0-20m height band, however 4 sightings were noted within the rotor-swept height band (25-175m). Of note were 3 records of birds hunting within the site.

During summer 2019 surveys, there were six sightings in total. Three sightings were recorded in May from VP2. One of the birds was flying low within the buffer zone (below 20m), and two of the birds were flying both inside/outside the buffer zone and rose to a height between 20-40m which is within the rotor-swept height band (25-175m). The bird flying below 20m dived for prey within the site. A further three sightings were recorded from VP1 in May 2019. One was outside the buffer zone flying along the access road. The other two sightings were of birds flying both inside and outside the buffer zone with one individual rising into the rotor-swept height band inside the buffer zone.

During winter surveys a total of four observations of Kestrel were recorded. One involved a female observed from VP1 in November 2019 flying into a tree on site and flying out again heading West, both flight paths were outside the 500m buffer between 0-20m altitude. Two further flight lines were also outside the 500m buffer, below 20m altitude. The remaining sighting was inside/outside the 500m buffer; this Kestrel was being mobbed by corvids and was forced down.

3.2.7 Lesser Black-backed Gull

This Amber-listed gull species was recorded on one occasion during summer 2019 vantage point surveys at VP2, involving a single individual flying over the site. The individual was flying inside/outside the buffer zone.

One record was made during winter 2019-20 surveys of a large flock of birds feeding within the site in an Improved agricultural grassland field (GA1). This observation was in January 2020 at VP2 where a large mixed flock (c. 60 birds, comprised of Black-headed and Lesser Black-backed Gulls) flew in low (0-20m) from the south-west and foraged in the field where VP2 is located for 145 minutes (outside the 500m buffer zone).

3.2.8 Little Egret

This Annex I species was recorded at VP 1 and 2 on six separate occasions with five records inside the 500m buffer zone and one inside/outside. Of these records, three were from the summer, with the remaining three from winter surveys. A high count of 4 individuals were noted feeding in GS4 on 13/02/20. No birds were recorded flying within the rotor-swept height band (25-175m).

All summer sightings recorded in 2019 were within the 500m buffer zone and were of single individuals flying low (0-20m).



During winter surveys 4 individuals were noted flying in from the east and foraging in GS4 on 13th February 2020 within the buffer zone. Two more sightings of single individuals flying below the rotor-swept height band (25-175m) were recorded; one within, and one inside/outside the 500m buffer. The latter of these birds flew in from the west and foraged in a wet, scrubby area.

3.2.9 Mute Swan

A single observation of this Amber-listed species was recorded during winter 2019-20 VP surveys. The observation was made from VP2 on 26/11/2019, involving a bird flying north to south, inside and outside the 500m buffer zone, spending the entirety of recorded time (23 seconds) within the rotor-swept height band (25-175m).

3.2.10 Sparrowhawk

Sparrowhawk, a green-listed species in Ireland, was recorded once, during winter surveys, at VP 1, inside the 500m buffer zone, and below the rotor-swept height band (25-175m).

3.2.11 Snipe

Snipe was not recorded during VP surveys but was observed flying within the 500m buffer during winter transect surveys in January 2020. All three flights observed were below the rotor-swept height band. All were short flights (5-8 seconds) within the 500m buffer, in the 0-10m height band.

3.2.12 Hen Harrier

This species was not recorded during VP surveys but was observed flying within the 500m buffer over wet grassland during winter transect surveys in January 2020. The flight was below the rotor-swept height band. The surveyor noted the bird was a ringtail.

3.3 **Hinterland Survey**

Hinterland surveys to establish breeding occupancy and census wetland sites within a 10 km radius of the site were carried out over a 14 day period over 12-months across 2019 and 2020. The survey schedule and locations of the Hinterland watches are shown in Table 2-3 of Section 2.2. A total of 47 bird species were identified during Hinterland surveys within this 12-month period.

A total of 3 Annex I species were recorded during hinterland surveys: Little Egret, Kingfisher, and Whooper Swan. A total of 10 Red-listed species were observed: Curlew, Grey Wagtail, Kestrel, Lapwing, Meadow Pipit, Redwing, Shoveler, Snipe, swift and Yellowhammer. A further 19 Amber-listed species were observed.

Species recorded during Hinterland surveys included three raptor species, two gull species, five wader species, seven duck species, one goose species and two swan species.



For site-specific Hinterland survey results see Appendix 5 of this report. Species of conservation concern that were recorded will be discussed in more detail in this section. Species have been selected for detailed discussion on the basis of conservation status, vulnerability to wind farm developments and if species sightings have been confirmed on or near the proposed Wind Farm site, which will indicate potential links between species recorded at the proposed site and the surrounding environment.

3.3.1 Black-headed Gull

This Amber-listed Gull species was seen on four occasions during Hinterland surveys. All observations were at Large Quarry Lake (Ballinadrideen), which is 2.6 km from the proposed Annagh Wind Farm. Sightings were noted in May, June, July and October 2019 and between two and four individuals were observed on each occasion.

3.3.2 Cormorant

Amber-listed Cormorant was noted on four occasions during Hinterland surveys and all observations were from the winter 2019/2020 season. Two observations were made at Large Quarry Lake (Ballinadrideen) (2.6 km distance to proposed Wind Farm), where one Cormorant was seen in December 2019 and three birds were observed on the 25th of February 2020. Further observations were made in January 2020 with one sighting at River Blackwater SAC/ Buttevant (7.84 km distance to proposed Wind Farm), and one from the River Awbeg (2.76 km distance to proposed Wind Farm), where one Cormorant was noted on each occasion.

3.3.3 Curlew

This Red-listed wader species was seen on three occasions during Hinterland surveys. It was seen twice on the 17th of December 2019. Once at Glanmore Flats (5.55 km distance to proposed Wind Farm), where three Curlew were noted and once at Kilcolman Bog SPA (9.49 km distance to proposed Wind Farm) where 12 Curlew were observed. Additionally it was noted on the 28th of January 2020 at the Large Quarry Lake (Ballinadrideen) (2.6 km distance to proposed Wind Farm) where a flock of 40 Curlew was observed.

3.3.4 Grey Heron

Green-listed Heron was noted on 25 occasions during Hinterland surveys. The site with most Heron sightings was Large Quarry Lake (Ballinadrideen) (2.6 km distance to proposed Wind Farm). Heron were observed here in August, November and December 2019 as well as in January and February 2020. On five of these occasions one Heron was observed while on the 17th of December 2019 four Grey Herons were noted. Grey Heron were also observed five times at the River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm), four times at the Kilcolman Bog SPA (9.49 km distance to proposed Wind Farm), three times at the River Blackwater SAC/ Buttevant (7.84 km distance to proposed Wind Farm), twice at the Small Quarry Lake (Ballyroe) (2.6 km distance to proposed Wind Farm), and once at 2 Flooded fields east of Corbett Court restaurant (coordinates 554293, 618683). These observations were made throughout the year during hinterland surveys in April, May, June, July, August, October and December 2019 and in January and February 2020.



3.3.5 Kestrel

Red-listed Kestrel was noted on two occasions during Hinterland surveys and one individual was seen each time. The first observation was from the 27th of August 2019 at Eagle Lough pNHA (8.6 km distance to proposed Wind Farm) and the second observation was from the 20th of December 2019 at Ballyhoura Mountain pNHA (6.6 km distance to proposed Wind Farm).

3.3.6 Lapwing

Red-listed Lapwing was noted on four occasions during Hinterland surveys. Lapwing was seen twice at the Large Quarry Lake (Ballinadrideen) (2.6 km distance to proposed Wind Farm), once on the 28th of January 2020 and once on the 25th of February where 16 and 21 Lapwing were observed respectively. The third occasion Lapwing was seen was on the 17th of December 2019 at Glanmore Flats (5.55 km distance to proposed Wind Farm) where 18 Lapwing were noted. Finally, six Lapwing were observed at the Kilcolman Bog SPA (9.49 km distance to proposed Wind Farm) on the 28th of November 2019.

3.3.7 Lesser Black-backed Gull

Amber-listed Lesser Black-backed Gull was noted on three occasions during Hinterland surveys with each observation being from the summer 2019 season. This gull species was observed at Large Quarry Lake (Ballinadrideen) (2.6 km distance to proposed Wind Farm) in May, June and July 2019 and between two and four individuals were observed on each occasion.

3.3.8 Little Egret

Little Egret, an Annex 1 species, was noted on five occasions during Hinterland surveys. Two observations were made at Eagle Lough pNHA (8.6 km distance to proposed Wind Farm), where one bird was observed on the 1st of August 2019 and four Little Egret were seen on the 8th of October 2019. One observation of four Little Egret was made on the 2nd of May 2019 at the River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm). A further observation was made of one Little Egret at the Kilcolman Bog SPA (9.49 km distance to proposed Wind Farm) on the 23rd of June 2019. The final observation was on the 17th of December 2019 at 2 Flooded fields east of Corbett Court restaurant (co-ordinates 554293, 618683).

3.3.9 Mute Swan

This Amber-listed Swan species was noted on 22 occasions at eight different sites during Hinterland surveys. It was seen seven times at Castle Lake (Milltown) (0.9 km distance to proposed Wind Farm) where between two and five Mute Swan were seen in May, June, August, November and December 2019 and January 2020. Mute Swan were seen on four occasions at Kilcolman Bog SPA (9.49 km distance to proposed Wind Farm), where two Swans were seen on the 2nd of May 2019, one Swan was seen on the 27th of May 2019 and seven Swans were seen on the 17th of December 2019, an additional Mute Swan record was from the 28th of November 2019. At the River Blackwater SAC/Buttevant (7.84 km distance to proposed Wind Farm), seven Mute Swans were seen on the 17th of December 2019 and three Swans were seen on the 28th of January 2019. At the River Awbeg (2.76 km distance to proposed Wind Farm), Mute Swan were seen in May and in December 2019 where between one and two Swans were seen on each occasion.



Mute Swan were also observed at West Plantation (Aughrim) (5.76 km distance to proposed Wind Farm), at Eagle Lough pNHA (8.6 km distance to proposed Wind Farm), at Glanmore Flats (5.55 km distance to proposed Wind Farm) and at the River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm) where on each occasion between one and two birds was observed. These observations were from May and December 2019 and from February 2020.

3.3.10 Sparrowhawk

This Green-listed raptor species was seen twice during Hinterland surveys. One observation of a single hawk was made at Kilcolman Bog SPA (9.49 km distance to proposed Wind Farm) on the 23rd of June 2019 and a further sighting was recorded at the same site on the 1st of August 2019.

3.3.11 Snipe

Red-listed Snipe was noted five times during Hinterland surveys with all observations being from the winter 2019/2020 season and from four different Hinterland sites. Snipe was seen twice at the Large Quarry Lake (Ballinadrídeen) (2.6 km distance to proposed Wind Farm), where three Snipe were noted on the 17th of December 2019 and one Snipe was noted on the 28th of January 2020. On the same day in January total of five Snipe were observed at Ballyhoura Mountain pNHA (6.6 km distance to proposed Wind Farm) and two Snipe were seen at the River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm). On the 25th of February 2020 one Snipe was noted at Glanmore Flats (5.55 km distance to proposed Wind Farm).

3.3.12 Whooper Swan

Annex 1 species Whooper Swan was seen on eight occasions during Hinterland surveys, all of which were throughout the winter season 2019/2020. Of these, two observations were at the River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm), the largest flock of 50 was observed on the 28th of January 2020 and a smaller number of 18 Whooper Swans was observed on the 17th of December 2019. A further large flock of 40 Whooper Swans was noted at Glanmore Flats (5.55 km distance to proposed Wind Farm) on the 28th of November 2019. At the Large Quarry Lake (Ballinadrídeen) (2.6 km distance to proposed Wind Farm), ten Whooper Swans were seen on the 28th of January 2020, on the same day five more Swans were seen at Glanmore Flats (5.55 km distance to proposed Wind Farm). A total of eight Whooper Swans was noted on the 6th of November at Kilcolman Bog SPA (9.49 km distance to proposed Wind Farm) and a further record of Whooper Swan was taken at this site on the 28th of November 2019. Finally, seven Swans were seen on the 17th of December at the River Awbeg (2.76 km distance to proposed Wind Farm).

Table 3-2: Bird species recorded during hinterland surveys

Common Name	Scientific Name	Conservation Status	
		BoCCI*	Annex I**
Blackcap	<i>Sylvia atricapilla</i>	Green	No
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Amber	No
Buzzard	<i>Buteo buteo</i>	Green	No
Chaffinch	<i>Fringilla coelebs</i>	Green	No
Chiffchaff	<i>Phylloscopus collybita</i>	Green	No



Common Name	Scientific Name	Conservation Status	
		BoCCI*	Annex I**
Collared Dove	<i>Streptopelia decaocto</i>	Green	No
Coot	<i>Fulica atra</i>	Green	No
Cormorant	<i>Phalacrocorax carbo</i>	Amber	No
Curlew	<i>Numenius arquata</i>	Red	No
Garganey	<i>Anas querquedula</i>	Amber	No
Greenfinch	<i>Carduelis chloris</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
Hooded Crow	<i>Corvus cornix</i>	Green	No
House Martin	<i>Delichon urbicum</i>	Amber	No
Jackdaw	<i>Corvus monedula</i>	Green	No
Kestrel	<i>Falco tinnunculus</i>	Red	No
Kingfisher	<i>Alcedo atthis</i>	Amber	Yes
Lapwing	<i>Vanellus vanellus</i>	Red	No
Lesser Black-backed Gull	<i>Larus fuscus</i>	Amber	No
Little Egret	<i>Egretta garzetta</i>	Green	Yes
Little Grebe	<i>Tachybaptus ruficollis</i>	Green	No
Mallard	<i>Anas platyrhynchos</i>	Amber	No
Meadow Pipit	<i>Anthus pratensis</i>	Red	No
Moorhen	<i>Gallinula chloropus</i>	Green	No
Mute Swan	<i>Cygnus olor</i>	Amber	No
Pheasant	<i>Phasianus colchicus</i>	Green	No
Pied/White Wagtail	<i>Motacilla alba</i>	Green	No
Raven	<i>Corvus corax</i>	Green	No
Redwing	<i>Turdus iliacus</i>	Red	No
Rook	<i>Corvus frugilegus</i>	Green	No
Sand Martin	<i>Riparia riparia</i>	Amber	No
Shoveler	<i>Anas clypeata</i>	Red	No
Skylark	<i>Alauda arvensis</i>	Amber	No
Snipe	<i>Gallinago gallinago</i>	Red	No
Song Thrush	<i>Turdus philomelos</i>	Green	No
Sparrowhawk	<i>Accipiter nisus</i>	Green	No



Common Name	Scientific Name	Conservation Status	
		BoCCI*	Annex I**
Starling	<i>Sturnus vulgaris</i>	Amber	No
Stonechat	<i>Saxicola torquatus</i>	Green	No
Swallow	<i>Hirundo rustica</i>	Amber	No
Swift	<i>Apus apus</i>	Red	No
Teal	<i>Anas crecca</i>	Amber	No
Tufted Duck	<i>Aythya fuligula</i>	Amber	No
Whooper Swan	<i>Cygnus cygnus</i>	Amber	Yes
Wigeon	<i>Anas penelope</i>	Amber	No
Yellowhammer	<i>Emberiza citrinella</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 Breeding Waders Survey

Transect 1 (TR1) is located near the proposed road between T05 and T04, and the construction access track between T05 and substation. Transect 2 (TR2) is located north of T1 and below T01, T02 and T03, cutting across the proposed access track from T05 to T02 (see figure 2-3 for a detailed transect map). A confirmed breeding attempt by Snipe was established in the first of 4 visits in April 2019, along TR1. A total of 3 occupied territories were noted in May 2019 (all along TR1), as well as a confirmed attempt (TR1) and a potential Woodcock territory (TR1) based on a feather found on site. A return visit in August 2019 yielded another occupied territory (TR1) as well as an additional potential territory. The closest suitable habitat for breeding Woodcock is a conifer plantation at the eastern end of TR1, close to where the feather was found.

Table 3-3: Bird species recorded during breeding wader surveys

Date	Transect	Common Name	Behaviour	Breeding Status	Grid
26/04/2019	2	Snipe	Flushed	Potential	550406, 617426
26/04/2019	1	Snipe	Flushed	Potential	548934, 617056
26/04/2019	1	Snipe	Drumming	Confirmed attempt	549684, 617036
15/05/2019	1	Snipe	Flushed	Occupied Territory	550356, 616863
15/05/2019	1	Snipe	Flushed	Occupied Territory	550236, 616947
15/05/2019	1	Snipe	Flushed	Occupied Territory	549980, 617041
15/05/2019	1	Snipe	N/A	Confirmed attempt	549637, 617007
15/05/2019	1	Woodcock	N/A	Potential	550439, 616786
02/08/2019	1	Snipe	Calling	Occupied Territory	N/A
28/08/2019	1	Snipe	Flushed	Potential	N/A



3.5 General Breeding Bird Survey

The results of the summer breeding bird transect survey at Annagh are shown in Table 3-4. A total of 42 species were recorded along the transects. A total of 4 Red-listed species were recorded: Kestrel, Meadow Pipit, Snipe and Woodcock. Thirteen Meadow Pipit were recorded in transect one (b), and twelve in transect two (a), in the first visit in May 2019. In June, 10 were recorded in the first transect, and 3 in the second transect. A Woodcock feather was discovered along transect 1 in May (same record noted above in 3.4).

A total of eight Amber-listed species were recorded: Goldcrest, Greenfinch, House sparrow, Linnet, Skylark, Starling, Swallow and Willow Warbler.



Table 3-4: Results of breeding bird transects surveys of Annagh (TR1, TR2 and TR3) during summer 2019

Common Name	Scientific Name	Early				Late				Early				Late			
		T1		T2		T1		T2		T1		T2		T1		T2	
		0-25m	25-100m	>100/FO													
Blackbird	<i>Turdus merula</i>	4	0	0	3	2	0	1	0	0	0	5	0	0	0		
Blackcap	<i>Sylvia atricapilla</i>	0	1	0	0	3	0	2	3	0	0	3	0	0	0		
Blue Tit	<i>Cyanistes caeruleus</i>	0	5	0	1	0	0	3	2	0	0	0	0	0	0		
Bullfinch	<i>Pyrrhula pyrrhula</i>	0	2	0	0	4	0	2	0	0	0	0	0	0	0		
Buzzard	<i>Buteo buteo</i>	0	0	0	0	0	2	0	0	0	0	0	0	0	1		
Chaffinch	<i>Fringilla coelebs</i>	4	0	0	3	0	0	8	0	0	0	7	0	0	0		
Chiffchaff	<i>Phylloscopus collybita</i>	0	6	0	0	1	0	0	0	0	0	0	0	0	0		
Coal Tit	<i>Periparus ater</i>	0	0	0	0	0	0	0	0	0	0	2	0	0	0		
Cuckoo	<i>Cuculus canorus</i>	0	0	0	0	1	0	0	2	0	0	0	0	0	0		
Duncock	<i>Prunella modularis</i>	0	0	0	2	0	0	2	1	0	0	3	0	0	0		
Goldcrest	<i>Regulus regulus</i>	0	0	0	0	0	0	2	0	0	0	0	0	0	0		
Goldfinch	<i>Carduelis carduelis</i>	2	0	0	0	0	0	2	0	0	0	0	0	0	0		
Grasshopper Warbler	<i>Locustella naevia</i>	0	1	0	0	1	0	1	1	0	0	0	2	0	0		
Great Tit	<i>Parus major</i>	7	2	0	2	0	0	3	1	0	0	4	0	0	0		
Greenfinch	<i>Carduelis chloris</i>	0	1	0	0	1	0	0	2	0	0	0	0	0	0		
Grey Heron	<i>Ardea cinerea</i>	0	0	0	0	2	0	0	0	0	2+	0	0	0	0		



Common Name	Scientific Name	Early				Late				Early				Late					
		T1		T2		T1		T2		T1		T2		T1		T2			
		0-25m	25-100m	>100/FO															
Hooded Crow	<i>Corvus cornix</i>	0	0	8	0	0	0	0	0	0	0	0	0	0	5	0	0	0	3
House Sparrow	<i>Passer domesticus</i>	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Jackdaw	<i>Corvus monedula</i>	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	3
Kestrel	<i>Falco tinnunculus</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lesser Redpoll	<i>Carduelis cabaret</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Linnet	<i>Carduelis cannabina</i>	0	2	0	0	0	0	5	0	1	0	0	0	0	0	0	2	0	0
Magpie	<i>Pica pica</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Meadow Pipit	<i>Anthus pratensis</i>	13	0	0	6	0	4	0	0	4	8	1	2	0	0	0	0	0	0
Mistle Thrush	<i>Turdus viscivorus</i>	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Pheasant	<i>Phasianus colchicus</i>	3	0	0	0	0	1	0	0	2	0	0	0	0	0	0	1	0	0
Raven	<i>Corvus corax</i>	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reed Bunting	<i>Emberiza schoeniclus</i>	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Robin	<i>Erithacus rubecula</i>	0	0	0	0	0	0	0	2	3	0	4	0	0	0	0	0	0	0
Rook	<i>Corvus frugilegus</i>	0	0	0	0	0	17	0	0	0	10	0	0	0	0	0	0	0	0
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	0	2	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
Siskin	<i>Carduelis spinus</i>	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Skylark	<i>Alauda arvensis</i>	4	3	0	3	0	0	0	0	2	0	0	0	2	0	0	2	0	0



Common Name	Scientific Name	Early				Late				Early				Late			
		T1		T2		T1		T2		T1		T2		T1		T2	
		0-25m	25-100m	>100/FO													
Snipe	<i>Gallinago gallinago</i>	4	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0
Song Thrush	<i>Turdus philomelos</i>	3	0	0	3	0	0	0	0	0	0	0	0	1	0	0	
Starling	<i>Sturnus vulgaris</i>	6	0	11	0	0	0	0	0	0	0	0	0	0	0	0	
Stonechat	<i>Saxicola torquatus</i>	4	0	0	5	7	0	0	3	0	0	0	0	3	0	0	
Swallow	<i>Hirundo rustica</i>	0	0	0	0	0	0	1	0	0	10	0	0	0	0	12	
Willow Warbler	<i>Phylloscopus trochilus</i>	3	0	0	1	0	0	0	8	0	0	0	0	0	0	0	
Woodcock	<i>Scolopax rusticola</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Woodpigeon	<i>Columba palumbus</i>	0	0	5	0	0	0	6	0	0	3	0	0	0	0	0	
Wren	<i>Troglodytes troglodytes</i>	4	0	0	4	0	0	0	5	1	0	3	0	0	0	0	
Total Number of Species: 42																	



3.6 Wintering Bird Survey

The results of the wintering bird transect survey at Annagh are shown below, in table 3-5.

A total of 28 species were recorded along the transects. Just one Annex I species was recorded during surveys, namely Hen Harrier. This female/immature was observed south of T04, flying low in a westerly direction over wet grassland GS4.

A total of 4 Red-listed species (Kestrel, Meadow Pipit, Redwing and Snipe) were recorded. An additional 2 Amber-listed species were recorded: Hen Harrier and Starling.



Common Name	Scientific Name	Early			Late			Early			Late		
		T1			T2			T1			T2		
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO
Magpie	<i>Pica pica</i>	0	0	0	0	0	0	0	0	0	0	0	0
Meadow Pipit	<i>Anthus pratensis</i>	0	0	6	0	0	0	0	0	0	0	7	0
Mistle Thrush	<i>Turdus viscivorus</i>	0	0	0	0	2	0	0	0	0	0	0	0
Redwing	<i>Turdus iliacus</i>	0	0	15	0	0	0	0	0	60	0	5	0
Robin	<i>Erithacus rubecula</i>	3	0	0	0	0	0	4	0	0	0	2	0
Rook	<i>Corvus frugilegus</i>	1	0	0	1	0	6	0	0	0	0	0	20
Snipe	<i>Gallinago gallinago</i>	0	2	0	0	0	0	2	0	0	0	1	4
Song Thrush	<i>Turdus philomelos</i>	0	0	0	0	0	0	6	0	0	0	0	0
Starling	<i>Sturnus vulgaris</i>	0	35	0	0	0	0	0	0	0	0	0	0
Stonechat	<i>Saxicola torquatus</i>	0	0	0	1	0	0	0	0	0	0	0	0
Woodpigeon	<i>Columba palumbus</i>	0	0	3	0	0	3	3	0	10	1	1	1
Wren	<i>Troglodytes troglodytes</i>	3	0	0	0	0	0	5	0	0	2	0	0
Total number of species:											28		



4. DISCUSSION

In conclusion, FT carried out one full year of ornithological surveys at the proposed Annagh Wind Farm between April 2019 and March 2020, inclusive. The following surveys were undertaken: vantage point surveys, breeding & winter bird transect surveys, hinterland surveys, and breeding wader surveys.

In total there were 58 individual flight lines of 12 target species observed during the survey period (including additional flight lines for recorded during transect surveys).

In total 57, species of bird were noted. Of these species, 6 are of Red-list status under the BoCCI: Grey Wagtail, Kestrel, Meadow Pipit, Redwing, Snipe and swift. A total of 16 are Amber-listed and the remaining 35 are Green-listed. A total of 2 species are protected under Annex I of the EU Birds Directive: Hen Harrier and Little Egret. Table 3-1 details the conservation status of all 57 species.

Annex I-listed Little Egret was observed on a total of 5 occasions. All flight-lines of this species were below 20m, highlighting the fact that birds were primarily feeding or commuting within site, in suitable GS4 habitat. There was one record of annex-1 listed Hen Harrier, with a ringtail observed flying within the 500m buffer over wet grassland during winter transect surveys in January 2020. The flight was below the rotor-swept height band.

A total of 47 bird species were identified during Hinterland surveys surrounding the proposed site. A total of 3 Annex I species were recorded: Little Egret, Kingfisher, and Whooper Swan. A total of 10 Red-listed species were observed: Curlew, Grey Wagtail, Kestrel, Lapwing, Meadow Pipit, Redwing, Shoveler, Snipe, Swift and Yellowhammer. A further 18 Amber-listed species were observed during hinterland surveys.

The most important sites for wetland bird species of interest were the Large Quarry Lake (Ballinadrideen) at 2.6 km from the proposed development and Kilcolman Bog SPA at 9.49 km from the proposed development. At the Large Quarry Lake (Ballinadrideen) the following species of conservation concern, and species which are known to be vulnerable to wind farm developments, were noted: Annex 1 species Whooper Swan, Red-listed Lapwing, Curlew and Snipe and Amber-listed Lesser Black-backed Gull, Black-headed Gull, Cormorant, Mallard, Teal, Wigeon, Sand Martin, House Martin and Swallow, as well as Green-listed Grey Heron. At Kilcolman Bog SPA the following species of conservation concern were noted: Annex 1 species Whooper Swan, Red-listed Curlew, Amber-listed Garganey, Greylag Goose, Mallard, Teal, Wigeon, Tufted Duck and Mute Swan, as well as Green-listed Grey Heron, Sparrowhawk, Buzzard, Coot, Little Grebe and Moorhen.

Other Hinterland sites which support a variety of species of conservation interest are: River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm), River Awbeg (2.76 km distance to proposed Wind Farm), Ballyhoura Mountains pNHA (6.6 km distance to proposed Wind Farm), River Blackwater SAC/Buttevant (7.84 km distance to proposed Wind Farm) and Eagle Lough pNHA (8.6 km distance to proposed Wind Farm).

A confirmed breeding attempt by common Snipe was established in the first of 4 visits in April 2019. A total of 3 occupied territories were noted in May, as well as a confirmed attempt and a potential woodcock territory based on a feather found on site. A return visit in August 2019 yielded another occupied territory as well as an additional potential territory.

A comprehensive ornithological assessment is included in the EIAR (Chapter 8: Biodiversity). This comprises a detailed impact assessment of the potential impact of the proposed Wind Farm on birds. Collision risk modelling (CRM) has been carried out for target species and the CRM report is contained within Appendix 8.7 of the EIAR.



5. REFERENCES

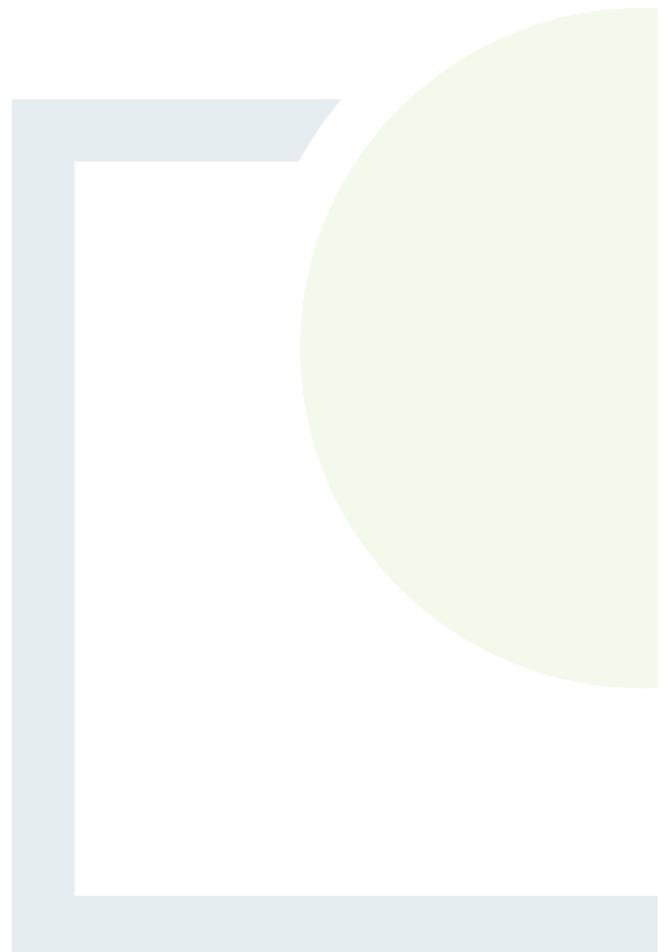
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APPENDIX 1

VP Summer 2019
Survey Details



VP Summer 2019 - Survey Details

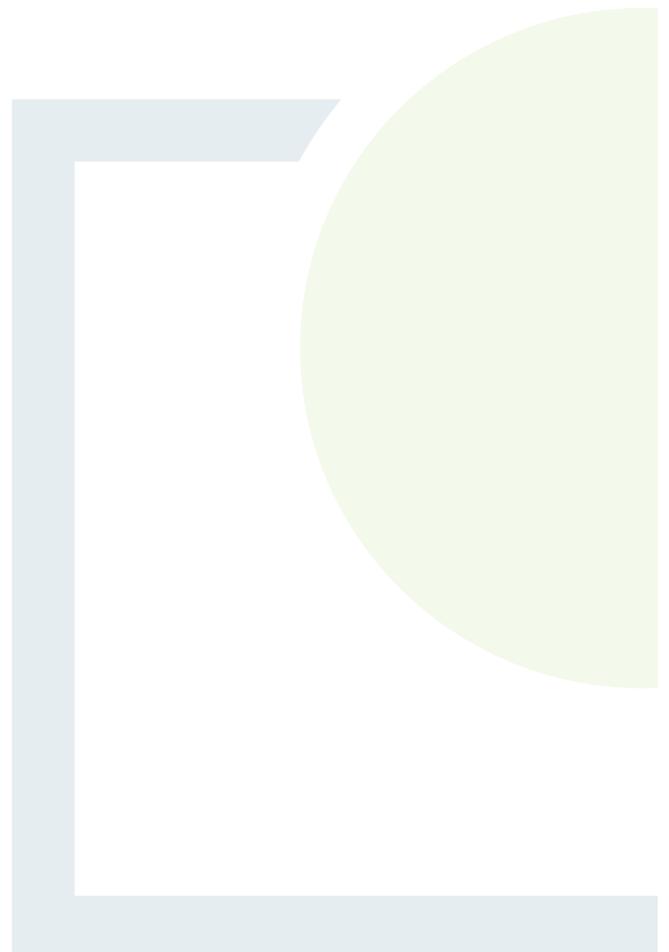
Site	VP	Date	Start Time	End Time	Cloud (Oktas)	Visibility	Rain	Wind
Annagh	1	29/04/2019	08:45	15:15	8	Excellent - Good	Light at times	F0
Annagh	2	01/05/2019	09:45	16:15	6 to 7	Excellent	Light	F1-0 W
Annagh	1	22/05/2019	08:10	14:40	3 to 7	Excellent	Dry	F0-1
Annagh	2	24/05/2019	08:05	14:35	8	Good - OK	N/A - Light @ 12	F1-2 E
Annagh	1	24/06/2019	14:05	17:05	5	Excellent	Dry	F1 SE
Annagh	1	25/06/2019	09:05	12:05	8	Fair - Good	Dry	F2 NW
Annagh	2	24/06/2019	11:00	14:00	7	Excellent	Dry	F1-2 SE
Annagh	2	25/06/2019	06:00	09:00	8	Poor-Fair	Dry	F2-3 NW
Annagh	1	02/08/2019	09:30	12:30	0 to 2	Excellent	Light Showers	F2-3 SE - E
Annagh	1	03/08/2019	08:05	11:05	6	Excellent	Light Showers	F2-3 SE
Annagh	2	02/08/2019	12:35	15:35	1	Excellent	Dry	F2-3 E
Annagh	2	03/08/2019	11:10	14:10	6	Excellent	Dry	F2-3 SE
Annagh	1	27/08/2019	11:00	14:00	8	Excellent	Rain at 12	F2-3 SW
Annagh	1	28/08/2019	07:00	10:00	0 to 8	Excellent	Dry	F1-2 SW
Annagh	2	27/08/2019	14:05	17:05	8	Excellent	Occasional fronts	F2-3 SW
Annagh	2	28/08/2019	10:10	13:10	2	Excellent	Dry	F1-2 SW
Annagh	1	02/09/2019	14:00	17:00	8	Excellent	Occasional light showers	F4 SW
Annagh	1	03/09/2019	09:35	12:35	8	Good - Fair	Drizzle	F1-2 S
Annagh	2	02/09/2019	17:10	20:10	8	Excellent	Occasional showers	F4-5 SW
Annagh	2	03/09/2019	06:30	09:30	8	Excellent	Very light drizzle	F1-2 S



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APPENDIX 2

VP Winter 2019/2020
Survey Details



VP Winter 2019/2020 - Survey Details

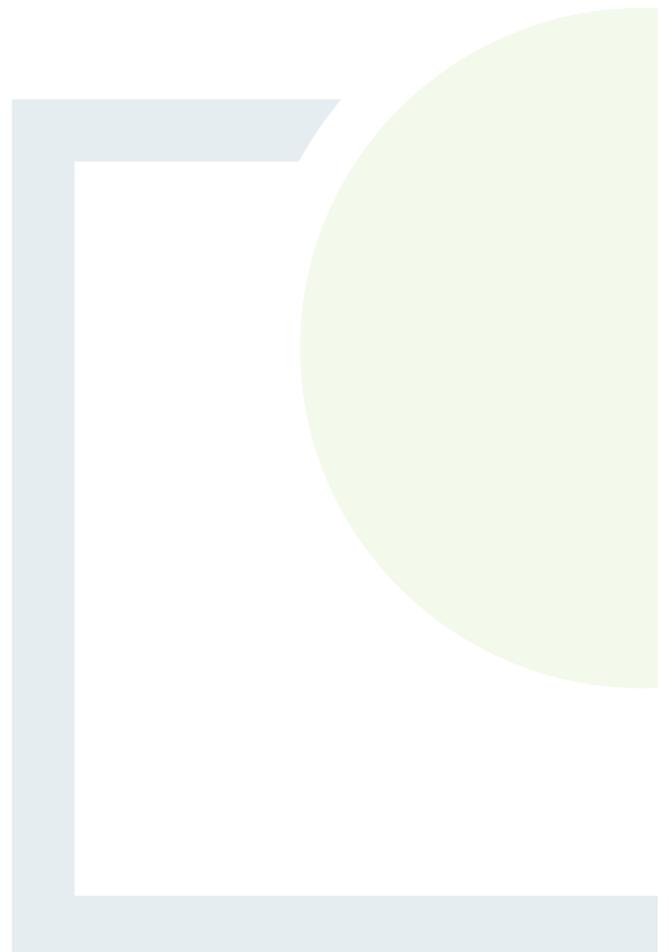
Site	VP	Date	Start	End	Cloud (Oktas)	Visibility	Rain	Wind
Annagh	1	06/11/2019	12:50	15:50	8	Good	Occ. Drizzle	F1-2 SSW
Annagh	1	08/11/2019	09:20	12:20	0	Excellent	Dry	F1 SW
Annagh	2	06/11/2019	09:45	12:45	8	Moderate - Good	Persistent until 11:45	F1-2 SSW
Annagh	2	08/11/2019	12:25	15:25	0	Excellent	Dry	F1 SW
Annagh	2	26/11/2019	09:30	15:30	8	Good	Dry - Light Drizzle	F3-4
Annagh	1	27/11/2019	09:35	15:35	7	Good	Dry	F3
Annagh	1	16/12/2019	08:40	11:40	2	Very Good	Dry	F1
Annagh	1	16/12/2019	11:40	14:40	1	Very Good	Dry	F1
Annagh	2	08/01/2020	09:30	15:30	4 to 7	Good	Dry	F1
Annagh	1	15/01/2020	10:30	16:30	1 to 6	Excellent	Occ. Light Showers	F1-2
Annagh	2	18/02/2020	09:30	16:00	6	Good	Occ. Light Showers	F3-4
Annagh	1	13/02/2020	09:30	16:00	2	Good	Dry	F2
Annagh	2	09/03/2020	09:05	15:05	8	Good	Persistent	F1-2 SE
Annagh	1	22/03/2020	10:15	13:20	5	Excellent	Dry	F1-2 SE
Annagh	1	23/03/2020	09:00	12:00	8	Good	Frequent squalls	F5 SW
Annagh	2	22/03/2020	13:30	16:30	4	Excellent	Dry	F1-2 SE
Annagh	2	23/03/2020	12:10	15:15	8	Good	Freq. heavy squalls	F4 SW



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APPENDIX 3

Bird Survey Observations
2019-2020



Summer Survey 2019 Bird Flightline data

Site	VP	Date	Observation	Species	Species Quantity	Start Time	Duration	Flightline Map	Flightline No.	Notes
Annagh	1	29/04/2019	2	Buzzard	2	09:42	120	8B	2	
Annagh	2	01/05/2019	2	Buzzard	1	11:44	240	8B	4	
Annagh	2	24/05/2019	8	Buzzard	1	14:02	25	8B	24	
Annagh	1	22/05/2019	4	Buzzard	2	11:27	560	8B	13	
Annagh	1	22/05/2019	5	Buzzard	1	12:02	240	8B	14	
						-	-	-	-	Bird observed flying outside 500m buffer (Annagh Bridge) after VP watch
Annagh	2	03/09/2019	-	Buzzard	1					
Annagh	1	29/04/2019	1	Grey Heron	2	09:22	15	8C	1	
Annagh	2	01/05/2019	1	Grey Heron	1	09:50	20	8C	3	
Annagh	2	01/05/2019	7	Grey Heron	1	16:15	20	8C	9	
Annagh	2	24/05/2019	4	Grey Heron	1	08:51	40	8C	20	
Annagh	2	24/05/2019	7	Grey Heron	1	12:40	35	8C	23	
Annagh	1	22/05/2019	2	Grey Heron	1	10:47	20	8C	11	
Annagh	1	22/05/2019	7	Grey Heron	1	13:59	30	8C	16	
Annagh	2	28/08/2019	-	Grey Heron	1	-	-	-	-	No flight activity observed
Annagh	2	02/09/2019	-	Grey Heron	1	-	-	-	-	
Annagh	2	03/09/2019	-	Grey Heron	2	-	-	-	-	
Annagh	2	01/05/2019	3	Kestrel	1	13:47	25	8D	5	
Annagh	2	01/05/2019	4	Kestrel	1	15:45	15	8D	6	

Site	VP	Date	Observation	Species	Species Quantity	Start Time	Duration	Flightline Map	Flightline No.	Notes
Annagh	2	01/05/2019	6	Kestrel	1	16:03	30	8D	8	
Annagh	1	22/05/2019	1	Kestrel	1	10:38	30	8D	10	
Annagh	1	22/05/2019	3	Kestrel	1	11:20	40	8D	12	
Annagh	1	22/05/2019	6	Kestrel	1	13:28	5	8D	15	
Annagh	2	24/05/2019	5	Lesser Black-backed Gull	1	09:50	35	8E	21	
Annagh	2	01/05/2019	5	Little Egret	1	16:00	30	8F	7	
Annagh	2	24/05/2019	1	Little Egret	1	08:28	20	8F	18	
Annagh	2	22/05/2019	1	Little Egret	1	14:09	20	8F	17	

Winter Survey 2019/20 Bird Flightline data

VP	Date	Observation	Species	Species Quantity	Start Time	Duration	Flightline Map	Flightline No.	Notes
2	08/01/2020	6	Black-headed Gull	30	12:15	8700	8H	22	
1	13/02/2020	5	Black-headed Gull	10	15:16	3600	8H	49	
2	08/01/2020	1	Buzzard	1	09:50	19	8G	29	
2	08/01/2020	2	Buzzard	1	09:55	350	8G	30	
2	08/01/2020	3	Buzzard	1	10:04	600	8G	31	
1	15/01/2020	1	Buzzard	1	11:30	150	8G	37	
1	15/01/2020	2	Buzzard	1	11:35	125	8G	38	
1	15/01/2020	3	Buzzard	5	11:57	545	8G	39	
1	15/01/2020	4	Buzzard	1	12:11	39	8G	40	
1	15/01/2020	8	Buzzard	1	14:19	9	8G	44	
1	13/02/2020	1	Buzzard	1	09:48	128	8G	45	
TR1	21/01/2020	3	Buzzard	1	9:21	10	8G	187	
1	13/02/2020	4	Common Gull	15	15:16	3600	8I	48	
2	08/01/2020	4	Cormorant	1	11:36	9	8J	32	
1	13/02/2020	3	Cormorant	1	13:14	70	8J	47	
1	08/11/2019	-	Grey Heron	1	-	-	-	-	No flight activity observed
2	08/01/2020	5	Grey Heron	1	11:49	10	8L	33	
2	08/01/2020	7	Grey Heron	1	13:14	120	8L	35	
2	08/01/2020	8	Grey Heron	1	13:49	20	8L	36	
2	22/03/2020	-	Grey Heron	1	-	-	-	-	No flight activity observed
TR1	21/01/2020	1	Grey Heron	1	9:39	10	8L	186	
TR1	21/01/2020	4	Grey Heron	1	10:40	5	8L	189	

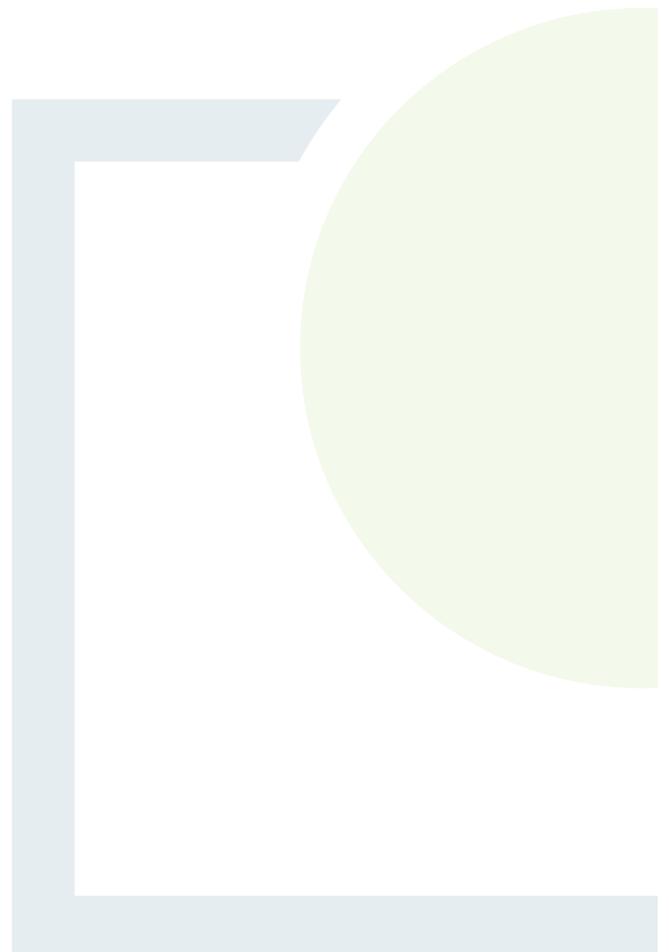
VP	Date	Observation	Species	Species Quantity	Start Time	Duration	Flightline Map	Flightline No.	Notes
TR1	21/01/2020	7	Grey Heron	1	10:10	7	8L	192	
TR1	21/01/2020	3	Hen Harrier	1	9:15	6	8K	188	
1	27/11/2019	1	Kestrel	1	13:24	35	8M	25	
1	16/12/2019	1	Kestrel	1	10:01	4	8M	28	
1	15/01/2020	5	Kestrel	1	12:26	45	8M	41	
2	18/02/2020	1	Kestrel	1	12:19	47	8M	50	
2	08/01/2020	6	Lesser Black-backed Gull	30	12:15	8700	8N	34	
1	27/11/2019	2	Little Egret	1	13:45	216	8O	26	
1	15/01/2020	7	Little Egret	1	14:01	18	8O	43	
1	13/02/2020	2	Little Egret	4	10:22	240	8O	46	
2	26/11/2019	1	Mute Swan	2	13:10	23	8P	27	
TR1	21/01/2020	5	Snipe	3	10:39	8	8Q	190	
TR1	21/01/2020	6	Snipe	1	10:15	5	8Q	191	
TR1	21/01/2020	8	Snipe	1	10:12	7	8Q	193	
2	08/11/2019	-	Snipe	2	-	-	-	-	
2	06/11/2019	-	Snipe	1	-	-	-	-	No flight activity observed
1	22/03/2020	-	Snipe	1	-	-	-	-	No flight activity observed
1	23/03/2020	-	Snipe	2	-	-	-	-	
1	15/01/2020	6	Sparrowhawk	1	13:39	4	8R	42	



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APPENDIX 4

Target species Flight Lines





Legend

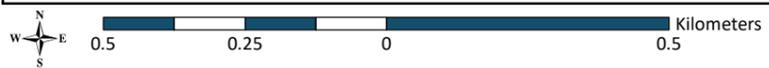
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- Turbine Layout

Flightlines

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- 49, 13/02/2020, 15:16

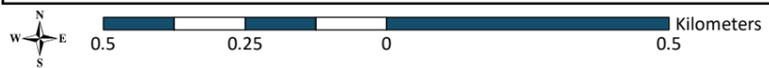
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PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8H		
CLIENT:	EMPower		
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- Legend**
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 - Turbine Layout
- Flightlines**
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 - ▶ 30, 08/01/2020, 09:55
 - ▶ 31, 08/01/2020, 10:04
 - ▶ 37, 15/01/2020, 11:30
 - ▶ 38, 15/01/2020, 11:35
 - ▶ 39, 15/01/2020, 11:57
 - ▶ 40, 15/01/2020, 12:11
 - ▶ 44, 15/01/2020, 14:19
 - ▶ 45, 13/02/2020, 09:48
 - ▶ 187, 21/01/2020, 09:21

TITLE:	Winter 2019 - 2020 Flightlines Buzzard		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8G		
CLIENT:	EMPower		
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- Legend**
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 - Turbine Layout 500m Buffer
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- Flightlines**
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- ▶ 2, 29/04/2019, 09:42
 - ▶ 4, 01/05/2019, 11:44
 - ▶ 13, 22/05/2019, 11:27
 - ▶ 14, 22/05/2019, 12:02
 - ▶ 24, 24/05/2019, 14:02

TITLE:	Summer 2019 Flightlines Buzzard		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8B		
CLIENT:	EMPower		
SCALE:	1:20000	REVISION:	0
DATE:	13/10/2021	PAGE SIZE:	A3



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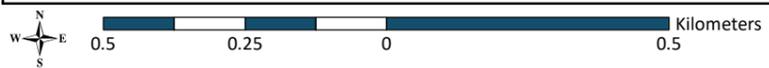
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- Turbine Layout 500m Buffer
- Turbine Layout

Flightlines

ID, Date, Time:

- ▶ 48, 13/02/2020, 15:16

TITLE:	Winter 2019 - 2020 Flightlines Common Gull		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	81		
CLIENT:	EMPower		
SCALE:	1:12500	REVISION:	0
DATE:	13/10/2021	PAGE SIZE:	A3





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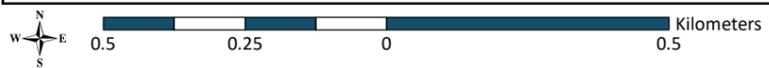
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- Turbine Layout 500m Buffer
- Turbine Layout

Flightlines

ID, Date, Time:

- ▶ 32, 08/01/2020, 11:36
- ▶ 47, 13/02/2020, 13:14

TITLE:	Winter 2019 - 2020 Flightlines Cormorant		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8J		
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DATE:	13/10/2021	PAGE SIZE:	A3





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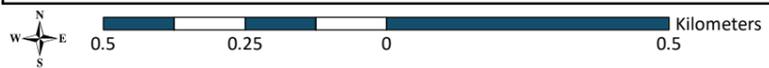
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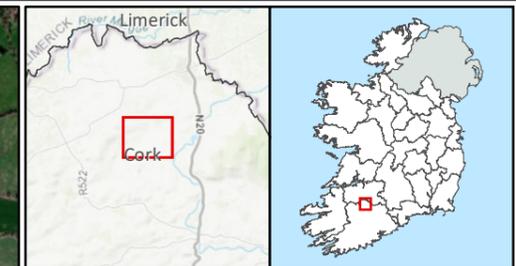
Flightlines

ID, Date, Time:

- 33, 08/01/2020, 11:49
- 35, 08/01/2020, 13:14
- 36, 08/01/2020, 13:49
- 186, 21/01/2020, 09:39
- 189, 21/01/2020, 10:40
- 192, 21/01/2020, 10:10

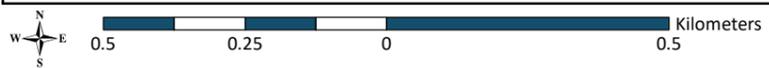
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PROJECT:	Annagh Wind Farm, Co. Cork	
FIGURE NO:	8L	
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SCALE:	1:12500	REVISION: 0
DATE:	13/10/2021	PAGE SIZE: A3





- Legend**
- Site Boundary
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 - Turbine Layout
- Flightlines**
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- ▶ 1, 29/04/2019, 09:22
 - ▶ 3, 01/05/2019, 09:50
 - ▶ 9, 01/05/2019, 16:15
 - ▶ 11, 22/05/2019, 10:47
 - ▶ 16, 22/05/2019, 13:59
 - ▶ 20, 24/05/2019, 08:51
 - ▶ 23, 24/05/2019, 12:40

TITLE:	Summer 2019 Flightlines Heron		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8C		
CLIENT:	EMPower		
SCALE:	1:12500	REVISION:	0
DATE:	13/10/2021	PAGE SIZE:	A3





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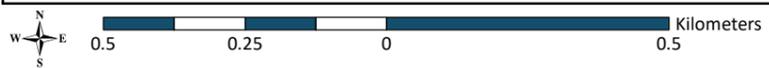
- Site Boundary
- Turbine Layout 500m Buffer
- Turbine Layout

Flightlines

ID, Date, Time:

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- ▶ 6, 01/05/2019, 15:45
- ▶ 8, 01/05/2019, 16:03
- ▶ 10, 22/05/2019, 10:38
- ▶ 12, 22/05/2019, 11:20
- ▶ 15, 22/05/2019, 13:28

TITLE:	Summer 2019 Flightlines Kestrel		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8D		
CLIENT:	EMPower		
SCALE:	1:12500	REVISION:	0
DATE:	13/10/2021	PAGE SIZE:	A3

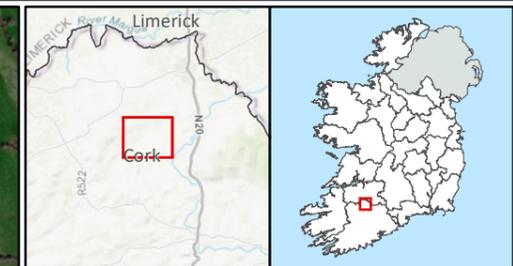




- Legend**
- Site Boundary
 - Turbine Layout 500m Buffer
 - Turbine Layout
- Flightlines**
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- ▶ 25, 27/11/2019, 13:24
 - ▶ 28, 16/12/2019, 10:01
 - ▶ 41, 15/01/2020, 12:26
 - ▶ 50, 18/02/2020, 12:19

TITLE:	Winter 2019 - 2020 Flightlines Kestrel
PROJECT:	Annagh Wind Farm, Co. Cork
FIGURE NO:	8M
CLIENT:	EMPower
SCALE:	1:12500
REVISION:	0
DATE:	13/10/2021
PAGE SIZE:	A3





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- Site Boundary
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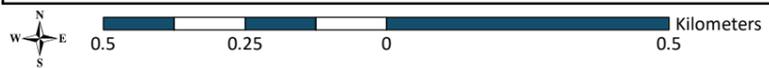
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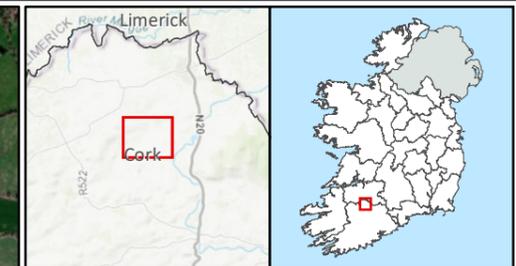
ID, Date, Time:

- ▶ 34, 08/01/2020, 12:15

TITLE:	Winter 2019 - 2020 Flightlines Lesser Black-backed Gull		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8N		
CLIENT:	EMPower		
SCALE:	1:12500	REVISION:	0
DATE:	13/10/2021	PAGE SIZE:	A3

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Legend

- Site Boundary
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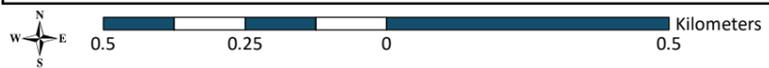
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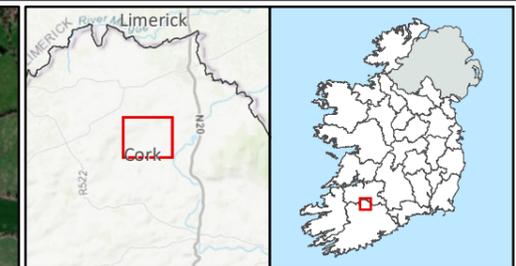
ID, Date, Time:

- ▶ 21, 24/05/2019, 09:50

TITLE:	Summer 2019 Flightlines Lesser Black-backed Gull		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8E		
CLIENT:	EMPower		
SCALE:	1:12500	REVISION:	0
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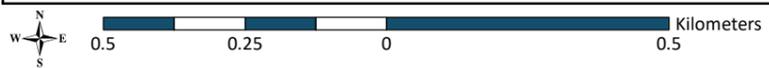
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- Legend**
- Site Boundary
 - Turbine Layout 500m Buffer
 - Turbine Layout
- Flightlines**
- ID, Date, Time:**
- ▶ 7, 01/05/2019, 16:00
 - ▶ 17, 22/05/2019, 14:09
 - ▶ 18, 24/05/2019, 08:28

TITLE:	Summer 2019 Flightlines Little Egret		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8F		
CLIENT:	EMPower		
SCALE:	1:12500	REVISION:	0
DATE:	13/10/2021	PAGE SIZE:	A3





- Legend**
- Site Boundary
 - Turbine Layout 500m Buffer
 - Turbine Layout
- Flightlines**
- ID, Date, Time:**
- ▶ 26, 27/11/2019, 13:45
 - ▶ 43, 15/01/2020, 14:01
 - ▶ 46, 13/02/2020, 10:22

TITLE:	Winter 2019 - 2020 Flightlines Little Egret		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	80		
CLIENT:	EMPower		
SCALE:	1:12500	REVISION:	0
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- Site Boundary
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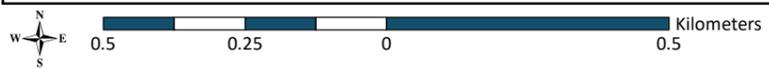
Flightlines

ID, Date, Time:

- 27, 26/11/2019, 13:10

TITLE:	Winter 2019 - 2020 Flightlines Mute Swan		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8P		
CLIENT:	EMPower		
SCALE:	1:12500	REVISION:	0
DATE:	13/10/2021	PAGE SIZE:	A3

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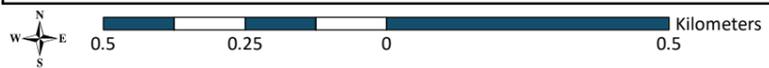
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- Turbine Layout 500m Buffer
- Turbine Layout

Flightlines

ID, Date, Time:

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TITLE:	Winter 2019 - 2020 Flightlines Sparrowhawk		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8R		
CLIENT:	EMPower		
SCALE:	1:12500	REVISION:	0
DATE:	13/10/2021	PAGE SIZE:	A3





Legend

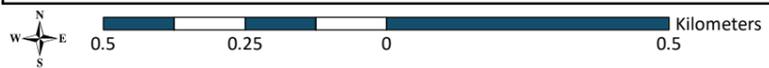
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- Turbine Layout

Flightlines

ID, Date, Time:

- 190, 21/01/2020, 10:39
- 191, 21/01/2020, 10:15
- 193, 21/01/2020, 10:12

TITLE:	Winter 2019 - 2020 Flightlines Snipe		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8Q		
CLIENT:	EMPower		
SCALE:	1:12500	REVISION:	0
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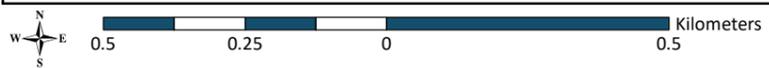
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- Turbine Layout

Flightlines

ID, Date, Time:

- 188, 21/01/2020, 09:15

TITLE:	Winter 2019 - 2020 Flightlines Hen Harrier		
PROJECT:	Annagh Wind Farm, Co. Cork		
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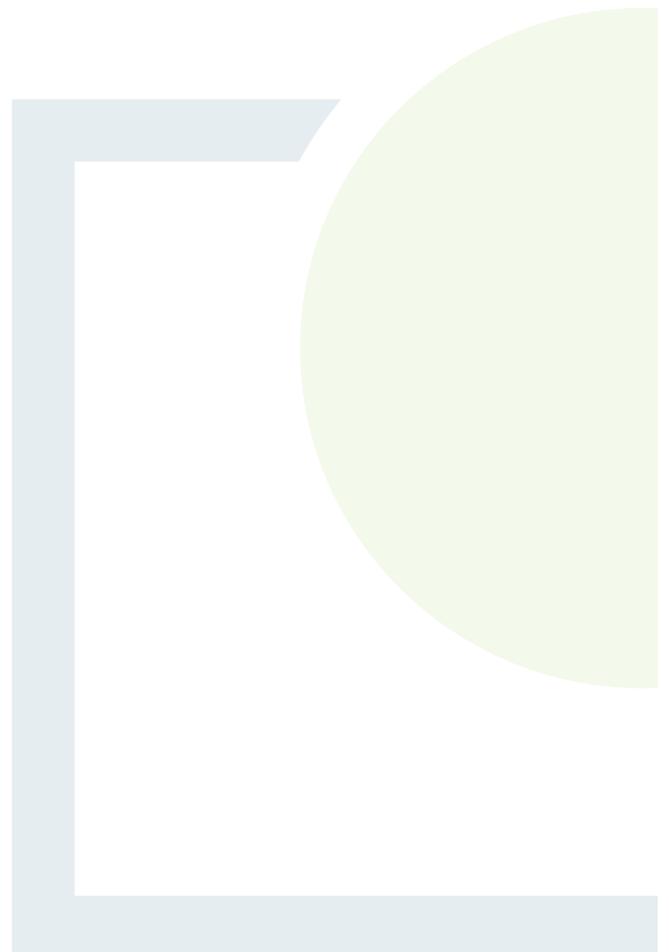




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APPENDIX 5

Hinterland Survey Results



Hinterland Survey Data 2018/19

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Eagle Lough pNHA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Blackcap	1
Large Quarry Lake (Ballinadrideen)	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Black-headed Gull	2
Large Quarry Lake (Ballinadrideen)	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Black-headed Gull	4
Large Quarry Lake (Ballinadrideen)	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Black-headed Gull	2
Large Quarry Lake (Ballinadrideen)	08/11/19	N/A	N/A	0	Excellent	Dry	F1 SW	Black-headed Gull	3
Eagle Lough pNHA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Buzzard	2
Kilcolman Bog SPA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Buzzard	2
Eagle Lough pNHA	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Buzzard	1
Kilcolman Bog SPA	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Buzzard	1
Eagle Lough pNHA	08/11/19	N/A	N/A	0	Excellent	Dry	F1 SW	Buzzard	1
Eagle Lough pNHA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Buzzard	2
Castle Lake (Milltown)	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Buzzard	1
River Blackwater SAC/Annagh Bridge	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Buzzard	1
Eagle Lough pNHA	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Buzzard	2
River Blackwater SAC/Buttevant Bridge	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Chaffinch	2
River Blackwater SAC/Buttevant Bridge	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Chiffchaff	1

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
River Blackwater SAC/Buttevant Bridge	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Collared Dove	1
River Blackwater SAC/Buttevant Bridge	02/05/19	07:20	15:50	8	Great	Light at times	F0	Coot	1
Eagle Lough pNHA	02/05/19	07:20	15:50	8	Great	Light at times	F0	Coot	2
Kilcolman Bog SPA	02/05/19	07:20	15:50	8	Great	Light at times	F0	Coot	1
Kilcolman Bog SPA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Coot	5
Kilcolman Bog SPA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Coot	4
Kilcolman Bog SPA	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Coot	2
Kilcolman Bog SPA	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Coot	1
Kilcolman Bog SPA	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Coot	1
Eagle Lough pNHA	08/11/19	N/A	N/A	0	Excellent	Dry	F1 SW	Coot	1
Castle Lake (Milltown)	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Coot	1
Large Quarry Lake (Ballinadrideen)	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Cormorant	1
River Awbeg	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Cormorant	1
River Blackwater SAC/Buttevant Bridge	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Cormorant	1
Large Quarry Lake (Ballinadrideen)	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Cormorant	3
Glanmore Flats	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Curlew	3
Kilcolman Bog SPA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Curlew	12
Small Quarry Lake (Ballyroe)	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Curlew	40

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Kilcolman Bog SPA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Garganey	1
River Blackwater SAC/Buttevant Bridge	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Greenfinch	1
River Blackwater SAC/Buttevant Bridge	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Greenfinch	3
River Blackwater SAC/Buttevant Bridge	02/05/19	07:20	15:50	8	Great	Light at times	F0	Grey Heron	2
Kilcolman Bog SPA	02/05/19	07:20	15:50	8	Great	Light at times	F0	Grey Heron	1
River Blackwater SAC/Annagh Bridge	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Grey Heron	2
River Blackwater SAC/ Buttevant Bridge	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Grey Heron	1
Eagle Lough pNHA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Grey Heron	1
Small Quarry Lake (Ballyroe)	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Grey Heron	1
River Blackwater SAC/Annagh Bridge	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Grey Heron	1
River Blackwater SAC/Annagh Bridge	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Grey Heron	1
Kilcolman Bog SPA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Grey Heron	2
River Blackwater SAC/Annagh Bridge	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Grey Heron	1
Kilcolman Bog SPA	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Grey Heron	1
Large Quarry Lake (Ballinadrideen)	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Grey Heron	1
Eagle Lough pNHA	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Grey Heron	2

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Kilcolman Bog SPA	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Grey Heron	2
Small Quarry Lake (Ballyroe)	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Grey Heron	1
Large Quarry Lake (Ballinadrideen)	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Grey Heron	
River Blackwater SAC/Annagh Bridge	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Grey Heron	1
Kilcolman Bog SPA	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Grey Heron	1
Large Quarry Lake (Ballinadrideen)	08/11/19	N/A	N/A	0	Excellent	Dry	F1 SW	Grey Heron	1
River Blackwater SAC/Buttevant Bridge	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Grey Heron	1
Large Quarry Lake (Ballinadrideen)	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Grey Heron	4
554293, 618683	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Grey Heron	2
Large Quarry Lake (Ballinadrideen)	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Grey Heron	1
Large Quarry Lake (Ballinadrideen)	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Grey Heron	1
Kilcolman Bog SPA	28/11/19	11:10	15:40	N/A	N/A	N/A	N/A	Grey Heron	1
River Blackwater SAC/Annagh Bridge	02/05/19	07:20	15:50	8	Great	Light at times	F0	Grey Wagtail	2
River Awbeg	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Grey Wagtail	1
River Blackwater SAC/Annagh Bridge	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Grey Wagtail	2

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Kilcolman Bog SPA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Greylag Goose	5
Kilcolman Bog SPA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Greylag Goose	2
Kilcolman Bog SPA	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Greylag Goose	2
Kilcolman Bog SPA	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Greylag Goose	
Kilcolman Bog SPA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Greylag Goose	24
Kilcolman Bog SPA	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Greylag Goose	150
Kilcolman Bog SPA	28/11/19	11:10	15:40	N/A	N/A	N/A	N/A	Greylag Goose	112
Kilcolman Bog SPA	02/05/19	07:20	15:50	8	Great	Light at times	F0	Greylag Goose (domestic)	3
Ballinonear Ponds pNHA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Hooded Crow	2
Large Quarry Lake (Ballinadrideen)	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	House Martin	10
River Blackwater SAC/Buttevant Bridge	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Jackdaw	4
River Blackwater SAC/Buttevant Bridge	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Jackdaw	5
River Blackwater SAC/Buttevant Bridge	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Jackdaw	4
River Blackwater SAC/Buttevant Bridge	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Jackdaw	8
Eagle Lough pNHA	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Kestrel	1
Ballyhoura Mountain pNHA	20/12/19	12:30	13:57	N/A	N/A	Dry	N/A	Kestrel	1
River Awbeg	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Kingfisher	1
Glanmore Flats	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Lapwing	18

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Large Quarry Lake (Ballinadrideen)	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Lapwing	16
Large Quarry Lake (Ballinadrideen)	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Lapwing	21
Kilcolman Bog SPA	28/11/19	11:10	15:40	N/A	N/A	N/A	N/A	Lapwing	6
Large Quarry Lake (Ballinadrideen)	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Lesser Black-backed Gull	2
Large Quarry Lake (Ballinadrideen)	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Lesser Black-backed Gull	3
Large Quarry Lake (Ballinadrideen)	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Lesser Black-backed Gull	4
West Plantation (Aughrim)	02/05/19	07:20	15:50	8/8-	Great	Light at times	F0	Little Egret	4
Kilcolman Bog SPA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Little Egret	1
Eagle Lough pNHA	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Little Egret	1
Eagle Lough pNHA	08/11/19	N/A	N/A	0	Excellent	Dry	F1 SW	Little Egret	1
554293, 618683	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Little Egret	1
Kilcolman Bog SPA	02/05/19	07:20	15:50	8	Great	Light at times	F0	Little Grebe	2
Kilcolman Bog SPA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Little Grebe	1
Kilcolman Bog SPA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Little Grebe	2
Kilcolman Bog SPA	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Little Grebe	1
River Blackwater SAC/Annagh Bridge	02/05/19	07:20	15:50	8	Great	Light at times	F0	Mallard	1
Kilcolman Bog SPA	02/05/19	07:20	15:50	8	Great	Light at times	F0	Mallard	4

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
River Blackwater SAC/Buttevant Bridge	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Mallard	1
Eagle Lough pNHA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Mallard	1
Kilcolman Bog SPA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Mallard	1
Small Quarry Lake (Ballyroe)	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Mallard	1
Kilcolman Bog SPA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Mallard	1
Small Quarry Lake (Ballyroe)	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Mallard	2
Kilcolman Bog SPA	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Mallard	2
Kilcolman Bog SPA	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Mallard	
Large Quarry Lake (Ballinadrideen)	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Mallard	2
Large Quarry Lake (Ballinadrideen)	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Mallard	12
River Blackwater SAC/Annagh Bridge	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Mallard	6
River Awbeg	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Mallard	3
Glanmore Flats	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Mallard	4
Large Quarry Lake (Ballinadrideen)	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Mallard	8
Kilcolman Bog SPA	28/11/19	11:10	15:40	N/A	N/A	N/A	N/A	Mallard	2
River Blackwater SAC/Buttevant Bridge	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Meadow Pipit	10
Kilcolman Bog SPA	02/05/19	07:20	15:50	8	Great	Light at times	F0	Moorhen	1
Eagle Lough pNHA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Moorhen	1

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Kilcolman Bog SPA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Moorhen	1
Eagle Lough pNHA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Moorhen	1
Kilcolman Bog SPA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Moorhen	2
River Blackwater SAC/Annagh Bridge	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Moorhen	1
Kilcolman Bog SPA	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Moorhen	1
River Blackwater SAC/Annagh Bridge	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Moorhen	1
Eagle Lough pNHA	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Moorhen	3
River Blackwater SAC/Annagh Bridge	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Moorhen	2
Kilcolman Bog SPA	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Moorhen	
River Blackwater SAC/Buttevant Bridge	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Moorhen	1
Castle Lake (Milltown)	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Moorhen	3
River Blackwater SAC/Annagh Bridge	02/05/19	07:20	15:50	8	Great	Light at times	F0	Mute Swan	2
Kilcolman Bog SPA	02/05/19	07:20	15:50	8	Great	Light at times	F0	Mute Swan	2
West Plantation (Aughrim)	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Mute Swan	1
River Awbeg	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Mute Swan	1
Kilcolman Bog SPA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Mute Swan	1
Castle Lake (Milltown)	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Mute Swan	5
Castle Lake (Milltown)	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Mute Swan	4

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Castle Lake (Milltown)	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Mute Swan	4
Castle Lake (Milltown)	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Mute Swan	3
Castle Lake (Milltown)	08/11/19	N/A	N/A	0	Excellent	Dry	F1 SW	Mute Swan	
River Awbeg	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Mute Swan	2
River Blackwater SAC/Buttevant Bridge	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Mute Swan	7
Eagle Lough pNHA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Mute Swan	2
Kilcolman Bog SPA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Mute Swan	7
Castle Lake (Milltown)	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Mute Swan	2
River Blackwater SAC/Buttevant Bridge	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Mute Swan	3
Castle Lake (Milltown)	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Mute Swan	2
Glanmore Flats	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Mute Swan	2
River Blackwater SAC/Annagh Bridge	28/11/19	11:10	15:40	N/A	N/A	N/A	N/A	Mute Swan	2
Eagle Lough pNHA	28/11/19	11:10	15:40	N/A	N/A	N/A	N/A	Mute Swan	5
Kilcolman Bog SPA	28/11/19	11:10	15:40	N/A	N/A	N/A	N/A	Mute Swan	
Close to Glanmore Flats	28/11/19	11:10	15:40	N/A	N/A	N/A	N/A	Mute Swan	20
West Plantation (Aughrim)	02/05/19	07:20	15:50	8	Great	Light at times	F0	N/A	N/A
Eagle Lough pNHA	02/05/19	07:20	15:50	8	Great	Light at times	F0	Pheasant	1
Ballyhoura Mountain pNHA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Pheasant	1
Large Quarry Lake (Ballinadirdeen)	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Pied/White Wagtail	5

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Large Quarry Lake (Ballinadrideen)	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Pied/White Wagtail	2
Kilcolman Bog SPA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Raven	1
Kilcolman Bog SPA	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Raven	2
River Blackwater SAC/Buttevant Bridge	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Redwing	4
River Blackwater SAC/Buttevant Bridge	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Rook	1
River Blackwater SAC/Buttevant Bridge	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Rook	4
Ballinvear Ponds pNHA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Rook	6
West Plantation (Aughrim)	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Rook	1
Large Quarry Lake (Ballinadrideen)	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Sand Martin	2
Kilcolman Bog SPA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Shoveler	155
Ballyhoura Mountain pNHA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Skylark	2
Large Quarry Lake (Ballinadrideen)	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Snipe	3
River Blackwater SAC/Annagh Bridge	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Snipe	2
Ballyhoura Mountain pNHA	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Snipe	5
Large Quarry Lake (Ballinadrideen)	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Snipe	1
Glanmore Flats	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Snipe	1
Ballinvear Ponds pNHA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Song Thrush	2

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Kilcolman Bog SPA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Sparrowhawk	1
Kilcolman Bog SPA	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Sparrowhawk	1
River Awbeg	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Starling	2
Small Quarry Lake (Ballyroe)	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Stonechat	2
Small Quarry Lake (Ballyroe)	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Stonechat	1
Small Quarry Lake (Ballyroe)	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Stonechat	2
Small Quarry Lake (Ballyroe)	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Stonechat	2
Castle Lake (Milltown)	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Stonechat	2
Small Quarry Lake (Ballyroe)	20/12/19	12:30	13:57	N/A	N/A	Dry	N/A	Stonechat	2
River Awbeg	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Swallow	2
River Blackwater SAC/Buttevant Bridge	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Swallow	2
River Blackwater SAC/Annagh Bridge	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Swallow	4
River Blackwater SAC/Annagh Bridge	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Swallow	3
Glanmore Flats	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Swallow	3
Small Quarry Lake (Ballyroe)	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Swallow	3
Large Quarry Lake (Ballinadrideen)	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Swallow	4
River Blackwater SAC/Annagh Bridge	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Swallow	4
River Blackwater SAC/Buttevant Bridge	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Swallow	6

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Glanmore Flats	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Swallow	6
River Blackwater SAC/Annagh Bridge	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Swallow	8
River Blackwater SAC/Buttevant Bridge	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Swallow	4
Large Quarry Lake (Ballinadrideen)	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Swallow	100
River Awbeg	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Swift	5
River Blackwater SAC/Buttevant Bridge	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Swift	1
River Blackwater SAC/Annagh Bridge	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Swift	2
River Blackwater SAC/Buttevant Bridge	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Swift	3
River Blackwater SAC/Buttevant Bridge	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Swift	4
Kilcolman Bog SPA	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Teal	
Kilcolman Bog SPA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Teal	49
Castle Lake (Milltown)	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Teal	10
Large Quarry Lake (Ballinadrideen)	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Teal	12
Castle Lake (Milltown)	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Teal	16
Large Quarry Lake (Ballinadrideen)	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Teal	4

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Large Quarry Lake (Ballinadrideen)	25/02/20	10:30	17:30	6 to 8	Good	Dry	F1	Teal	10
Kilcolman Bog SPA	02/05/19	07:20	15:50	8	Great	Light at times	F0	Tufted Duck	1
Eagle Lough pNHA	27/05/19	08:50	16:50	6 to 7	Good	N/A - Light	F1	Tufted Duck	2
Eagle Lough pNHA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Tufted Duck	6
Eagle Lough pNHA	01/08/19	N/A	N/A	2	Excellent	Dry	F1-2 SE	Tufted Duck	2
Eagle Lough pNHA	27/08/19	N/A	N/A	8	Good	Persistent Rain - clearing occ.	F2-3 SW	Tufted Duck	1
Eagle Lough pNHA	08/11/19	N/A	N/A	0	Excellent	Dry	F1 SW	Tufted Duck	
Kilcolman Bog SPA	06/11/19	N/A	N/A	8	Good	Light Drizzle	F1-2 SSW	Whooper Swan	8
River Blackwater SAC/Annagh Bridge	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Whooper Swan	18
River Awbeg	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Whooper Swan	7
River Blackwater SAC/Annagh Bridge	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Whooper Swan	50
Glanmore Flats	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Whooper Swan	5
Large Quarry Lake (Ballinadrideen)	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Whooper Swan	10
Kilcolman Bog SPA	28/11/19	11:10	15:40	N/A	N/A	N/A	N/A	Whooper Swan	
Close to Glanmore Flats	28/11/19	11:10	15:40	N/A	N/A	N/A	N/A	Whooper Swan	40
Eagle Lough pNHA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Wigeon	10
Kilcolman Bog SPA	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Wigeon	260
Castle Lake (Milltown)	17/12/19	10:30	16:45	6	Excellent	Dry	F0	Wigeon	4

Site	Date	Start Time	End Time	Cloud	Visibility	Rain	Wind	Common Name	Quantity
Large Quarry Lake (Ballinadrideen)	28/01/20	09:00	16:30	5	Excellent	Occ. Showers/Rain	F1-2	Wigeon	10
Eagle Lough pNHA	23/06/19	N/A	N/A	8	Good	Freq. Showers	F2 NW	Yellowhammer	1

Breeding Wader Survey Data 2019

Transect	Date	Cloud (/8)	Rain	Visibility	Wind	Start	Time	Common Name	Quantity	Behaviour	Breeding Status
2	26/04/19	5	Dry	Excellent	F2	07:40	07:45	Snipe	2	Flushed	Potential
1	26/04/19	5	Dry	Excellent	F2	07:40	07:59	Snipe	1	Flushed	Potential
1	26/04/19	5	Dry	Excellent	F2	07:40	08:20	Snipe	1	Drumming	Confirmed attempt
1	15/05/19	4	Dry	Excellent	F4	07:30	08:42	Snipe	1	Flushed	Occupied Territory
1	15/05/19	4	Dry	Excellent	F4	07:30	08:56	Snipe	1	Flushed	Occupied Territory
1	15/05/19	4	Dry	Excellent	F4	07:30	09:04	Snipe	1	Flushed	Occupied Territory
1	15/05/19	4	Dry	Excellent	F4	07:30	09:20	Snipe	1	N/A	Confirmed attempt
1	15/05/19	4	Dry	Excellent	F4	07:30	10:15	Woodcock	1	N/A	Potential
1	02/08/19	2	Showers	Excellent	F2-3 E	N/A	N/A	Snipe	1	Calling	Occupied Territory
1	28/08/19	2	Light Shower	Excellent	F1-2 SW	N/A	N/A	Snipe	1	Flushed	N/A



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& PLANNING

ANNAGH WIND FARM ORNITHOLOGICAL SURVEYS

**BASELINE ORNITHOLOGICAL SURVEYS –
ANNAGH WIND FARM: SUMMER 2020
AND WINTER 2020/21**

Prepared for: EMPower



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EXECUTIVE SUMMARY

Ornithological surveys for Annagh Wind farm searched for and recorded all bird species, focusing primarily on the wind farm site but also taking in the surrounding region. Surveys extended throughout the year, covering both the breeding and non-breeding seasons.

The methodology for the 2020/2021 vantage point surveys at Annagh Wind farm adhered to Scottish Natural Heritage guidance (SNH, 2017) for assessing the impact of proposed wind farm developments on 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 2020 and October 2020 to April 2021 inclusive, totalling 72 hours (36 hours per season) of observation time at each VP over the survey period. Breeding & winter bird transect surveys, hinterland surveys and wader surveys were also undertaken during this period.

During vantage point surveys a total of 58 species of bird were recorded across the surveyed summer and winter periods of 2020/21. Of these species seven are of Red-list status under the BoCCI (Gilbert et al., 2021): Grey Wagtail, Kestrel, Meadow Pipit, Redwing, Snipe, Swift and Woodcock.

A total of 17 are Amber-listed and the remaining 34 are Green-listed. Three species are protected under Annex I of the EU Birds Directive: Little Egret, Hen Harrier and Peregrine falcon.

During hinterland surveys surrounding the proposed site a total of 55 species were noted. Of these species, ten are of Red-list status under the BoCCI (Gilbert et al., 2021): Curlew, Golden Plover, Kestrel, Lapwing, Meadow Pipit, Red Grouse, Redwing, Snipe, Shoveler and Yellowhammer.

A total of 17 Amber-listed bird species were identified, and the remaining 28 are Green-listed. A total of four species are protected under Annex I of the EU Birds Directive: Golden Plover, Little Egret, Greenland White-fronted Goose and Whooper Swan.

During breeding wader surveys there was no evidence noted for the presence of wader species during the summer season of 2020. However, during the surveys one red-listed species was noted: Meadow Pipit, as well as one amber-listed species: Willow Warbler. Additionally, Sedge warbler, Long-tailed Tit and Grey Heron were recorded.

During breeding transects a total of 33 species were detected. Of these, two species are red listed: Meadow Pipit and Kestrel. Five amber-listed species were recorded.

During wintering bird transects a total of 38 species were detected. Of these, four species are red-listed: Meadow Pipit, Kestrel, Redwing and Snipe; nine are amber-listed. One species is protected under Annex I of the EU Birds Directive: Hen Harrier.



1. INTRODUCTION

Fehily Timoney & Company (FT) was appointed by EMPower to undertake the 2nd year of ornithological surveys at the proposed Annagh wind farm from 2020-2021. 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 2020 and 2021. The study area of Annagh wind farm is near Charleville, Co, Cork.

This avian assessment for surveys completed over the second year in summer 2020 and winter 2020/21 includes the assessment of bird species occurring within the proposed site boundary, and surveys of surrounding habitats of value to birds. Surveys adhered to Scottish Natural Heritage guidance (SNH, 2017). The following surveys were carried out:

- Vantage Point survey (breeding and non-breeding season);
- Hinterland survey;
- Breeding Wader survey;
- Breeding bird transect survey; and
- Winter bird transect 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 at 2 vantage point (VP) locations from April to September 2020 (inclusive) and October 2020 to March 2021 (inclusive). Each VP was subject to 2 watches per month, each consisting of 3 hours in length (6 hours surveyed per VP per month). Migration surveys were carried out in Early April 2021 in lieu of the final round of VPs for summer 2020.

Hinterland surveys were completed in potential favourable bird habitats within a 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 the site. This survey technique was also used to assess the presence of breeding waders.

1.1 Study Area

The proposed Annagh wind farm is located c. 7.3 km south west of Charleville, Co. Cork near the Co. Cork/Co. Limerick border. The study area encompasses parts of the townlands of Cooliney, Fiddane, Annagh North, Cullig and Coolcaum. The VP surveys study area was the VP viewsheds and 500m turbine buffers. Breeding bird, breeding wader and wintering bird transects were surveyed within the land ownership boundary. Surrounding habitats and land uses are described by Corine 20181 as: Pastures (code 231), land principally occupied by agriculture with significant areas of natural vegetation (code 243), Broad-leaved forests (code 311) and Coniferous forests (code 312). Figure 2-1 displays the site location and vantage points within the study area.

1 <https://gis.epa.ie/EPAMaps/>. Accessed 18/02/21 at 12:30.



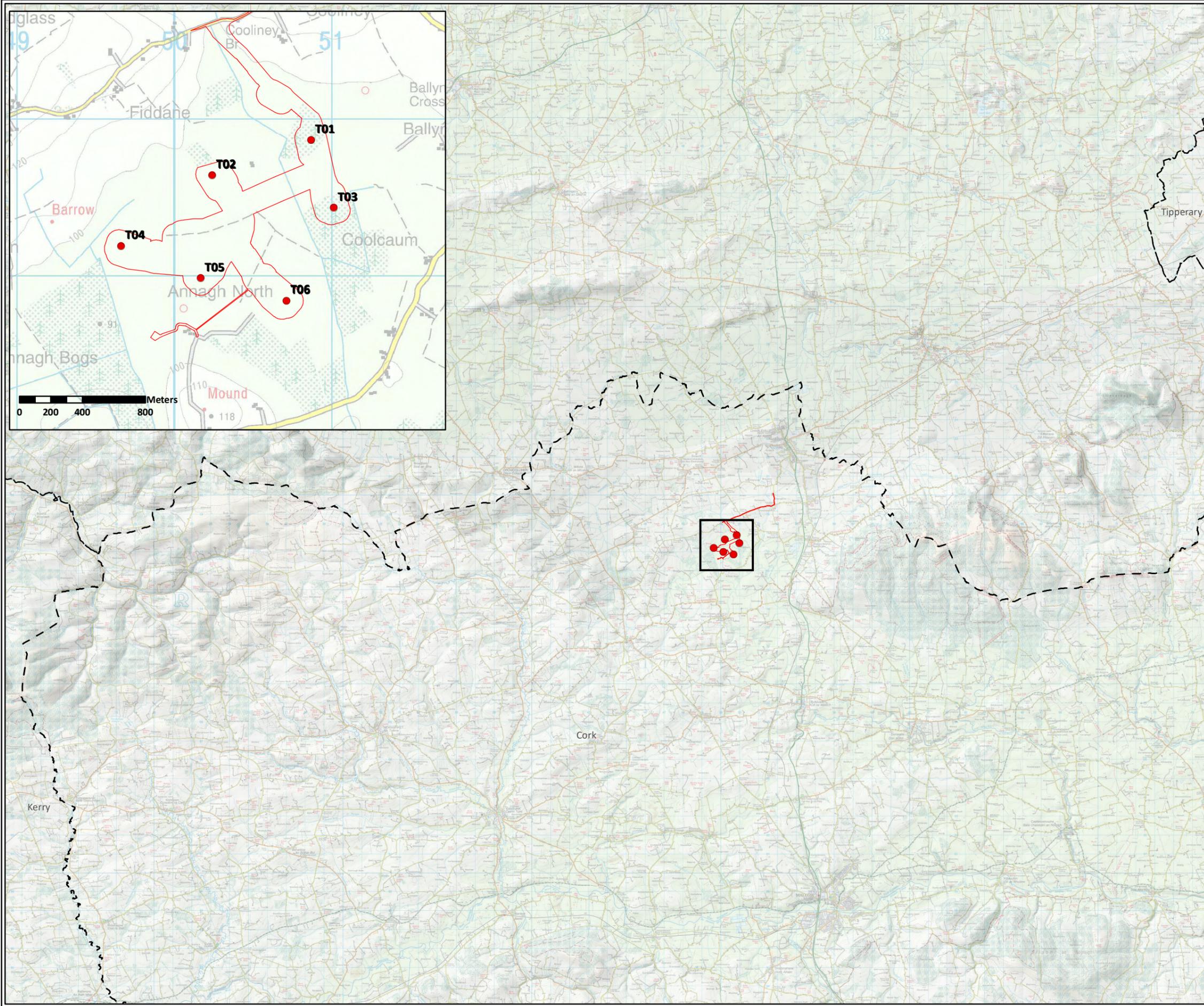
During site surveys, habitats such as wet grassland (GS4), conifer plantation (WD4), hedgerows (WL1), treelines (WL2) and improved agricultural grasslands (GA1) were recorded (Fossitt, 2000). At Annagh, (mixed) broadleaved woodland (WD1), improved agricultural grasslands (GA1) and wet grassland (GS4) are the dominant habitat types.

The protected European sites within 15 km of the proposed Wind Farm are:

- Blackwater River (Cork/Waterford) SAC (002170)
- Ballyhoura Mountains SAC (002036)
- Kilcolman Bog SPA (004095)

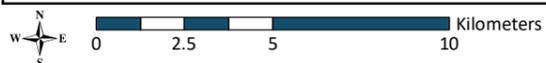
The protected national sites within 15 km of the proposed Wind Farm are:

- Eagle Lough pNHA (site code 001049)
- Kilcolman Bog pNHA (side code 000092)
- Ballyhoura Mountains pNHA (site code 002036)
- Ballinvonear Pond pNHA (Site code 000012)
- Mountrussel Wood pNHA (Site code 002088)
- Awbeg Valley (Above Doneraile) pNHA (Site code 000075)
- Ballintlea Wood pNHA (Site code 002086)
- Castleoliver wood pNHA (Site code 002090)



- Legend**
- County Boundaries
 - Proposed Site Boundary
 - Proposed Turbine Layout

TITLE:	Site Location		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	1.1		
CLIENT:	EMPower		
SCALE:	1:200000	REVISION:	0
DATE:	14/10/2021	PAGE SIZE:	A3





2. SURVEY METHODOLOGY

The following surveys were carried out:

- Vantage Point survey (breeding and non-breeding season);
- Hinterland survey;
- Breeding Wader survey and;
- Breeding bird transect survey;
- Winter bird transect survey.

Vantage point surveys carried out at the proposed Wind Farm adhered to Scottish Natural Heritage guidance (SNH, 2017). Hinterland surveys were completed in potentially favourable bird habitats within a c. 10km radius of the proposed Annagh Wind Farm site, the surveys were undertaken following methodology by Hardey et al. (2013) and O’ Donoghue, (2012). Breeding bird transects method utilised is based on the existing British Trust for Ornithology (BTO) Breeding Bird Survey (BBS or CBS). Winter bird transect surveys were conducted following a modified wintering bird transect survey method based on Brown and Shepherd (1993) and recommended in published guidance from Scottish Natural Heritage (2017). A dusk watch for Woodcock was carried out on 29th June 2020 from VP1 which overlooks an area of conifer plantation suitable for breeding woodcock. The survey methodology followed that used for the UCC Breeding Woodcock Survey (adapted from Hoodless et al. 2009).

2.1 Vantage Point Surveys

Vantage Point (VP) surveys were carried out at the proposed Annagh Wind Farm site from April 2020 to April 2021 (inclusive) during the non-breeding (winter) 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 2020) and winter (October 2020 – March 2021) seasons with an additional round of surveys in April 2021 to cover the spring migration period. Two fixed VP locations (Annagh VP1 and VP2) overlooking the study area were used during the VP surveys (Table 2-1). 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 Table 2-1 below:

Table 2-1: Vantage point viewshed and turbines encompassed

Site	Vantage Point	Turbine number(s) covered in viewshed
Annagh	VP 1	1-6
	VP 2	1-6

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 10.4.1, 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 20-30m 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 sample diurnal and crepuscular 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 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 is noted. Details of each flight-path observation 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.

As previously mentioned, VP surveys were carried out at the site from April 2020 to April 2021 inclusive and involved carrying out 2 x 3-hour VPs at each VP every month. As per SNH guidance (2017), 36 hours of vantage point effort was carried out at each vantage point during the breeding period, and 36 hours during wintering period. The proportion of survey time that activity was recorded inside and outside the 500m turbine buffer 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 Annagh Wind Farm

Site	Vantage Point	Easting, Northing (ITM)
Annagh WF	VP 1	550115, 616205
	VP 2	550037, 616468



Legend

- Turbine Layout
- Turbine Layout 500m Buffer
- Vantage Point Locations

2km Viewsheds

- VP1 Viewshed
- VP2 Viewshed

TITLE:	Viewshed Analysis (based on a target height of 30m and observer height of 1.5m)		
PROJECT:	Annagh Wind Farm		
FIGURE NO:	8A		
CLIENT:	EMP Group		
SCALE:	1:12800	REVISION:	0
DATE:	15/10/2021	PAGE SIZE:	A3





2.2 Hinterland Surveys

The methodology used for wetland sites during hinterland surveys followed I-WeBS (Irish Wetland Bird Survey) methodology (Lewis *et al*, 2019), whereby each location was surveyed for the duration necessary to identify and obtain a count for all target species present. The same approach was adapted for non-wetland sites. A hinterland survey for raptors was conducted in accordance with Raptors: a field guide to survey and monitoring (Hardey *et al*. 2013) to assess Hen Harrier and other raptor activity over the winter and breeding periods in the greater surroundings. Surveys for Hen Harrier breeding and roosting sites were also carried out within 10km of the proposed Wind Farm, fulfilling and exceeding the requirement set out in SNH Guidance (2017).

The surveys were carried out in suitable woodland and wetland habitats in the area surrounding the proposed wind farm site. This comprised of 13 sites within 10 km from the proposed wind farm site. These sites were chosen as they had suitable habitat for the following target species: raptors, waders, waterfowl and barn owl. Surveys were carried out between April and September in the summer of 2020 and October to March in the winter of 2020/21. The following sites were checked regularly across this period: River Blackwater SAC/Annagh Bridge, River Awbeg, River Blackwater SAC/Buttevant, Eagle Lough pNHA, Glanmore Flats, Kilcolman Bog SPA, Ballinvonear Ponds pNHA, Ballyhoura Mountains SAC, Castle Lake (Milltown), Small Quarry Lake (Ballyroe) and Large Quarry Lake (Ballinadridden). Opportunistic observations were made at a flooded area along the R522, a casual observation was made at a railway crossing north of Buttevant, while a Hen Harrier breeding habitat recce survey covering the Ballyhoura Mountains was carried out in May 2020 (also listed below in Table 2-3). Table 2-3 indicates where within the 10 km area around the proposed Wind Farm hinterland surveys were carried out.

Table 2-3: Hinterland survey locations

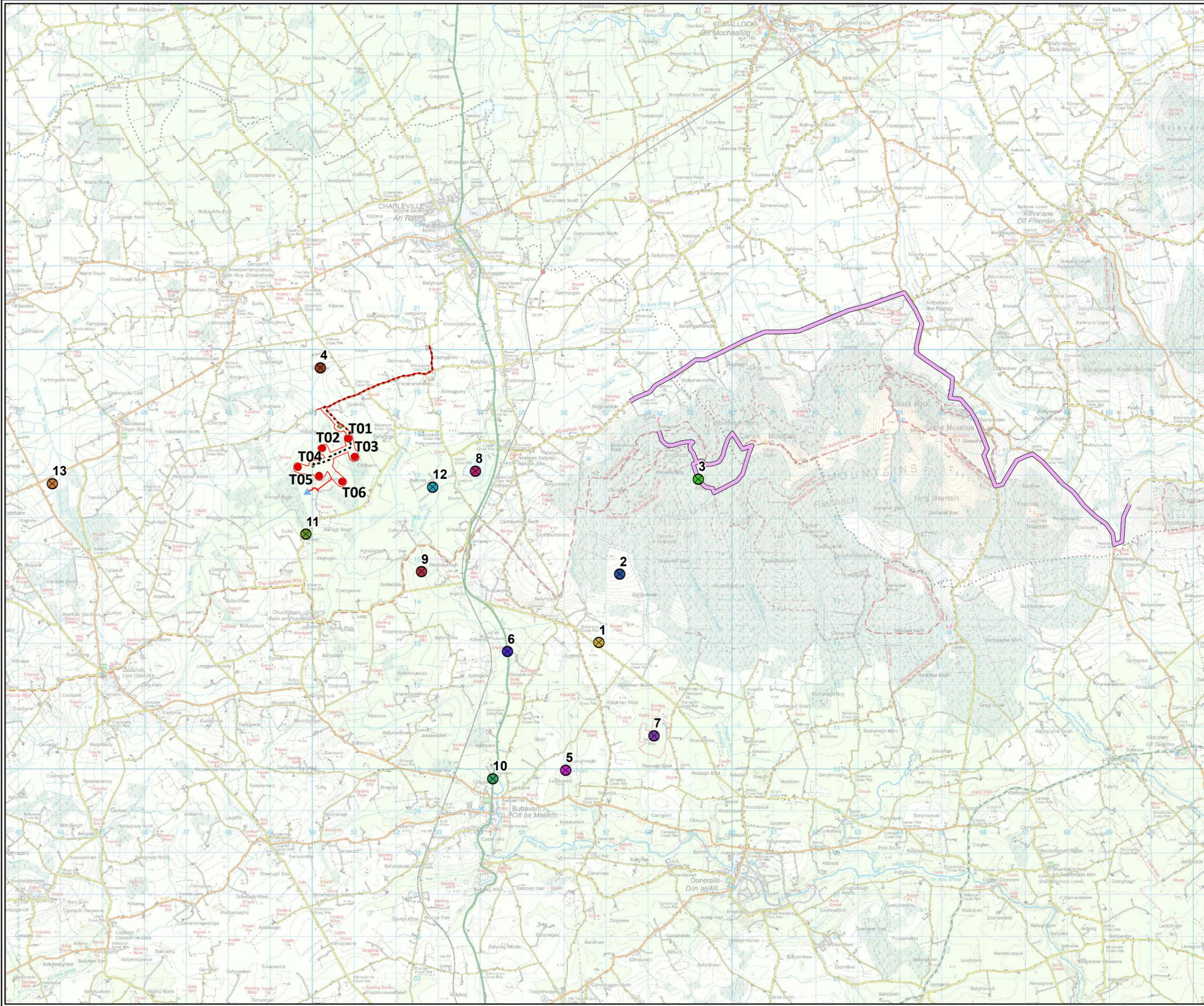
Location	Coordinates (ITM)	Dates visited	
		Summer 2020	Winter 2020-21
River Blackwater SAC/Annagh Bridge	549814, 615638	27/04/2020 15/06/2020 16/06/2020 04/09/2020	22/10/2020 06/11/2020 26/11/2020 07/12/2020 16/12/2020 26/01/2021 15/02/2021 16/02/2021 26/02/2021 23/03/2021
River Awbeg	552564, 614751	Not surveyed	22/10/2020 06/11/2020 26/11/2020 07/12/2020 16/12/2020 26/01/2021



Location	Coordinates (ITM)	Dates visited	
		Summer 2020	Winter 2020-21
			16/02/2021 23/03/2021
River Blackwater SAC/ Buttevant	554265, 609841	Not surveyed	22/10/2020 06/11/2020 26/11/2020 07/12/2020 26/01/2021 16/02/2021
Eagle Lough pNHA	556064, 610328	Not surveyed	22/10/2020 06/11/2020 26/11/2020 07/12/2020 26/01/2021 26/02/2021 23/03/2021
Glanmore Flats	554616, 612847	Not surveyed	22/10/2020 06/11/2020 26/11/2020 07/12/2020 16/12/2020 26/01/2021 23/03/2021
Kilcolman Bog SPA	558072, 610856	27/04/2020 29/05/2020 16/06/2020 04/09/2020	22/10/2020 06/11/2020 26/11/2020 07/12/2020 26/01/2021 16/02/2021 26/02/2021 23/03/2021
Ballinvonear Ponds pNHA	556797, 613057	Not surveyed	22/10/2020
Ballyhoura Mountains pNHA	557289, 614688	27/04/2020	Not surveyed
Ballyhoura Mountains SAC	559159, 616959	29/05/2020 25/06/2020 04/09/2020	22/10/2020 06/11/2020 26/11/2020 07/12/2020 16/12/2020 26/01/2021 26/02/2021



Location	Coordinates (ITM)	Dates visited	
		Summer 2020	Winter 2020-21
			23/03/2021
Castle Lake (Milltown)	550153, 619611	Not surveyed	22/10/2020 06/11/2020 26/11/2020 07/12/2020 26/01/2021 26/02/2021 23/03/2021
Small Quarry Lake (Ballyroe)	552833, 616762	Not surveyed	22/10/2020 06/11/2020 26/11/2020 07/12/2020 16/12/2020 26/01/2021 26/02/2021 23/03/2021
Large Quarry Lake (Ballinadrideen)	553853, 617143	15/06/2020 04/09/2020	22/10/2020 06/11/2020 26/11/2020 07/12/2020 16/12/2020 29/12/2020 26/01/2021 26/02/2021 23/03/2021
Ballyhoura's Hen Harrier Recce Survey	N/A	29/05/2020	Not surveyed
Flooded area along R522 south of Churchtown	550355, 611036	Not surveyed	16/02/2021 26/02/2021
Railway crossing north of Buttevant (Casual Obs.)	553336, 609845	Not surveyed	26/02/2021



- Legend**
- Site Boundary
 - Turbine Layout
 - ▲ Met Mast
 - Substation
 - Construction Compound
 - Underground Cable Route
 - Hen Harrier Recce Survey
- Hinterland Survey Sites**

- ID and Name:
- ⊗ 1: Ballinvonear Ponds pNHA
 - ⊗ 2: Ballyhoura Mountains pNHA
 - ⊗ 3: Ballyhoura Mountains SAC
 - ⊗ 4: Castle Lake (Milltown)
 - ⊗ 5: Eagle Lough pNHA
 - ⊗ 6: Glanmore Flats
 - ⊗ 7: Kilcolman Bog SPA
 - ⊗ 8: Large Quarry Lake (Ballinadrideen)
 - ⊗ 9: River Awbeg
 - ⊗ 10: River Blackwater SAC/ Buttevant
 - ⊗ 11: River Blackwater SAC/Annagh Bridge
 - ⊗ 12: Small Quarry Lake (Ballyroe)
 - ⊗ 13: Western Plantation (Aughrim)

TITLE:	Hinterland Survey Area
PROJECT:	Annagh Wind Farm
FIGURE NO:	2.2
CLIENT:	EMP Group
SCALE:	1:90000
REVISION:	0
DATE:	12/10/2021
PAGE SIZE:	A3





2.3 Breeding Waders Surveys

Survey transects to assess the presence of breeding wader populations were completed during the months of May, June and July 2020. A number of methods were combined from published literature including Bibby *et al*, (2000), Gilbert *et al*, (1998), O’Brien & Wilson (2011) and SNH 2017 to estimate numbers of target species breeding within this envelope.

Methods utilised were grouped into 2 categories; those for breeding Lapwing *Vanellus* and those for other species such as Curlew *Numenius arquata*, Common Snipe *Gallinago*, Redshank *Tringa totanus*, Woodcock *Scolopax rusticola*, Common Sandpiper *Actitis hypoleucos* and Ringed Plover *Charadrius hiaticula*. For each species, a pre-defined matrix of suitable habitats was created and used to select target habitats for survey.

Table 2-4: Target Species and Associated Suitable Breeding Habitat

Target Species	Suitable Breeding Habitat
Lapwing	Lowland wet grassland, arable farmland, cutover bog with pools and wet grassland
Snipe	Wet pastures, marsh, bogs (intact and cutover) and fens
Redshank	Bog
Curlew	Bog
Common Sandpiper	Streams/rivers in bog
Woodcock	Woodland, bog woodland
Ringed Plover	Cutover bog, milled peat with exposed gravel

Survey methods for Lapwing followed those in Bibby *et al*. 2000 wherein the primary count unit for breeding birds is defined as an incubating female; in addition, displaying birds, birds standing guard near nests or distraction displays were also recorded as indications of occupied territories. Extensive areas of open ground were covered from roads, farm tracks or roadsides (where possible); larger areas of open ground not visible from easily accessible vantage points were walked using transects.

Surveys were carried out during the time periods recommended in Bibby *et al*. 2000 although territorial behaviour noted outside these periods was also utilised in the assessment. For all additional species of wader the employed method was essentially the same and utilised transects walked through suitable habitat within 3 hours of dawn or dusk. Count units (see Table 2-5) were predefined for each target species and included in the method statement provided to surveyors.

All suitable habitats for waders were visited, at four week intervals, during the months of May, June and July 2020. Observations from each visit were annotated onto maps (locations of territories or breeding attempts) and a final, summary map produced at the end of the survey season using ARCMAP 10.4.1. Breeding wader summary sheets were also compiled at the end of the breeding season, indicating in each case the minimum number of breeding pairs/occupied territories known to occur.



Table 2-5: Count Units for each Wading Species

Species	Count Unit
Lapwing	Incubating Bird
Common Snipe	Drumming or Chipping Bird
Redshank	Alarming Bird
Woodcock	Displaying Male
Ringed Plover	Presence or Absence/ Fledged Young late in season
Common Sandpiper	Presence or Absence/ Fledged young late in season
Curlew	Territorial Activity

All species encountered (seen or heard) were recorded and their abundance, behaviour, sex/age and breeding status 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 2-6 below, details the survey dates and weather conditions.

A dusk watch for Woodcock was also carried out on 29th June 2020. The methodology used followed that used in the UCC breeding Woodcock survey (adapted from Hoodless et al. 2009).

Table 2-6: Breeding Waders Survey Details

Date	Location	Cloud (Okta)	Precipitation	Visibility	Wind
08/05/2020	Annagh WF	5/8	Dry	Excellent	f1-2
15/06/2020	Annagh WF	8/8	Dry	Excellent	f1-2
29/06/2020	Annagh WF	8/8	Dry	V. Good, deteriorating	f1-2
09/07/2020	Annagh WF	5/8	Dry	Excellent	f1-2

2.4 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; Bibby *et al*, 2000). The study area for this survey comprised a total of three no. c. 1 km transects which were selected and centred on different habitats present within the subject sites (See Figure 2-3 for the location of transects). Birds were counted over two visits, each timed to coincide with the early part of the breeding season (April to mid-May 2020) and later part of the season (mid- May to late June 2020) 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 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).

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 summer breeding bird transect schedule is available in Table 2-7:

Table 2-7: Breeding bird summer transect Survey Details

Date	Transect	Time	Weather Conditions
08/05/2020	TR1,TR2,TR3	09:50 – 12:25	Cloud: 5/8 oktas; rain: none; wind: F1-2; visibility: excellent
15/06/2020	TR1,TR2,TR3	10:53 – 13:30	Cloud: 5/8 oktas; rain: none; wind: F2; visibility: excellent

2.5 Wintering Bird Surveys

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.

The wintering bird transect schedule is available in Table 2-8:

Table 2-8: Wintering bird transect Survey Details

Date	Transect	Time	Weather Conditions
14/10/2020	TR1,TR2,TR3	9:00 – 13:01	Cloud: 8/8 oktas, Rain: none, Wind: F1, Visibility: good
10/11/2020	TR1,TR2,TR3	12:30 – 15:15	Cloud: 8/8 oktas, Rain: none, Wind: F2, Visibility: good
29/12/2020	TR1,TR2,TR3	12:00 – 14:10	Cloud: 5/8 oktas, Rain: none, Wind: F3, Visibility: good
31/03/2021	TR1,TR2,TR3	15:01 – 16:38	Cloud: 8/8 oktas, Rain: none, Wind: F0-1, Visibility: excellent

Wintering Wader Survey

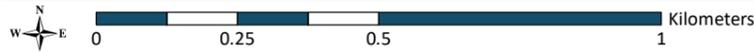
A nocturnal survey for Woodcock and Snipe using a thermal imaging scope was carried out in the fields surrounding VP2 on 15th February 2021.



Legend

- Site Boundary
- Turbine Layout
- Bird Survey Transect
- Construction Access
- Internal Access Track
- Turbine Hardstanding Area
- Substation
- Construction Compound

TITLE:	Bird Survey Transects
PROJECT:	Annagh Wind Farm, Co. Cork
FIGURE NO:	2.3
CLIENT:	EMPower
SCALE:	1:12500
REVISION:	0
DATE:	12/10/2021
PAGE SIZE:	A3





3. RESULTS

3.1 Avian usage of the Study Area – Vantage point

A total of 2 timed watches of 3 hours duration each were carried out at each of the 2 vantage points on a monthly basis from April 2020 to April 2021 inclusive. This surveying effort totals 72 hours of observation time at each VP over the survey period (see Appendix 3). Bird activity was recorded from the VPs during each survey. **Table 3-1** shows all the species recorded during surveys. In total there were 220 individual flight lines of 15 target species observed during the survey period.

In total 58 species of bird were noted. Of these species 7 are of Red-list status under the BoCCI (Gilbert et al., 2021): Grey Wagtail, Kestrel, Meadow Pipit, Redwing, Snipe, Swift and Woodcock. A total of 17 are Amber-listed and the remaining 34 are Green-listed. Three species are protected under Annex I of the EU Birds Directive: Little Egret, Hen Harrier and Peregrine falcon. Table 3-1 details the conservation status of all 58 species.

3.1.1 Summary Results Summer 2020 (April - August)

Target species observed during this survey period at Annagh include Buzzard, Grey Heron, Herring Gull, Little Egret, Kestrel, Mallard, Sparrowhawk and Lesser Black-backed Gull. Buzzard was recorded on nine occasions, Herring Gull once, Little Egret once, Mallard once, Sparrowhawk once, Great Black-backed Gull three times, Grey Heron ten, Kestrel 24 times, and lesser-black backed gull seven times during summer vantage point surveys in 2020.

3.1.2 Summary Results Winter 2020/21 (October - March)

Target species observed during this survey period included: Black-headed Gull, Buzzard, Hen Harrier, Goshawk, Grey Heron, Kestrel, Lesser Black-backed Gull, Great Black-backed Gull, Mallard, Peregrine Falcon, Sparrowhawk, Woodcock and Snipe. The number of times each species was observed was as follows: Black-headed Gull once; Buzzard 25 times; Hen Harrier twice; Goshawk once; Grey Heron 14 times; Kestrel 20 times; Lesser Black-backed Gull once; Great Black-backed Gull once; Mallard twice; Peregrine falcon twice; Sparrowhawk six times; Woodcock once; Snipe nine times. A farmer also reported a barn owl has previously been observed using a derelict farmhouse to the south of the Site.

3.1.3 Summary Results Breeding Season 2021 (April)

Target species observed during this survey period included: Buzzard, Lesser Black-backed Gull and Grey Heron.

Buzzard was recorded three times, Grey Heron once and Lesser Black-backed Gull once during vantage point surveys in April 2021.



Table 3-1 Bird species recorded during VP surveys 2020/21

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
Black-headed Gull (BH)	<i>Chroicocephalus ridibundus</i>	Amber	No
Blue Tit (BT)	<i>Cyanistes caeruleus</i>	Green	No
Bullfinch (BF)	<i>Pyrrhula pyrrhula</i>	Green	No
Buzzard (BZ)	<i>Buteo buteo</i>	Green	No
Chaffinch (CH)	<i>Fringilla coelebs</i>	Green	No
Chiffchaff (CC)	<i>Phylloscopus collybita</i>	Green	No
Coal Tit (CT)	<i>Periparus ater</i>	Green	No
Collared Dove (CD)	<i>Streptopelia decaocto</i>	Green	No
Cuckoo (CK)	<i>Cuculus canorus</i>	Green	No
Dunnock (D.)	<i>Prunella modularis</i>	Green	No
Feral Pigeon (FP)	<i>Columba livia</i>	Green	No
Fieldfare (FF)	<i>Turdus pilaris</i>	Green	No
Goldcrest (GC)	<i>Regulus regulus</i>	Amber	No
Goldfinch (GO)	<i>Carduelis carduelis</i>	Green	No
Goshawk (GI)	<i>Accipiter gentilis</i>	Amber	No
Great Black-backed Gull (GB)	<i>Ardea cinerea</i>	Green	No
Great Tit (GT)	<i>Parus major</i>	Green	No
Greenfinch (GR)	<i>Carduelis chloris</i>	Amber	No
Grey Heron (H.)	<i>Ardea cinerea</i>	Green	No
Grey Wagtail (GL)	<i>Motacilla cinerea</i>	Red	No
Hen Harrier (HH)	<i>Circus cyaneus</i>	Amber	Yes
Herring Gull (HG)	<i>Larus argentatus</i>	Amber	No
Hooded Crow (HC)	<i>Corvus cornix</i>	Green	No
House Martin (HM)	<i>Delichon urbicum</i>	Amber	No
House Sparrow (HP)	<i>Passer domesticus</i>	Amber	No
Jackdaw (JD)	<i>Corvus monedula</i>	Green	No
Kestrel (K.)	<i>Falco tinnunculus</i>	Red	No
Lesser Black-backed Gull (LB)	<i>Larus fuscus</i>	Amber	No
Lesser Redpoll (LR)	<i>Carduelis cabaret</i>	Green	No



Common name (BTO code)	Scientific name	*BoCCI status	**Annex I status
Linnet (LI)	<i>Carduelis cannabina</i>	Amber	No
Little Egret (ET)	<i>Egretta garzetta</i>	Green	Yes
Long-tailed Tit (LT)	<i>Aegithalos caudatus</i>	Green	No
Magpie (MG)	<i>Pica pica</i>	Green	No
Mallard (MA)	<i>Anas platyrhynchos</i>	Amber	No
Meadow Pipit (MP)	<i>Anthus pratensis</i>	Red	No
Mistle Thrush (M.)	<i>Turdus viscivorus</i>	Green	No
Peregrine	<i>Falco peregrinus</i>	Green	Yes
Pheasant (PH)	<i>Phasianus colchicus</i>	Green	No
Pied/White Wagtail (PW)	<i>Motacilla alba</i>	Green	No
Raven (RN)	<i>Corvus corax</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
Sand Martin (SM)	<i>Riparia riparia</i>	Amber	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>	Amber	No
Starling (SG)	<i>Sturnus vulgaris</i>	Amber	No
Stonechat (SC)	<i>Saxicola torquatus</i>	Green	No
Swallow (SL)	<i>Hirundo rustica</i>	Amber	No
Swift (SI)	<i>Apus apus</i>	Red	No
Willow Warbler (WW)	<i>Phylloscopus trochilus</i>	Amber	No
Woodcock	<i>Scolopax rusticola</i>	Red	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.



3.2 Target Species observations during VP surveys

3.2.1 Black-headed Gull

Winter

There was one sighting of Black-headed Gull on the 28th of December 2020 from VP1. The bird was not observed in flight.

3.2.2 Buzzard

Winter

Buzzards were recorded a total of 25 times during winter VP surveys making it the most frequently recorded species through the winter season. They were recorded across both VPs and all months. Most observations were of individual birds; however, two pairs were also recorded perched and flying together. Eight flight lines were within the buffer zone and four further flight lines were both inside and outside of the buffer zone with the remainder being entirely outside the buffer zone. Buzzards were recorded flying at all height ranges, including observations of birds flying within the rotor-swept height band (25-175m). On March 4th 2021 there was a Buzzard observed feeding on the ground in GA1 which subsequently walked out of sight.

Summer

A total of 14 observations of this Green-listed species were made over the summer season across VP1 and VP2 and a total of 14 flight lines were recorded. In addition, an incidental observation of a Buzzard flying inside the 500m buffer within the rotor-swept height band was recorded on the 8th of May 2020 during transect surveys, this flight line is also shown on the flight line map for summer 2020 in Appendix 3.

The majority of the observations were of single birds, with four flight lines within the 500m buffer, seven flight lines inside and outside the buffer and the remaining three outside the buffer zone. Twelve observations were made of Buzzards flying within the rotor-swept height band (25-175m). Four events of mobbing by corvids were recorded. There was also one instance of three Buzzards circling together on the 6th of April 2021 to the North of the site, after which one bird broke away and headed closer to the site.

3.2.3 Goshawk

Winter

There was one sighting of Goshawk flying below 20m just outside the buffer zone to the south on the 15th of February 2021 from VP1.

Summer

No observation of Goshawk in the summer season 2020.

3.2.4 Grey Heron

Winter

Grey Heron were recorded a total of 17 times during winter VP surveys and across all months and from both VP1 and VP2. Eleven birds were observed in flight between 0-25m height, below the rotor-swept height band (25-175m).



Eight of these flight lines were within the buffer zone, one was both inside and outside the buffer zone and the remaining two were outside the buffer zone. Other observations were of perched birds. One note was made of a minimum of four birds visible in the marsh and perching on buildings on the 15th of February 2021.

Summer

Grey Heron were recorded ten times during summer VP surveys in 2020. Of these, six observations were made of Herons in flight. One of the flight lines was entirely within the buffer of 500m, and the remaining five were both within and outside the buffer.

3.2.5 Hen Harrier

Winter

There were two sightings of Hen Harrier in the winter period of 2020. One on October 14th 2020 was observed during transect surveys. It was observed flying below the rotor-swept height band (25-175m) within the buffer zone, after being flushed from wet grassland/marsh by the surveyor during a winter transect survey. The second observation was on the 18th of December 2020. This Ringtail Hen Harrier was observed flying low from outside the buffer to roost within the buffer zone. It appeared to go to ground a short distance to the west of the met mast. Subsequent dusk surveys throughout the winter season confirmed the site is not a habitual roosting location for Hen Harrier.

Summer

No observation of Hen Harrier in the summer season 2020.

3.2.6 Herring Gull

Winter

No observation of Herring Gull in the winter season 2020/21.

Summer

There was one sighting of Herring Gull on the 18th of May 2020 from VP2. The bird was not observed in flight.

3.2.7 Kestrel

Winter

This Red-listed species was recorded 23 times during the 2020/2021 winter VP surveys across all months and VPs and 23 flight lines were noted. A total of 15 flight lines were entirely within the buffer zone, seven were inside/outside the buffer zone and one was outside the buffer zone. All records were of individual birds. One further flight line was recorded before the VP watch period started. Kestrel were observed hunting on 13 occasions, demonstrating that these birds are actively using the area to find prey.

Summer

Kestrel were recorded 24 times during VP surveys between April and July 2020 from both VPs, making it the most frequently recorded species throughout the summer season 2020. Male as well as female birds were seen. Eleven flight paths were within the rotor-swept height band (25-175m).

Thirteen flight lines were within the buffer zone, seven were both within and outside the buffer zone and the remaining four flight lines were outside of the buffer zone just south to the south. Four individuals were



reported hunting within the buffer zone of 500m; one of these was over GS4, one over GS4/GS1/Plantation. One note was made about a successful hunt inside/outside the buffer zone on the 16th of June 2020 by a male Kestrel which hovered, stooped and emerged with a bank vole. It then flew to a Hawthorn and perched to eat its prey. One additional flight line was recorded outside of VP surveys, during breeding bird transect surveys on 08/05/2020. This record was of a Kestrel that was observed flying inside/outside the 500m buffer from TR3.

3.2.8 Lesser Black-backed Gull

Winter

This Amber-listed species was recorded on the 28th of December 2020 from VP1. The bird was not observed in flight.

Summer

There were seven records of Lesser Black-backed Gull during the summer 2020, all were recorded from VP1. One sighting was on the 25th of May 2020 where one individual flew within the rotor-swept height band (25-175m) within the buffer zone of 500m. The remaining sightings were on the 4th of September 2020 between 8:34 am and 12:37 pm and were of groups of between 4-34 individuals. The Gulls were all travelling in the same direction, in the same manner. All flight lines passed inside/outside the 500m buffer. All flight lines are within the rotor-swept height band (25-175m). A farmer was spreading slurry and the observer inferred this was attracting them.

One sighting of Lesser Black-backed Gull was recorded on the 6th of April 2021 from VP1, no flight activity was observed on that occasion.

3.2.9 Little Egret

Winter

No observations of Little Egret were recorded in the winter season 2020/21.

Summer

This Annex I species was recorded from VP1 on one occasion on April 27th 2020. The bird was observed for 15 seconds commuting across the site within the 500m buffer at a height of 30-100m within the rotor-swept height band (25-175m).

3.2.10 Mallard

Winter

This Amber-listed species was recorded on two occasions during the winter surveys 2020/2021. The first occasion was on 4th November 2020 and the Mallard was observed flying at a height of 0-20m outside the 500m buffer. The second record was from the 15th February 2021 and the Mallard was not observed in flight.

Summer



There was one record from the 4th of September 2020 of a group of 16 Mallard flying over the site within the 500m buffer north of turbine 1 for 200 seconds before continuing flying within view for 180 seconds outside the 500m buffer within the rotor-swept height band (25-175m).

3.2.11 Peregrine Falcon

Winter

This Annex 1 species was recorded on two occasions during the winter surveys in 2020/2021. The first occasion was on December 18th 2020 and the Falcon was observed flying to a perch within the 500m buffer under 20m, below the rotor-swept height band (25-175m).

The second record was from the 15th of February 2021 where the Peregrine was observed feeding on a fencepost and then flying off at a height of 0-20m inside/outside of the buffer zone.

Summer

No observation of Peregrine in the summer season 2020.

3.2.12 Snipe

Winter

This red listed species was recorded from VP1 on nine occasions during the winter surveys 2020/2021.

The observations were of individuals, pairs or groups of three. On one of these occasions the Snipe was only heard and not seen. On two occasions the birds were seen flying within the rotor-swept height band (25-175m), one of these flight lines was within the 500 m buffer zone and the flight was observed for 26 seconds. One flight line was inside/outside the 500m buffer. All remaining sightings were of Snipe outside the buffer zone; flying between 0-20m. In most cases they were flushed out by startling noises such as by a tractor spreading slurry.

One observation of nine Snipe foraging was made as part of a walkover thermal imaging survey of fields to the east and west of VP2 after dark on February 15th 2021.

Summer

No observation of Snipe in the summer season 2020.

3.2.13 Sparrowhawk

Winter

Sparrowhawk, a Green-listed species in Ireland, was recorded on eight occasions during winter surveys 2020/2021, and was seen from both VPs. One of these observations was made on October 14th 2020 during winter transect surveys. Seven of the sightings were of individual Sparrowhawk flying low between 0-25m; three of these sightings were inside the buffer zone, four were inside/outside the buffer zone and one was outside of the 500m buffer. A pair of Sparrowhawk rose out of conifer woodland within the buffer zone and performed a soaring display inside the 500m buffer within the rotor-swept height band (25-175m) on March 31st 2021.

Summer



There was one record of a Sparrowhawk being mobbed by songbirds outside of the buffer zone flying between 0-20m height on April 27th 2020. An incidental observation of a juvenile Sparrowhawk flying at 0-20m inside the buffer zone to the south of T04 was recorded during transect surveys on 15th June 2020. On July 26th, 2020, a Juvenile was recorded calling from a nest, estimated to be located c. 500m west of VP2 (outside site boundary).

3.2.14 Woodcock

Winter

One observation of seven Woodcock foraging was made around VP2 as part of a walkover thermal imaging survey of fields to the east and west of VP2 (outside proposed site) after dark on February 15th 2021.

Summer

No observation of Woodcock in the summer season 2020.

3.3 Hinterland Survey

Hinterland surveys to establish breeding occupancy within a 10 km radius of the site were carried out over 14 dates across 2020 and 2021. The survey schedule and locations of the Hinterland watches are shown in Table 2-3. A total of 55 bird species were identified during Hinterland surveys within this 12-month period.

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

A total of 4 Annex I species were recorded during hinterland surveys: Little Egret, Golden Plover, Greenland white-fronted Goose, and Whooper Swan. A total of ten Red-listed species were observed: Curlew, Golden Plover, Kestrel, Lapwing, Meadow Pipit, Red Grouse, Redwing, Shoveler, Snipe and Yellowhammer. A further 17 Amber-listed species were observed. Species recorded during Hinterland surveys included three raptor species, two gull species, six wader species, eight duck species, four goose species and two swan species.

For site-specific Hinterland survey results see Appendix 4 of this report.

Species of conservation concern that are known to be potentially vulnerable to wind farm developments will be discussed in more detail in this section. Species have been selected for detailed discussion on the basis of conservation status, vulnerability to wind farm developments and if species sightings have been confirmed on or near the proposed Wind Farm site, which will indicate potential links between species recorded at the proposed site and the surrounding environment.

3.3.1 Black-headed Gull

This Amber-listed Gull species was seen on one occasion during Hinterland surveys. This observation of five Gulls was made on the 15th of June 2020 at Large Quarry Lake (Ballinadridden), which is 2.6 km from the proposed Annagh Wind Farm.

3.3.2 Cormorant



Amber-listed Cormorant was noted on five occasions during Hinterland surveys. Of these, three observations were made at Large Quarry Lake (Ballinadriveen) (2.6 km distance to proposed Wind Farm), where one Cormorant was seen in September 2020, one bird was seen in January 2021 and six Cormorants were observed in February 2021. Further observations were made at the River Awbeg (2.76 km distance to proposed Wind Farm), where one Cormorant was noted in November 2020 and four birds were observed in March 2021.

3.3.3 Curlew

This Red-listed wader species was seen on five occasions during Hinterland surveys. Of these, four were at the Large Quarry Lake (Ballinadriveen) (2.6 km distance to proposed Wind Farm). The largest flock of 53 Curlew was noted on the 16th of December 2020, another large flock of 46 as observed on the 26th of November 2020. Further sightings were of an individual Curlew in January and a group of eight Curlew in February 2021. The final observation of seven Curlew was at the Small Quarry Lake (Ballyroe) (2.6 km distance to proposed Wind Farm) in November 2020.

3.3.4 Golden Plover

This Red-listed Annex 1 species was noted twice during Hinterland surveys, both times were on the 22nd of October 2020. The first observation of a flock of about 40 individuals was from the Ballyhoura Mountains SAC (8.2 km distance to proposed Wind Farm), the second observation of a smaller flock of 15 Golden Plover was from the River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm),

3.3.5 Greenland White-fronted Goose

This Amber-listed Annex 1 species was noted once during Hinterland surveys on the 23rd of March 2021 when a single Greenland White-fronted Goose was observed at the Kilcolman Bog SPA (9.49 km distance to proposed Wind Farm).

3.3.6 Grey Heron

Green-listed Heron was noted on 11 occasions during Hinterland surveys. The site with most Heron sightings was Large Quarry Lake (Ballinadriveen) (2.6 km distance to proposed Wind Farm). Heron were observed here six times in June, October and December 2020 as well as in January, February and March 2021. On three of these occasions one Heron was observed while on the 16th of December 2020 two Grey Herons were noted, and on the 15th of June 2020 as well as the 26th of February 2021 three Herons were observed. Grey Heron were also observed twice at the River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm), where a single Heron was seen in November 2020 as well as in February 2021. Further observations were made at the River Blackwater SAC/ Buttevant (7.84 km distance to proposed Wind Farm), where individual Grey Herons were observed in October and November 2020 as well as in January 2021.



3.3.7 Kestrel

Red-listed Kestrel was noted on five occasions during Hinterland surveys and one individual was seen each time. Of these, two were casual observations on the 29th of May 2020 (one was east of Buttevant at ITM 558383 609600, c. 10.25 km south-east of proposed site; the second was in the Ballyhoura Mountains at ITM 560586 617793, c. 9.86 north-east of the proposed site). Of the remaining sightings, one was recorded on the 15th of June 2020 at the was Large Quarry Lake (Ballinadridden) (2.6 km distance to proposed Wind Farm), and two were recorded on the 4th of September 2020 at the Kilcolman Bog SPA (9.49 km distance to proposed Wind Farm) and the Ballyhoura Mountains SAC (8.2 km distance to proposed Wind Farm).

3.3.8 Lapwing

Red-listed Lapwing was noted on five occasions during Hinterland surveys. Lapwing was seen twice at the Large Quarry Lake (Ballinadridden) (2.6 km distance to proposed Wind Farm), both times in November 2020. Two further sightings were at the River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm), once in October and once in November 2020. A final sighting was made in November 2020 at the River Awbeg (2.76 km distance to proposed Wind Farm).

3.3.9 Lesser Black-backed Gull

Amber-listed Lesser Black-backed Gull was noted on two occasions during Hinterland surveys, both observations being from the Large Quarry Lake (Ballinadridden) (2.6 km distance to proposed Wind Farm). The first observation was of five Gulls on the 4th of September 2020, the second observation was of a single Gull on the 26th of November 2020.

3.3.10 Little Egret

Little Egret, an Annex 1 species, was noted on four occasions during Hinterland surveys. The closest observation to the proposed site was made on the 7th of December 2020 at the River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm). Two further observations were made at the River Blackwater SAC/ Buttevant (7.84 km distance to proposed Wind Farm), where two Little Egret were noted on the 22nd of October 2020 and one Little Egret was observed on the 26th of November 2020. A further observation was made casually at the railway crossing to the north of Buttevant in February 2020.

3.3.11 Mute Swan

This Amber-listed Swan species was noted on 18 occasions at eight different sites during Hinterland surveys. It was seen five times at Castle Lake (Milltown) (0.9 km distance to proposed Wind Farm) where two Mute Swan were seen in October, November and December 2020 as well as in January and February 2021. Mute Swan were seen on three occasions at Kilcolman Bog SPA (9.49 km distance to proposed Wind Farm), where one swan was seen on the 7th of December 2020 and two Mute Swans were seen in January and February 2021. At the River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm), seven Swans were observed on the 6th of November 2020 and two individuals were noted on the 22nd of October 2020. Two further sightings were recorded at the River Blackwater SAC/ Buttevant (7.84 km distance to proposed Wind Farm), where two Mute Swan were seen twice in November 2020.



At the River Awbeg (2.76 km distance to proposed Wind Farm), Mute Swan were seen in October and in November 2020 where two Swans were seen on each occasion. At Glanmore Flats (5.55 km distance to proposed Wind Farm), Mute Swan were observed in November 2020 and in January 2021, where three and two Swans were seen respectively. Mute Swan were also observed at the Large Quarry Lake (Ballinadridden) (2.6 km distance to proposed Wind Farm) and at Eagle Lough pNHA (8.6 km distance to proposed Wind Farm), where three Swans were noted in October 2020 and two Swans were noted in December 2020 respectively.

3.3.12 Red Grouse

No specimens of Red Grouse were observed during Hinterland surveys. Grouse Droppings were however noted at the and the Ballyhoura Mountains SAC (8.2 km distance to proposed Wind Farm) on the 23rd of March 2021.

3.3.13 Sparrowhawk

This Green-listed raptor species was seen once during Hinterland surveys. One observation of a single Hawk was made at the Ballyhoura Mountains SAC (8.2 km distance to proposed Wind Farm) on the 22nd of October 2020.

3.3.14 Snipe

Red-listed Snipe was noted once during Hinterland surveys. The observation was made at Eagle Lough pNHA (8.6 km distance to proposed Wind Farm) on the 26th of January 2021. On this occasion four Snipe were noted.

3.3.15 Whooper Swan

Annex 1 species Whooper Swan was seen on 15 occasions during Hinterland surveys, all of which were throughout the winter season 2020/2021. Of these, nine observations were at the River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm), where the largest flock of 107 Whooper Swans was observed on the 16th of February 2021. Further large flocks of 92 and 52 Swans were observed at this site on the 16th of December 2020 and the 7th of December 2020 respectively. Numbers of all remaining observations at this site were between six to 24 birds, in October and November 2020 as well as in February and March 2021.

A further flock of 38 Whooper Swans was noted at the Small Quarry Lake (Ballyroe) (2.6 km distance to proposed Wind Farm) on the 26th of February 2021. Two further sightings were at Kilcolman Bog SPA (9.49 km distance to proposed Wind Farm) where 22 and 23 birds were noted in February 2021 and March 2021 respectively. A single Whooper Swan was seen in March 2021 at the Large Quarry Lake (Ballinadridden) (2.6 km distance to proposed Wind Farm). The final observation was of 14 Swans in February 2021, to the North of Buttevant, which was a casual observation.



Table 3-2: Bird species recorded during hinterland surveys in year 2 (2020/2021)

Common Name	Scientific Name	Conservation Status	
		BoCCI*	Annex I**
Blackbird	<i>Turdus merula</i>	Green	No
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Amber	No
Buzzard	<i>Buteo buteo</i>	Green	No
Blue Tit	<i>Cyanistes caeruleus</i>	Green	No
Canada Goose	<i>Branta canadensis</i>	Green	No
Chaffinch	<i>Fringilla coelebs</i>	Green	No
Coal Tit	<i>Periparus ater</i>	Green	No
Coot	<i>Fulica atra</i>	Amber	No
Cormorant	<i>Phalacrocorax carbo</i>	Amber	No
Curlew	<i>Numenius arquata</i>	Red	No
Dunnock	<i>Prunella modularis</i>	Green	No
Fieldfare	<i>Turdus pilaris</i>	Green	No
Gadwall	<i>Mareca strepera</i>	Amber	No
Golden Plover	<i>Pluvialis apricaria</i>	Red	Yes
Goldfinch	<i>Carduelis carduelis</i>	Green	No
Great Crested Grebe	<i>Podiceps cristatus</i>	Amber	No
Green Sandpiper	<i>Tringa ochropus</i>	Green	No
Greenfinch	<i>Carduelis chloris</i>	Amber	No
Grey Heron	<i>Ardea cinerea</i>	Green	No
Greylag Goose	<i>Anser anser</i>	Amber	No
Hooded Crow	<i>Corvus cornix</i>	Green	No
Jackdaw	<i>Corvus monedula</i>	Green	No
Jay	<i>Garrulus glandarius</i>	Green	
Kestrel	<i>Falco tinnunculus</i>	Amber	No
Lapwing	<i>Vanellus vanellus</i>	Red	No
Lesser Black-backed Gull	<i>Larus fuscus</i>	Amber	No
Little Egret	<i>Egretta garzetta</i>	Green	Yes
Little Grebe	<i>Tachybaptus ruficollis</i>	Green	No



Common Name	Scientific Name	Conservation Status	
		BoCCI*	Annex I**
Long-tailed Tit	<i>Aegithalos caudatus</i>	Green	No
Mallard	<i>Anas platyrhynchos</i>	Green	No
Meadow Pipit	<i>Anthus pratensis</i>	Red	No
Mistle Thrush	<i>Turdus viscivorus</i>	Green	No
Moorhen	<i>Gallinula chloropus</i>	Green	No
Mute Swan	<i>Cygnus olor</i>	Amber	No
Pied/White Wagtail	<i>Motacilla alba</i>	Green	No
Pink-footed Goose	<i>Anser brachyrhynchus</i>	Green	No
Red Grouse	<i>Lagopus lagopus scotica</i>	Red	No
Redwing	<i>Turdus iliacus</i>	Red	No
Reed Bunting	<i>Emberiza schoeniclus</i>	Green	No
Robin	<i>Erithacus rubecula</i>	Green	No
Rook	<i>Corvus frugilegus</i>	Green	No
Shoveler	<i>Anas clypeata</i>	Red	No
Snipe	<i>Gallinago gallinago</i>	Red	No
Sparrowhawk	<i>Accipiter nisus</i>	Green	No
Stonechat	<i>Saxicola torquatus</i>	Green	No
Swallow	<i>Hirundo rustica</i>	Amber	No
Teal	<i>Anas crecca</i>	Amber	No
Tufted Duck	<i>Aythya fuligula</i>	Amber	No
Greenland White-fronted Goose	<i>Anser albifrons</i>	Amber	Yes
Whooper Swan	<i>Cygnus cygnus</i>	Amber	Yes
Wigeon	<i>Mareca penelope</i>	Amber	No
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber	No
Woodpigeon	<i>Columba palumbus</i>	Green	No
Yellowhammer	<i>Emberiza citrinella</i>	Red	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



3.4 Breeding Waders Survey

Breeding wader surveys were undertaken along TR1 and TR2. Transect 1 (TR1) is located south of T05 and T04. Transect 2 (TR2) is located north of TR1 and south of T01, T02 and T03, running north of T05 towards T04 and traversing part of the GCR near the onsite substation (see figure 2-3 for a detailed transect map).

There were no waders recorded during the breeding waders surveys in 2020. Wader species were however spotted during the wintering and breeding bird transect surveys as well as during VP surveys. Most of these sightings were of Red-listed Snipe, there was one sighting of Red-listed Woodcock and one sighting of Little Egret, which is listed as an Annex I species.

There were six sightings of Snipe along wintering bird transects intersecting the proposed site in October and November 2020 and March 2021. Snipe were also seen during VP surveys on seven occasions during November 2020 and January and March 2021.

A walkover thermal imaging survey of fields near VP2 (outside proposed site) after dark was conducted on the 15th of February 2021 and nine Snipe as well as seven Woodcock were observed feeding in the fields. On the 27th of April 2020 a Little Egret was observed commuting over the buffer zone of 500m from VP1.



3.5 Transect Surveys species overview

For the summer (breeding) season 2020 and the wintering (non-breeding) season 2020/21, three transects were chosen. Transect 1 (TR1) is located south of the proposed road between T05 and T04. Transect 2 (TR2) is located north of TR1 and south of T01, T02 and T03, running north of T05 towards T04 and traversing part of the GCR near the onsite substation. Transect 3 (TR3) runs north-south parallel to T01 and T03 before turning east and passing T03 immediately to the north (see figure 2-3 for a detailed transect map). 43 Species were observed across all transect surveys. Among these was one Annex 1 species – the amber listed Ringtail Hen Harrier (probably an adult female) was flushed from marsh south of T04 on approach during the October 2020 survey in TR1. Four red listed species were found throughout the surveys; Kestrel, Meadow Pipit, Redwing and Snipe. A further nine amber listed species were observed across the surveys, notably among them are Mallard and Mute Swan. The bird species shown per Month are shown in Table 3-3:

Table 3-3: Species recorded per Month (transect surveys)

combined	May	June	October	November	December	March
Blackbird	Blackbird	Blackbird	Blackbird	Blackbird	Blackbird	Blackbird
Blackcap	Blackcap	Blackcap				
Blue Tit	Blue Tit	Blue Tit	Blue Tit	Blue Tit		Blue Tit
Bullfinch		Bullfinch				
Buzzard	Buzzard				Buzzard	
Chaffinch	Chaffinch	Chaffinch	Chaffinch	Chaffinch		Chaffinch
Chiffchaff	Chiffchaff	Chiffchaff				Chiffchaff
Coal Tit		Coal Tit	Coal Tit			Coal Tit
Dunnock	Dunnock	Dunnock	Dunnock	Dunnock	Dunnock	Dunnock
Fieldfare			Fieldfare	Fieldfare	Fieldfare	Fieldfare
Goldcrest	Goldcrest	Goldcrest	Goldcrest			Goldcrest
Goldfinch	Goldfinch	Goldfinch				
Great Tit (GT)	Great Tit	Great Tit			Great Tit	Great Tit



combined	May	June	October	November	December	March
Grey Heron (H)	Grey Heron		Grey Heron		Grey Heron	Grey Heron
Hen Harrier(HH)			Hen Harrier			
Hooded Crow (HC)	Hooded Crow	Hooded Crow	Hooded Crow	Hooded Crow	Hooded Crow	Hooded Crow
Jackdaw (JD)	Jackdaw		Jackdaw		Jackdaw	
Jay (J.)		Jay				
Kestrel (K.)	Kestrel		Kestrel	Kestrel	Kestrel	
Linnet (LI)	Linnet	Linnet				
Long-tailed Tit						Long-tailed Tit
Magpie (MG)	Magpie		Magpie	Magpie	Magpie	
Mallard (MA)					Mallard	Mallard
Meadow Pipit (MP)	Meadow Pipit	Meadow Pipit	Meadow Pipit	Meadow Pipit	Meadow Pipit	Meadow Pipit
Mistle Thrush (M.)					Mistle Thrush	
Mute Swan (MS)			Mute Swan			
Pheasant (PH)	Pheasant	Pheasant	Pheasant		Pheasant	Pheasant
Raven (RN)				Raven		
Redwing (RE)			Redwing	Redwing	Redwing	Redwing
Reed Bunting (RB)	Reed Bunting	Reed Bunting				Reed Bunting
Robin (R.)	Robin	Robin	Robin	Robin	Robin	Robin
Rook (RO)		Rook	Rook	Rook	Rook	Rook
Sedge Warbler (SW)	Sedge Warbler	Sedge Warbler				
Skylark (S.)	Skylark	Skylark				Skylark
Snipe		Snipe	Snipe	Snipe		Snipe



combined	May	June	October	November	December	March
Song Thrush	Song Thrush	Song Thrush		Song Thrush		Song Thrush
Sparrowhawk		Sparrowhawk	Sparrowhawk			
Starling			Starling			
Stonechat	Stonechat	Stonechat	Stonechat		Stonechat	
Swallow	Swallow	Swallow	Swallow			
Willow Warbler	Willow Warbler	Willow Warbler				Willow Warbler
Woodpigeon	Woodpigeon	Woodpigeon	Woodpigeon	Woodpigeon	Woodpigeon	Woodpigeon
Wren	Wren	Wren	Wren	Wren		Wren

3.6 General Breeding Bird Survey

The results of the summer breeding bird transect survey at Annagh are shown in Table 3-4 and Table 3-5. A total of 33 species were recorded along the transects over the summer season. A total of 2 Red-listed species were recorded: Kestrel and Meadow Pipit. One Kestrel was observed in May in TR3. The Kestrel was seen travelling over the site, descending slowly, presumably for prey. Ten Meadow Pipit were observed in May and thirteen were recorded in June 2020 in TR1. A juvenile Sparrowhawk was seen from TR1 flying inside the buffer for 10s 0-20m high.

A total of five Amber-listed species were recorded: Goldcrest, Linnet, Skylark, Willow Warbler and Swallow.



Table 3-4: Results of breeding bird transects surveys of Annagh (TR1, TR2 TR3) May 2020

Common Name	Scientific Name	May								
		TR1			TR2			TR3		
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO
Blackbird	<i>Turdus merula</i>	6	2	1	10	1	2	8	5	2
Blackcap	<i>Sylvia atricapilla</i>	5	1	2	6	1	0	4	0	0
Blue Tit	<i>Cyanistes caeruleus</i>	2	0	0	0	0	0	0	1	0
Buzzard	<i>Buteo buteo</i>	0	0	1	0	0	0	0	0	0
Chaffinch	<i>Fringilla coelebs</i>	4	5	1	2	1	1	1	0	1
Chiffchaff	<i>Phylloscopus collybita</i>	0	0	1	2	4	1	1	1	0
Duncock	<i>Prunella modularis</i>	2	0	0	2	2	0	1	0	0
Goldcrest	<i>Regulus regulus</i>	0	0	0	0	0	0	2	0	0
Goldfinch	<i>Carduelis carduelis</i>	0	0	0	0	0	0	1	0	0
Great Tit	<i>Parus major</i>	0	0	0	1	0	0	2	0	0
Grey Heron	<i>Ardea cinerea</i>	0	0	1	0	0	0	0	0	0
Hooded Crow	<i>Corvus cornix</i>	0	0	2	0	0	1	0	0	2
Jackdaw	<i>Corvus monedula</i>	0	2	0	0	0	1	0	0	0
Kestrel	<i>Falco tinnunculus</i>	0	0	0	0	0	0	0	0	1
Linnet	<i>Carduelis cannabina</i>	2	0	1	0	0	0	0	0	0
Magpie	<i>Pica pica</i>	0	0	0	0	0	0	0	0	0



Common Name	Scientific Name	May										
		TR1			TR2			TR3				
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO		
Meadow Pipit	<i>Anthus pratensis</i>	10	1	0	0	0	0	0	0	0	0	0
Pheasant	<i>Phasianus colchicus</i>	0	0	1	0	0	1	0	0	0	0	0
Reed Bunting	<i>Emberiza schoeniclus</i>	0	0	1	0	0	0	0	0	0	0	0
Robin	<i>Erithacus rubecula</i>	4	1	0	11	1	0	0	6	6	0	0
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	18	3	0	0	3	0	0	0	0	0	0
Skylark	<i>Alauda arvensis</i>	1	1	0	0	0	0	0	0	0	0	0
Song Thrush	<i>Turdus philomelos</i>	0	3	0	1	1	2	0	0	0	0	0
Stonechat	<i>Saxicola torquatus</i>	5	0	0	0	0	0	0	0	0	0	0
Swallow	<i>Hirundo rustica</i>	0	0	0	0	0	0	0	0	0	2	2
Willow Warbler	<i>Phylloscopus trochilus</i>	1	1	2	5	4	0	0	0	0	0	0
Woodpigeon	<i>Columba palumbus</i>	0	2	5	1	1	3	1	0	0	6	6
Wren	<i>Troglodytes troglodytes</i>	4	3	1	10	1	0	3	3	0	0	0
Number of species:											28	



Table 3-5: Results of breeding bird transects surveys of Annagh (TR1, TR2 TR3) June 2020

Common Name	Scientific Name	June								
		TR1			TR2			TR3		
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO
Blackbird	<i>Turdus merula</i>	0	1	1	9	0	0	0	7	1
Blackcap	<i>Sylvia atricapilla</i>	0	0	0	2	0	0	1	2	0
Blue Tit	<i>Cyanistes caeruleus</i>	0	0	0	1	0	0	2	0	0
Bullfinch	<i>Pyrrhula pyrrhula</i>	0	0	0	0	0	0	1	0	0
Chaffinch	<i>Fringilla coelebs</i>	1	0	0	2	3	0	0	0	0
Chiffchaff	<i>Phylloscopus collybita</i>	0	0	1	1	2	0	3	0	0
Coal Tit	<i>Parus ater</i>	0	0	0	1	0	0	0	0	0
Duncock	<i>Prunella modularis</i>	2	0	1	2	0	0	0	0	0
Goldcrest	<i>Regulus regulus</i>	0	0	0	6	0	0	0	0	0
Goldfinch	<i>Carduelis carduelis</i>	0	0	0	0	0	0	1	0	0
Great Tit	<i>Parus major</i>	2	0	0	1	0	0	0	0	0
Hooded Crow	<i>Corvus cornix</i>	0	0	2	0	0	0	1	0	2
Jay	<i>Corvus monedula</i>	0	0	0	0	0	0	0	0	1
Linnet	<i>Carduelis cannabina</i>	0	0	0	0	0	0	1	0	0
Meadow Pipit	<i>Anthus pratensis</i>	13	5	0	0	0	0	0	0	0
Pheasant	<i>Phasianus colchicus</i>	0	1	0	0	1	0	0	0	0



Common Name	Scientific Name	June								
		TR1			TR2			TR3		
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO
Reed Bunting	<i>Emberiza schoeniclus</i>	1	1	0	0	0	0	0	0	0
Robin	<i>Erithacus rubecula</i>	0	0	1	1	1	0	1	0	0
Rook	<i>Corvus frugilegus</i>	0	1	0	2	0	0	0	0	1
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	8	1	1	0	1	0	0	0	0
Skylark	<i>Alauda arvensis</i>	1	1	0	0	0	0	0	0	0
Song Thrush	<i>Turdus philomelos</i>	2	2	0	0	2	0	0	0	0
Sparrowhawk	<i>Accipiter nisus</i>	0	0	1	0	0	0	0	0	0
Stonechat	<i>Saxicola torquatus</i>	2	0	0	0	0	0	0	0	0
Swallow	<i>Hirundo rustica</i>	0	0	1	0	0	0	0	0	5
Willow Warbler	<i>Phylloscopus trochilus</i>	2	5	2	5	3	3	0	0	0
Woodpigeon	<i>Columba palumbus</i>	0	0	1	5	0	1	5	0	0
Wren	<i>Troglodytes troglodytes</i>	12	2	0	7	0	0	5	1	0
Number of species:										28



3.7 Wintering Bird Survey

The results of the wintering bird transect survey at Annagh are shown below, in Table 3-6.

A total of 38 species were recorded along the transects in the wintering season. Just 1 Annex I species was recorded during surveys, namely Hen Harrier.

A total of 26 species were recorded both in October 2020 and March 2021; 17 species were recorded in November and 19 species in December 2020. A total of four Red-listed species were recorded across the transects over the wintering surveys: Kestrel, Meadow Pipit, Redwing and Snipe. A further eight Amber-listed species were recorded along the transects, only one of which was recorded in December 2020 (Mallard) and none recorded in November 2020. All remaining species were either recorded in October 2020 or March 2021. Notable among these are: Mute Swan seen from TR2 and Sparrowhawk seen from TR2 in October 2020.

Table 3-6: Results of wintering bird transects surveys at Annagh (TR1, TR2 TR3) October 2020

Common Name	Scientific Name	October									
		TR1			TR2			TR3			
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	
Blackbird	<i>Turdus merula</i>	0	2	0	45	0	0	0	3	0	0
Blue Tit	<i>Cyanistes caeruleus</i>	0	0	0	0	0	0	0	1	0	0
Chaffinch	<i>Fringilla coelebs</i>	0	0	0	0	0	0	0	7	0	0
Coal Tit	<i>Parus ater</i>	1	0	0	0	0	0	0	0	0	0
Duncock	<i>Prunella modularis</i>	0	0	0	0	1	0	0	0	0	0
Fieldfare	<i>Prunella modularis</i>	0	0	0	50	0	0	0	6	0	0
Goldcrest	<i>Regulus regulus</i>	0	0	0	4	0	0	0	0	0	0
Grey Heron	<i>Ardea cinerea</i>	0	2	0	0	2	1	0	0	0	0
Hen Harrier	<i>Circus cyaneus</i>	0	1	0	0	0	0	0	0	0	0
Hooded Crow	<i>Corvus cornix</i>	0	0	0	0	1	1	0	0	0	1
Jackdaw	<i>Corvus monedula</i>	0	0	2	0	0	2	0	0	0	0



Common Name	Scientific Name	October										
		TR1			TR2			TR3				
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO		
Kestrel	<i>Falco tinnunculus</i>	0	0	0	1	0	1	0	0	0	0	0
Magpie	<i>Pica pica</i>	1	1	0	0	2	0	0	0	0	0	0
Meadow Pipit	<i>Anthus pratensis</i>	31	2	0	0	1	0	0	0	0	0	0
Mute Swan	<i>Anthus pratensis</i>	0	0	0	0	0	0	0	0	0	0	0
Pheasant	<i>Phasianus colchicus</i>	1	1	0	0	0	0	0	0	0	0	0
Redwing	<i>Turdus iliacus</i>	0	0	0	0	0	0	0	0	0	0	0
Robin	<i>Erithacus rubecula</i>	0	3	0	10	0	0	0	0	0	1	0
Rook	<i>Corvus frugilegus</i>	0	0	4	0	0	0	0	0	3	0	6
Snipe	<i>Gallinago gallinago</i>	0	3	0	0	3	0	0	0	0	0	0
Sparrowhawk	<i>Accipiter nisus</i>	0	0	0	1	0	0	0	0	0	0	0
Starling	<i>Sturnus vulgaris</i>	1	0	0	0	0	0	0	0	0	0	0
Stonechat	<i>Saxicola torquatus</i>	1	0	0	0	1	0	0	0	0	0	0
Swallow	<i>Hirundo rustica</i>	0	0	1	0	0	0	0	0	0	0	0
Woodpigeon	<i>Columba palumbus</i>	0	0	5	3	0	0	0	0	2	0	4
Wren	<i>Troglodytes troglodytes</i>	3	0	0	1	0	0	0	0	0	1	0
Number of species:											26	



Table 3-7: Results of wintering bird transects surveys at Annagh (TR1, TR2 TR3) November 2020

Common Name	Scientific Name	November										
		TR1			TR2			TR3				
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO		
Blackbird	<i>Turdus merula</i>	5	0	0	15	2	0	0	3	2	0	0
Blue Tit	<i>Cyanistes caeruleus</i>	0	0	0	3	0	0	0	0	0	0	0
Chaffinch	<i>Fringilla coelebs</i>	0	0	0	0	0	0	0	1	1	0	0
Duncock	<i>Prunella modularis</i>	0	0	0	1	0	0	0	0	1	0	0
Fieldfare	<i>Prunella modularis</i>	0	0	0	50	0	0	0	0	5	80	0
Hooded Crow	<i>Corvus cornix</i>	0	0	0	0	0	0	0	0	0	5	0
Kestrel	<i>Falco tinnunculus</i>	0	0	0	1	0	0	0	0	0	0	0
Magpie	<i>Pica pica</i>	0	0	0	1	0	0	0	0	0	0	0
Meadow Pipit	<i>Anthus pratensis</i>	5	0	0	0	0	15	0	0	0	1	0
Raven	<i>Corvus corax</i>	0	0	0	0	0	0	0	0	0	1	0
Redwing	<i>Turdus iliacus</i>	40	0	0	0	0	0	0	0	0	0	0
Robin	<i>Erithacus rubecula</i>	0	0	0	3	1	0	0	0	1	0	0
Rook	<i>Corvus frugilegus</i>	0	0	0	0	0	0	0	0	0	71	0
Snipe	<i>Gallinago gallinago</i>	2	0	1	0	0	0	0	0	0	0	0
Song Thrush	<i>Turdus philomelos</i>	0	0	0	1	0	0	0	0	0	0	0
Woodpigeon	<i>Columba palumbus</i>	0	0	0	0	1	0	0	0	0	1	0
Wren	<i>Troglodytes troglodytes</i>	0	0	0	0	2	0	0	0	0	0	0
Number of species:											17	



Table 3-8: Results of wintering bird transects surveys at Annagh (TR1, TR2 TR3) December 2020

Common Name	Scientific Name	December									
		TR1			TR2			TR3			
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	
Blackbird	<i>Turdus merula</i>	1	0	0	8	0	0	3	0	0	0
Buzzard	<i>Buteo buteo</i>	0	0	1	0	0	0	0	0	0	0
Duncock	<i>Prunella modularis</i>	0	0	0	3	0	0	1	0	0	0
Fieldfare	<i>Prunella modularis</i>	0	1	0	10	50	10	10	0	0	0
Great Tit	<i>Parus major</i>	1	0	0	0	0	0	0	0	0	0
Grey Heron	<i>Ardea cinerea</i>	0	1	0	0	0	0	0	0	0	0
Hooded Crow	<i>Corvus cornix</i>	0	0	1	0	1	0	0	0	0	1
Jackdaw	<i>Corvus monedula</i>	0	0	7	0	0	0	0	0	0	0
Kestrel	<i>Falco tinnunculus</i>	1	0	0	0	0	0	0	0	0	0
Magpie	<i>Pica pica</i>	0	0	1	0	0	0	0	0	0	0
Mallard	<i>Anas platyrhynchos</i>	7	0	0	0	0	0	0	0	0	0
Meadow Pipit	<i>Anthus pratensis</i>	2	3	0	0	0	0	1	0	0	0
Mistle Thrush	<i>Turdus viscivorus</i>	0	0	0	2	1	0	0	0	0	0
Pheasant	<i>Phasianus colchicus</i>	0	0	0	0	0	1	0	0	0	0
Redwing	<i>Turdus iliacus</i>	3	0	0	51	30	50	66	0	0	0
Robin	<i>Erithacus rubecula</i>	0	0	0	2	0	0	0	0	0	0
Rook	<i>Corvus frugilegus</i>	0	0	6	0	0	0	0	0	0	2



Common Name	Scientific Name	December											
		TR1			TR2			TR3					
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO
Stonechat	<i>Saxicola torquatus</i>	0	0	0	1	0	0	0	0	0	0	0	0
Woodpigeon	<i>Columba palumbus</i>	0	0	0	3	0	0	0	0	0	0	0	2
Number of species:													19

Table 3-9: Results of wintering bird transects surveys at Annagh (TR1, TR2 TR3) March 2021

Common Name	Scientific Name	March											
		TR1			TR2			TR3					
		0-25m	25-100m	>100/FO									
Blackbird	<i>Turdus merula</i>	0	2	4	9	14	3	2	0	0	0	0	
Blue Tit	<i>Cyanistes caeruleus</i>	0	0	0	0	0	0	1	0	0	0	0	
Chaffinch	<i>Fringilla coelebs</i>	0	0	0	0	0	0	3	1	3	2	0	
Chiffchaff	<i>Phylloscopus collybita</i>	0	1	0	3	0	1	2	0	0	0	0	
Coal Tit	<i>Parus ater</i>	0	0	0	0	0	1	1	0	0	0	0	
Duncock	<i>Prunella modularis</i>	1	1	0	0	0	0	1	0	0	0	0	
Fieldfare	<i>Prunella modularis</i>	0	0	0	5	0	0	0	0	0	0	0	
Goldcrest	<i>Regulus regulus</i>	0	0	0	1	0	0	0	0	0	0	0	
Great Tit	<i>Parus major</i>	1	0	0	1	1	0	1	0	0	0	0	



Common Name	Scientific Name	March													
		TR1			TR2			TR3							
		0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO	0-25m	25-100m	>100/FO					
Grey Heron	<i>Ardea cinerea</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	
Hooded Crow	<i>Corvus cornix</i>	0	0	0	0	0	0	0	1	1	2	0	0	0	
Long-tailed Tit	<i>Aegithalos caudatus</i>	0	0	0	0	0	5	0	0	0	0	0	0	0	
Mallard	<i>Anas platyrhynchos</i>	0	0	0	0	0	0	0	0	0	0	2	0	0	
Meadow Pipit	<i>Anthus pratensis</i>	8	0	0	0	0	2	0	0	0	0	0	0	0	
Pheasant	<i>Phasianus colchicus</i>	0	0	0	0	0	0	0	1	1	0	0	0	0	
Redwing	<i>Turdus iliacus</i>	0	0	0	0	0	5	1	1	0	0	0	0	0	
Reed Bunting	<i>Emberiza schoeniclus</i>	1	0	0	0	0	1	0	0	0	0	2	0	0	
Robin	<i>Erithacus rubecula</i>	2	0	0	0	0	19	1	1	0	0	2	0	0	
Rook	<i>Corvus frugilegus</i>	0	0	0	0	0	0	0	1	1	0	0	0	0	
Redwing	<i>Turdus iliacus</i>	0	0	0	0	0	0	0	1	1	0	0	0	0	
Skylark	<i>Alauda arvensis</i>	1	0	0	0	0	0	0	2	2	0	0	0	0	
Snipe	<i>Gallinago gallinago</i>	0	0	0	0	0	0	0	0	0	0	1	0	0	
Song Thrush	<i>Turdus philomelos</i>	0	0	0	0	0	1	0	0	0	0	0	0	0	
Willow Warbler	<i>Phylloscopus trochilus</i>	0	0	0	0	0	2	0	0	0	0	1	0	0	
Woodpigeon	<i>Columba palumbus</i>	0	0	2	2	2	2	4	4	0	0	5	0	0	
Wren	<i>Troglodytes troglodytes</i>	4	2	0	9	5	2	5	5	2	2	6	6	0	
Number of species:		26													



4. DISCUSSION

In conclusion, FT carried out a second full year of ornithological surveys at the proposed Annagh Wind Farm between April 2020 and April 2021 inclusive. The following surveys were undertaken: vantage point surveys, breeding & winter bird transect surveys, hinterland surveys, and breeding wader surveys.

In total there were 220 individual flight lines of 15 target species observed during the survey period.

In total 83 species of bird were noted across all surveys. Of these species 13 are of Red-list status under the BoCCI (Gilbert et al., 2021); A further 27 are Amber-listed and the remaining 44 are Green-listed. Five species are protected under Annex I of the EU Birds Directive: Golden Plover, Hen Harrier, Little Egret, Peregrine falcon and Whooper Swan.

Of these 63 species were recorded as part of VP and transect surveys and can therefore be presumed as directly using the site. Of these three are protected under Annex 1 of the EU Birds directive: Hen Harrier, Little Egret and Peregrine falcon. Seven of the species recorded are Red-listed in Ireland: Grey Wagtail, Kestrel, Meadow Pipit, Redwing, Snipe, Swift, and Woodcock. A further 18 of the recorded species are Amber-listed with the remaining 38 being Green-listed.

During Hinterland surveys, 55 species of bird were noted. Of these four species are protected under Annex 1 of the EU Birds directive: Little Egret, Golden Plover, Greenland white-fronted Goose and Whooper Swan. Nine of the hinterland species are Red-listed: Curlew, Golden Plover, Kestrel, Lapwing, Meadow Pipit, Red Grouse, Redwing, Shoveler and Snipe. A further 17 of the hinterland species are Amber-listed with the remaining 29 species being Green-listed.

The most important sites for wetland bird species of interest were the Large Quarry Lake (Ballinadrideen) 2.6 km from the proposed development and Kilcolman Bog SPA at 9.49 km from the proposed development. At the Large Quarry Lake (Ballinadrideen) following species of conservation concern, and species which are known to be vulnerable to wind farm developments, were noted: Annex 1 species Whooper Swan, Red-listed Lapwing, Shoveler and Curlew and Amber-listed Lesser Black-backed Gull, Black-headed Gull, Cormorant, Mallard, Teal, Great Crested Grebe, Wigeon, and Swallow, as well as Green-listed Grey Heron. At Kilcolman Bog SPA the following species of conservation concern were noted: Annex 1 species Whooper Swan and Greenland White-fronted Goose, Red-listed Shoveler, Meadow Pipit and Kestrel, Amber-listed Coot, Gadwall, Greylag Goose, Mallard, Teal, Wigeon, Tufted Duck and Mute Swan, as well as Green-listed Grey Heron, Coot, Little Grebe and Moorhen.

Other Hinterland sites which support a variety of species of conservation interest are: River Blackwater SAC/Annagh Bridge (1.01 km distance to proposed Wind Farm), River Awbeg (2.76 km distance to proposed Wind Farm), Ballyhoura Mountains SAC (8.2 km distance to proposed Wind Farm), River Blackwater SAC/Buttevant (7.84 km distance to proposed Wind Farm), Eagle Lough pNHA (8.6 km distance to proposed Wind Farm), Castle Lake (Milltown) (0.9 km distance to proposed Wind Farm) and Ballyhoura Mountains SAC (8.2 km distance to proposed Wind Farm).

A comprehensive ornithological assessment is included in the EIAR (Chapter 8: Biodiversity). This comprises a detailed impact assessment of the potential impact of the proposed windfarm on birds. Collision risk modelling (CRM) has been carried out for target species and the CRM report is contained within Appendix 8.7 of the EIAR.



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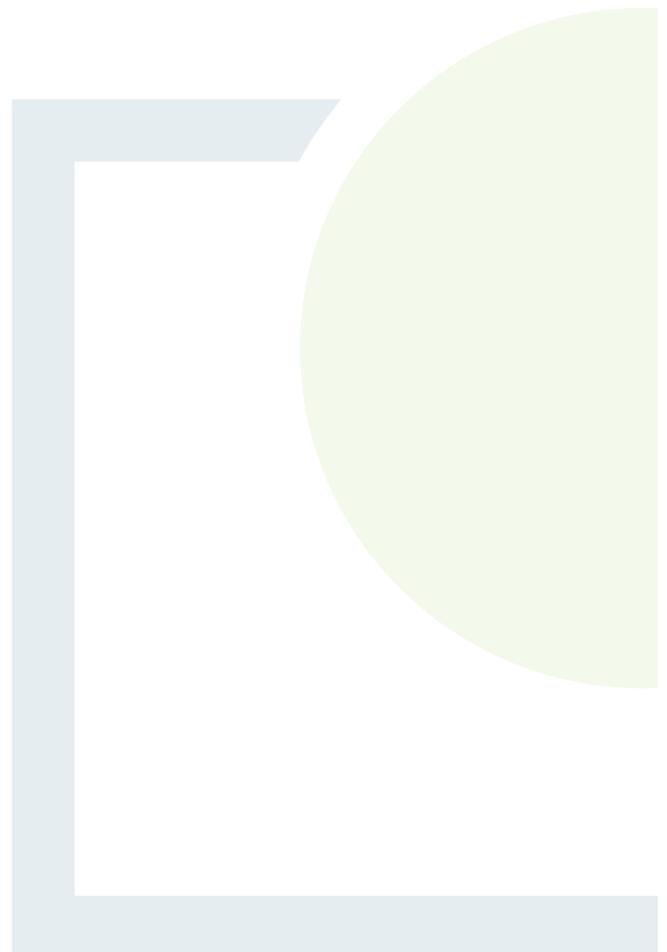
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APPENDIX 1

VP Survey Details Summer
2020 & Winter 2020-21



VPs Summer 2020, Winter 2020-21 - Survey Details

Date	VP	Time	Weather Conditions
27/04/2020	1	13:00 - 19:00	Cloud: 6/8 oktas, Rain: none, Wind: F0-1, Visibility: Excellent
29/04/2020	2	08:00 - 11:00	Cloud: 7-5/8 oktas, Rain: some heavy squalls first thing, Wind: F2, Visibility: very good
18/05/2020	2	09:30 - 15:30	Cloud: 8/8 oktas, Rain: none, Wind: F1-2, Visibility: excellent
25/05/2020	1	09:40 - 15:40	Cloud: 3/8 oktas, Rain: none, Wind: F3-4, Visibility: excellent
16/06/2020	2	10:00 - 16:00	Cloud: 8/8 oktas, Rain: none, Wind: F1, Visibility: good
25/06/2020	1	10:50 - 13:50	Cloud: 7/8 oktas, Rain: none, Wind: F1-2, Visibility: excellent
29/06/2020	1	17:00 - 20:00	Cloud: 8/8 oktas, Rain: none, Wind: F3-4, Visibility: excellent
25/07/2020	1	09:05 - 15:05	Cloud: 6/8 oktas, Rain: occ. Light showers, Wind: F0-2, Visibility: good
26/07/2020	2	08:35 - 14:55	Cloud: 6/8 oktas, Rain: none, Wind: F2-3, Visibility: good
14/08/2020	2	09:50 - 15:50	Cloud: 8/8 oktas, Rain: none, Wind: F0, Visibility: heat haze
04/09/2020	1	08:28 - 14:28	Cloud: 8/8 oktas, Rain: occasional light showers, Wind: F2, Visibility: very good
12/10/2020	2	16:10 - 18:10	Cloud: 8/8 oktas, Rain: showers, Wind: F3, Visibility: good
12/10/2020	1	10:05 - 16:05	Cloud:4-8/8 oktas, Rain: rain shower, Wind: F3, Visibility: good
14/10/2020	2	13:30 - 17:30	Cloud:4/8 oktas, Rain: dry, Wind: F2, Visibility: good
03/11/2020	2	10:00 - 16:00	Cloud: 3-7/8 oktas, Rain: showers, Wind: F3, Visibility: good
04/11/2020	1	10:25 - 16:25	Cloud: 0/8 oktas, Rain: dry, Wind: F1, Visibility: good
18/12/2020	2	10:40 - 16:40	Cloud:1/8 oktas, Rain: shower, Wind: F1, Visibility: good
28/12/2020	1	10:50 - 16:50	Cloud: 6/8 oktas, Rain: showers, Wind: F4, Visibility: good
18/01/2021	1	10:30 - 13:30	Cloud:8/8 oktas, Rain: dry, Wind: F1, Visibility: moderate
19/01/2021	2	11:00 - 14:00	Cloud:8/8 oktas, Rain: some drizzle, Wind: F1, Visibility: moderate
19/01/2021	2	14:30 - 17:30	Cloud:8/8 oktas, Rain: some drizzle and light showers, Wind: F2-3, Visibility: moderate
19/01/2021	2	11:00 - 14:00	Cloud:8/8 oktas, Rain: some drizzle, Wind: F1-3, Visibility: moderate
15/02/2021	1	10:05 - 16:05	Cloud:4-8/8 oktas, Rain: none, Wind: F1-3, Visibility: good
15/02/2021	2	16:06 - 18:00	Cloud: 8/8 oktas, Rain: drizzle/light rain, Wind: F3, Visibility: good
15/02/2021	2	19:00 - 20:45	Cloud: 8/8 oktas, Rain: drizzle/light rain, Wind: F3, Visibility: good
16/02/2021	2	12:20 - 16:30	Cloud: 3/8 oktas, Rain: some showers, Wind: F2, Visibility: good
04/03/2021	1	11:30 - 14:30	Cloud: 8/8 oktas, Rain: dry, Wind: F1, Visibility: good

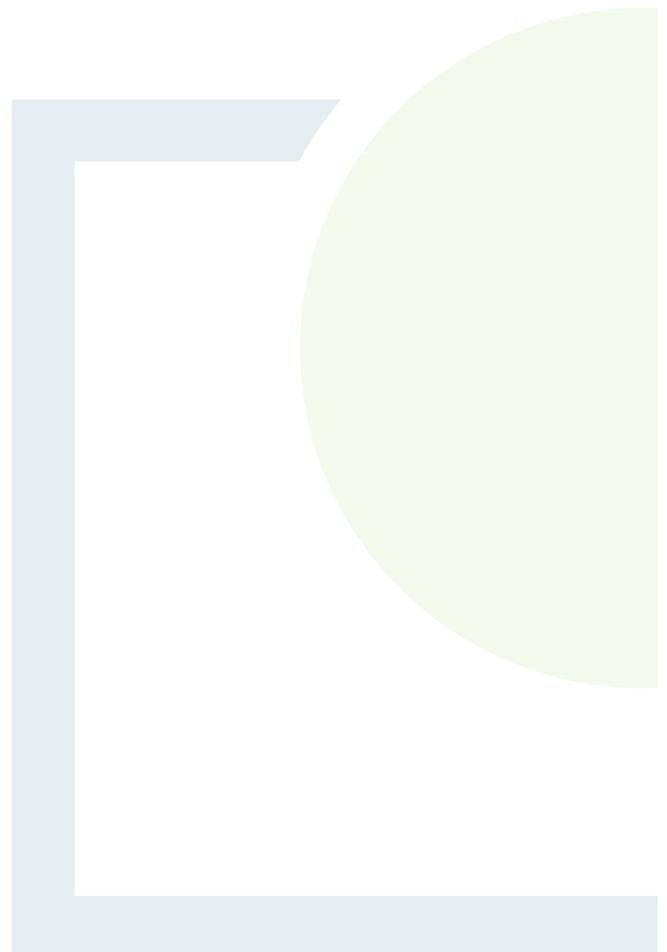
Date	VP	Time	Weather Conditions
31/03/2021	2	08:00 - 14:00	Cloud: 7-8/8 oktas, Rain: dry, Wind: F0, Moderate-Very good
31/03/2021	2	08:00 - 14:00	Cloud: 7-8/8 oktas, Rain: dry, Wind: F0, Moderate-Very good
06/04/2021	1	10:15 - 16:15	Cloud: 7/8 oktas, Rain: brief shower, Wind: F4, Visibility: good
06/04/2021	2	16:18 - 18:20	Cloud: 7/8 oktas, Rain: dry, Wind: F3, Visibility: good
07/04/2021	2	12:00 - 16:00	Cloud: 7/8 oktas, Rain: showers, Wind: F1-3, Visibility: good



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APPENDIX 2

Bird Survey Observations
2020-2021



VP No.	Date	Species	Species Quantity	Time of Obs.	Total Duration (s)	Flight line map	Flight line no.	Notes
1	28/12/2020	Black-headed Gull	-	-	-	-	-	
1	27/04/2020	Buzzard	1	15:07	1	8B.2	51	
1	27/04/2020	Buzzard	1	15:39	45	8B.2	52	
2	29/04/2020	Buzzard	1	11:50	20	8B.2	57	
2	29/04/2020	Buzzard	1	12:13	128	8B.2	58	
2	18/05/2020	Buzzard	1	12:48	343	8B.2	66	
1	25/05/2020	Buzzard	1	15:20	423	8B.2	68	
1	25/05/2020	Buzzard	3	-	-	-	-	With 68 above before breaking off
1	25/06/2020	Buzzard	1	12:06	540	8B.2	74	
1	25/06/2020	Buzzard	1	12:21	110	8B.2	76	
1	29/06/2020	Buzzard	1	17:23	480	8B.2	197	
1	25/07/2020	Buzzard	1	10:12	20	8B.2	204	
1	25/07/2020	Buzzard	1	11:47	240	8B.2	206	
1	12/10/2020	Buzzard	1	15:18	350	8G.2	84	
2	14/10/2020	Buzzard	1	14:22	8	8G.2	88	
2	03/11/2020	Buzzard	1	11:29	166	8G.2	93	
2	03/11/2020	Buzzard	1	13:01	40	8G.2	96	
1	04/11/2020	Buzzard	1	10:46	7	8G.2	90	
1	04/11/2020	Buzzard	1	13:41	48	8G.2	91	
1	28/12/2020	Buzzard	1	10:50	7	8G.2	106	
1	28/12/2020	Buzzard	1	12:37	540	8G.2	108	
1	28/12/2020	Buzzard	2	12:42	360	8G.2	109	
1	28/12/2020	Buzzard	1	14:04	16	8G.2	110	
1	28/12/2020	Buzzard	1	15:20	5	8G.2	111	
1	28/12/2020	Buzzard	1	16:50	38	8G.2	113	
1	15/02/2021	Buzzard	2	15:10	220	8G.2	134	
1	15/02/2021	Buzzard	1	15:19	6	8G.2	135	
1	15/02/2021	Buzzard	1	15:28	8	8G.2	136	
2	15/02/2021	Buzzard	1	17:20	11	8G.2	139	
2	16/02/2021	Buzzard	1	14:14	4	8G.2	141	

VP No.	Date	Species	Species Quantity	Time of Obs.	Total Duration (s)	Flight line map	Flight line no.	Notes
2	16/02/2021	Buzzard	1	14:47	47	8G.2	142	
1	04/03/2021	Buzzard	1	12:52	15	8G.2	149	
1	04/03/2021	Buzzard	1	14:18	720	8G.2	150	
1	04/03/2021	Buzzard	1	15:39	43	8G.2	151	
1	04/03/2021	Buzzard	1	16:09	20	8G.2	152	
1	04/03/2021	Buzzard	1	17:35	25	8G.2	156	
1	04/03/2021	Buzzard	1	17:56	17	8G.2	157	
1	06/04/2021	Buzzard	1	11:09	193	8G	161	
1	06/04/2021	Buzzard	3	13:23	375	8G	162	
2	07/04/2021	Buzzard	1	13:07	155	8G	163	
1	15/02/2021	Goshawk	1	11:12	4	8U.2	133	
1	27/04/2020	Grey Heron	-	-	-	-	-	No flight activity observed
2	29/04/2020	Grey Heron	1	12:15	20	8C.2	59	
2	29/04/2020	Grey Heron	1	12:49	49	8C.2	61	
2	18/05/2020	Grey Heron	-	-	-	-	-	No flight activity observed
2	16/06/2020	Grey Heron	4	-	-	-	-	
1	29/06/2020	Grey Heron	-	-	-	-	-	No flight activity observed
1	25/07/2020	Grey Heron	1	11:23	70	8C.2	205	
2	26/07/2020	Grey Heron	1	09:50	60	8C.2	208	
2	26/07/2020	Grey Heron	1	10:22	55	8C.2	209	
2	26/07/2020	Grey Heron	1	13:15	220	8C.2	210	
1	12/10/2020	Grey Heron	1	14:06	5	8L.2	82	
2	14/10/2020	Grey Heron	1	16:05	10	8L.2	89	
2	03/11/2020	Grey Heron	1	15:28	35	8L.2	99	
2	18/12/2020	Grey Heron	1	-	-	-	-	No flight activity observed
1	28/12/2020	Grey Heron	1	-	-	-	-	No flight activity observed
2	19/01/2021	Grey Heron	1	12:40	3	8L.2	126	

VP No.	Date	Species	Species Quantity	Time of Obs.	Total Duration (s)	Flight line map	Flight line no.	Notes
2	19/01/2021	Grey Heron	1	13:08	16	8L.2	127	
2	19/01/2021	Grey Heron	1	13:34	5	8L.2	128	
2	19/01/2021	Grey Heron	1	16:37	15	8L.2	130	
1	15/02/2021	Grey Heron	4	-	-	-	-	No flight activity observed
2	15/02/2021	Grey Heron	1	-	-	-	-	No flight activity observed
2	16/02/2021	Grey Heron	1	-	-	-	-	No flight activity observed
1	04/03/2021	Grey Heron	1	12:02	2	8L.2	143	
1	04/03/2021	Grey Heron	1	16:36	5	8L.2	154	
2	31/03/2021	Grey Heron	1	10:25	63	8L.2	158	
2	31/03/2021	Grey Heron	1	11:31	32	8L.2	159	
2	06/04/2021	Grey Heron	-	-	-	-	-	No flight activity observed
2	14/10/2020	Hen Harrier	1	09:40	12	8K.2	85	
2	18/12/2020	Hen Harrier	1	16:24	53	8K.2	196	
2	18/05/2020	Herring Gull	-	-	-	-	-	No flight activity observed
2	29/04/2020	Kestrel	1	09:56	67	8D.2	55	
2	29/04/2020	Kestrel	1	10:05	5	8D.2	56	
2	29/04/2020	Kestrel	1	12:33	78	8D.2	60	
2	18/05/2020	Kestrel	1	09:30	10	8D.2	62	
2	18/05/2020	Kestrel	1	10:43	489	8D.2	63	
2	18/05/2020	Kestrel	1	11:19	7	8D.2	64	
2	18/05/2020	Kestrel	1	12:09	35	8D.2	65	
2	16/06/2020	Kestrel	1	14:37	25	8D.2	69	
2	16/06/2020	Kestrel	1	14:41	10	8D.2	70	
2	16/06/2020	Kestrel	1	14:53	35	8D.2	71	
1	25/06/2020	Kestrel	1	11:17	410	8D.2	72	
1	25/06/2020	Kestrel	1	11:31	3	8D.2	73	
1	25/06/2020	Kestrel	1	12:15	5	8D.2	75	

VP No.	Date	Species	Species Quantity	Time of Obs.	Total Duration (s)	Flight line map	Flight line no.	Notes
1	25/06/2020	Kestrel	1	12:35	16	8D.2	77	
1	25/06/2020	Kestrel	1	13:03	85	8D.2	78	
1	25/06/2020	Kestrel	1	13:18	46	8D.2	79	
1	25/06/2020	Kestrel	1	13:36	12	8D.2	80	
TR3	08/05/2020	Kestrel	1	12:25	180	8D.2	195	
1	29/06/2020	Kestrel	1	17:44	183	8D.2	198	
1	29/06/2020	Kestrel	1	18:03	97	8D.2	199	
1	29/06/2020	Kestrel	1	18:44	65	8D.2	200	
1	29/06/2020	Kestrel	1	19:08	60	8D.2	201	
1	29/06/2020	Kestrel	1	19:53	3	8D.2	202	
1	29/06/2020	Kestrel	1	19:54	9	8D.2	203	
1	25/07/2020	Kestrel	1	14:02	130	8D.2	207	
1	12/10/2020	Kestrel	1	10:58	76	8M.2	81	
1	12/10/2020	Kestrel	1	14:12	12	8M.2	83	
2	14/10/2020	Kestrel	1	11:30	22	8M.2	86	
2	03/11/2020	Kestrel	1	12:44	4	8M.2	94	
2	03/11/2020	Kestrel	1	13:00	8	8M.2	95	
2	03/11/2020	Kestrel	1	13:07	24	8M.2	97	
2	03/11/2020	Kestrel	1	14:26	196	8M.2	98	
2	18/12/2020	Kestrel	1	11:29	975	8M.2	100	
2	18/12/2020	Kestrel	1	13:07	23	8M.2	102	
2	18/12/2020	Kestrel	1	15:36	110	8M.2	103	
2	18/12/2020	Kestrel	1	15:39	420	8M.2	104	
1	28/12/2020	Kestrel	1	10:50	28	8M.2	107	
1	18/01/2021	Kestrel	1	11:20	70	8M.2	116	
1	18/01/2021	Kestrel	1	11:31	38	8M.2	117	
1	18/01/2021	Kestrel	1	14:31	278	8M.2	119	
1	18/01/2021	Kestrel	1	14:38	458	8M.2	120	
2	19/01/2021	Kestrel	1	11:38	5	8M.2	122	
2	19/01/2021	Kestrel	1	12:22	230	8M.2	125	
2	19/01/2021	Kestrel	1	16:41	65	8M.2	131	
2	19/01/2021	Kestrel	1	16:43	159	8M.2	132	
2	15/02/2021	Kestrel	1	16:48	330	8M.2	138	

VP No.	Date	Species	Species Quantity	Time of Obs.	Total Duration (s)	Flight line map	Flight line no.	Notes
1	04/03/2021	Kestrel	1	11:20	-	-	-	Observed perched on pole en route to VP
1	04/03/2021	Kestrel	1	12:18	168	8M.2	147	
1	04/03/2021	Kestrel	1	16:26	33	8M.2	153	
1	25/05/2020	Lesser Black-backed Gull	1	14:46	60	8E.2	67	
1	04/09/2020	Lesser Black-backed Gull	4	08:34	420	8E.2	211	
1	04/09/2020	Lesser Black-backed Gull	34	08:51	260	8E.2	212	
1	04/09/2020	Lesser Black-backed Gull	22	09:32	300	8E.2	214	
1	04/09/2020	Lesser Black-backed Gull	19	09:51	320	8E.2	215	
1	04/09/2020	Lesser Black-backed Gull	6	11:14	360	8E.2	216	
1	04/09/2020	Lesser Black-backed Gull	10	12:37	320	8E.2	217	
1	28/12/2020	Lesser Black-backed Gull	-	-	-	-	-	No flight activity observed
2	06/04/2021	Lesser Black-backed Gull	-	-	-	-	-	No flight activity observed
1	27/04/2020	Little Egret	1	18:22	15	8F.2	53	
1	04/09/2020	Mallard	16	08:59	380	8Y.2	213	
1	04/11/2020	Mallard	1	14:54	5	8Y.2(2)	92	
2	15/02/2021	Mallard	-	-	-	-	-	No flight activity observed
2	18/12/2020	Peregrine	1	13:05	36	8T.2	101	
2	15/02/2021	Peregrine	1	16:06	240	8T.2	137	
1	04/11/2020	Snipe	-	-	-	-	-	No flight activity observed
1	18/01/2021	Snipe	3	11:00	6	8Q.2	114	
1	18/01/2021	Snipe	2	11:06	36	8Q.2	115	
1	18/01/2021	Snipe	2	14:07	13	8Q.2	118	
1	18/01/2021	Snipe	2	16:19	10	8Q.2	121	
1	04/03/2021	Snipe	1	12:12	20	8Q.2	144	
1	04/03/2021	Snipe	1	12:16	20	8Q.2	145	

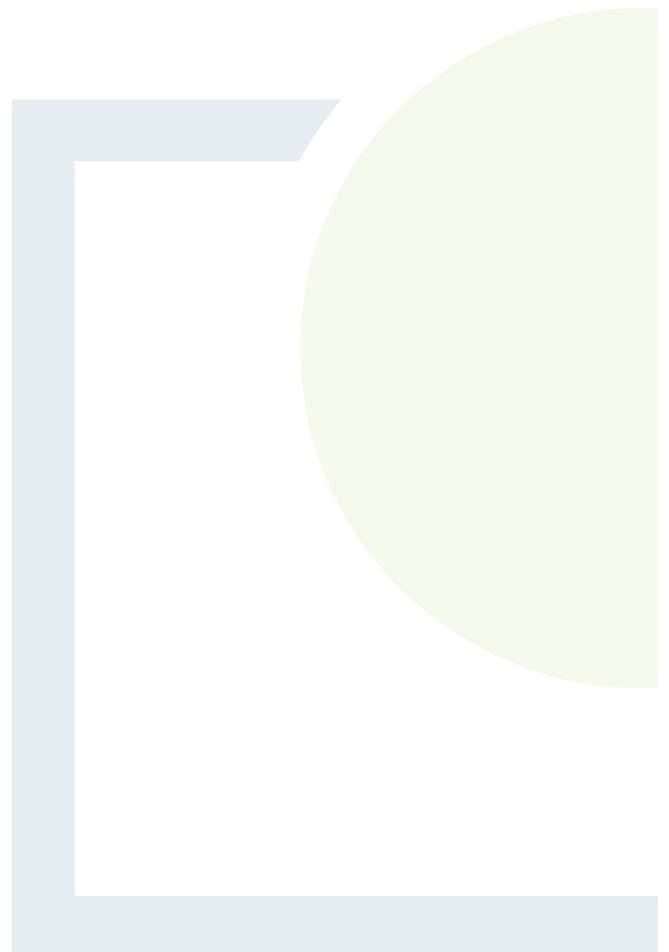
VP No.	Date	Species	Species Quantity	Time of Obs.	Total Duration (s)	Flight line map	Flight line no.	Notes
1	04/03/2021	Snipe	3	12:17	20	8Q.2	146	
1	04/03/2021	Snipe	3	12:27	14	8Q.2	148	
1	27/04/2020	Sparrowhawk	1	18:23	4	8Z.2	54	
TR1	15/06/2020	Sparrowhawk	1	10:53	10	8Z.2	218	
2	26/07/2020	Sparrowhawk	-	-	-	-	-	Young bird calling from conifer block west of VP
2	14/10/2020	Sparrowhawk	1	11:35	15	8R.2	87	
2	18/12/2020	Sparrowhawk	1	15:51	8	8R.2	105	
1	28/12/2020	Sparrowhawk	1	16:10	4	8R.2	112	
2	19/01/2021	Sparrowhawk	1	11:46	131	8R.2	123	
2	19/01/2021	Sparrowhawk	1	15:31	53	8R.2	129	
2	15/02/2021	Sparrowhawk	1	17:33	7	8R.2	140	
1	04/03/2021	Sparrowhawk	1	17:16	14	8R.2	155	
2	31/03/2021	Sparrowhawk	2	13:41	177	8R.2	160	



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APPENDIX 3

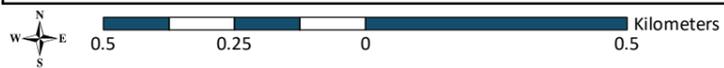
Target Species Flight Line
Maps





- Legend**
- Site Boundary
 - Turbine Layout 500m Buffer
 - Turbine Layout
- Flightlines**
- ID, Date, Time:**
- ▶ 51, 27/04/2020, 15:07
 - ▶ 52, 27/04/2020, 15:39
 - ▶ 57, 29/04/2020, 11:50
 - ▶ 58, 29/04/2020, 12:13
 - ▶ 66, 18/05/2020, 12:48
 - ▶ 68, 25/05/2020, 15:20
 - ▶ 74, 25/06/2020, 12:06
 - ▶ 76, 25/06/2020, 12:21
 - ▶ 194, 08/05/2020, 09:50
 - ▶ 197, 29/06/2020, 17:23
 - ▶ 204, 25/07/2020, 10:12
 - ▶ 206, 25/07/2020, 11:47

TITLE:	Summer 2020 Flightlines Buzzard		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8B.2		
CLIENT:	EMPower		
SCALE:	1:13500	REVISION:	0
DATE:	13/10/2021	PAGE SIZE:	A3





Legend

- Site Boundary
- Turbine Layout 500m Buffer
- Turbine Layout

Flightlines

ID, Date, Time:

- 161, 06/04/2021, 11:09
- 162, 06/04/2021, 13:23
- 163, 07/04/2021, 13:07

TITLE:	April 2021 Flightlines Buzzard		
PROJECT:	Annagh Wind Farm, Co. Cork		
FIGURE NO:	8B.3		
CLIENT:	EMPower		
SCALE:	1:12500	REVISION:	0
DATE:	13/10/2021	PAGE SIZE:	A3

