

Appendix 8-2 Baseline Ornithological Surveys – Migration and winter 2021/2022



CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

DERRYADD, CO. LONGFORD WIND FARM ORNITHOLOGICAL SURVEY

BASELINE ORNITHOLOGICAL SURVEYS – DERRYADD WIND FARM, MIGRATION AND WINTER 2021/2022

Prepared for: Bord na Móna

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BASELINE ORNITHOLOGICAL SURVEYS – DERRYADD WIND FARM, MIGRATION 2021 AND WINTER 2021/2022

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Abstract: This document outlines a baseline ornithological survey during autumn migrations and winter

2021/2022 at the potential Derryadd Wind Farm, Co. Longford. This ornithology report is required to assess the impacts of the proposed development on bird species within and

surrounding the site.

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Derryadd, Co. Longford Wind Farm Ornithological Report



EXECUTIVE SUMMARY

Ornithological surveys for the winter 2021/2022 season at Derryadd Wind Farm recorded all bird species, within the wind farm site and the surrounding hinterland.

The methodology for the 2021/2022 vantage point surveys at Derryadd adhered to Scottish Natural Heritage guidance (SNH, 2017) for assessing the impact of proposed wind farm developments on target species' wintering populations. Two timed watches of three hours duration were carried out from each VP every month from October 2021 to March 2022 inclusive, totalling 36 hours of observation time at each VP over the survey period. Additionally, two timed watches of three hours duration were carried out from each VP in September 2021 to observe the migration period. Winter transect surveys and hinterland surveys were also undertaken during this period.

During vantage point surveys a total of 83 bird species were recorded. Of these species, 14 are of Red-list status under the Birds of Conservation Concern in Ireland (BoCCI) (Gilbert et al., 2021): bar-tailed godwit, black-tailed godwit, curlew, golden plover, grey wagtail, kestrel, lapwing, meadow pipit, redshank, redwing, shoveler, snipe, white-tailed eagle and yellowhammer. A total of 27 are Amber-listed and the remaining 42 are Green-listed. A total of ten Annex I species were recorded during vantage point surveys: bar-tailed godwit, little egret, golden plover, hen harrier, peregrine, merlin, marsh harrier, kingfisher, white-tailed eagle, and whooper swan.

During hinterland surveys surrounding the proposed site a total of 24 species were noted. Of these species, six are of Red-list status under the BoCCI (Gilbert et al., 2021): golden plover, goldeneye, grey wagtail, lapwing, shoveler and snipe. A further 11 Amber-listed species were observed: black-headed gull, coot, cormorant, goldcrest, great crested grebe, mallard, mute swan, teal, tufted duck, whooper swan and wigeon. Of these, three species are protected under Annex I of the EU Birds directive: golden plover, little egret, whooper swan.

During winter bird transects a total of 29 species were detected. Of these, two species are Red listed: redwing and meadow pipit. A total of two amber-listed species were recorded: linnet and starling.

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1. INTRODUCTION

Fehily Timoney & Company (FT) was appointed by Bord na Móna to undertake winter ornithological surveys at the proposed Derryadd Wind Farm in 2021 to 2022. This report presents the results of these ornithological surveys and summarises the activity of specific target bird species during the winter survey period in 2021/2022. The study area of the proposed Derryadd Wind Farm is near Lanesborough, Co. Longford.

This ornithological assessment for surveys completed during winter 2021/2022 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
- Hinterland survey
- Winter transect surveys

1.1 Study Area

The proposed Derryadd wind farm is located c. 3 km east of Lanesborough, Co. Longford, 4km west of Killashee, Co. Longford and 8km north of Newtowncashel, Co. Longford. The proposed wind farm is located on the Mountdillon group of peat extraction bogs in Co. Longford (Figure 1.1).

Habitats on the proposed site consist of cutover bog, recolonising cutover bog, remnant raised bog, colonising birch woodland and large ponds/lakes on cutover bog. Surrounding habitats and land uses are described by Corine 2018¹ as: Peat bogs (412), Pastures (code 231), Mixed Forests (313), Coniferous Forests (312), Transitional woodland scrub (324), Broad-leaved forests (311), and Discontinuous urban fabric (112).

Designated Sites within a 15km radius of the proposed wind farm are detailed in Table 1.1.

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¹ https://gis.epa.ie/EPAMaps/. Accessed 26/04/22

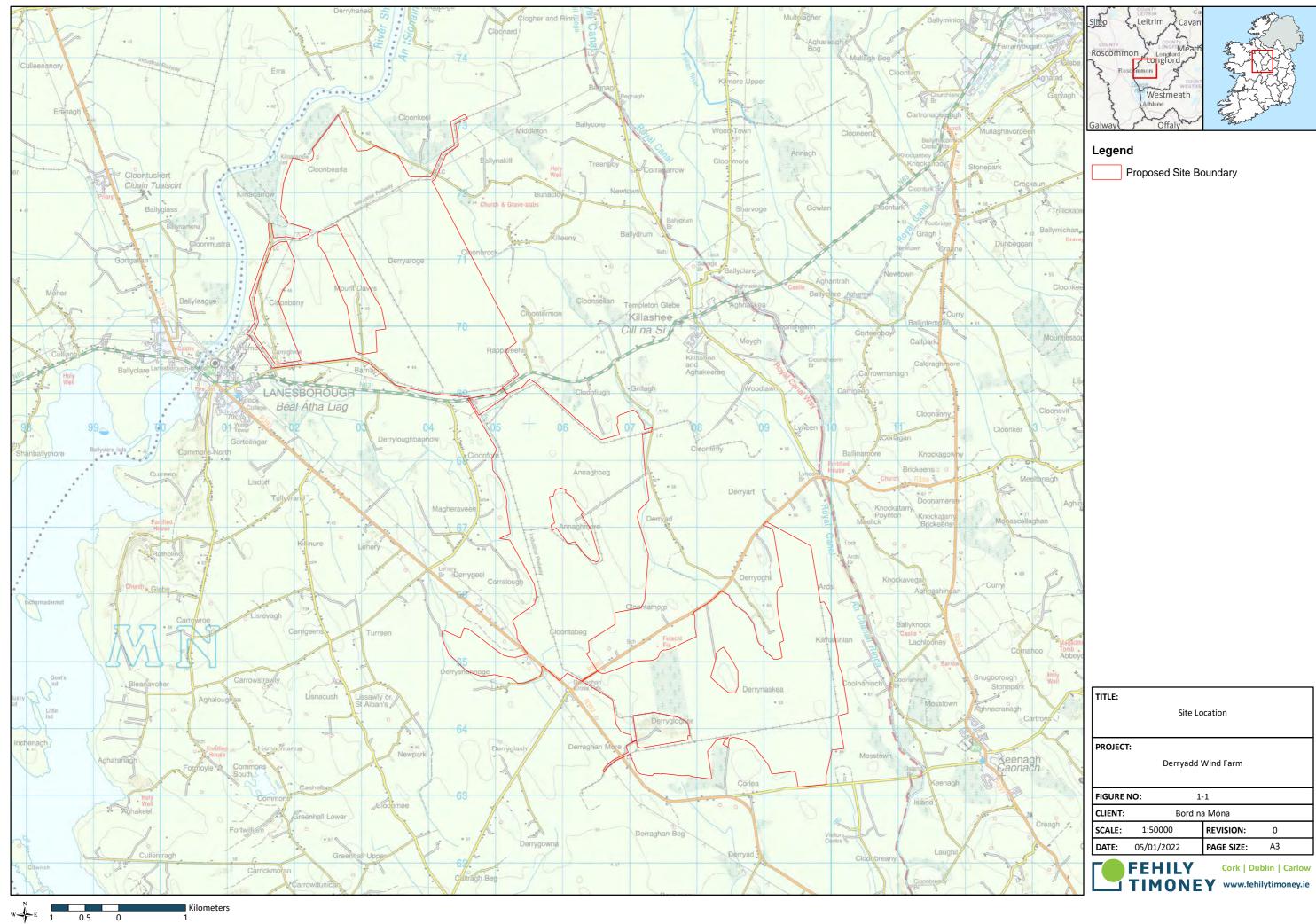


Table 1-1: Designated sites within a 15km radius of the proposed Derryadd Wind Farm.

Site	Site Code	Туре
Lough Ree	004064/000440/000440	SPA/SAC/pNHA
Fortwilliam Turlough	000448/000448	SAC/pNHA
Ballykenny-Fisherstown Bog	004101	SPA
Lough Forbes Complex	001818/001818	SAC/pNHA
Brown Bog	002346/000442	SAC/pNHA
Corbo Bog	002349/000602	SAC/pNHA
Annaghmore Lough	001626	SAC
Clooneen Bog	002348/000445	SAC/pNHA
Mount Jessop Bog	001450	SAC/NHA
Forthill Bog	001448	NHA
Derrycanan Bog	000605	NHA
Aghnamona Bog	000422	NHA
Cloonageeher Bog	001423	NHA
Lisnanarriagh Bog	002072	NHA
River Finn	002301	NHA
Lough Bawn	001819	pNHA
Lough Bannow	00449	pNHA
Royal Canal	002103	pNHA
Cordara Turlough	001821	pNHA
Derry Lough	001444	pNHA
Lough Slawn	001443	pNHA
Kilglass and Grange Loughs	000608	pNHA
Carrickglass Demesne	001822	pNHA
Lough Boderg and Lough Bofin	001642	pNHA
Annaghmore Lough (Roscommon)	001626	pNHA
Ardnakilla Lough	001617	pNHA

Note: *SPA = Special Protected Area (European site), SAC = Special Area of Conservation (European site), NHA = Natural Heritage Area (Nationally Designated Site), pNHA = proposed Natural Heritage Area

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2. SURVEY METHODOLOGY

The following surveys were carried out:

- Vantage point survey
- Hinterland survey
- Winter bird surveys

Methodologies for these surveys are detailed under the following headings:

2.1 Vantage Point Surveys

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;
- c. The proportion of flying time spent within the upper and lower height limits as determined by the rotor diameter and rotor hub height.

Vantage Point (VP) surveys were carried out at the proposed Derryadd Wind Farm site from October 2021 to March 2022 (covering the winter season), in accordance with the Scottish Natural Heritage Methodology for assessing onshore wind farms (SNH, 2017). Additional surveys were conducted in September 2021 to assess migrating birds. A total of 11 fixed VP locations overlooking the study area were used during the VP surveys (see Figure 2.1 for VP locations), each with specific viewsheds chosen to provide coverage of the proposed Wind Farm in addition to a 500m buffer around the site boundary.

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 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).

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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 activity of target species, fulfilling the required effort from SNH. Vantage Point (VP) surveys 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 winter period.

Data recorded included flight activity of target species (flight height, duration, directionality) in addition to metrics such as flock size (per recorded transit) and relative time of observation. Detailed notes of each observation of a target bird species were recorded including behaviour, sex (where possible), numbers, flight height, associated habitat and the period spent within the study area. Successful foraging events were also noted if they arose. Other bird species seen or heard during the VP surveys were also recorded 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 VP and on departure is noted. Details of each flight-path observation are provided in Section 3. Binoculars and telescopes were used to scan for target species. Dictaphones were 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.

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. All surveys were conducted during suitable weather conditions.

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■ Kilometers

0

0.5

1

2

3

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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 Hardey *et al*. (2013) to assess hen harrier and other raptor activity over the winter period in the greater surroundings.

The surveys were carried out in suitable woodland, grassland, peatland and wetland habitats in the area surrounding the proposed wind farm site. This comprised of 25 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, geese, swans and barn owl. Surveys were carried out between September 2021 and March 2022, covering the migration period and winter season. The sites detailed in Table 2.2 were checked regularly across this period:

Table 2-1: Hinterland survey locations

Code	Landing	ITM Coordinates		Dates
Code	Location	Easting	Northing	Visited
HVP1	Pake Bridge, Royal Canal	612898.185	759486.712	30/09/2021,
HVP2	Foygh Bridge, Royal Canal	612023.763	760522.067	26/10/2021, 24/11/2021, 25/01/2022, 28/02/2022, 29/03/2022
HVP3	Derrymacar Lough	608506.111	758389.783	Not surveyed
HVP4	Fortwilliam Turlough	601465.614	763206.551	
HVP5	Incharmadermot Island, Lough Ree	598015.731	765839.47	
HVP6	Cureen, Lough Ree	599770.446	767832.499	30/09/2021, 26/10/2021,
HVP7	Lanesborough Bridge, Lough Ree	600495.231	769387.084	24/11/2021,
HVP8	Cullaghy, Lough Ree	598739.475	769573.953	25/01/2022, 28/02/2022,
HVP9	Gardenstown, Lough Ree	597396.711	767345.703	29/03/2022
HVP10	Cloonmustra, River Shannon	600807.323	772340.698	
HVP11	Erra & Derryhanee, River Shannon	603635.518	7.944911	
HVP12	Derrycashel, River Shannon	603185.029	776452.94	30/09/2021, 28/10/2021, 24/11/2021, 25/01/2022, 28/02/2022, 29/03/2022

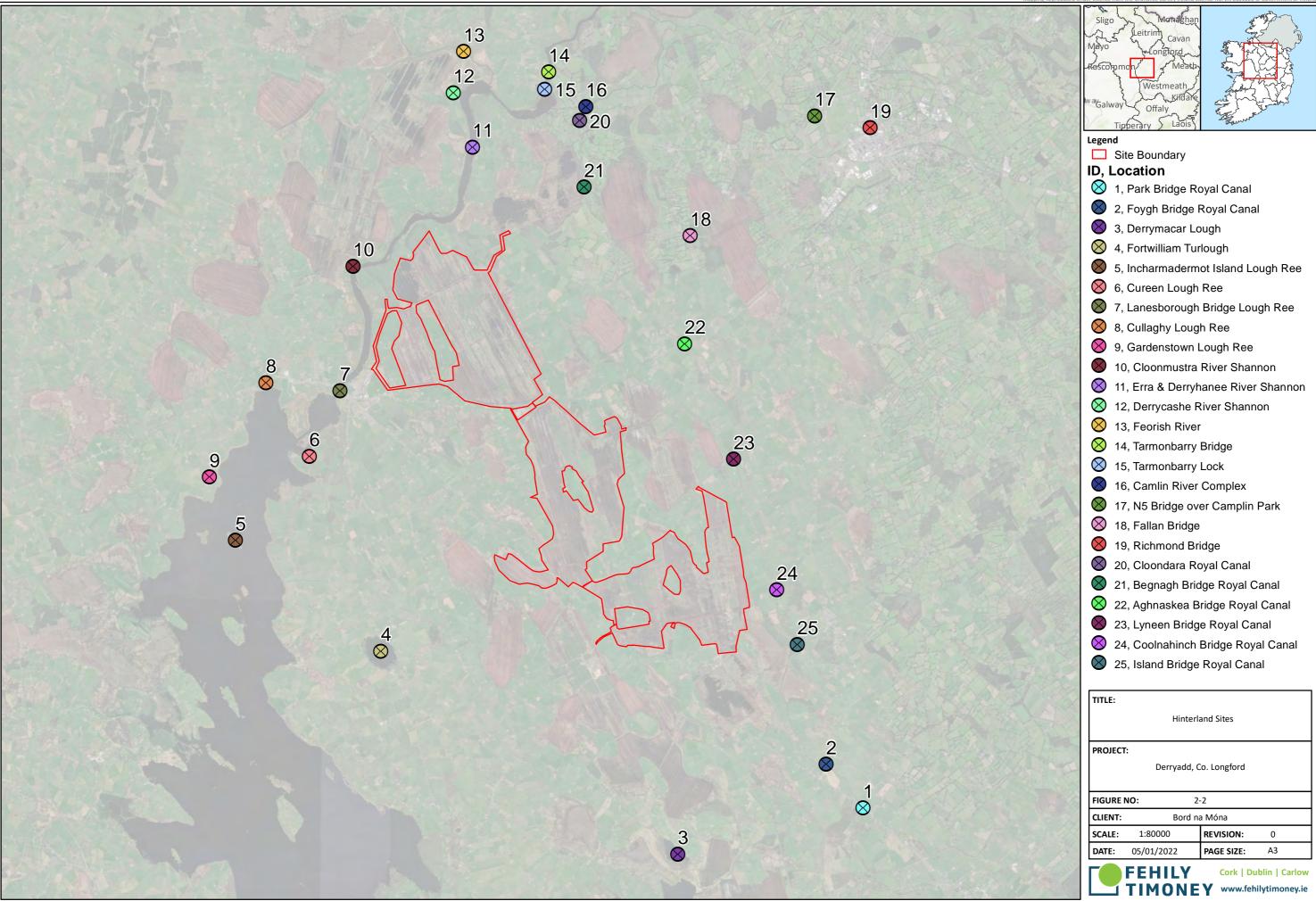
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Code	Lacation	ITM Coordinates		Dates	
Code	Location	Easting	Northing	Visited	
HVP13	Feorish River	603428.885	777430.82	30/09/2021, 28/10/2021, 25/01/2022, 28/02/2022, 29/03/2022	
HVP14	Tarmonbarry Bridge	605449.722	776948.108	30/09/2021,	
HVP15	Tarmonbarry Lock	605352.886	776538.819	28/10/2021,	
HVP16	Camlin River Complex	606330.588, -	776126.409	24/11/2021, 25/01/2022,	
HVP17	N5 Bridge over Camlin Park	611752.094	775901.951	28/02/2022,	
HVP18	Fallan Bridge	608801.086	773065.52	29/03/2022	
HVP19	Richmond Bridge	613068.179	775627.344		
HVP20	Cloondara, Royal Canal	606176.505	775790.583	30/09/2021,	
HVP21	Begnagh Bridge, Royal Canal	606287.094	774216.229	29/10/2021,	
HVP22	Aghnaskea Bridge, Royal Canal	608672.728	770495.836	24/11/2021, 25/01/2022,	
HVP23	Lyneen Bridge, Royal Canal	609831.385	767761.094	28/02/2022,	
HVP24	Coolnahinch Bridge, Royal Canal	610855.924	764658.67	29/03/2022	
HVP25	Island Bridge, Royal Canal	611337.847	763361.965		

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2.3 Winter Bird Transect Surveys

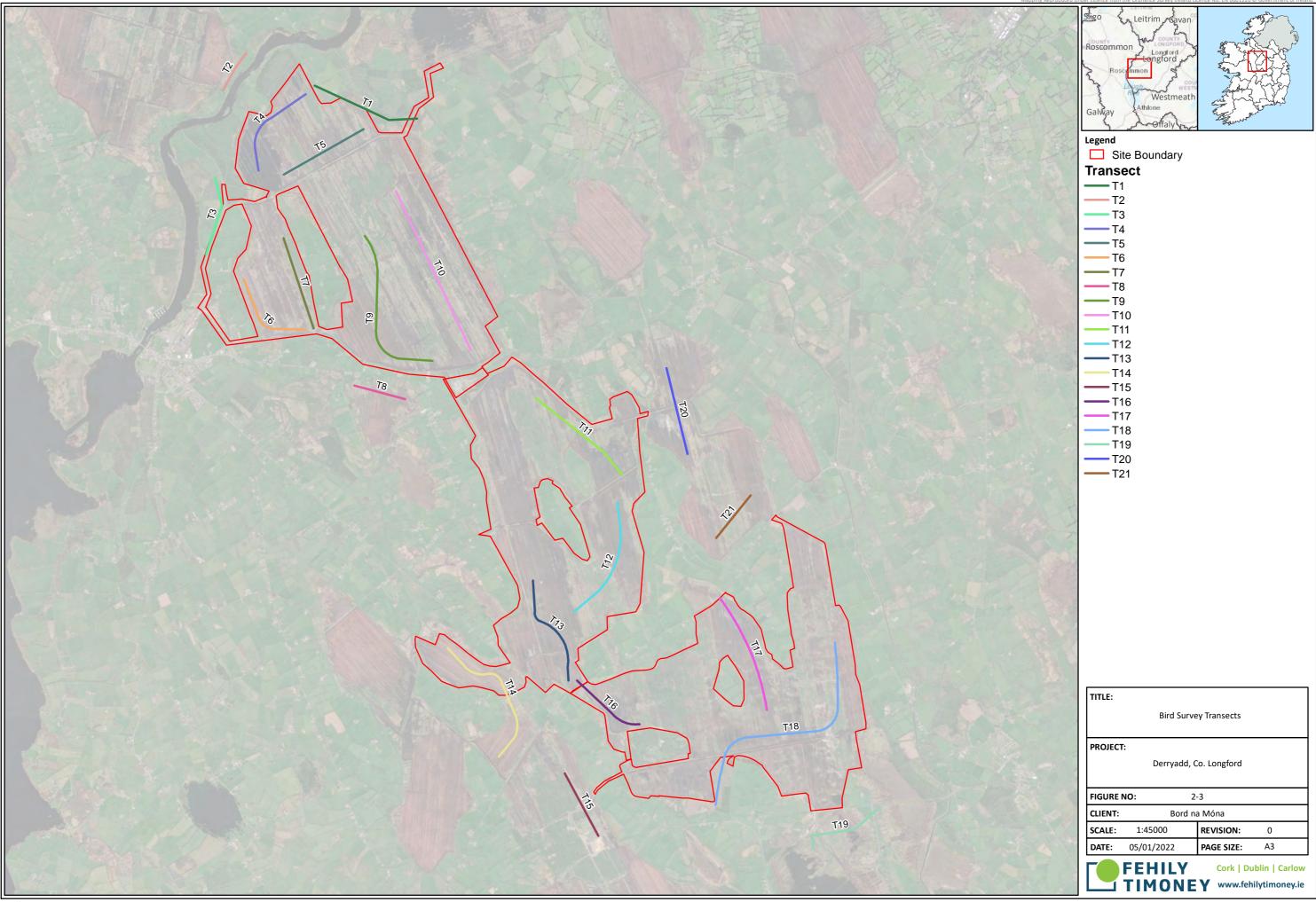
Over the winter season, general bird transect surveys were carried out at 21 no. c. 1 km transects which were selected and centred on different habitats present within the subject sites (See Table 2-5).

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). The winter transect survey details are available in Table 2.6, with further details including weather and survey times indicated in Appendix 5.

Table 2-2: Winter bird transect surveys

Transact	Month		
Transect	February 2022	March 2022	
1	03/02/2022	03/03/2022	
2	03/02/2022	03/03/2022	
3	03/02/2022	03/03/2022	
4	03/02/2022	03/03/2022	
5	04/02/2022	04/03/2022	
6	04/02/2022	04/03/2022	
7	04/02/2022	04/03/2022	
8	04/02/2022	04/03/2022	
9	07/02/2022	09/03/2022	
10	07/02/2022	09/03/2022	
11	07/02/2022	09/03/2022	
12	07/02/2022	09/03/2022	
13	11/02/2022	11/03/2022	
14	11/02/2022	11/03/2022	
15	11/02/2022	11/03/2022	
16	11/02/2022	11/03/2022	
17	15/02/2022	12/03/2022	
18	15/02/2022	12/03/2022	
19	15/02/2022	12/03/2022	
20	15/02/2022	12/03/2022	
21	15/02/2022	12/03/2022	

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3. RESULTS

3.1 Avian usage of the Study Area – Vantage point

A total of two timed watches of three hours duration each were carried out at each of the 11 vantage points on a monthly basis from October 2021 to March 2022 inclusive. Additionally, two further timed watches (three hour duration) were conducted at these vantage points in September 2021. This surveying effort totals 36 hours of observation time at each VP over the winter survey period and six hours during the migration period (Appendix 2). Bird activity was recorded from the VPs during each survey. Table 3-1 shows all the species recorded during surveys. In total there were 562 individual flight lines of 27 target species observed during the entire survey period (migration and winter combined).

In total, 83 species of bird were noted. Of these species, 14 are of Red-list status under the BoCCI (Gilbert *et al.*, 2021): bar-tailed godwit, black-tailed godwit, curlew, golden plover, grey wagtail, kestrel, lapwing, meadow pipit, redshank, redwing, shoveler, snipe, white-tailed eagle, and yellowhammer. A total of 27 are Amber-listed and the remaining 42 are Green-listed. Of the species noted, seven are listed under Annex I of the EU Birds Directive: bar-tailed godwit, little egret, golden plover, hen harrier, peregrine, merlin, marsh harrier, kingfisher, white-tailed eagle, and whooper swan. It is worth noting that the white-tailed eagle was not observed on site approx. 2km to the northwest. Table 3.1 details the conservation status of all 85 species.

3.1.1 Summary Results Migration Period and Winter 2021/2022

Target species observed, during this survey period at Derryadd were black-headed gull, black-tailed godwit, buzzard, cormorant, curlew, golden plover, great crested grebe, grey heron, greylag goose, hen harrier, kestrel, lapwing, lesser black-backed gull, little egret, mallard, marsh harrier, merlin, moorhen, mute swan, peregrine, pintail, shoveler, snipe, sparrowhawk, teal, whooper swan, and wigeon.

Table 3-1: Bird species recorded during VP surveys winter 2021/2022 and migration surveys²

Common name (BTO code)	Scientific name	*BoCCI status	**Annex I status
Bar-tailed Godwit	Limosa lapponica	Red	Yes
Blackbird	Turdus merula	Green	No
Blackcap	Sylvia atricapilla	Green	No
Black-headed Gull	Chroicocephalus ridibundus	Amber	No
Black-tailed Godwit	Limosa limosa	Red	No
Blue Tit	Cyanistes caeruleus	Green	No
Brambling	Fringilla montifringilla	Amber	No
Bullfinch	Pyrrhula pyrrhula	Green	No
Buzzard	Buteo buteo	Green	No
Chaffinch	Fringilla coelebs	Green	No
Chiffchaff	Phylloscopus collybita	Green	No

² Colours refer to the conservation status of the species according to Birds of Conservation Concern in Ireland.

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Common name (BTO code)	Scientific name	*BoCCI status	**Annex I status
Coal Tit	Periparus ater	Green	No
Collared Dove	Streptopelia decaocto	Green	No
Common Crossbill	Loxia curvirostra	Green	No
Cormorant	Phalacrocorax carbo	Amber	No
Curlew	Numenius arquata	Red	No
Dunnock	Prunella modularis	Green	No
Fieldfare	Turdus pilaris	Green	No
Goldcrest	Regulus regulus	Amber	No
Golden Plover	Pluvialis apricaria	Red	Yes
Goldfinch	Carduelis carduelis	Green	No
Great Black-backed Gull	Larus marinus	Green	No
Great Crested Grebe	Podiceps cristatus	Amber	No
Great Spotted Woodpecker	Dendrocopos major	Green	No
Great Tit	Parus major	Green	No
Greenfinch	Carduelis chloris	Amber	No
Grey Heron	Ardea cinerea	Green	No
Grey Wagtail	Motacilla cinerea	Red	No
Greylag Goose	Anser anser	Amber	No
Hen Harrier	Circus cyaneus	Amber	Yes
Herring Gull	Larus argentatus	Amber	No
Hooded Crow	Corvus cornix	Green	No
House Sparrow	Passer domesticus	Amber	No
Jack Snipe	Lymnocryptes minimus	Green	No
Jackdaw	Corvus monedula	Green	No
Jay	Garrulus glandarius	Green	No
Kestrel	Falco tinnunculus	Red	No
Kingfisher	Alcedo atthis	Amber	Yes
Lapwing	Vanellus vanellus	Red	No
Lesser Black-backed Gull	Larus fuscus	Amber	No
Lesser Redpoll	Carduelis cabaret	Green	No
Linnet	Carduelis cannabina	Amber	No
Little Egret	Egretta garzetta	Green	Yes
Long-tailed Tit	Aegithalos caudatus	Green	No
Magpie	Pica pica	Green	No
Mallard	Anas platyrhynchos	Amber	No
Marsh Harrier	Circus aeruginosus	Amber	Yes
Meadow Pipit	Anthus pratensis	Red	No
Merlin	Falco columbarius	Amber	Yes
Mistle Thrush	Turdus viscivorus	Amber	No
Moorhen	Gallinula chloropus	Green	No

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Common name (BTO code)	Scientific name	*BoCCI status	**Annex I status
Mute Swan	Cygnus olor	Amber	No
Peregrine	Falco peregrinus	Green	Yes
Pheasant	Phasianus colchicus	Green	No
Pied/White Wagtail	Motacilla alba	Green	No
Pintail	Anas acuta	Amber	No
Raven	Corvus corax	Green	No
Redshank	Tringa totanus	Red	No
Redwing	Turdus iliacus	Red	No
Reed Bunting	Emberiza schoeniclus	Green	No
Ringed Plover	Charadrius hiaticula	Amber	No
Robin	Erithacus rubecula	Green	No
Rook	Corvus frugilegus	Green	No
Shoveler	Anas clypeata	Red	No
Siskin	Carduelis spinus	Green	No
Skylark	Alauda arvensis	Amber	No
Snipe	Gallinago gallinago	Red	No
Song Thrush	Turdus philomelos	Green	No
Sparrowhawk	Accipiter nisus	Green	No
Starling	Sturnus vulgaris	Amber	No
Stonechat	Saxicola torquatus	Green	No
Swallow	Hirundo rustica	Amber	No
Teal	Anas crecca	Amber	No
Treecreeper	Certhia familiaris	Green	No
Water Rail	Rallus aquaticus	Green	No
White-tailed Eagle	Haliaeetus albicilla	Red	Yes
Whitethroat	Sylvia communis	Green	No
Whooper Swan	Cygnus cygnus	Amber	Yes
Wigeon	Anas penelope	Amber	No
Willow Warbler	Phylloscopus trochilus	Amber	No
Woodpigeon	Columba palumbus	Green	No
Wren	Troglodytes troglodytes	Green	No
Yellowhammer	Emberiza citrinella	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.



3.2 Target species observations during VP surveys

3.2.1 Black-Headed Gull

A single flightline for the Amber-listed black-headed gull was recorded during the VP surveys. This observation occurred in November from VP2 This species was recorded 0-30m height band for 52 seconds, outside the SNH buffer. A single bird was observed in this sighting.

3.2.2 Black-Tailed Godwit

Black-tailed godwit, a Red-listed species was recorded once, at VP1 on the 1st of February 2022. A single bird recorded during this observation. This bird flew at a height of 30-50m for 20 seconds, outside the SNH buffer.

3.2.3 Buzzard

Green-listed buzzard was observed on 71 occasions. Observations were distributed across all VPs and months. Buzzard was observed flying through all height bands, most frequently at the 0-30m band. Observations were usually of individual birds, but up to six individuals were recorded at once, on one occasion in March 2022 from VP3. A total of 55 observations were made inside the SNH buffer, five outside the buffer and 11 both inside and outside the buffer. Activities observed included hunting, calling, circling, hovering and calling.

3.2.4 Cormorant

Cormorant, an Amber-listed Species, was observed on seven occasions, from VP1, 2 and 4. Of these observations, five flightlines were inside the SNH buffer, and two were both inside and outside. Observations were all of individual birds. Fight occurred most frequently in the 50-185m height band (0-30m = 11s, 30-50m = 258s, 50-185m = 561s).

3.2.5 <u>Curlew</u>

Curlew, a Red-listed species was recorded once during the winter survey period, on the 2nd of March 2022. This observation was of seven birds, observed flying in the 30-50m height band at VP1 for 15 seconds.

3.2.6 Golden Plover

The Red-listed/Annex I golden plover was observed on 37 occasions. Observations occurred in all months from October 2021. Golden plover was observed at VPs 1, 3, 4, 5, 9, 10, and 11. This species was observed flying at all height bands, but most frequently at 50-185m (0-30m = 456s, 30-50m = 258s, 50-185m = 1928s, >185m = 7s). Observations included birds being flushed by walkers or other species, as well as groups moving location. Group size ranged from one to approximately 500. Of the flightlines observed, 25 were within the SNH buffer, eight were outside, and four were both inside and outside the buffer.

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3.2.7 Great Crested Grebe

Amber-listed great crested grebe was observed once, with a single bird flying in the 0-30m height band for 120s. This observation was from VP2 in November 2021.

3.2.8 Grey Heron

The Green-listed Grey Heron was observed 59 times during the migration/winter surveys. Observations of this species were made during all surveyed months. This species generally flew at the 0-30m height band (0-30m = 11s, 30-50m = 258s, 50-185m = 561s). This species was observed at all VP locations. Observations were generally of single birds, but two individuals were noted on two occasions. Of the flightlines observed, 38 were within the SNH buffer, 16 were outside, and five were both inside and outside the buffer. Behaviours included birds flying to ponds and landing in sections of bog.

3.2.9 Greylag Goose

Greylag goose (Amber-listed) was observed once during the winter survey period, on the 27th December 2021. This species was observed at VP10 flying both inside and outside the SNH buffer. This group of six individuals flew at a height of 50-185m for a period of seven seconds.

3.2.10 Hen Harrier

A total of 11 observations were made of the (Amber-listed) Annex I listed species hen harrier at VPs 2, 3, 5, 7, 8, 10, and 11. Hen harrier was recorded in November, December, January, February and March. This species most frequently flew at the lower height band (0-30m) and was not observed flying above 185m (0-30m = 783s, 30-50m = 126s, 50-185m = 71s). Of the observed flightlines, eight were inside the SNH buffer and three were both inside and outside the buffer. Each observation was of a single individual, and both males and females were observed. Behaviours included flight, hunting and being mobbed by hooded crows.

3.2.11 Kestrel

Red-listed kestrel had 64 flightlines mapped across all VPs, except for VP2. This species was observed in all months. A single individual was noted in all observations. Of the observed flightlines, 63 were inside the SNH buffer and one was both inside and outside the buffer. Behaviours included circling, soaring, hunting, perching and being disturbed by walkers.

3.2.12 Lapwing

A total of 49 observations of Red-listed lapwing were recorded. This species was recorded from all VPs except VP7, VP9 and VP10. Observations were made in all months. This species was most frequently observed flying within the 30-50m height band (0-30m = 576s, 30-50m = 861s, 50-185m = 722s). The numbers of individuals per observation ranged from one to 112, with an average group size of 52. Of the observed flightlines, 22 were inside the SNH buffer, three were both inside and outside the buffer, and 24 were outside the buffer.

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3.2.13 Lesser Black-backed Gull

Amber-listed lesser black-backed gull flightlines were recorded five times. Each flightline was of a single individual. Flightlines were all recorded during the migration surveys in September 2021, from VP2, 4 and 8. Flight was mostly observed in the 50-185m height band (0-30m =154s, 30-50m = 690s). Lesser black-backed gull was also recorded during surveys in February and March 2022. These additional records originated from VP1, 2, 4, 5, 8, 10 and 11.

3.2.14 Little Egret

Green-listed/Annex I little egret was recorded 30 times. Observations occurred in all months, from all VPs except 1, 8 and 11. Quantities ranged from one individual up to 11 birds. Of the flightlines, 25 were inside the SNH buffer and five were both inside and outside the buffers. Flight was mostly observed in the 0-30m height band (0-30m = 481, 30-50m = 328s, 50-185m = 60s). Behaviours included flight, and landing in a cutover bog.

3.2.15 Mallard

Mallard (Amber-listed) was recorded 55 times. Observations originated from VPs 1, 2, 3, 4, 5, 10 and 11. Observations occurred in all surveyed months. Flight occurred in all height bands, most frequently in the 0-30m band (0-30m = 4448s, 30-50m = 552s, 50-185m = 442s, >185m = 36s). Of the flightlines, 31 were inside the SNH buffer and 12 were both inside and outside the buffers, and 12 were only outside the buffer. Behaviours included feeding in a flooded section of bog to the south of VP4, in the north of the site.

3.2.16 Marsh Harrier

Marsh harrier (Amber-listed, Annex I) was observed once in the winter surveys. On 16th of March a single female was observed from VP3, flying in 0-30 height band for 100 seconds. This individual was observed hunting within the SNH buffer.

3.2.17 Merlin

Amber-listed/Annex I merlin was observed five times. This species was observed from VP6, VP7, VP8, and VP11. Observations were made in December and January. All observations were of one individual and included an immature or female bird. Flight was most frequently in the 0-30m band (108s) but also occurred in the 30-50m band (35s). Behaviours included hunting, and merlin were observed being flushed by a buzzard, and attacked by a hen harrier.

3.2.18 Moorhen

Moorhen (Green-listed) was observed twice during the winter survey season. This species was observed from all VP2 and VP4 in November 2021. Both observations were of one individual. One of these observations was within the SNH buffer, and the other was outside. Flights only occurred in the 0-30m height band (7s).

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3.2.19 Mute Swan

Amber-listed mute swan was observed 20 times during VP surveys. Observations occurred from October to March, and mute swan were observed from all VPs except for VP5 and VP8. Quantities observed ranged from one to four birds. Flight occurred in all height bands, most frequently in the 0-30m band (0-30m = 5103s, 30-50m = 403s, 50-185m = 21s, >185m = 30s). Of the flightlines, 11 were inside the SNH buffer and six were both inside and outside the buffers, and three were only outside the buffer. Behaviours included flight over rivers and feeding, as well as moving between foraging areas.

3.2.20 Peregrine

Green-listed/Annex I peregrine was observed nine times. This species was observed from VP1, VP3, VP4, VP6, VP7 and VP9. Observations were made in September, December, January, February and March. Flight occurred in all height bands, most frequently above 185m (0-30m = 88s, 30-50m = 198s, 50-185m =110s, >185m = 200s). Of the flightlines, 6 were inside the SNH buffer and three were only outside the buffer. Behaviours included perching and fly throughs.

3.2.21 Pintail

Pintail (Amber-listed) was observed once during the winter survey season. For this observation, six individuals were observed from VP1, flying both inside and outside the buffer. Flight height was 0-30m for 10s and 30-50m for 20s.

3.2.22 Shoveler

Red-listed shoveler was observed once during VP surveys, on the 2nd of March 2022. A single drake (male) was observed flying at a height of 0-30m for 10 seconds.

3.2.23 Snipe

Red-listed snipe was observed 16 times. This species was observed from VP2, VP4, VP5, VP6, VP7, VP8 and VP9. Observations were made in September (during migration surveys), October, November, December, and February. Quantities ranged from one to 15. Flight was most frequently below 30m (0-30m = 172s, 30-50m = 198s, 50-185m = 32s). All observations were inside the SNH buffer, with the exception of one which was outside.

3.2.24 Sparrowhawk

Sparrowhawk (Green-listed) was observed 16 times. This species was observed from VPs 1, 2, 3, 4, 6 and 8. Both males and females were observed, with quantities of between one and two. Observations of sparrowhawk were made in all months except February. Sparrowhawk was observed in all height bands, except for above 185m. It was most frequently observed in the 50-185m band (0-30m = 197s, 30-50m = 148s, 50-185m =209s). Of the flightlines recorded, 11 were inside the SNH buffer, two were outside the buffer, and three were both inside and outside. Birds were observed with prey, landing in trees, displaying and flying through the viewshed.

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3.2.25 Teal

Amber-listed teal was observed 15 times during VP surveys. Observations were noted from VP1, 2, 4, 5, and 6 and occurred from November to March inclusive. Quantities ranged from 1 to 32 birds. Teal was most frequently observed flying below 30m (0-30m = 3759s, 30-50m = 163s, 50-185m =13s). Of the observations, 12 were inside the SNH buffer, two were outside, and one was both inside and outside the buffer.

3.2.26 Whooper Swan

Amber-listed/Annex I whooper swan was observed 63 times. This species was observed from all VPs except for VP11. Observations were made from November 2021 to March 2022 inclusive. Quantities ranged from 1 to 16 birds. This species was recorded flying in all height bands, most frequently below 30m (0-30m = 15474s, 30-50m = 808s, 50-185m = 683s, >185m = 235s). Of the observations, 49 were only within the SNH buffer, 6 were outside and eight were both inside and outside the buffer. Many of the observations were of birds flying over, but were sometimes seen landed in areas of flooded bog within the site. Two of these observations were not of flights as the individual remained on the ground, but areas they were occupying are provided in the figures (Appendix 3).

3.2.27 Wigeon

Wigeon (Amber-listed) was observed 15 times during the surveys. Observations occurred from VP1, 2 3 and 4, from November to March inclusive. Quantities observed ranged from 1 to 130 birds. Flight was most frequently in the 0-30m height band (0-30m = 3680s, 30-50m = 115s, 50-185m = 308s). Of the observed flights, nine were inside the SNH buffer, two were outside the buffer and four were both inside and outside the buffer.

3.3 Hinterland Survey

Hinterland surveys to establish occupancy within a 10 km radius of the site were carried out over seven dates during winter 2021/2022, and one date for autumn migration surveys. The survey schedule and locations of the Hinterland watches are shown in Table 2-1.

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

A total of three Annex I species were recorded during hinterland surveys: golden plover, little egret and whooper swan. A total of six Red-listed species were observed: golden plover, goldeneye, grey wagtail, lapwing, shoveler and snipe. A further 11 Amber-listed species were observed: black-headed gull, coot, cormorant, goldcrest, great crested grebe, mallard, mute swan, teal, tufted duck, whooper swan and wigeon. All observed species, including green listed species are included in Table 3-2.

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 based on 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.

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3.3.1 Black-Headed Gull

This Amber-listed species was seen twice times during hinterland surveys, with observations made during November 2021. Observations were made from the following hinterland vantage points (HVPs): HVP7 (Lanesborough Bridge, Lough Ree, 0.9 km west), and HVP 11 (Erra and Derryhanee, River Shannon, 2.2km north). These HVPs are to the west and north of the proposed site, in the vicinity of Lough Ree and the River Shannon. The quantity of birds counted in these observations ranged from one to four.

3.3.2 Buzzard

Buzzard (Green-listed) was observed on nine occasions during the hinterland surveys. Buzzard was observed from the following hinterland vantage points: from HVP4 (Fortwilliam Turlough, 3.4 km west), HVP8 (Cullaghy, Lough Ree, 0.9km west), HVP12 (Derrycashel, River Shannon, 3.3km north), HVP16 (Camlin River Complex, 3.5km north), HVP17 (N5 Bridge over Camlin Park), HVP19 (Richmond Bridge, 8.9km north-east), HVP20 (Cloondara, Royal Canal, 3.1km north), and HVP21 (Begnagh Bridge, Royal Canal, 2.1km north). All observations were of individuals, except for the sighting at HVP4 on the 30th of September, where two buzzards were seen together.

3.3.3 Common Coot

Coot (Amber-listed) was observed 10 times during the hinterland surveys. Quantities ranged from 1 to 20, and averaging 4 individuals. Observations of coot occurred from late September 2021 to March 2022, and were recorded from HVP4 (Fortwilliam Turlough, 3.4km west), HVP5 (Incharmadermot Island, Lough Ree, 5.1km west), HVP6 (Cureen, Lough Ree, 2.4km west), HVP8 (Cullaghy, Lough Ree, 2.5km west), HVP9 (Gardenstown, Lough Ree, 4.6km west) and HVP10 (Cloonmustra, River Shannon, 1km north-west). These Hinterland Vantage Points (HVPs) all surround Lough Ree SPA (004064), which is a protected site for coot.

3.3.4 Cormorant

Cormorant (Amber-listed) were recorded three times during the hinterland surveys, with quantities ranging from one to three individuals. This species was observed during late September and November 2021. Sightings occurred at the following hinterland vantage points: HVP6 (Cureen, Lough Ree, 2.4km west), HVP9 (Gardenstown, Lough Ree, 4.6km west), HVP15 (Tarmonbarry Lock, 3.5km north). These hinterland sites are in the vicinity of either Lough Ree or the River Shannon

3.3.5 Goldcrest

Amber-listed goldcrest was observed on three occasions, all in March 2022. Quantities ranged between 1 and 2 birds. These observations occurred at HVP4 (Fortwilliam Turlough, 3.4km west), HVP9 (Gardenstown, Lough Ree, 4.6km west) and HVP12 (Derrycashel, River Shannon, 3.3km north).

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3.3.6 Golden Plover

Golden plover (Red-listed/Annex I) was observed once during the hinterland surveys. In November 2021, golden plover was observed from HVP4 (Fortwilliam Turlough, 3.4km west). Two birds were counted during this observation.

3.3.7 Goldeneye

Goldeneye (Red-listed) was observed twice during the hinterland surveys. In September 2021, during migration surveys, two goldeneye were observed from HVP8 (Cullaghy, Lough Ree, 2.5km west). In October 2021, 18 goldeneye were counted from this hinterland vantage point. This hinterland vantage point is at Lough Ree SPA (004064), which is a protected site for goldeneye.

3.3.8 Great Crested Grebe

Over the survey period, eight observations were made of great-crested grebe (Amber-listed). Sightings of this species occurred in September, October, November and February, and numbers per observation ranged from 1 to 7 (average = 3). These observations were made from HVP4 (Fortwilliam Turlough, 3.4km west), HVP5 (Incharmadermot Island, Lough Ree, 5.1km west), HVP6 (Cureen, Lough Ree, 2.4km west), HVP8 (Cullaghy, Lough Ree, 2.5km west), and HVP9 (Gardenstown, Lough Ree, 4.6km west).

3.3.9 Grey Wagtail

Red-listed grey wagtail was observed on once during hinterland surveys. This observation was of a single bird during the migration surveys. This observation was from HVP19 (Richmond Bridge, 8.9km north-east).

3.3.10 Lapwing

Overall, seven sightings of Red-listed lapwing were made during the hinterland surveys. Observations were made in September, October and November 2021 as well as February 2022. Lapwing were observed from HVP4 (Fortwilliam Turlough, 3.4km west), from HVP8 (Cullaghy, Lough Ree, 2.5km west), HVP11 (Erra & Derryhanee, River Shannon, 2.2km north) and HVP12 (Derrycashel, River Shannon, 3.3km north) and. Groups ranging from 1 to 260 (mean = 74) were observed September, October, November 2021 and February 2022. HVP8 is at Lough Ree SPA (004064), which is a protected site for lapwing.

3.3.11 Mallard

Mallard (Amber-listed) was observed on 31 occasions. Sightings were made during all surveyed months. Mallard was observed from HVP1 (Pake Bridge, Royal Canal, 4.8km south-east), HVP2 (Foygh Bridge, Royal Canal, 3.4km SE), HVP4 (Fortwilliam Turlough, 3.4km west), HVP5 (Incharmadermot Island, Lough Ree, 5.1km west), HVP6 (Cureen, Lough Ree, 2.4km west), HVP7 (Lanesborough Bridge, Lough Ree, 0.9 km west), HVP8 (Cullaghy, Lough Ree, 2.5km west), HVP9 (Gardenstown, Lough Ree, 4.6km west), HVP10 (Cloonmustra, River Shannon, 1km north-west), HVP11 (Erra & Derryhanee, River Shannon, 2.2km north), HVP14 (Tarmonbarry Bridge, 3.9km north), and HVP16 (Camlin River Complex, 3.5km north).

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A number of these HVPs are located on the shores of Lough Ree SPA, which is designated for mallard. Counts of this species ranged from 1 to 30, with an average count of 7.

3.3.12 Mute Swan

Mute swan (Amber-listed) was observed species 39 times during the hinterland surveys. Observations occurred in all months and were evenly distributed across those months. Counts ranged from 1 to 20, with an average count of 6 per observation. Sightings occurred at the following HVPs: HVP4 (Fortwilliam Turlough, 3.4km W), HVP5 (Incharmadermot Island, Lough Ree, 5.1km west), HVP6 (Cureen, Lough Ree, 2.4km west), HVP7 (Lanesborough Bridge, Lough Ree, 0.9 km west), HVP8 (Cullaghy, Lough Ree, 2.5km west), HVP9 (Gardenstown, Lough Ree, 4.6km west), HVP10 (Cloonmustra, River Shannon, 1km north west), HVP11 (Erra & Derryhanee, River Shannon, 2.2km N), HVP12 (Derrycashel, River Shannon, 3.3km north), HVP15 (Tarmonbarry Lock, 3.5km north), HVP16 (Camlin River Complex, 3.5km north), HVP18 (Fallan Bridge, 2km east), and HVP21 (Begnagh Bridge, Royal Canal, 2.1km north).

3.3.13 Shoveler

Shoveler (Red-listed) was recorded once during the hinterland surveys. During this observation, 18 birds were observed from HVP4 (Fortwilliam Turlough, 3.4km west), on the 12th of November 2021.

3.3.14 Snipe

Snipe (Red-listed) was recorded once during the hinterland surveys. In November 2021, three snipe were observed from HVP4 (Fortwilliam Turlough, 3.4km west).

3.3.15 Teal

Amber-listed teal was observed 12 times during the hinterland surveys. Observations occurred in all surveyed months, with quantities ranging from 5 to 48 birds. Teal was observed at the following hinterland vantage points: HVP4 (Fortwilliam Turlough, 3.4km west), HVP5 (Incharmadermot Island, Lough Ree, 5.1km west), HVP7 (Lanesborough Bridge, Lough Ree, 0.9 km west) from HVP8 (Cullaghy, Lough Ree, 2.5km west) on the 9th of September 2021. Some of these sites are within the Lough Ree SPA, which lists teal as a Special Conservation Interest.

3.3.16 Tufted Duck

A total of 15 observations were made of the Amber-listed tufted duck. Observations were made at the following HVPs, which are in the vicinity of Lough Ree SPA, which is designated for tufted duck: HVP4 (Fortwilliam Turlough, 3.4km west), HVP5 (Incharmadermot Island, Lough Ree, 5.1km west), HVP8 (Cullaghy, Lough Ree, 2.5km west) and HVP9 (Gardenstown, Lough Ree, 4.6km west). Counts for this species ranged from 1 to 55 individuals. Observations occurred during all months. Some of these sites are within or near the Lough Ree SPA, which lists tufted duck as a Special Conservation Interest.

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3.3.17 Whooper Swan

Amber-listed/Annex I whooper swan was observed three times from HVP4 (Fortwilliam Turlough, 3.4km west). This species was observed in October, November 2021 and January 2022. Quantities ranged from 2 to 32.

3.3.18 Wigeon

There were 17 observations of wigeon (Red-listed) during the hinterland surveys. Quantities observed ranged from 2 to 210. This species was observed in all survey months. Observations occurred from the following HVPs: HVP4 (Fortwilliam Turlough, 3.4km west), HVP5 (Incharmadermot Island, Lough Ree, 5.1km west), HVP6 (Cureen, Lough Ree, 2.4km west), HVP8 (Cullaghy, Lough Ree, 2.5km west), HVP9 (Gardenstown, Lough Ree, 4.6km west) and HVP11 (Erra & Derryhanee, River Shannon, 2.2km N). Some of these hinterland vantage points are near or within Lough Ree SPA, which lists wigeon as a Special Conservation Interest.

Table 3-2: Bird species recorded during hinterland surveys in winter 2021/2022 and during migration surveys in September 2021³

Common Nama		Conse	Conservation Status						
Common Name	Scientific Name	BoCCI*	Annex I**						
Black-headed Gull	Chroicocephalus ridibundus	Amber	No						
Buzzard	Buteo buteo	Green	No						
Coot	Fulica atra	Amber	No						
Cormorant	Phalacrocorax carbo	Amber	No						
Goldcrest	Regulus regulus	Amber	No						
Golden Plover	Pluvialis apricaria	Red	Yes						
Goldeneye	Bucephala clangula	Red	No						
Great Black-backed Gull	Larus marinus	Green	No						
Great Crested Grebe	Podiceps cristatus	Amber	No						
Grey Heron	Ardea cinerea	Green	No						
Grey Wagtail	Motacilla cinerea	Red	No						
Lapwing	Vanellus vanellus	Red	No						
Little Egret	Egretta garzetta	Green	Yes						
Little Grebe	Tachybaptus ruficollis	Green	No						
Mallard	Anas platyrhynchos	Amber	No						
Moorhen	Gallinula chloropus	Green	No						
Mute Swan	Cygnus olor	Amber	No						
Shoveler	Anas clypeata	Red	No						
Snipe	Gallinago gallinago	Red	No						
Teal	Anas crecca	Amber	No						

³ Colours refers to the conservation status of the species according to Birds of Conservation Concern in Ireland. Species in bold refers to species listed on Annex I of the EU Birds Directive.

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CLIENT:

Bord na Móna

PROJECT NAME: Derryadd, Co. Longford Wind Farm Ornithological Report



Common Name	Colombisio Name	Conservation Status						
	Scientific Name	BoCCI*	Annex I**					
Tufted Duck	Aythya fuligula	Amber	No					
Water Rail	Rallus aquaticus	Green	No					
Whooper Swan	Cygnus cygnus	Amber	Yes					
Wigeon	Anas penelope	Amber	No					

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

3.4 Winter Bird Transect Surveys

For the winter season 2021, a total of 21 transects were chosen (Table 2.6). The results of the winter bird transect survey at Derryadd are shown in Table 3.4. A total of 29 species were recorded along the transects over the winter season.

A total of two Red-listed species were recorded: redwing and meadow pipit.

Redwing was observed in both February and March 2022. In February, redwing was observed from TR1, TR3, TR8, TR9, TR12, TR14 and TR17, with quantities ranging between 1 and 5. In March, redwing was observed from TR3 and TR11, with quantities of 2 to 4 redwing.

Similarly, meadow pipit was observed in both February and March 2022. In February, meadow pipit was observed from TR3, TR4, TR5, TR9, TR10, TR12, TR17, TR18, TR20. with quantities ranging between 1 and 2. In March, meadow pipit was observed from TR1, TR3, TR5, TR7, TR9, TR14, TR16, TR17, and TR20, with quantities of between 1 and 3.

A total of two Amber-listed species were recorded: linnet and starling.

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

PROJECT NAME:

Derryadd, Co. Longford Wind Farm Ornithological Survey



Table 3-3: Results of winter bird transects surveys at Derryadd (TR1- TR21) in February and March 2022⁴

Species	TR1	TR2	TR3	TR4	TR5	TR6	TR7	TR8	TR9	TR10	TR11	TR12	TR13	TR14	TR15	TR16	TR17	TR18	TR19	TR20	TR21
Blackbird	14	8	9	2	5	2	2	7	6	7	2	9	7	6	7	10	9	8	4	7	1
Blue Tit	1	5	4	2	3	3		2		4		4	2	4	3	5	5	1	3		6
Bullfinch																					2
Chaffinch	6	5	8	2	6	3	3	4			14	7	7	5	4	14	10	7	9	2	10
Coal Tit														1							
Dunnock		4										1	2	2		2	2				1
Fieldfare									1			1									
Goldfinch					1						3		9		2			4	19		
Great Black-backed Gull				1																	
Great Spotted Woodpecker		1																			
Great Tit		2	1	1		4		2		1	3	1	2	1	2	8	4	2	1		3
Hooded Crow	1		3		4			4	4	2	1	1	2	1	4	1	4	3	5	1	2
Jackdaw					2	2						1			1						1
Lesser Redpoll									3		2		4				1		4		
Linnet									6		6	1	12		3		1	3	12		
Magpie	2		3		1	1	1	1	1	1	2		2	1	3	2	1	2			3
Mistle Thrush	1		2	2	2		2		1	1		5	2	1	1	1	2	1		2	1
Meadow Pipit	1		2	1	2		2		4	2		2		3		1	3	1		4	
Pheasant	1																	1			

⁴ Colours refers to the conservation status of the species according to Birds of Conservation Concern in Ireland. Species in bold refers to species listed on Annex I of the EU Birds Directive

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CLIENT:

Bord na Móna

PROJECT NAME:

Derryadd, Co. Longford Wind Farm Ornithological Survey



Species	TR1	TR2	TR3	TR4	TR5	TR6	TR7	TR8	TR9	TR10	TR11	TR12	TR13	TR14	TR15	TR16	TR17	TR18	TR19	TR20	TR21
Pied/White Wagtail				2			2		2	2	2			1						2	
Raven	1				2			1	1	1	1	1	1				1	3		1	
Redwing	1		7					1	1		4	1		1			1				
Reed Bunting	2		1	1	3	1		1		3	1	2	3		4	9	3	6	2	2	3
Robin	6	3	6	1	4	6	4	5	4	5	3	8	8	7	5	6	3	5	4	5	8
Rook	3	3	2			6	1	2		3		1		4	3		1		3		
Song Thrush	1	4	1	1	2	1		1		1	3	1	3	1	2	2	1	1	2		3
Starling		4	4		3						6		7		8		4		4	2	
Woodpigeon	3		1		4	3	2		1	6	2	2	3	3	5	·	4	2	2	7	3
Wren	11	10	10	8	7	6	5	10	8	9	4	5	12	7	7	12	10	5	7	7	8

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4. DISCUSSION

In conclusion, FT carried out ornithological surveys at the proposed Derryadd Wind Farm during winter 2021/2022 and during the autumn migration period (late September 2021). Surveys took place between September 2021 and March 2022 inclusive. The following surveys were undertaken: vantage point surveys, winter bird transect surveys, and hinterland surveys. In total, there were 562 individual flight lines of 27 target species observed during the survey period. In total, 83 bird species were recorded during vantage point surveys. The activity patterns recorded show that the area is used by a wide variety of bird species.

Buzzard, sparrowhawk, kestrel and were noted to hunt within and around the proposed Wind Farm Site. Merlin and hen harrier were also observed hunting occasionally (once and twice respectively). The following species were observed foraging in or near the proposed Wind Farm site: mute swan, whooper swan, lapwing and mallard. This shows that the area is utilised by these species for foraging. Furthermore, buzzard, kestrel, golden plover and lapwing were recorded frequently during the surveys, indicating the presence of roost sites in the area but no roosts were confirmed in the site. Additionally, a variety of other species of conservation concern were heard and seen from the VPs. These included, bar-tailed godwit, golden plover, kingfisher, little egret, marsh harrier, peregrine, black-tailed godwit, curlew, grey wagtail, meadow pipit, redshank, redwing, shoveler, snipe, and yellowhammer.

Hinterland surveys were conducted to show the general wintering occupancy throughout the winter season in a c. 10km radius around the proposed site. During these hinterland surveys, 24 species of bird were noted. Of these, three species are protected under Annex I of the EU Birds directive, six are Red-listed, and 11 are Amberlisted.

The most important sites for wetland bird species of interest were HVP4 (Fortwilliam Turlough, 3.4km west), HVP8 (Cullaghy, Lough Ree, 2.5km west). These hinterland vantage points are near or within the Lough Ree SPA (004064). This SPA lists several Special Conservation Interests that were observed during on site during VP and transect surveys: whooper swan, wigeon, teal, mallard, shoveler, goldeneye, golden plover and lapwing. Other hinterland sites which support a variety of species of conservation interest are: HVP5 (Incharmadermot Island, Lough Ree, 5.1km west), HVP9 (Gardenstown, Lough Ree, 4.6km west), and HVP11 (Erra & Derryhanee, River Shannon, 2.2km north).

The above sites are all less than 5.1km from the proposed development. Many bird species that are vulnerable to wind farm developments are highly mobile and could potentially commute over the Wind Farm site, in the case of wetland birds, or utilise the proposed development site for feeding, in the case of raptors such as buzzard, kestrel and sparrowhawk.

The target bird species seen at both the hinterland surveys and VP surveys were black-headed gull, buzzard, cormorant, golden plover, great black-backed gull, great crested grebe, grey heron, lapwing, little egret, mallard, moorhen, mute swan, shoveler, snipe, teal, whooper swan, and wigeon. This demonstrates that these species are present both onsite and in the surrounding areas during the wintering season and that the local landscape provides suitable habitat for these species.

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APPENDIX 1

VP Survey Details



VP	Date	Start Time	End Time	Cloud (Oktas)	Visibility	Rain	Wind
1	24/09/2021	16:05	19:05	7	V.good	Dry	F1 WSW
1	27/09/2021	08:10	11:10	3	V.good	Dry	F1 SSW
2	20/09/2021	08:20	11:20	6	V.good	Dry	F2 W
2	20/09/2021	11:55	14:55	7	V.good	Dry	F2 W
3	28/09/2021	15:37	18:37	2	V.good	Dry	F1 WSW
3	29/09/2021	09:00	12:00	2	V.good	Dry	F1 W
4	23/09/2021	08:50	11:50	6	V.good	Dry	F1 WSW
4	23/09/2021	12:33	15:33	7	V.good	Dry	F1 W
5	20/09/2021	15:35	18:35	7	V.good	Dry	F2 W
5	21/09/2021	16:05	19:05	8	Good	Light showers	F2 SW
6	28/09/2021	08:20	11:20	3	V.good	Dry	F1 SSW
6	28/09/2021	12:00	15:00	3	V.good	Dry	F1 SSW
7	27/09/2021	11:45	14:45	4	V.good	Light showers	F1-2 SW
7	27/09/2021	15:25	18:25	4	V.good	Light showers	F1-2 SW
8	24/09/2021	08:55	11:55	7	V.good	Dry	F1 W
8	24/09/2021	12:30	15:30	7	V.good	Dry	F1 W
9	21/09/2021	08:45	11:45	7	V.good	Dry	F3 SW
9	21/09/2021	12:25	15:25	8	V.good	V. light showers	F3 SW
10	22/09/2021	08:47	11:47	7	V.good	Dry	F3 SW
10	22/09/2021	12:25	15:25	8	V.good	Dry	F4 SW
11	22/09/2021	16:05	19:05	8	V.good	Dry	F3 SW
11	23/09/2021	16:10	19:10	7	V.good	Dry	F1 SW
1	01/10/2021	11:20	14:20	4	V.good	Dry	F2 W
1	01/10/2021	07:45	10:45	2	V.good	Dry	F1-2 SW
2	28/10/2021	08:35	11:35	3	V.good	Dry	F2 S
2	28/10/2021	12:10	15:10	6	V.good	Light showers	F2 S
3	26/10/2021	08:20	11:20	8	V.good	Showers	F2 SSW
3	26/10/2021	12:00	15:00	8	V.good	Showers	F3 SSW
4	02/10/2021	08:00	11:00	4	V.good	Dry	F1 S
4	02/10/2021	11:45	14:45	5	V.good	Dry	F1 W
5	01/10/2021	15:05	18:05	6	V.good	Dry	F2 W
5	02/10/2021	15:20	18:20	5	V.good	Dry	F1 SSW
6	03/10/2021	08:00	11:00	8	V.good	Showers	F2 WSW
6	03/10/2021	11:34	14:34	8	V.good	Showers	F2 WSW
7	03/10/2021	15:05	18:05	8	V.good	Light showers	F1 W
7	27/10/2021	08:30	11:30	8	V.good	Showers	F2 S
8	27/10/2021	12:05	15:05	8	Good	Light rain/showers	F2 S
8	29/10/2021	08:40	11:40	5	V.good	Dry	F1 W

VP	Date	Start Time	End Time	Cloud (Oktas)	Visibility	Rain	Wind
9	25/10/2021	08:18	11:18	5	V.good	Dry	F2 SSW
9	29/10/2021	13:05	16:05	6	V.good	Dry	F1 SSW
10	20/10/2021	08:10	11:10	4	V.good	Dry	F1 WSW
10	25/10/2021	12:30	15:30	5	V.good	Dry	F1 SW
11	20/10/2021	11:45	14:45	5	V.good	Dry	F1 W
11	21/10/2021	15:15	18:15	6	V.good	Dry	F1 W
1	01/12/2021	08:20	11:20	4	Good	Showers	F3 NW
1	01/12/2021	11:20	14:20	4	Good	Showers	F3 NW
2	23/11/2021	08:15	11:15	8	Excellent	Dry	F0
2	23/11/2021	11:45	14:45	8	Excellent	Dry	F0
3	22/11/2021	09:15	12:15	0	Excellent	Dry	F0-1
3	22/11/2021	12:45	15:45	0	Excellent	Dry	F0-1
4	25/11/2021	08:00	11:00	3	Excellent	Dry	F1-2
4	25/11/2021	11:30	14:30	3	Excellent	Dry	F1-2
5	26/11/2021	08:00	11:00	6	Excellent	Occasional light showers	F3-4
5	26/11/2021	11:30	14:30	6	Excellent	Occasional light showers	F3-4
6	02/12/2021	09:10	12:10	4/8-7/8	Moderate	Dry	W F1-2
6	02/12/2021	12:40	15:40	7/8-8/8	Good-Poor	Light rain/showers	W F2
7	29/11/2021	10:45	13:45	8/8	Very good	Dry	W F2
7	29/11/2021	13:45	16:45	8/8	Very good	Dry	W F2
8	24/11/2021	09:00	12:00	7/8-3/8	Excellent	Showers then dry	NW F3
8	24/11/2021	12:30	15:30	3/8	Excellent	Dry/Drizzle	NW F3
9	19/11/2021	07:30	10:30	8/8	Good	Mist/Dry	SW F1
9	02/11/2021	08:20	11:20	5/8	Good	Dry	W F1
10	18/11/2021	11:00	14:00	8/8	Good	Dry	SE F2
10	18/11/2021	14:00	17:00	8/8	Good	Dry	SE F2
11	25/11/2021	08:50	11:50	2/8	Excellent	Dry	NW F3
11	25/11/2021	12:30	15:30	2/8	Good	Shower	NW F3
1	13/12/2021	09:30	12:30	7/8	Good	Light Drizzle	F1
1	13/12/2021	13:00	16:00	7/8	good	Light Drizzle	F1
2	14/12/2021	09:30	12:30	3/8	Good	Dry	F2
2	14/12/2021	13:00	16:00	3/8	Good	Dry	F2
3	13/12/2021	09:30	12:30	7/8	Moderate	Some drizzle	F2
3	13/12/2021	13:00	16:00	7/8	Moderate	Some drizzle	F2
4	15/12/2021	09:30	12:30	8/8	Good	Dry	F3
4	15/12/2021	13:00	16:00	8/8	Very good	Dry	F3
5	14/12/2021	13:00	16:00	7/8	Moderate	Dry	F2
5	14/12/2021	09:30	12:30	7/8	Good	Dry	F1

VP	Date	Start Time	End Time	Cloud (Oktas)	Visibility	Rain	Wind
6	16/12/2021	09:30	12:30	7/8	Moderate	Dry	F2
6	16/12/2021	13:00	16:00	7/8	Moderate	Dry	F2
7	15/12/2021	09:30	12:00	7/8	Moderate	Light Drizzle	F2
7	15/12/2021	13:00	16:00	6/8	Good	Dry	F2
8	27/12/2021	09:00	12:00	8/8	Moderate	Dry	F2
8	27/12/2021	13:00	16:00	4/8	Moderate	Light Drizzle	F2
9	16/12/2021	09:30	12:30	7/8	Good	Dry	F3
9	16/12/2021	13:00	14:00	7/8	Good	Dry	F3
10	27/12/2021	09:30	12:30	8/8	Moderate	Dry	F1
10	27/12/2021	13:00	16:00	8/8	Moderate	Dry	F1
11	28/12/2021	13:00	16:00	3/8	Excellent	Dry	F1
11	28/12/2021	09:30	12:30	3/8	Excellent	Dry	F1
1	07/01/2022	09:30	12:30	6/8	Good	Showers	F3
	07/01/2022		16:00	-			
1	1 1	13:00		7/8	Good	Showers	F3
2	17/01/2022	09:30	12:30	1/8	Excellent	Dry	F1
2	17/01/2022	13:00	16:00	1/8	Excellent	Dry	F1
3	18/01/2022	09:30	12:30	7/8	Good	Light Drizzle	F1
3	18/01/2022	13:00	16:00	7/8	Good	Light Drizzle	F1
4	24/01/2022	09:30	12:30	7/8	Good	Dry	F1
4	24/01/2022	13:00	16:00	7/8	Good	Dry	F1
5	25/01/2022	09:30	12:30	7/8	Moderate	Dry	F1
5	25/01/2022	13:00	16:00	7/8	Moderate	Dry	F2
6	24/01/2022	09:40	12:40	4/8	Good	Dry	F1
6	24/01/2022	13:10	16:10	4/8	Good	Dry	F1
7 7	06/01/2022	09:30	12:30	8/8	Moderate	Light Drizzle	F3
8	06/01/2022 11/01/2022	13:00 09:30	16:00 12:30	8/8 3/8	Moderate Good	Light Drizzle	F3 F1
8	11/01/2022	13:00	16:00	3/8	Good	Dry Dry	F1
9	12/01/2022	09:30	12:30	2/8	Very good	Dry	F1
9	12/01/2022	13:00	16:00	2/8	Very good	Dry	F1
10	17/01/2022	09:40	12:40	2/8	Good	Dry	F1
10	17/01/2022	13:10	16:10	2/8	Good	Dry	F1
11	18/01/2022	09:30	12:30	8/8	Moderate	Dry	F2
11	18/01/2022	13:00	16:00	8/8	Moderate	Light Rain	F2
1	01/02/2022	09:30	12:30	7/8	Good	Light Drizzle	F3
1	02/03/2022	13:00	16:00	7/8	Good	Light Drizzle-Dry	F3
2	03/02/2022	09:30	12:30	6/8	Excellent	Dry	F2
2	03/02/2022	13:00	16:00	6/8	Excellent	Dry	F2
3	02/02/2022	09:30	12:30	6/8	Good	Light Drizzle	F3
3	02/02/2022	13:00	16:00	7/8	Good	Dry	F3

VP	Date	Start Time	End Time	Cloud (Oktas)	Visibility	Rain	Wind
4	28/02/2022	09:30	13:00	2/8	Excellent	Dry	F1
4	28/02/2022	13:00	16:00	2/8	Excellent	Dry/Light Rain	F3
5	25/02/2022	09:30	12:30	6/8	Good	Dry	F1
5	25/02/2022	13:00	16:00	5/8	Good	Dry	F1
6	25/02/2022	09:30	12:30	7/8	Good	Dry	F2
6	25/02/2022	13:00	16:00	7/8	Good	Dry	F3
7	02/02/2022	09:40	12:40	8/8	Good	Dry	F2
7	02/02/2022	13:10	16:10	8/8	Good	Dry	F2
8	14/02/2022	09:15	12:15	6/8	Good	Showers	F4
8	14/02/2022	12:45	15:45	4/8	Good	Showers	F4
9	09/02/2022	09:15	12:15	4/8	Good	Dry	F3
9	09/02/2022	12:45	15:45	5/8	Good	Dry/Occasional Shower	F3
10	01/02/2022	09:40	12:40	8/8	Good	Drizzle	F2
10	01/02/2022	13:10	16:10	8/8	Good	Drizzle	F3
11	08/02/2022	09:30	12:30	8/8	Moderate	Drizzle	F3
11	08/02/2022	13:00	16:00	8/8	Moderate	Drizzle/Light Rain	F3
1	02/03/2022	09:30	12:30	8/8	Moderate	Heavy Drizzle	F2
1	02/03/2022	13:00	16:00	7/8	Good	Light Drizzle-Dry	F3
2	07/03/2022	09:30	12:30	6/8	Good	Dry	F3
2	07/03/2022	13:00	16:00	6/8	Good	Dry	F3
3	16/03/2022	09:30	12:30	1/8	Excellent	Dry	F1
3	16/03/2022	13:00	16:00	1/8	Excellent	Dry	F1
4	08/03/2022	09:30	12:30	7/8	Good	Dry	F4
4	08/03/2022	13:00	16:00	6/8	Good	Dry/Light Drizzle	F3
5	15/03/2022	09:30	12:30	7/8	Good	Dry	F2
5	15/03/2022	13:00	16:00	6/8	Good	Dry	F2
6	16/03/2022	09:30	12:30	3/8	Excellent	Dry	F1
6	16/03/2022	13:00	16:00	4/8	Excellent	Dry	F1
7	07/03/2022	09:35	12:35	8/8	Good	Dry	F3
7	07/03/2022	13:10	16:10	7/8	Good	Dry	F4
8	08/03/2022	09:40	12:40	8/8	Good	Heavy Showers	F3
8	08/03/2022	13:10	16:10	8/8	Good	Showers	F3
9	02/03/2022	09:40	12:40	8/8	Moderate	Drizzle	F3
9	02/03/2022	13:10	16:10	8/8	Moderate	Drizzle	F3
10	15/03/2022	09:45	12:45	8/8	Good	Dry	F1
10	15/03/2022	13:15	16:15	8/8	Good	Dry	F1
11	28/03/2022	09:30	12:30	1/8	Excellent	Dry	F1
11	28/03/2022	13:00	16:00	1/8	Excellent	Dry	F1



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APPENDIX 2

Vantage Point Observations



VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
2	1	8	20/09/2021	Mallard	08:52	in	24	24			
2	1	3	20/09/2021	Grey Heron	09:20	out	15	15			
2	1	1	20/09/2021	Buzzard	09:41	in	64	9	55		
2	1	6	20/09/2021	Lesser Black-backed Gull	10:04	in	143			143	
2	2	8	20/09/2021	Mallard	10:46	out	36	36			
2	2	6	20/09/2021	Lesser Black-backed Gull	11:08	out	48		48		
2	2	6	20/09/2021	Lesser Black-backed Gull	11:08	in	106		106		
2	3	8	20/09/2021	Mallard	12:09	out	37	37			
2	1	11	20/09/2021	Sparrowhawk	12:37	in	24	12	12		
2	2	3	20/09/2021	Grey Heron	13:06	out	16	16			
2	3	3	20/09/2021	Grey Heron	13:33	out	19	19			
2	1	2	20/09/2021	Cormorant	14:00	in	73		73		
2	1	2	20/09/2021	Cormorant	14:00	out	61		61		
2	2	1	20/09/2021	Buzzard	14:28	in	44		44		
5	3	1	20/09/2021	Buzzard	16:04	in	108	9	24	75	
5	1	10	20/09/2021	Snipe	16:47	in	33	17	16		
5	1	4	20/09/2021	Kestrel	17:15	in	205	73	102	30	
5	4	1	20/09/2021	Buzzard	17:57	in	47	6	41		
9	2	4	21/09/2021	Kestrel	09:13	in	363	26	27	310	
9	1	9	21/09/2021	Peregrine	09:46	in	51	8	43		
9	3	4	21/09/2021	Kestrel	10:33	in	144	7	15	122	
9	4	3	21/09/2021	Grey Heron	10:57	in	35	35			
9	5	1	21/09/2021	Buzzard	11:15	in	71		71		
9	4	4	21/09/2021	Kestrel	13:06	in	312		29	283	
9	6	1	21/09/2021	Buzzard	13:52	in	34	23	11		
9	5	4	21/09/2021	Kestrel	14:26	in	111		19	92	
9	6	4	21/09/2021	Kestrel	15:00	in	64		64		
5	7	1	21/09/2021	Buzzard	17:15	in	77		15	62	
5	7	4	21/09/2021	Kestrel	17:49	in	209	8	18	183	

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
5	8	1	21/09/2021	Buzzard	18:43	in	104			104	
10	8	4	22/09/2021	Kestrel	09:32	in	542	57	412	73	
10	9	4	22/09/2021	Kestrel	10:14	in	106	16	90		
10	5	3	22/09/2021	Grey Heron	10:53	in	21	21			
10	10	4	22/09/2021	Kestrel	11:20	in	75	61	14		
10	11	4	22/09/2021	Kestrel	13:09	in	222	26	180	16	
10	9	1	22/09/2021	Buzzard	14:14	in	35	8	27		
10	12	4	22/09/2021	Kestrel	15:00	in	17	17			
11	3	6	22/09/2021	Lesser Black-backed Gull	17:20	in	183			183	
11	13	4	22/09/2021	Kestrel	18:05	in	100	26	74		
11	10	1	22/09/2021	Buzzard	18:27	in	54	13	41		
4	11	1	23/09/2021	Buzzard	09:14	in	93	18	54	21	
4	2	2	23/09/2021	Cormorant	09:24	in	37	11	26		
4	4	6	23/09/2021	Lesser Black-backed Gull	09:38	in	165			165	
4	6	3	23/09/2021	Grey Heron	09:57	in	16	16			
4	1	7	23/09/2021	Little Egret	10:29	in	22	22			
4	2	10	23/09/2021	Snipe	10:50	in	41	21	20		
4	7	3	23/09/2021	Grey Heron	11:03	in	37	37			
4	2	7	23/09/2021	Little Egret	11:26	in	6	6			
4	4	8	23/09/2021	Mallard	11:44	in	69	69			
4	8	3	23/09/2021	Grey Heron	13:00	in	21	21			
4	3	10	23/09/2021	Snipe	13:13	in	15	15			
4	5	8	23/09/2021	Mallard	13:47	in	67	12	55		
4	12	1	23/09/2021	Buzzard	14:06	in	86		86		
4	4	10	23/09/2021	Snipe	14:24	in	29	19	10		
4	9	3	23/09/2021	Grey Heron	14:53	in	10	10			
4	3	7	23/09/2021	Little Egret	15:09	in	35	35			
4	10	3	23/09/2021	Grey Heron	15:21	in	12	12			
11	14	4	23/09/2021	Kestrel	17:11	in	364	111	173	80	

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
11	13	1	23/09/2021	Buzzard	18:00	in	79	10	69		
8	14	1	24/09/2021	Buzzard	09:25	in	83	7	76		
8	5	10	24/09/2021	Snipe	10:14	in	31	21	10		
8	5	6	24/09/2021	Lesser Black-backed Gull	10:29	in	199			199	
8	6	10	24/09/2021	Snipe	14:46	in	49	18	31		
1	11	3	24/09/2021	Grey Heron	16:52	in	162			162	
1	1	5	24/09/2021	Lapwing	17:06	out	36	36			
1	15	1	24/09/2021	Buzzard	17:24	in	52	11		41	
1	12	3	24/09/2021	Grey Heron	17:49	out	11	11			
1	6	8	24/09/2021	Mallard	18:10	out	17	17			
1	3	2	24/09/2021	Cormorant	18:37	in	33		33		
1	3	2	24/09/2021	Cormorant	18:37	out	65		65		
1	2	5	27/09/2021	Lapwing	08:33	out	45	12	33		
1	7	8	27/09/2021	Mallard	09:19	in	15	15			
1	7	8	27/09/2021	Mallard	09:19	out	31	31			
1	2	11	27/09/2021	Sparrowhawk	09:48	out	22	22			
1	13	3	27/09/2021	Grey Heron	10:12	out	19	19			
1	4	2	27/09/2021	Cormorant	10:50	in	152			152	
1	16	1	27/09/2021	Buzzard	10:56	in	63		63		
1	14	3	27/09/2021	Grey Heron	11:05	out	17	17			
7	17	1	27/09/2021	Buzzard	12:39	in	66	14	52		
7	15	4	27/09/2021	Kestrel	13:42	in	307	94	102	111	
7	16	4	27/09/2021	Kestrel	16:14	in	225	89	76	60	
7	17	4	27/09/2021	Kestrel	16:55	in	102	49	53		
6	3	11	28/09/2021	Sparrowhawk	09:02	in	101	12	10	79	
6	15	3	28/09/2021	Grey Heron	09:52	in	31	31			
6	18	4	28/09/2021	Kestrel	10:17	in	222	102	63	57	
6	18	1	28/09/2021	Buzzard	10:55	in	58	8	50		
6	19	4	28/09/2021	Kestrel	11:04	in	177	16	151		

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
6	4	11	28/09/2021	Sparrowhawk	12:21	in	73	60	13		
6	19	1	28/09/2021	Buzzard	12:58	in	103		103		
6	20	4	28/09/2021	Kestrel	13:44	in	66	14	52		
6	21	4	28/09/2021	Kestrel	14:35	in	220	52	168		
3	20	1	28/09/2021	Buzzard	16:04	in	69	15	54		
3	8	8	28/09/2021	Mallard	16:11	in	33	33			
3	22	4	28/09/2021	Kestrel	16:50	in	117	18	99		
3	16	3	28/09/2021	Grey Heron	17:15	in	15	15			
3	23	4	28/09/2021	Kestrel	18:00	in	78	30	48		
3	24	4	29/09/2021	Kestrel	09:37	in	172	55	67	50	
3	21	1	29/09/2021	Buzzard	10:11	in	44	12	32		
3	25	4	29/09/2021	Kestrel	11:06	in	58	20	38		
3	17	3	29/09/2021	Grey Heron	11:30	in	29	29			
1	3	28	01/10/2021	Lapwing	08:12	out	53	12	41		
1	5	16	01/10/2021	Cormorant	08:50	in	109			109	
1	22	14	01/10/2021	Buzzard	09:22	in	70	11	59		
1	18	21	01/10/2021	Grey Heron	09:43	out	15	15			
1	9	31	01/10/2021	Mallard	10:10	out	38	38			
1	19	21	01/10/2021	Grey Heron	11:55	out	17	17			
1	6	16	01/10/2021	Cormorant	12:08	in	202			202	
1	23	14	01/10/2021	Buzzard	12:30	in	89	19	70		
1	4	28	01/10/2021	Lapwing	13:14	out	55	33	22		
1	20	21	01/10/2021	Grey Heron	13:45	out	23	23			
1	10	31	01/10/2021	Mallard	14:02	in	30	30			
1	10	31	01/10/2021	Mallard	14:02	out	47	47			
1	5	41	01/10/2021	Sparrowhawk	14:15	out	10	10			
5	4	30	01/10/2021	Little Egret	16:10	in	36	36			
5	24	14	01/10/2021	Buzzard	16:40	in	79	8	71		
5	26	26	01/10/2021	Kestrel	17:13	in	134	8	20	106	

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
5	21	21	01/10/2021	Grey Heron	17:42	in	22	22			
4	25	14	02/10/2021	Buzzard	08:35	in	53		53		
4	7	16	02/10/2021	Cormorant	08:53	in	98			98	
4	5	30	02/10/2021	Little Egret	09:29	in	34	34			
4	22	21	02/10/2021	Grey Heron	10:10	in	18	18			
4	11	31	02/10/2021	Mallard	10:22	in	77	77			
4	7	40	02/10/2021	Snipe	10:43	in	15	15			
4	6	30	02/10/2021	Little Egret	12:06	in	35	35			
4	23	21	02/10/2021	Grey Heron	12:39	in	29	29			
4	24	21	02/10/2021	Grey Heron	13:04	in	7	7			
4	12	31	02/10/2021	Mallard	13:22	in	25	25			
4	5	28	02/10/2021	Lapwing	14:14	in	63	12	51		
5	26	14	02/10/2021	Buzzard	15:55	in	106	6	12	88	
5	25	21	02/10/2021	Grey Heron	16:26	in	57	57			
5	8	40	02/10/2021	Snipe	17:18	in	29	15	14		
6	27	26	03/10/2021	Kestrel	08:47	in	186	8	26	152	
6	27	14	03/10/2021	Buzzard	09:18	in	54	14	40		
6	6	41	03/10/2021	Sparrowhawk	09:50	in	26	26			
6	28	26	03/10/2021	Kestrel	10:15	in	66	19	47		
6	26	21	03/10/2021	Grey Heron	10:37	in	124	124			
6	29	26	03/10/2021	Kestrel	12:06	in	166	19	54	93	
6	28	14	03/10/2021	Buzzard	12:54	in	77	21	56		
6	30	26	03/10/2021	Kestrel	13:48	in	102			102	
7	27	21	03/10/2021	Grey Heron	16:22	in	31	31			
7	31	26	03/10/2021	Kestrel	16:58	in	79				79
10	32	26	20/10/2021	Kestrel	09:12	in	101	16	33	52	
10	28	21	20/10/2021	Grey Heron	10:00	in	27	27			
11	33	26	20/10/2021	Kestrel	14:01	in	202	58	105	59	
11	34	26	20/10/2021	Kestrel	15:47	in	154	22	34	98	

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
11	35	26	21/10/2021	Kestrel	14:33	in	77			77	
9	36	26	25/10/2021	Kestrel	09:10	in	144		18	126	
9	29	14	25/10/2021	Buzzard	10:17	in	60		60		
10	37	26	25/10/2021	Kestrel	12:35	in	117			117	
10	38	26	25/10/2021	Kestrel	13:30	in	88	9	11	68	
10	29	21	25/10/2021	Grey Heron	15:04	in	24	24			
3	1	18	26/10/2021	Golden Plover	08:33	in	47	37	0		
3	30	21	26/10/2021	Grey Heron	09:03	in	30	30			
3	2	18	26/10/2021	Golden Plover	09:51	in	72	37	35		
3	30	14	26/10/2021	Buzzard	10:15	in	63	14	49		
3	39	26	26/10/2021	Kestrel	10:42	in	118	19	22	77	
3	31	21	26/10/2021	Grey Heron	12:52	in	16	16			
3	3	18	26/10/2021	Golden Plover	13:25	in	80	5	13	62	
3	40	26	26/10/2021	Kestrel	14:14	in	172	12	65	95	
7	32	21	27/10/2021	Grey Heron	09:51	in	44	44			
8	31	14	27/10/2021	Buzzard	14:00	in	72	10	31	31	
2	1	36	28/10/2021	Mute Swan	08:51	in	10				
2	2	36	28/10/2021	Mute Swan	08:51	out	52				
2	32	14	28/10/2021	Buzzard	09:22	in	34	24			
2	33	21	28/10/2021	Grey Heron	09:49	out	22				
2	6	28	28/10/2021	Lapwing	10:24	out	48				
2	6	28	28/10/2021	Lapwing	10:24	in	13				
2	13	31	28/10/2021	Mallard	11:02	out	27				
2	14	31	28/10/2021	Mallard	11:08	out	30				
2	7	28	28/10/2021	Lapwing	12:44	out	62	30	32		
2	15	31	28/10/2021	Mallard	13:30	in	11	11			
2	15	31	28/10/2021	Mallard	13:30	out	22	22			
2	34	21	28/10/2021	Grey Heron	14:10	out	19	19			
2	33	14	28/10/2021	Buzzard	14:22	in	55	5	50		

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
2	35	21	28/10/2021	Grey Heron	14:51	out	17	17			
9	41	26	29/10/2021	Kestrel	14:14	in	153	10	23	120	
9	34	14	29/10/2021	Buzzard	14:38	in	149	18	58	73	
9	36	21	29/10/2021	Grey Heron	15:07	in	167	10	157		
9	4	18	02/11/2021	Golden Plover	08:36	in	64	64			
9	1	43	02/11/2021	Whooper Swan	08:38	in	30		30		
9	9	40	02/11/2021	Snipe	08:40	in	12	12			
9	5	18	02/11/2021	Golden Plover	08:48	in	275	60	5	210	
9	2	43	02/11/2021	Whooper Swan	09:44	in	38	38			
9	7	30	02/11/2021	Little Egret	10:01	in	33	33			
9	3	43	02/11/2021	Whooper Swan	10:12	in	No data				
10	10	40	18/11/2021	Snipe	11:05	in	5	5			
10	8	30	18/11/2021	Little Egret	11:09	in	13	13			
10	42	26	18/11/2021	Kestrel	12:02	in	9	9			
10	35	14	18/11/2021	Buzzard	12:48	in	122		10	112	
10	16	31	18/11/2021	Mallard	13:11	in	51			51	
10	17	31	18/11/2021	Mallard	13:15	in	38			38	
10	4	43	18/11/2021	Whooper Swan	14:18	in/out	55	45	10		
9	5	43	19/11/2021	Whooper Swan	07:52	in	14	14			
9	6	18	19/11/2021	Golden Plover	08:00	in	109	89	20		
9	6	43	19/11/2021	Whooper Swan	08:02	in	31	31			
9	7	18	19/11/2021	Golden Plover	09:01	in	42	37	5		
9	8	18	19/11/2021	Golden Plover	09:26	in	126	66	10	50	
3	43	26	22/11/2021	Kestrel	09:37	in	26	26			
3	36	14	22/11/2021	Buzzard	09:53	in	1320	1320			
2	1	35	23/11/2021	Moorhen	08:15	out	5	5			
2	3	36	23/11/2021	Mute Swan	08:15	out	1200	1200			
2	1	46	23/11/2021	Wigeon	08:28	out	28	28			
2	37	21	23/11/2021	Grey Heron	08:38	out	38	38			

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
2	4	36	23/11/2021	Mute Swan	08:43	out	61	61			
2	18	31	23/11/2021	Mallard	08:44	in	22	22			
2	4	36	23/11/2021	Mute Swan	08:48	in	30	30			
2	1	42	23/11/2021	Teal	08:50	out	16	16			
2	19	31	23/11/2021	Mallard	08:52	in	14	14			
2	19	31	23/11/2021	Mallard	08:52	out	30	30			
2	1	12	23/11/2021	Black-headed Gull	09:01	out	52	52			
2	20	31	23/11/2021	Mallard	09:15	in	36	30			
2	1	20	23/11/2021	Great Crested Grebe	10:51	out	120	120			
2	38	21	23/11/2021	Grey Heron	11:00	out	62	62			
2	8	28	23/11/2021	Lapwing	11:06	out	42	42			
2	7	43	23/11/2021	Whooper Swan	12:35	out	65		65		
2	11	40	23/11/2021	Snipe	12:39	out	52			32	
2	5	36	23/11/2021	Mute Swan	12:51	in	20	20			
2	5	36	23/11/2021	Mute Swan	12:51	out	15	15			
2	5	36	23/11/2021	Mute Swan	12:51	out	10		10		
2	5	36	23/11/2021	Mute Swan	12:51	in	41	5	26		
2	1	46	23/11/2021	Wigeon		in	20	20			
8	44	26	24/11/2021	Kestrel	12:40	in	20			20	
8	9	28	24/11/2021	Lapwing	13:04	in	30		30		
8	45	26	24/11/2021	Kestrel	14:38	in	10	10			
8	8	43	24/11/2021	Whooper Swan	15:15	in	900	900			
4	9	43	25/11/2021	Whooper Swan	08:00	in	10800	10800			
4	10	43	25/11/2021	Whooper Swan	08:00	in	2640	2640			
4	11	43	25/11/2021	Whooper Swan	08:01	in	40	10	30		
4	12	43	25/11/2021	Whooper Swan	08:10	in	69	50	19		
4	2	35	25/11/2021	Moorhen	08:18	in	2	2			
4	2	42	25/11/2021	Teal	08:18	in	20	20			
4	21	31	25/11/2021	Mallard	08:19	in	3600	3600			

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
4	13	43	25/11/2021	Whooper Swan	08:44	in	64	60	14		
11	1	24	25/11/2021	Gull sp.	09:25	in	60		45	10	
11	1	24	25/11/2021	Gull sp.	09:25	out	5			5	
4	14	43	25/11/2021	Whooper Swan	09:29	in	27		27		
4	15	43	25/11/2021	Whooper Swan	09:47	in	72	72			
11	46	26	25/11/2021	Kestrel	09:48	in	15	5			
11	47	26	25/11/2021	Kestrel	10:00	in	45	5	40		
4	41	22	25/11/2021	Grey Heron	10:11	in	51	51			
4	16	43	25/11/2021	Whooper Swan	10:14	in	122	75	36		
11	39	21	25/11/2021	Grey Heron	10:47	in					
4	2	46	25/11/2021	Wigeon	10:50	in	3600	3600			
4	3	42	25/11/2021	Teal	10:50	in	3600	3600			
11	40	22	25/11/2021	Grey Heron	10:52	in	2	2			
4	17	43	25/11/2021	Whooper Swan	11:00	in	61	61			
4	10	28	25/11/2021	Lapwing	11:40	in	146	26	120		
4	6	36	25/11/2021	Mute Swan	12:10	in	3600	3600			
4	37	14	25/11/2021	Buzzard	12:51	in	1500	1500			
5	18	43	26/11/2021	Whooper Swan	09:23	in	15	15			
5	1	25	26/11/2021	Hen Harrier	09:23	in	72	72			
5	2	25	26/11/2021	Hen Harrier	09:34	in	23	23			
5	19	43	26/11/2021	Whooper Swan	10:16	in	5	5			
5	4	42	26/11/2021	Teal	10:44	in	48	8	40		
5	22	31	26/11/2021	Mallard	11:31	in	58	8	10	40	
5	5	42	26/11/2021	Teal	11:37	in	47	15	32		
5	6	42	26/11/2021	Teal	11:42	in	121	50	71		
5	23	31	26/11/2021	Mallard	11:42	in	121	50	71		
5	20	43	26/11/2021	Whooper Swan	11:48	in	29	9	20		
5	24	31	26/11/2021	Mallard	12:22	in	153	50	50	53	
5	21	43	26/11/2021	Whooper Swan	12:32	in	103		103		

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
5	9	30	26/11/2021	Little Egret	12:58	in	30		30		
5	38	14	26/11/2021	Buzzard	13:35	in	37		37		
7	22	43	29/11/2021	Whooper Swan	11:19	in	16	16			
7	42	22	29/11/2021	Grey Heron	12:36	in	32		32		
7	43	22	29/11/2021	Grey Heron	14:28	in	61	61			
7	23	43	29/11/2021	Whooper Swan	15:21	in	108	108			
7	39	14	29/11/2021	Buzzard	15:24	in	59	59			
7	40	14	29/11/2021	Buzzard	16:06	in	72	72			
1	24	43	01/12/2021	Whooper Swan	08:32	out	30	30			
1	11	28	01/12/2021	Lapwing	08:46	out	23	23			
1	12	28	01/12/2021	Lapwing	08:50	out	32	25	7		
1	7	36	01/12/2021	Mute Swan	09:05	out	71	60	11		
1	13	28	01/12/2021	Lapwing	09:18	out	16	16			
1	14	28	01/12/2021	Lapwing	09:20	out	26	19	7		
1	25	31	01/12/2021	Mallard	09:23	out	18		18		
1	25	43	01/12/2021	Whooper Swan	09:27	out	56		56		
1	15	28	01/12/2021	Lapwing	09:28	out	18	18			
1	16	28	01/12/2021	Lapwing	09:31	out	120	110	10		
1	26	43	01/12/2021	Whooper Swan	09:58	out	50		50		
1	26	31	01/12/2021	Mallard	10:01	out	13	13			
1	17	28	01/12/2021	Lapwing	10:17	out	102	5	25	72	
1	18	28	01/12/2021	Lapwing	11:40	out	58			58	
1	8	36	01/12/2021	Mute Swan	11:59	out	64	54	10		
1	41	14	01/12/2021	Buzzard	12:57	out	6	6			
1	19	28	01/12/2021	Lapwing	13:09	out	18	18			
1	20	28	01/12/2021	Lapwing	13:11	out	10	8	2		
1	21	28	01/12/2021	Lapwing	13:30	out	21	21			
1	42	14	01/12/2021	Buzzard	14:06	out	42			42	
6	43	14	02/12/2021	Buzzard	09:40	in	180		180		

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
6	44	14	02/12/2021	Buzzard	10:03	in	50	5	45		
6	45	14	02/12/2021	Buzzard	10:20	in	65	10	55		
6	2	37	02/12/2021	Peregrine	10:30	in	300	50			
6	48	26	02/12/2021	Kestrel	11:44	in	10		10		
6	27	43	02/12/2021	Whooper Swan	12:57	in	50	50			
6	46	14	02/12/2021	Buzzard	14:29	in	16	16			
6	10	30	02/12/2021	Little Egret	14:39	in	65	65			
1	28	43	13/12/2021	Whooper Swan	09:35	out	9		9		
1	28	43	13/12/2021	Whooper Swan	09:35	in	6	6			
1	22	28	13/12/2021	Lapwing	09:42	out	8		8		
1	22	28	13/12/2021	Lapwing	09:42	in	292	5	25	272	
1	9	18	13/12/2021	Golden Plover	09:46	out	18			18	
1	9	18	13/12/2021	Golden Plover	09:46	in	300	5	3	292	
1	29	43	13/12/2021	Whooper Swan	09:55	in	6	3	3		
1	29	43	13/12/2021	Whooper Swan	09:55	out	9		9		
1	3	46	13/12/2021	Wigeon	10:00	in	32	5	15	12	
1	3	46	13/12/2021	Wigeon	10:01	out	9			9	
1	4	46	13/12/2021	Wigeon	10:12	in	14	4	2	8	
1	4	46	13/12/2021	Wigeon	10:12	out	8			8	
1	7	42	13/12/2021	Teal	10:13	in	15	2	5	3	
1	7	42	13/12/2021	Teal	10:13	out	10			10	
1	27	31	13/12/2021	Mallard	10:30	out	3	3			
1	27	31	13/12/2021	Mallard	10:30	in	5	5			
1	5	46	13/12/2021	Wigeon	10:40	in	12	3	3	6	
1	5	46	13/12/2021	Wigeon	10:40	out	15			15	
1	28	31	13/12/2021	Mallard	10:55	out	15		5	10	
1	28	31	13/12/2021	Mallard	10:55	in	10	3	7		
1	9	36	13/12/2021	Mute Swan	11:05	in	12	3	3	6	
1	9	36	13/12/2021	Mute Swan	11:05	out	15			15	

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
3	30	43	13/12/2021	Whooper Swan	11:26	in	100	50	50		
3	31	44	13/12/2021	Whooper Swan	11:34	in	70	30	40		
1	29	32	13/12/2021	Mallard	11:35	out	8			8	
1	29	32	13/12/2021	Mallard	11:35	in	22			22	
3	11	30	13/12/2021	Little Egret	11:56	in	60	60			
3	6	46	13/12/2021	Wigeon	12:09	in	10	10			
3	30	32	13/12/2021	Mallard	12:11	in	50			50	
1	44	22	13/12/2021	Grey Heron	12:15	out	18			18	
1	44	22	13/12/2021	Grey Heron	12:15	in	7			7	
3	31	32	13/12/2021	Mallard	12:19	in	60		60		
3	3	37	13/12/2021	Peregrine	12:20	in	80	30	50		
1	44	22	13/12/2021	Grey Heron	12:21	out	8		7		
1	44	22	13/12/2021	Grey Heron	12:21	in	10	3	3	4	
3	32	32	13/12/2021	Mallard	13:14	out	30		30		
3	7	41	13/12/2021	Sparrowhawk	13:18	in	20	20			
3	7	46	13/12/2021	Wigeon	13:20	out	10			10	
3	12	30	13/12/2021	Little Egret	13:31	in	60	30	30		
3	32	44	13/12/2021	Whooper Swan	13:39	in	180				180
1	45	22	13/12/2021	Grey Heron	13:41	out	7		7		
1	45	22	13/12/2021	Grey Heron	13:41	in	10	3	3	4	
3	8	41	13/12/2021	Sparrowhawk	13:59	in	5	5			
3	47	14	13/12/2021	Buzzard	15:02	out	5			5	
3	33	44	13/12/2021	Whooper Swan	15:06	in	180			180	
2	33	32	14/12/2021	Mallard	09:40	in	15	10	5		
2	10	36	14/12/2021	Mute Swan	09:43	in	20	20			
2	34	44	14/12/2021	Whooper Swan	09:56	in	15		15		
2	34	32	14/12/2021	Mallard	10:10	in	10	10			
2	23	28	14/12/2021	Lapwing	10:25	in	35	35			
5	13	30	14/12/2021	Little Egret	10:27	out	60			60	

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
5	13	30	14/12/2021	Little Egret	10:28	in	15	5	10		
5	35	44	14/12/2021	Whooper Swan	10:30	out	60			60	
5	14	30	14/12/2021	Little Egret	10:40	out	10		10		
5	14	30	14/12/2021	Little Egret	10:40	in	15	5	10		
5	36	44	14/12/2021	Whooper Swan	10:43	out	20			20	
5	36	44	14/12/2021	Whooper Swan	10:43	in	60	5	5	50	
5	37	44	14/12/2021	Whooper Swan	11:04	out	7			7	
5	37	44	14/12/2021	Whooper Swan	11:04	in	89			89	
5	48	14	14/12/2021	Buzzard	11:30	out	7			7	
5	48	14	14/12/2021	Buzzard	11:30	in	83			83	
2	24	28	14/12/2021	Lapwing	13:41	in	20		20		
2	24	28	14/12/2021	Lapwing	13:41	out	40		40		
5	15	30	14/12/2021	Little Egret	13:56	out	10		10		
5	15	30	14/12/2021	Little Egret	13:56	in	16	5	11		
7	49	14	15/12/2021	Buzzard	10:31	out	15		10	5	
7	16	30	15/12/2021	Little Egret	10:39	in	20		20		
7	50	14	15/12/2021	Buzzard	11:15	in	10		10		
7	49	26	15/12/2021	Kestrel	11:27	in	380		20	360	
7	4	37	15/12/2021	Peregrine	11:30	in	100			100	
4	46	22	15/12/2021	Grey Heron	11:40	out	4		4		
4	46	22	15/12/2021	Grey Heron	11:40	in	11	4	7		
4	51	15	15/12/2021	Buzzard	11:41	in	60		60		
4	5	37	15/12/2021	Peregrine	12:25	out	7		7		
4	5	37	15/12/2021	Peregrine	12:25	in	25		25		
7	3	25	15/12/2021	Hen Harrier	13:30	in	600	500	100		
7	1	34	15/12/2021	Merlin	13:31	in	20	20			
7	52	15	15/12/2021	Buzzard	14:01	in	30		30		
7	17	30	15/12/2021	Little Egret	14:07	in	10	10			
7	12	40	15/12/2021	Snipe	14:15	in	5	5			

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
6	18	30	16/12/2021	Little Egret	09:47	in	10	10			
6	38	44	16/12/2021	Whooper Swan	09:58	in	5	5			
6	39	44	16/12/2021	Whooper Swan	10:07	in	30	30			
6	40	44	16/12/2021	Whooper Swan	10:19	in	20	5	15		
9	19	30	16/12/2021	Little Egret	10:28	in	15	3	12		
6	20	30	16/12/2021	Little Egret	10:33	in	10	10			
6	13	40	16/12/2021	Snipe	10:44	in	4	4			
6	4	25	16/12/2021	Hen Harrier	10:47	in	7	7			
6	9	41	16/12/2021	Sparrowhawk	10:53	in	20		20		
6	41	44	16/12/2021	Whooper Swan	11:07	in	15	5	10		
9	10	18	16/12/2021	Golden Plover	11:13	in	45	5	10	30	
9	11	18	16/12/2021	Golden Plover	11:50	out	7				7
9	11	18	16/12/2021	Golden Plover	11:50	in	233			233	
6	53	15	16/12/2021	Buzzard	11:57	in	130	30	100		
6	8	42	16/12/2021	Teal	12:03	in	3	3			
6	42	44	16/12/2021	Whooper Swan	12:20	in	30	15	15		
6	43	44	16/12/2021	Whooper Swan	12:29	in	20	10	10		
6	44	44	16/12/2021	Whooper Swan	12:29	in	60	40	20		
9	12	18	16/12/2021	Golden Plover	14:01	in	5	2	3		
8	10	41	27/12/2021	Sparrowhawk	09:40	in	20	20			
8	11	41	27/12/2021	Sparrowhawk	09:57	in	30			30	
10	21	30	27/12/2021	Little Egret	10:43	out	5	5			
10	21	30	27/12/2021	Little Egret	10:43	in	8	8			
10	13	18	27/12/2021	Golden Plover	10:47	in	15	5	10		
10	1	23	27/12/2021	Greylag Goose	12:25	in	20			20	
10	1	23	27/12/2021	Greylag Goose	12:25	out	7			7	
8	2	34	27/12/2021	Merlin	14:27	in	40	10	30		
11	14	18	28/12/2021	Golden Plover	09:22	in	30	10	20		
11	25	28	28/12/2021	Lapwing	10:57	in	60	10		50	

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
11	15	18	28/12/2021	Golden Plover	11:09	in	20				
11	16	18	28/12/2021	Golden Plover	11:40	in	30			30	
11	5	25	28/12/2021	Hen Harrier	11:47	in	10	10			
11	3	34	28/12/2021	Merlin	11:49	in	15	15			
11	17	18	28/12/2021	Golden Plover	12:09	in	11			11	
7	4	34	06/01/2022	Merlin	10:36	out	10	10			
7	4	34	06/01/2022	Merlin	10:36	in	50	50			
1	26	28	07/01/2022	Lapwing	09:35	in	10		10		
1	45	44	07/01/2022	Whooper Swan	09:37	in	20		20	20	
1	18	18	07/01/2022	Golden Plover	09:44	in	20				
1	8	46	07/01/2022	Wigeon	10:16	in	30		30		
1	35	32	07/01/2022	Mallard	10:40	in	10	10			
1	9	42	07/01/2022	Teal	11:00	in	5	5			
1	27	28	07/01/2022	Lapwing	11:16	in	30			30	
1	6	37	07/01/2022	Peregrine	11:27	in	180				180
1	36	32	07/01/2022	Mallard	11:45	in	5		5		
1	54	15	07/01/2022	Buzzard	14:10	in	20		20		
1	46	45	07/01/2022	Whooper Swan	14:19	in	10		10		
1	10	42	07/01/2022	Teal	15:11	in	10	10			
1	28	28	07/01/2022	Lapwing	15:47	in	20	10	10		
8	47	45	11/01/2022	Whooper Swan	10:15	in	7			7	
8	47	45	11/01/2022	Whooper Swan	10:15	out	10			10	
8	6	25	11/01/2022	Hen Harrier	13:24	in	13			13	
9	48	45	12/01/2022	Whooper Swan	10:35	in	55				55
9	49	45	12/01/2022	Whooper Swan	10:50	in	10	10			
9	50	45	12/01/2022	Whooper Swan	13:13	in	35	5	10	10	
9	50	45	12/01/2022	Whooper Swan	13:13	out	10			10	
9	11	36	12/01/2022	Mute Swan	14:23	in	7	3			
2	30	29	17/01/2022	Lapwing	03:23	in	30		30		

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
10	19	18	17/01/2022	Golden Plover	09:45	in	15	5	5	5	
2	47	22	17/01/2022	Grey Heron	09:46	in	5	5			
2	29	28	17/01/2022	Lapwing	09:55	in	30		30		
10	7	25	17/01/2022	Hen Harrier	11:08	in	72	62	5	5	
10	7	25	17/01/2022	Hen Harrier	11:09	out	6		2	4	
10	20	18	17/01/2022	Golden Plover	11:09	in	13	2	2	4	
10	20	18	17/01/2022	Golden Plover	11:09	out	7	2	2	3	
2	12	36	17/01/2022	Mute Swan	11:13	in	40		40		
10	22	30	17/01/2022	Little Egret	11:24	in	14	6	8		
2	23	30	17/01/2022	Little Egret	11:33	in	30		30		
10	8	25	17/01/2022	Hen Harrier	11:53	in	78	69	5		
10	8	25	17/01/2022	Hen Harrier	11:53	out	4		4		
2	48	22	17/01/2022	Grey Heron	13:10	in	20	20			
10	50	26	17/01/2022	Kestrel	13:36	in	5	5			
2	12	41	17/01/2022	Sparrowhawk	14:13	in	10	10			
3	51	45	18/01/2022	Whooper Swan	09:57	in	30			30	
3	9	46	18/01/2022	Wigeon	11:19	in	15		15		
11	51	27	18/01/2022	Kestrel	11:30	out	5			5	
11	51	27	18/01/2022	Kestrel	11:30	in	25	5	5	15	
3	52	27	18/01/2022	Kestrel	14:44	in	30		30		
4	24	30	24/01/2022	Little Egret	10:03	in	20	20			
4	25	30	24/01/2022	Little Egret	11:33	in	40	20	20		
6	13	41	24/01/2022	Sparrowhawk	11:58	out	4		4		
6	13	41	24/01/2022	Sparrowhawk	11:58	in	28		28		
6	55	15	24/01/2022	Buzzard	11:59	out	6		6		
6	55	15	24/01/2022	Buzzard	11:59	in	26		26		
4	14	41	24/01/2022	Sparrowhawk	12:05	in	80			80	
6	56	15	24/01/2022	Buzzard	13:40	out	4		4		
6	56	15	24/01/2022	Buzzard	13:43	in	180		180		

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
6	5	34	24/01/2022	Merlin	13:43	in	3	3			
6	5	34	24/01/2022	Merlin	13:43	out	5		5		
5	52	45	25/01/2022	Whooper Swan	09:33	in	20	20			
5	11	42	25/01/2022	Teal	09:36	in	10	10			
5	53	27	25/01/2022	Kestrel	10:33	in	20	20			
1	21	19	01/02/2022	Golden Plover	09:35	out	10	10			
1	31	29	01/02/2022	Lapwing	09:35	out	30	10	20		
1	22	19	01/02/2022	Golden Plover	09:45	out	40			40	
1	53	45	01/02/2022	Whooper Swan	09:53	in	60			60	
1	23	19	01/02/2022	Golden Plover	09:57	out	60			60	
1	32	29	01/02/2022	Lapwing	09:57	out	80		40	40	
1	37	32	01/02/2022	Mallard	09:58	out	30		30		
1	12	42	01/02/2022	Teal	09:58	out	10	10			
1	10	46	01/02/2022	Wigeon	09:59	out	30	10	20		
1	54	45	01/02/2022	Whooper Swan	10:17	out	30		30		
1	24	19	01/02/2022	Golden Plover	10:35	out	20			20	
1	25	19	01/02/2022	Golden Plover	10:47	out	10	10			
1	33	29	01/02/2022	Lapwing	10:55	out	30				
1	26	19	01/02/2022	Golden Plover	11:30	out	300			300	
1	1	13	01/02/2022	Black-tailed Godwit	11:34	out	20		20		
10	38	32	01/02/2022	Mallard	11:39	in	32	16	16		
10	38	32	01/02/2022	Mallard	11:39	out	6		6		
1	1	38	01/02/2022	Pintail	12:12	out	20		20		
1	1	38	01/02/2022	Pintail	12:12	in	10	10			
1	39	32	01/02/2022	Mallard	12:24	out	15		15		
10	49	22	01/02/2022	Grey Heron	13:21	in	29		29		
10	49	22	01/02/2022	Grey Heron	13:21	out	11		11		
10	40	32	01/02/2022	Mallard	13:22	in	5	2	3		
10	40	32	01/02/2022	Mallard	13:22	out	9		9		

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
3	54	27	02/02/2022	Kestrel	09:57	in	30		30		
7	55	27	02/02/2022	Kestrel	10:25	in	24	24			
7	13	36	02/02/2022	Mute Swan	10:41	out	11				
7	13	36	02/02/2022	Mute Swan	10:41	in	16	16			
7	7	37	02/02/2022	Peregrine	11:08	in	28		28		
7	7	37	02/02/2022	Peregrine	11:09	out	17		17		
7	56	27	02/02/2022	Kestrel	11:11	in	23	5	18		
3	55	45	02/02/2022	Whooper Swan	11:14	in	20			20	
3	14	36	02/02/2022	Mute Swan	11:19	in	40		40		
7	57	27	02/02/2022	Kestrel	14:27	in	72	8	64		
2	15	36	03/02/2022	Mute Swan	09:57	in	40	10	30		
2	41	32	03/02/2022	Mallard	10:01	in	20		20		
2	41	32	03/02/2022	Mallard	10:01	out	30		30		
2	42	32	03/02/2022	Mallard	10:05	out	20	5	15		
2	34	29	03/02/2022	Lapwing	10:56	in	40			40	
2	50	22	03/02/2022	Grey Heron	10:59	in	10	10			
2	35	29	03/02/2022	Lapwing	11:18	in	60	20	40		
2	14	40	03/02/2022	Snipe	11:24	in	15	5	10		
2	9	25	03/02/2022	Hen Harrier	11:25	in	30	30			
2	57	15	03/02/2022	Buzzard	13:03	in	20		20		
2	15	40	03/02/2022	Snipe	14:24	in	20		20		
2	51	22	03/02/2022	Grey Heron	14:26	in	50		50		
11	43	32	08/02/2022	Mallard	10:39	in	6	6			
11	44	32	08/02/2022	Mallard	11:38	in	73	7	22	13	31
11	44	32	08/02/2022	Mallard	11:39	out	5				5
9	16	36	09/02/2022	Mute Swan	10:57	in	185		185		
9	58	15	09/02/2022	Buzzard	11:48	in	97		97		
9	58	15	09/02/2022	Buzzard	11:49	out	6		6		
8	52	22	14/02/2022	Grey Heron	11:26	in	19	19			

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
6	59	15	25/02/2022	Buzzard	09:35	out	7	7			
6	59	15	25/02/2022	Buzzard	09:35	in	32	26	6		
6	17	36	25/02/2022	Mute Swan	09:41	in	6	6			
6	56	45	25/02/2022	Whooper Swan	09:41	in	8	8			
6	57	45	25/02/2022	Whooper Swan	10:25	in	12	12			
5	60	15	25/02/2022	Buzzard	10:48	in	80		20	60	
6	58	45	25/02/2022	Whooper Swan	11:12	in	60	60			
6	61	15	25/02/2022	Buzzard	11:35	in	28			28	
6	61	15	25/02/2022	Buzzard	11:35	out	12			12	
5	61	15	25/02/2022	Buzzard	11:36	in	300		100	200	
6	59	45	25/02/2022	Whooper Swan	11:54	in	88	88			
5	58	27	25/02/2022	Kestrel	12:06	in	50			50	
5	62	15	25/02/2022	Buzzard	12:53	in	100			100	
5	27	19	25/02/2022	Golden Plover	12:58	in	80			80	
5	36	29	25/02/2022	Lapwing	12:58	in	60		60		
6	37	29	25/02/2022	Lapwing	14:05	in	28	5	23		
6	26	30	25/02/2022	Little Egret	14:14	in	15	5	25		
6	26	30	25/02/2022	Little Egret	14:14	out	12		12		
6	63	15	25/02/2022	Buzzard	15:10	out	22			22	
6	63	15	25/02/2022	Buzzard	15:11	in	73			73	
4	38	29	28/02/2022	Lapwing	09:40	in	30		30		
4	64	15	28/02/2022	Buzzard	09:42	in	60			60	
4	39	29	28/02/2022	Lapwing	11:00	in	100		10	90	
4	28	19	28/02/2022	Golden Plover	12:00	in	60			60	
4	13	42	28/02/2022	Teal	12:04	in	15		15		
4	27	30	28/02/2022	Little Egret	12:05	in	10		10		
4	16	40	28/02/2022	Snipe	12:09	in	30		30		
4	59	27	28/02/2022	Kestrel	14:00	In	100	10	90		
1	1	17	02/03/2022	Curlew	09:33	in	15		15		

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
1	11	46	02/03/2022	Wigeon	09:40	in	30		30		
9	60	45	02/03/2022	Whooper Swan	09:43	in	19	19			
1	45	32	02/03/2022	Mallard	09:46	in	60			60	
1	14	42	02/03/2022	Teal	10:05	in	5	5			
1	40	29	02/03/2022	Lapwing	10:11	in	5	5			
9	61	45	02/03/2022	Whooper Swan	10:31	in	56	9	47		
9	29	19	02/03/2022	Golden Plover	10:48	in	142	5	5	114	
9	29	19	02/03/2022	Golden Plover	10:51	out	18			18	
1	46	32	02/03/2022	Mallard	11:02	in	10		10		
1	30	19	02/03/2022	Golden Plover	11:09	in	100			100	
9	31	19	02/03/2022	Golden Plover	11:09	in	98			98	
9	18	36	02/03/2022	Mute Swan	11:25	in	38		38		
1	60	27	02/03/2022	Kestrel	11:42	in	50	10	10	30	
9	61	27	02/03/2022	Kestrel	11:48	in	64	64			
1	41	29	02/03/2022	Lapwing	13:01	out	20			20	
1	42	29	02/03/2022	Lapwing	13:01	out	20			20	
1	32	19	02/03/2022	Golden Plover	13:03	out	30		30		
1	33	19	02/03/2022	Golden Plover	13:03	out	30		30		
1	12	46	02/03/2022	Wigeon	13:19	in	20			20	
1	13	46	02/03/2022	Wigeon	13:19	in	20			20	
1	14	46	02/03/2022	Wigeon	13:30	in	100			100	
1	15	46	02/03/2022	Wigeon	13:30	in	100			100	
1	43	29	02/03/2022	Lapwing	13:44	out	25		25		
1	44	29	02/03/2022	Lapwing	13:44	out	25		25		
1	1	39	02/03/2022	Shoveler	13:45	in	10	10			
1	53	22	02/03/2022	Grey Heron	13:53	out	40			40	
1	54	22	02/03/2022	Grey Heron	13:53	out	40			40	
2	62	45	07/03/2022	Whooper Swan	10:37	in	60			60	
7	62	27	07/03/2022	Kestrel	10:57	in	337	337			

VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
7	55	22	07/03/2022	Grey Heron	13:16	in	12	4	8		
2	45	29	07/03/2022	Lapwing	14:16	in	20			20	
4	47	32	08/03/2022	Mallard	10:21	in	10	10			
4	48	32	08/03/2022	Mallard	10:42	in	30			30	
4	63	45	08/03/2022	Whooper Swan	11:51	in	60	10	30	20	
4	63	45	08/03/2022	Whooper Swan	11:51	out	30			30	
4	15	42	08/03/2022	Teal	11:57	in	5	5			
4	49	32	08/03/2022	Mallard	12:04	in	10	10			
5	34	19	15/03/2022	Golden Plover	09:51	in	30		30		
5	50	32	15/03/2022	Mallard	10:09	in	40			40	
5	65	15	15/03/2022	Buzzard	10:39	in	80		10	70	
5	46	29	15/03/2022	Lapwing	10:39	in	10			10	
5	63	27	15/03/2022	Kestrel	10:40	in	40			40	
5	28	30	15/03/2022	Little Egret	10:56	in	20		20		
5	29	30	15/03/2022	Little Egret	10:57	in	30		30		
10	51	32	15/03/2022	Mallard	11:05	in	12			12	
10	51	32	15/03/2022	Mallard	11:05	out	15			15	
5	52	32	15/03/2022	Mallard	11:42	in	10		10		
5	47	29	15/03/2022	Lapwing	11:42	in	10	10			
10	66	15	15/03/2022	Buzzard	11:57	out	23			23	
10	66	15	15/03/2022	Buzzard	11:57	in	32		32		
10	66	15	15/03/2022	Buzzard	11:59	out	18		18		
5	35	19	15/03/2022	Golden Plover	13:21	in	50			50	
5	48	29	15/03/2022	Lapwing	13:23	in	15		15		
3	1	33	16/03/2022	Marsh Harrier	09:50	in	100	100			
3	49	29	16/03/2022	Lapwing	09:51	in	20		20		
3	30	30	16/03/2022	Little Egret	09:51	in	30		30		
3	53	32	16/03/2022	Mallard	09:51	in	15		15		
3	36	19	16/03/2022	Golden Plover	10:01	in	40			40	

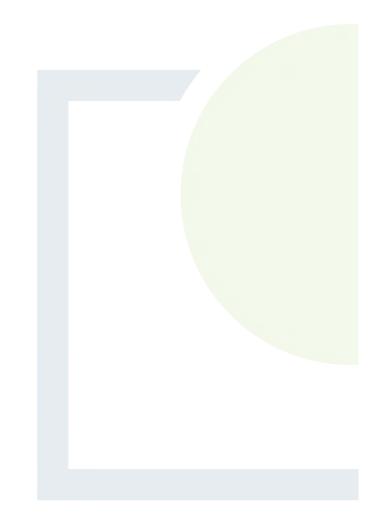
VP no.	Flightline Number	Flightline Map	Date	Species	Time of Obs.	Inside/outsid e Buffer	Total Duration (s)	0-30m (s)	30 - 50m (s)	50-185m (s)	>185m (s)
3	67	15	16/03/2022	Buzzard	10:03	out	25				25
3	56	22	16/03/2022	Grey Heron	10:16	in	30	5	5	20	
6	68	15	16/03/2022	Buzzard	10:59	in	35			35	
6	68	15	16/03/2022	Buzzard	10:59	out	8			8	
6	69	15	16/03/2022	Buzzard	11:22	out	12				12
6	69	15	16/03/2022	Buzzard	11:22	in	32				32
3	10	25	16/03/2022	Hen Harrier	11:28	in	20	10	10		
3	8	37	16/03/2022	Peregrine	11:28	in	30			10	20
6	11	25	16/03/2022	Hen Harrier	11:35	out	7			7	
6	11	25	16/03/2022	Hen Harrier	11:36	in	42			42	
6	9	37	16/03/2022	Peregrine	12:24	out	5		5		
6	9	37	16/03/2022	Peregrine	12:24	in	23		23		
3	70	15	16/03/2022	Buzzard	13:02	in	30		30		
6	15	41	16/03/2022	Sparrowhawk	13:05	out	3		3		
6	15	41	16/03/2022	Sparrowhawk	13:05	in	28		8	20	
3	16	41	16/03/2022	Sparrowhawk	13:09	in	30		30		
3	16	41	16/03/2022	Sparrowhawk	13:09	out	20		20		
3	19	36	16/03/2022	Mute Swan	13:19	in	10		10		
3	57	22	16/03/2022	Grey Heron	15:14	in	25		25		
3	54	32	16/03/2022	Mallard	15:30	in	35		35		
11	37	19	28/03/2022	Golden Plover	10:10	in	20		20		
11	58	22	28/03/2022	Grey Heron	10:50	in	40	10	30		
11	20	36	28/03/2022	Mute Swan	10:52	in	30				30
11	71	15	28/03/2022	Buzzard	11:16	in	500		200	300	
11	64	27	28/03/2022	Kestrel	13:03	in	70	50	20		
	55	32	28/03/2022	Mallard	13:36	in	10	10			

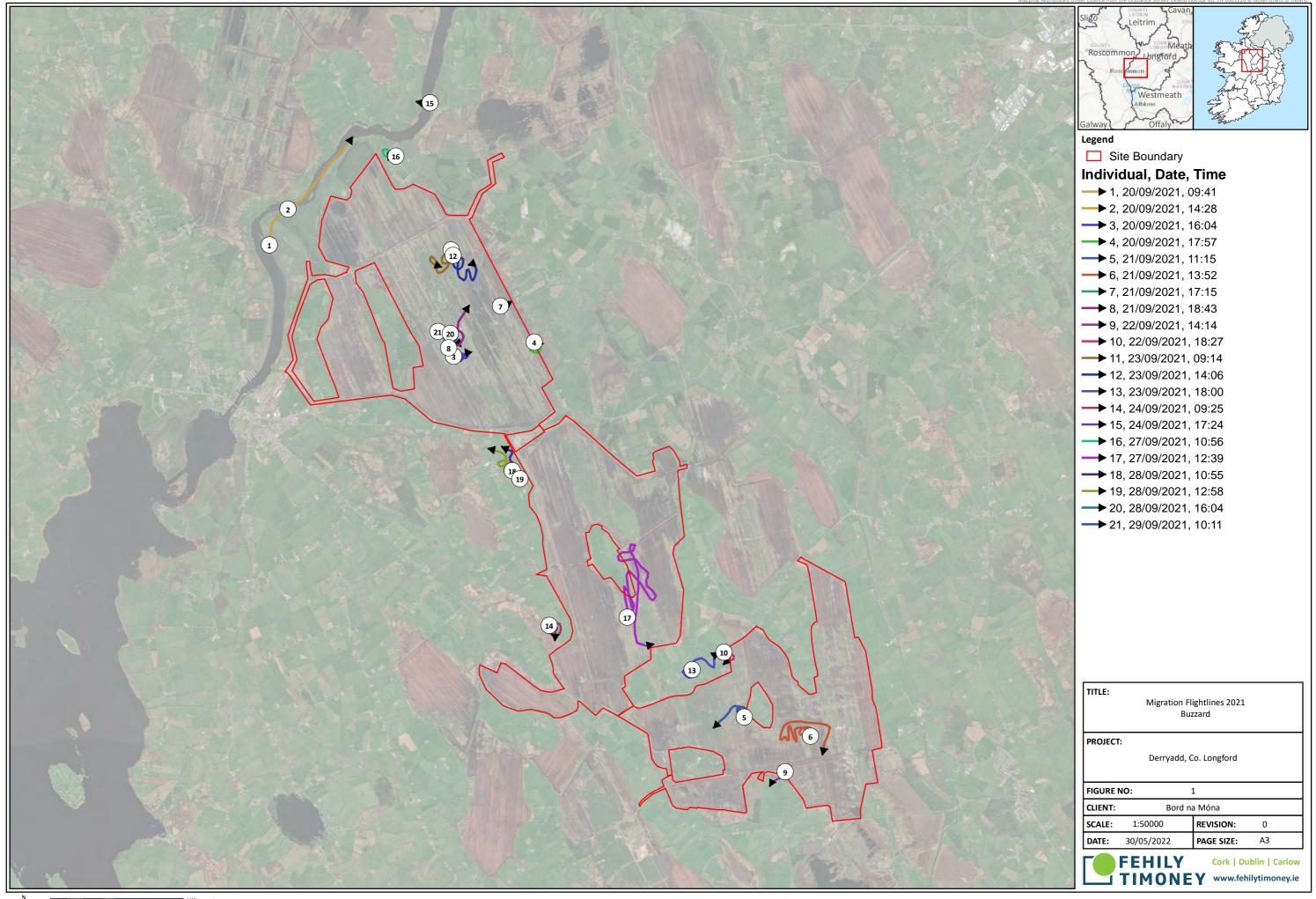


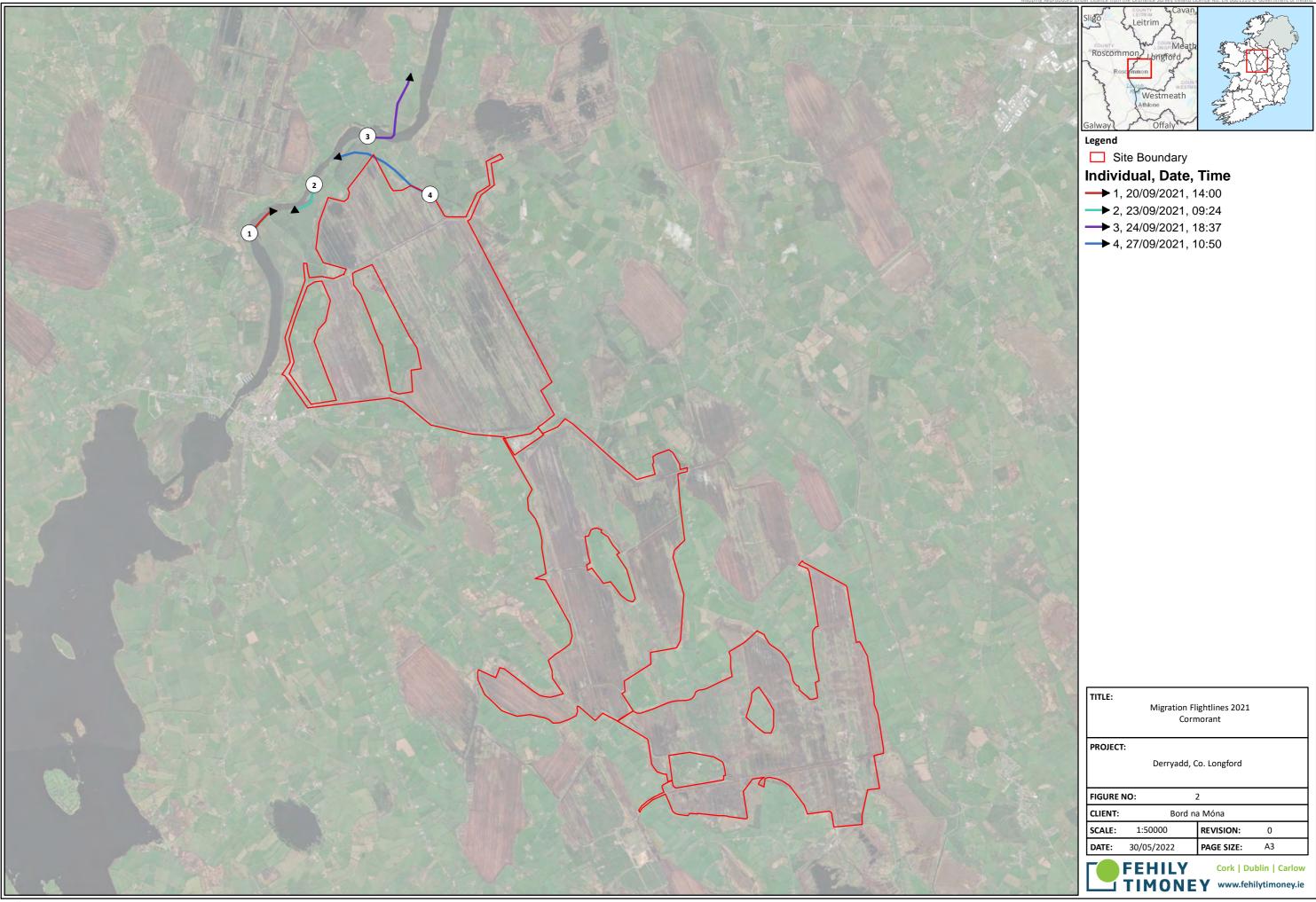
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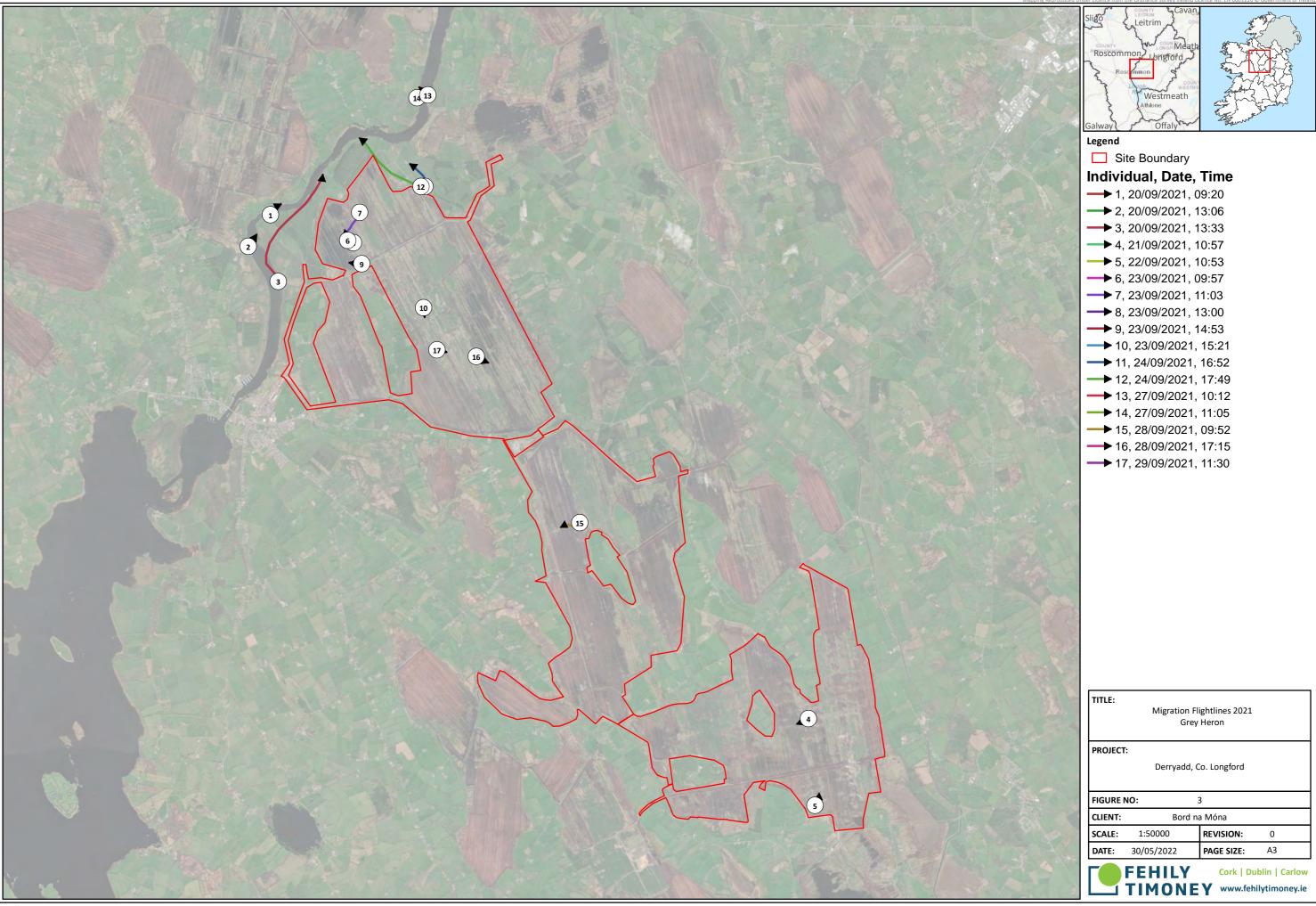
APPENDIX 3

Target Species Flight Line Maps









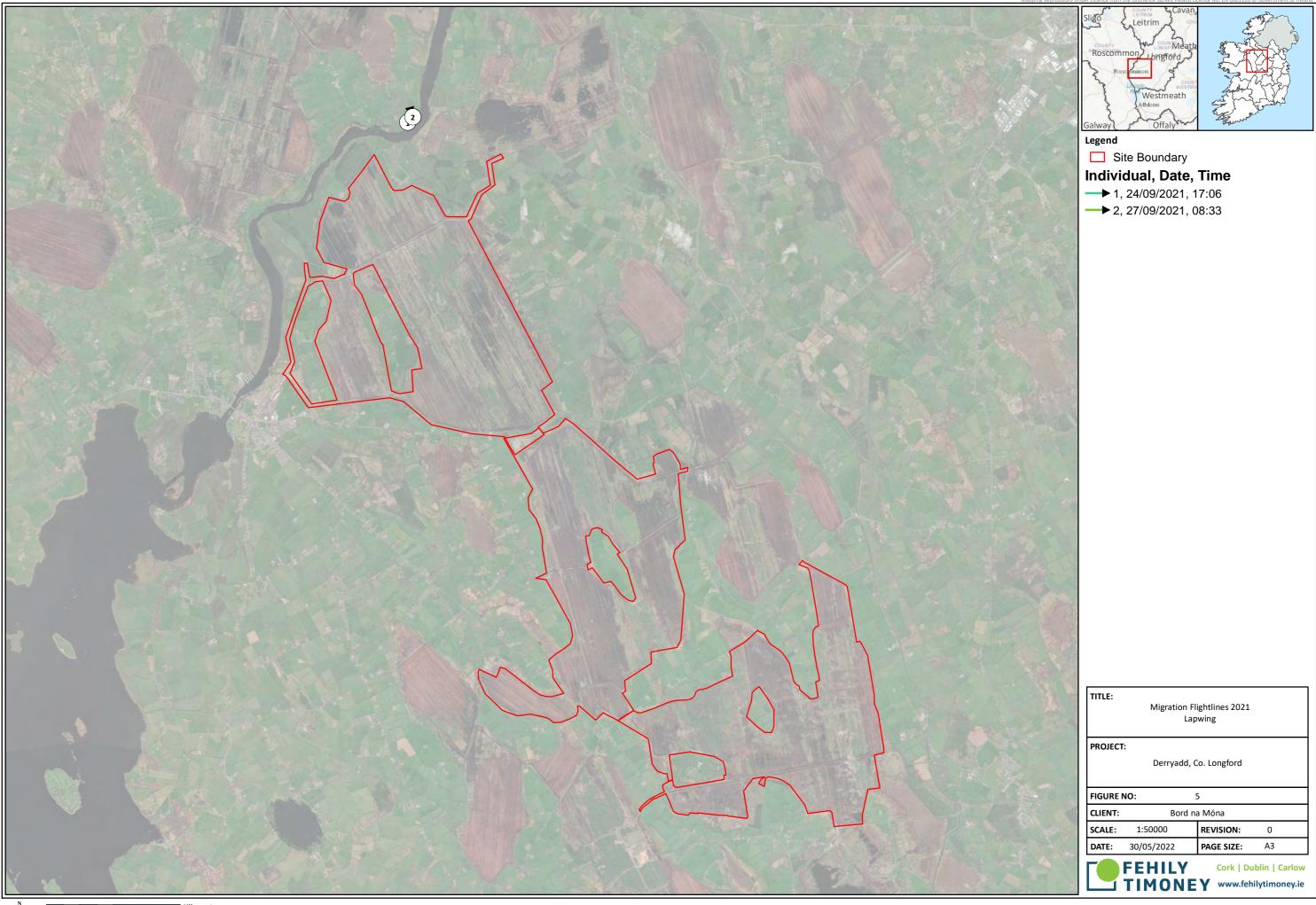
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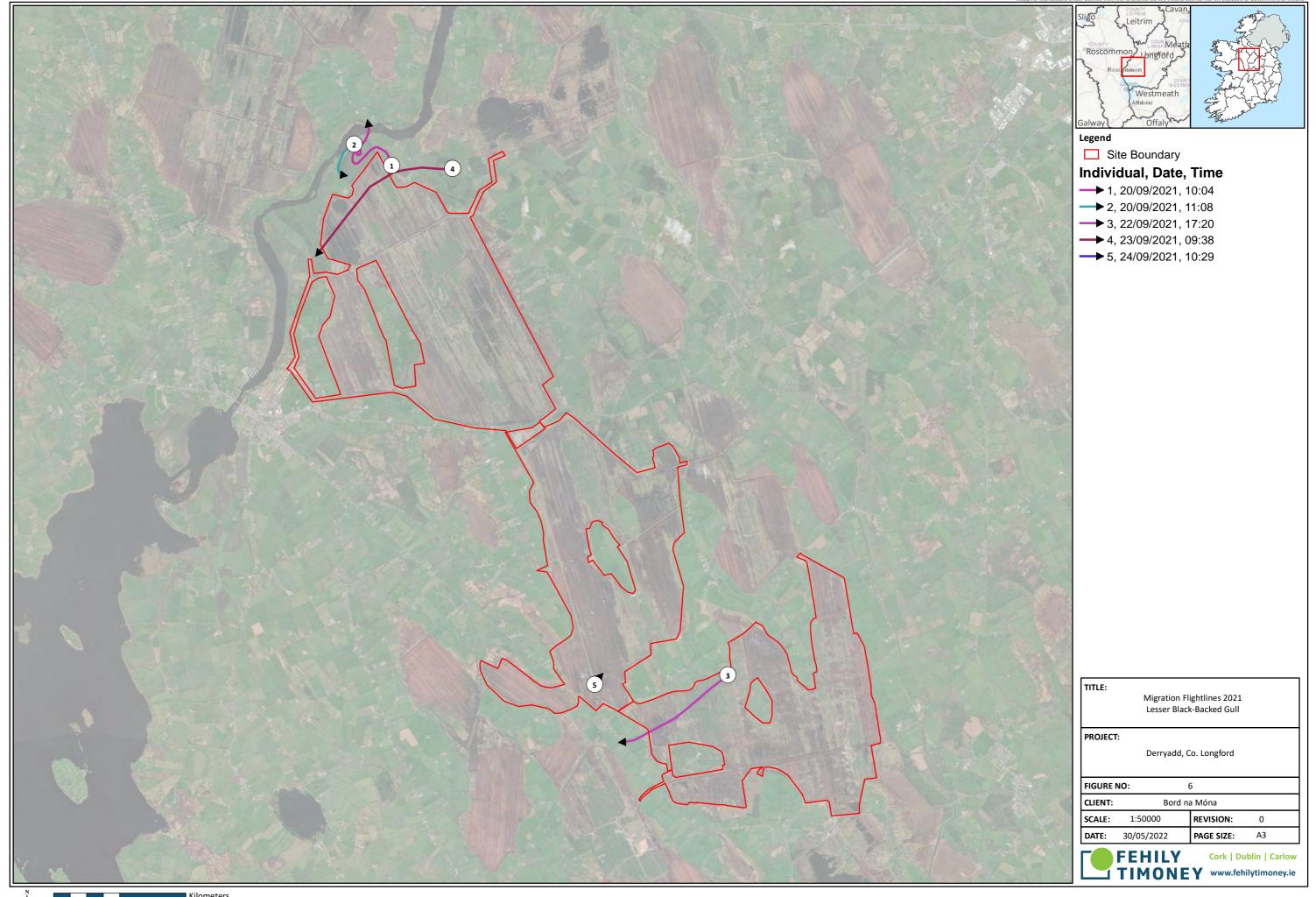
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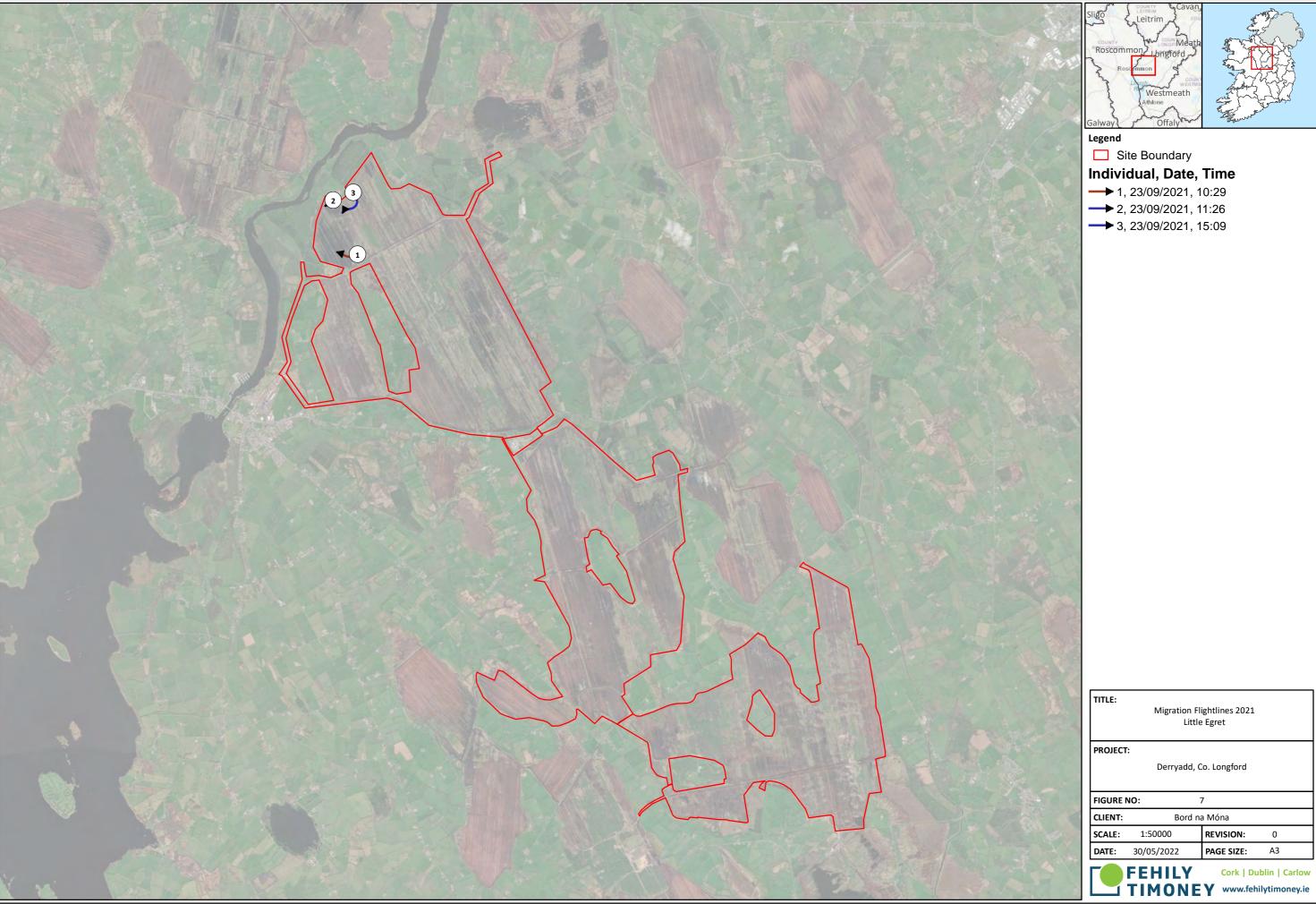
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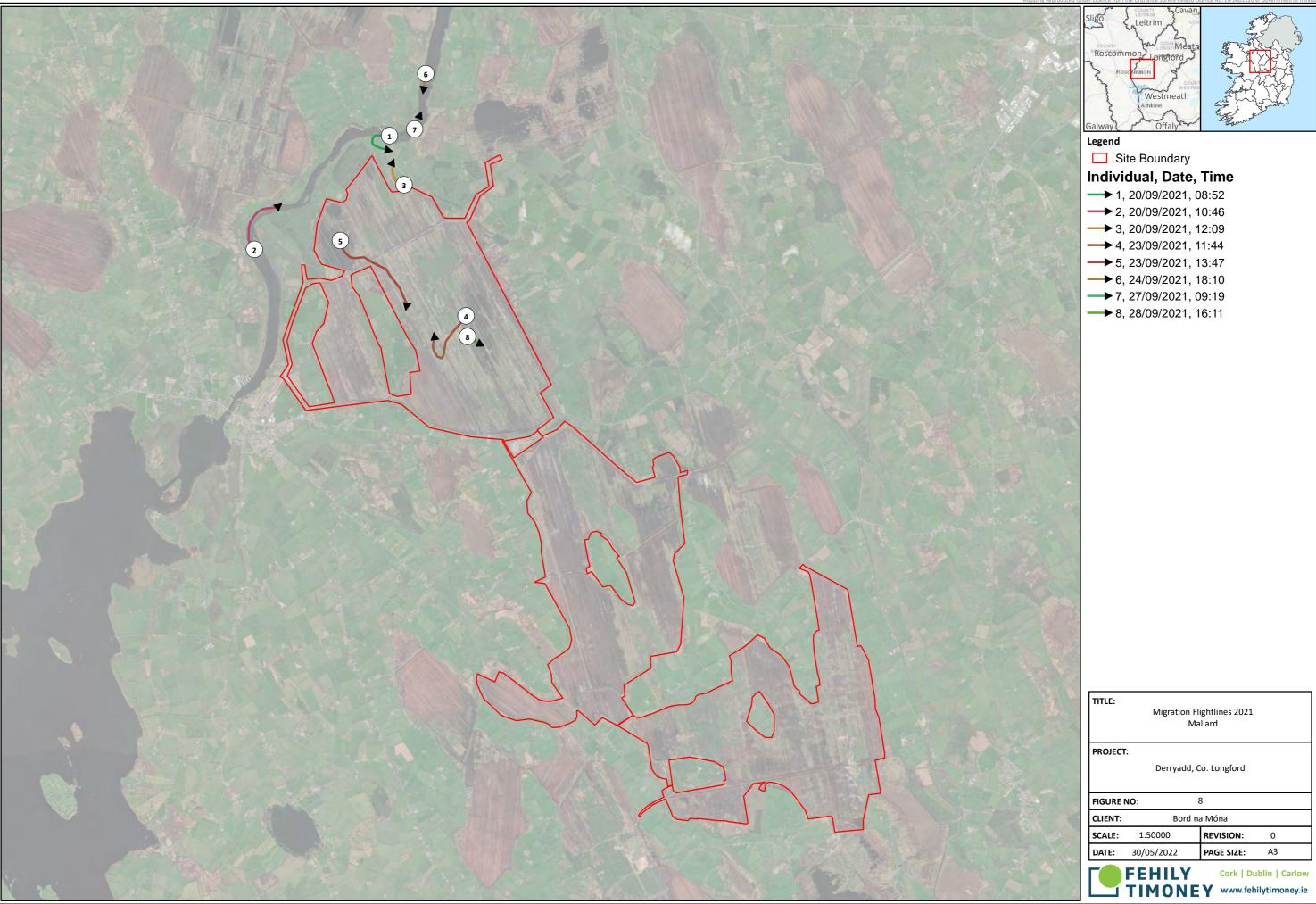
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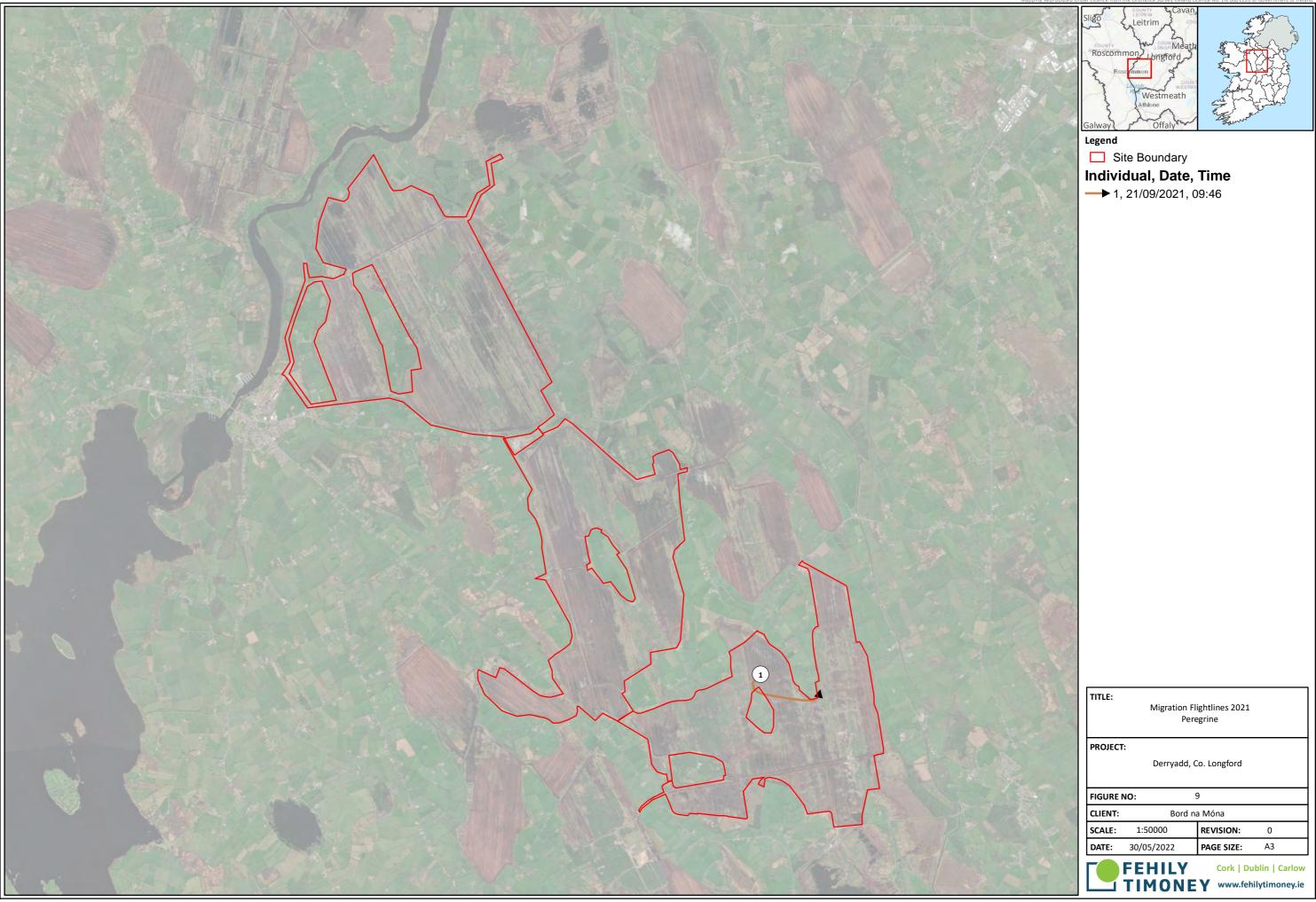




w E 0 0.5 1 2



W E 0 0.5 1 2 Kilomet





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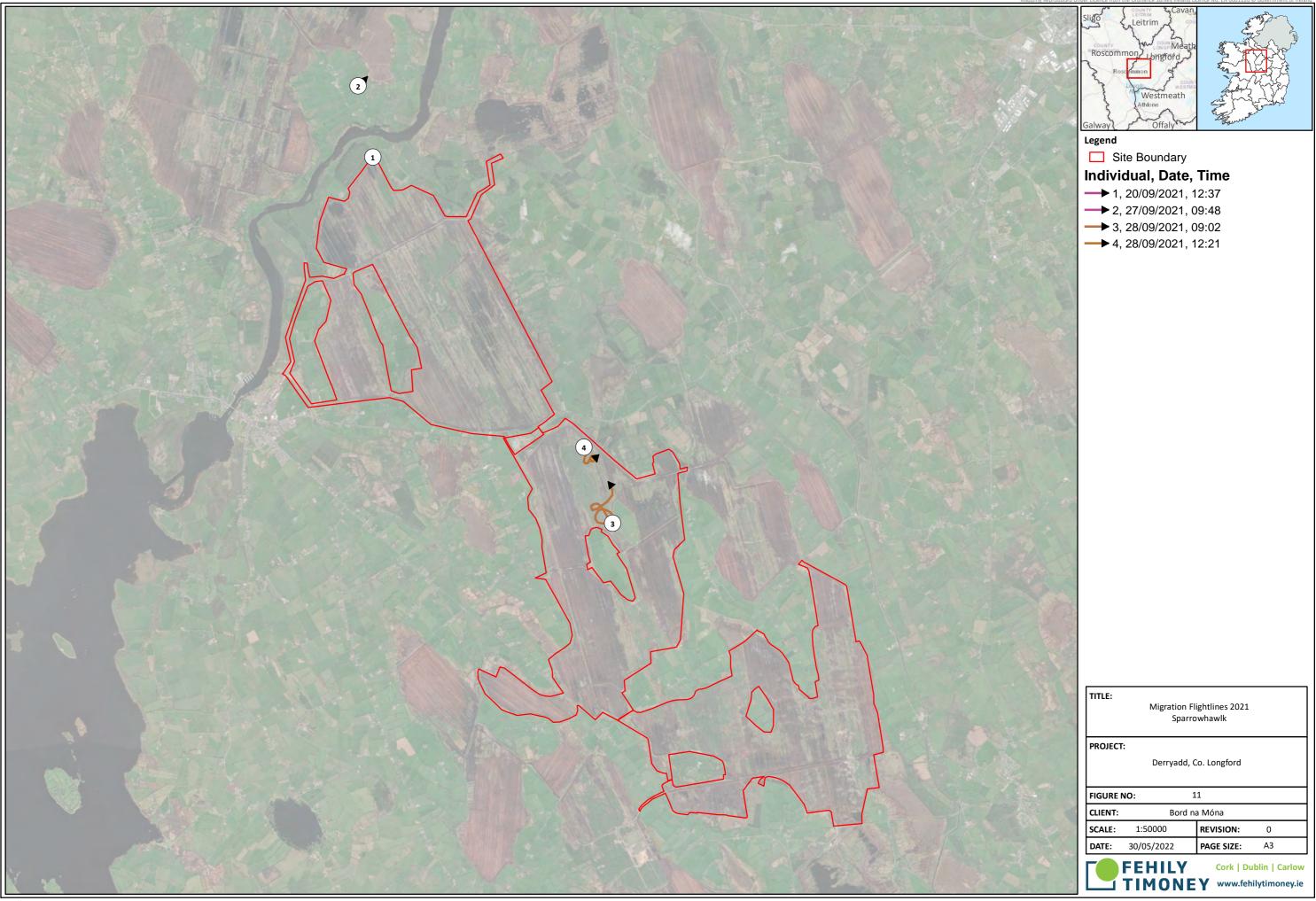
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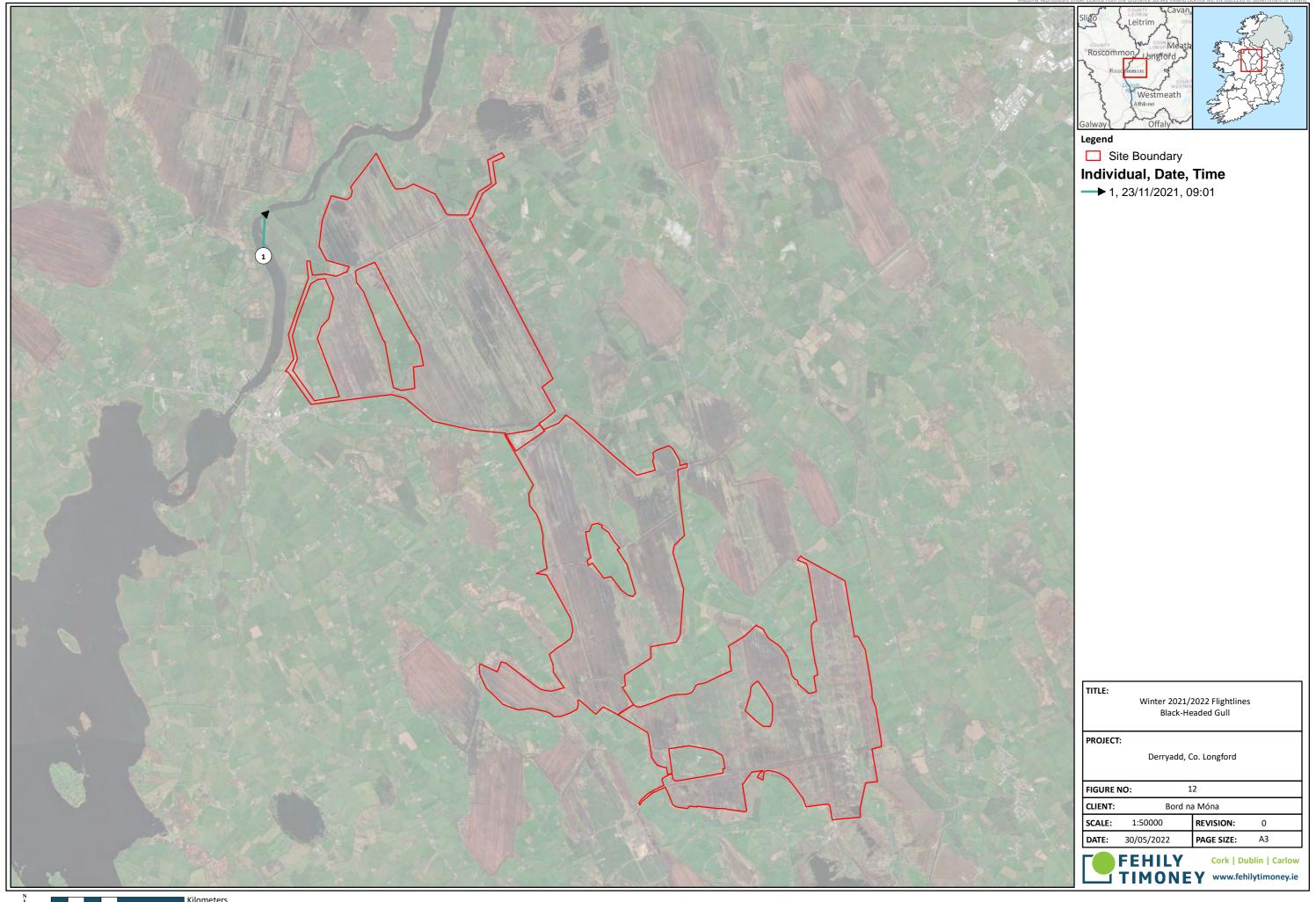
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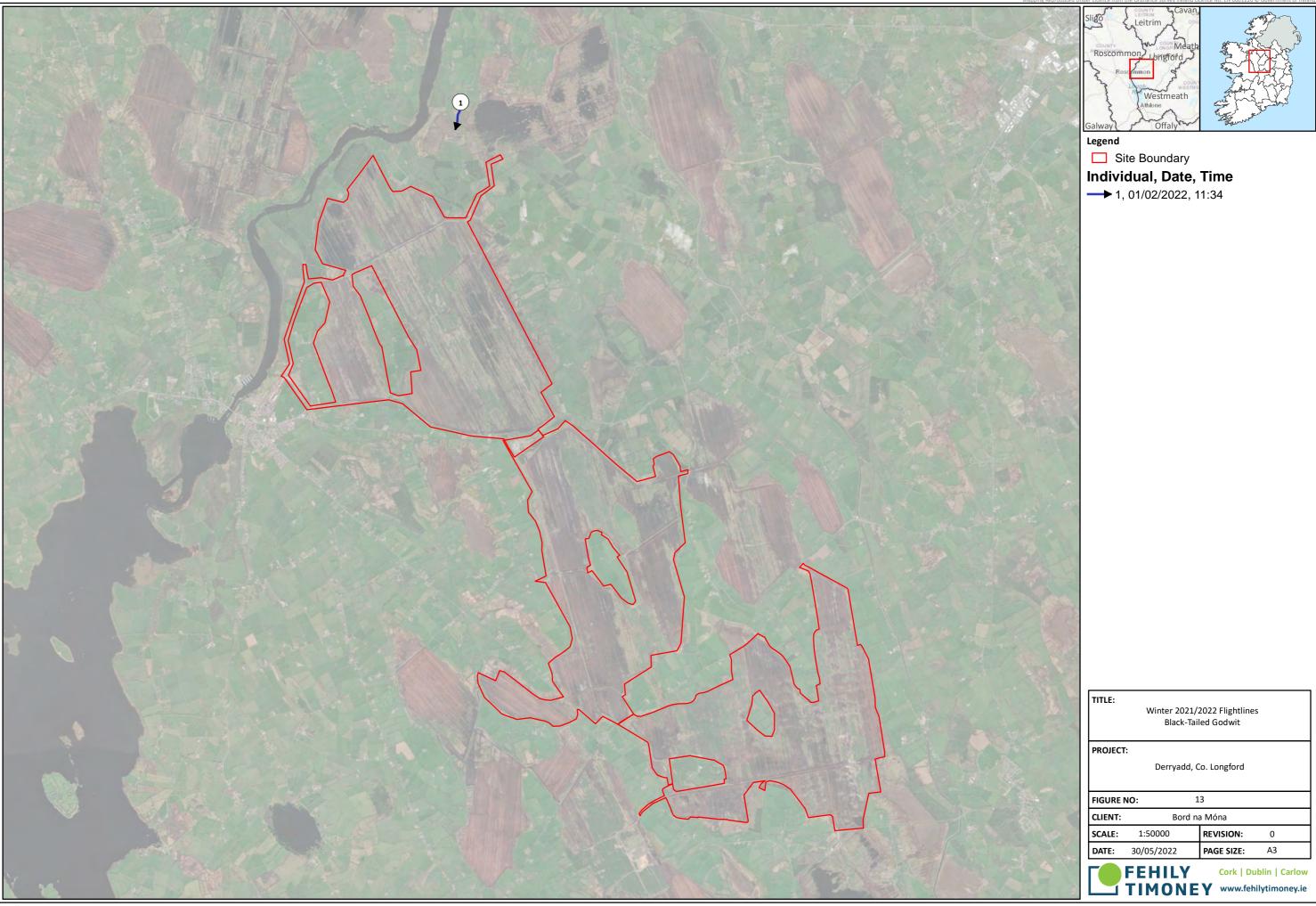
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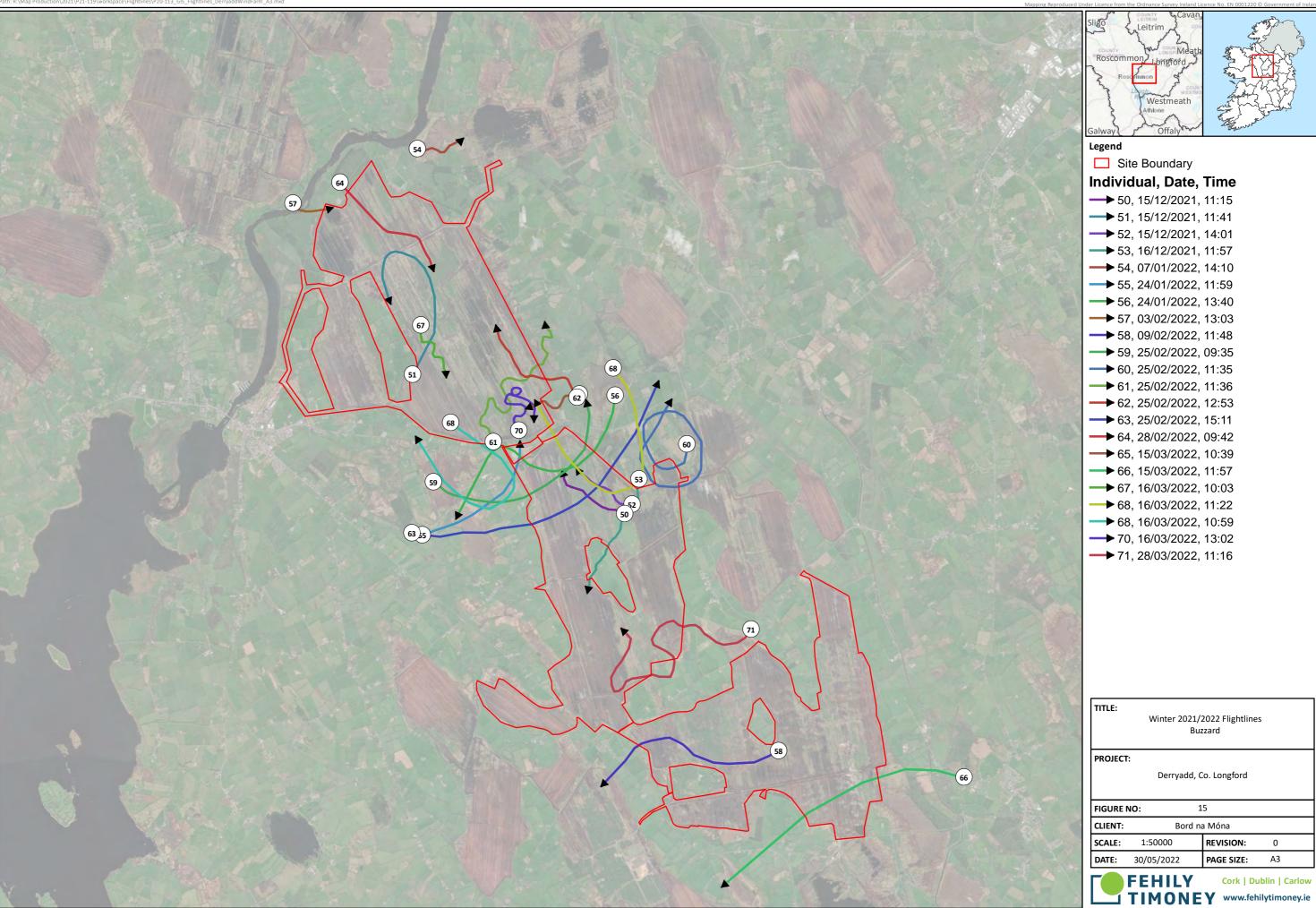


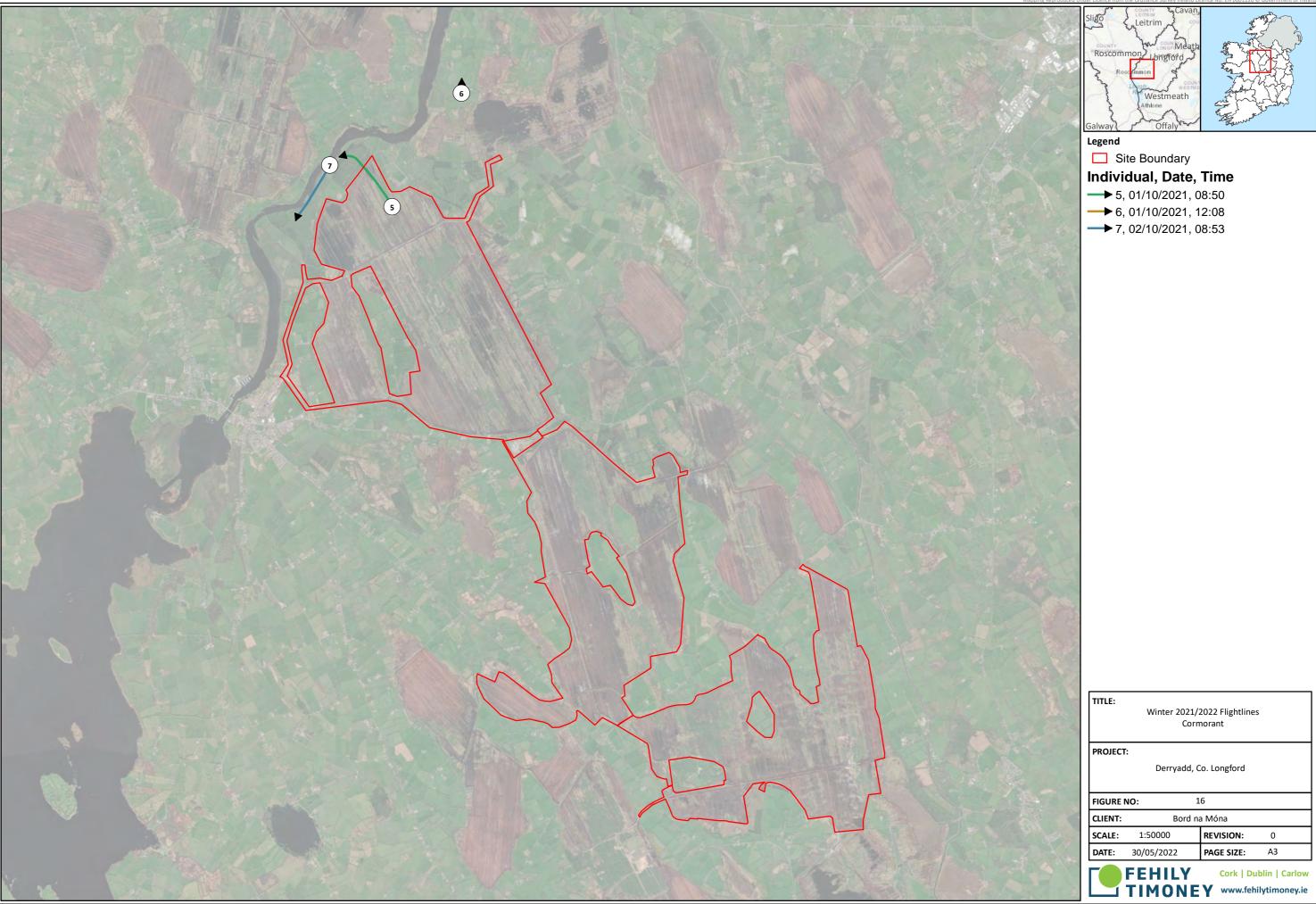
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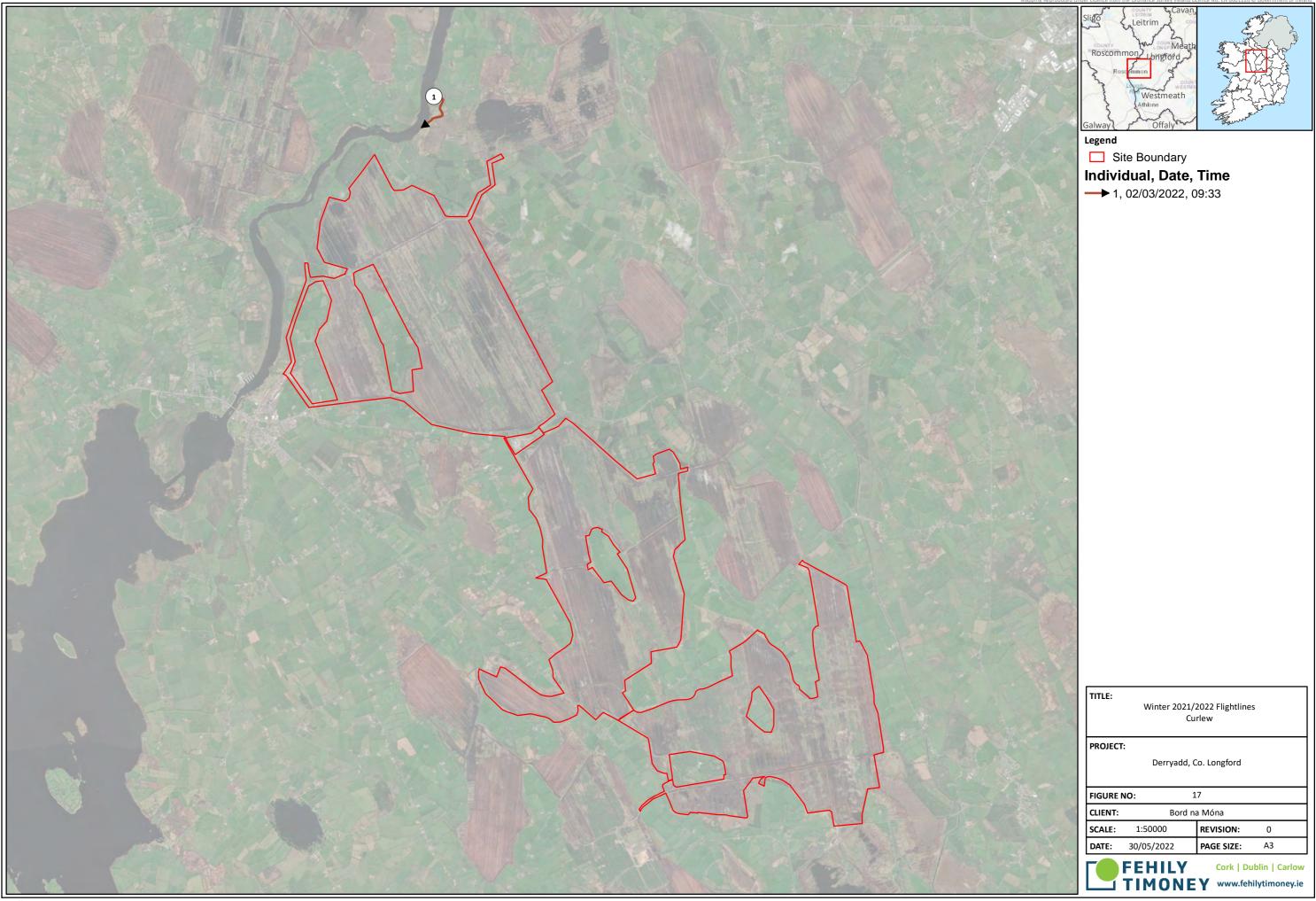


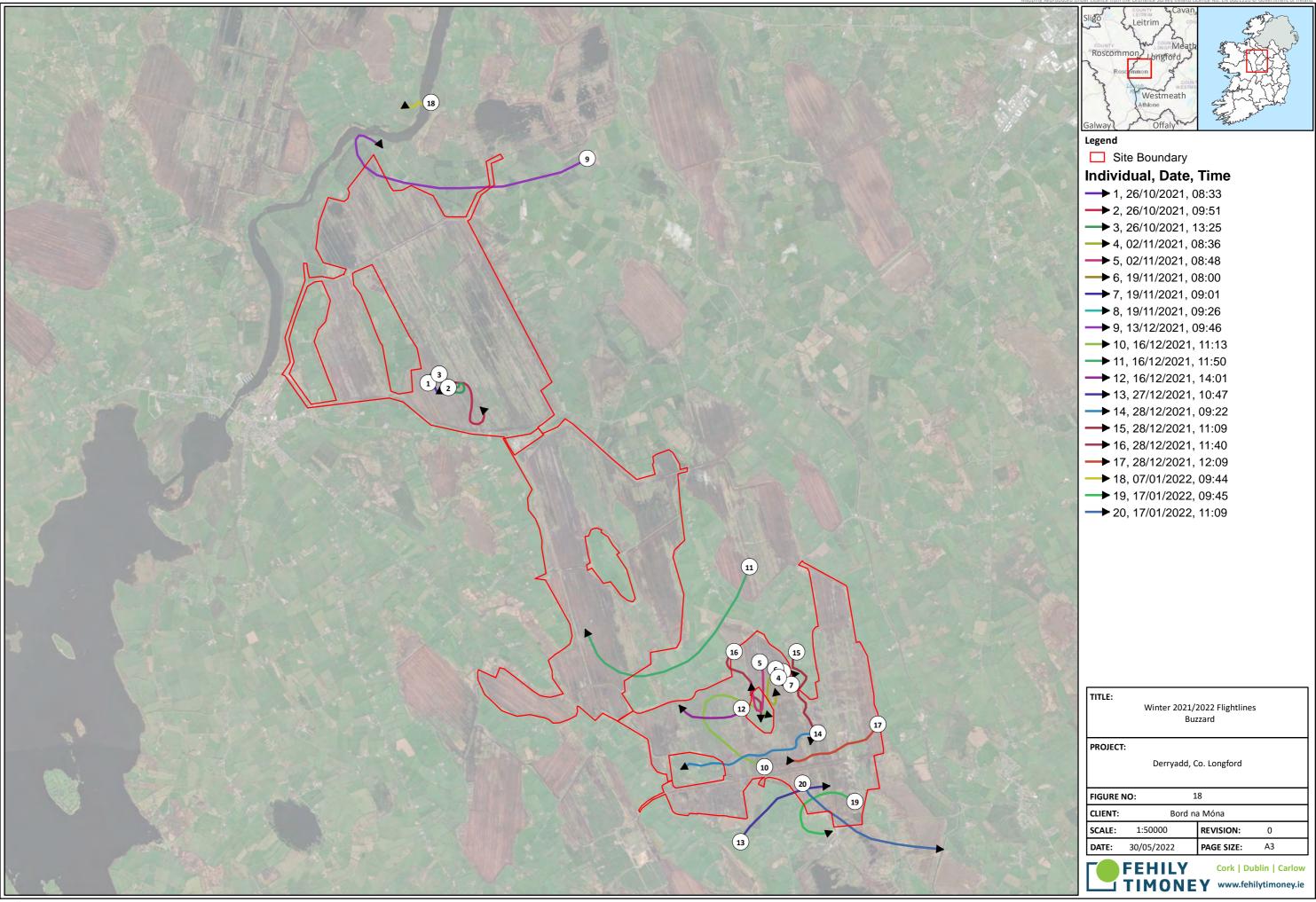


41 42 Legend Site Boundary Individual, Date, Time **22**, 01/10/2021, 09:22 **→** 23, 01/10/2021, 12:30 **2**4, 01/10/2021, 16:40 **→** 25, 02/10/2021, 08:35 25 → 26, 02/10/2021, 15:55 **27**, 03/10/2021, 09:18 **28**, 03/10/2021, 12:54 (47) **→** 29, 25/10/2021, 10:17 → 30, 26/10/2021, 10:15 → 31, 27/10/2021, 14:00 **→** 32, 28/10/2021, 09:22 **→** 33, 28/10/2021, 14:22 **→** 34, 29/10/2021, 14:38 → 35, 18/11/2021, 12:48 **→** 36, 22/11/2021, 09:53 → 37, 25/11/2021, 12:51 **→** 38, 26/11/2021, 13:35 (48) → 39, 29/11/2021, 15:24 → 40, 29/11/2021, 16:06 → 41, 01/12/2021, 12:57 **→** 42, 01/12/2021, 14:06 **→** 43, 02/12/2021, 09:40 (49) **44**, 02/12/2021, 10:03 **→** 45, 02/12/2021, 10:20 **→** 46, 02/12/2021, 14:29 **→** 47, 13/12/2021, 15:02 **→** 48, 14/12/2021, 11:30 → 49, 15/12/2021, 10:31 → 50, 15/12/2021, 11:15 Winter 2021/2022 Flightlines PROJECT: Derryadd, Co. Longford FIGURE NO: 14 CLIENT: Bord na Móna 1:50000 REVISION: SCALE: 30/05/2022 PAGE SIZE: A3 **FEHILY** Cork | Dublin | Carlow TIMONEY www.fehilytimoney.ie









Individual, Date, Time → 20, 17/01/2022, 11:09 → 21, 01/02/2022, 09:35 → 22, 01/02/2022, 09:45

→ 23, 01/02/2022, 09:57

- **2**4, 01/02/2022, 10:35
- → 25, 01/02/2022, 10:47 → 26, 01/02/2022, 11:30
- → 27, 25/02/2022, 12:58
- **→** 28, 28/02/2022, 12:00
- → 29, 02/03/2022, 11:09
- 30, 02/03/2022, 10:48
- → 31, 02/03/2022, 11:09 → 32, 02/03/2022, 13:03
- **→** 33, 02/03/2022, 13:03
- → 34, 15/03/2022, 09:51
- → 35, 15/03/2022, 13:21 → 36, 16/03/2022, 10:01
- **→** 37, 28/03/2022, 10:10

TITLE:

Winter 2021/2022 Flightlines Buzzard

PROJECT:

Derryadd, Co. Longford

 FIGURE NO:
 19

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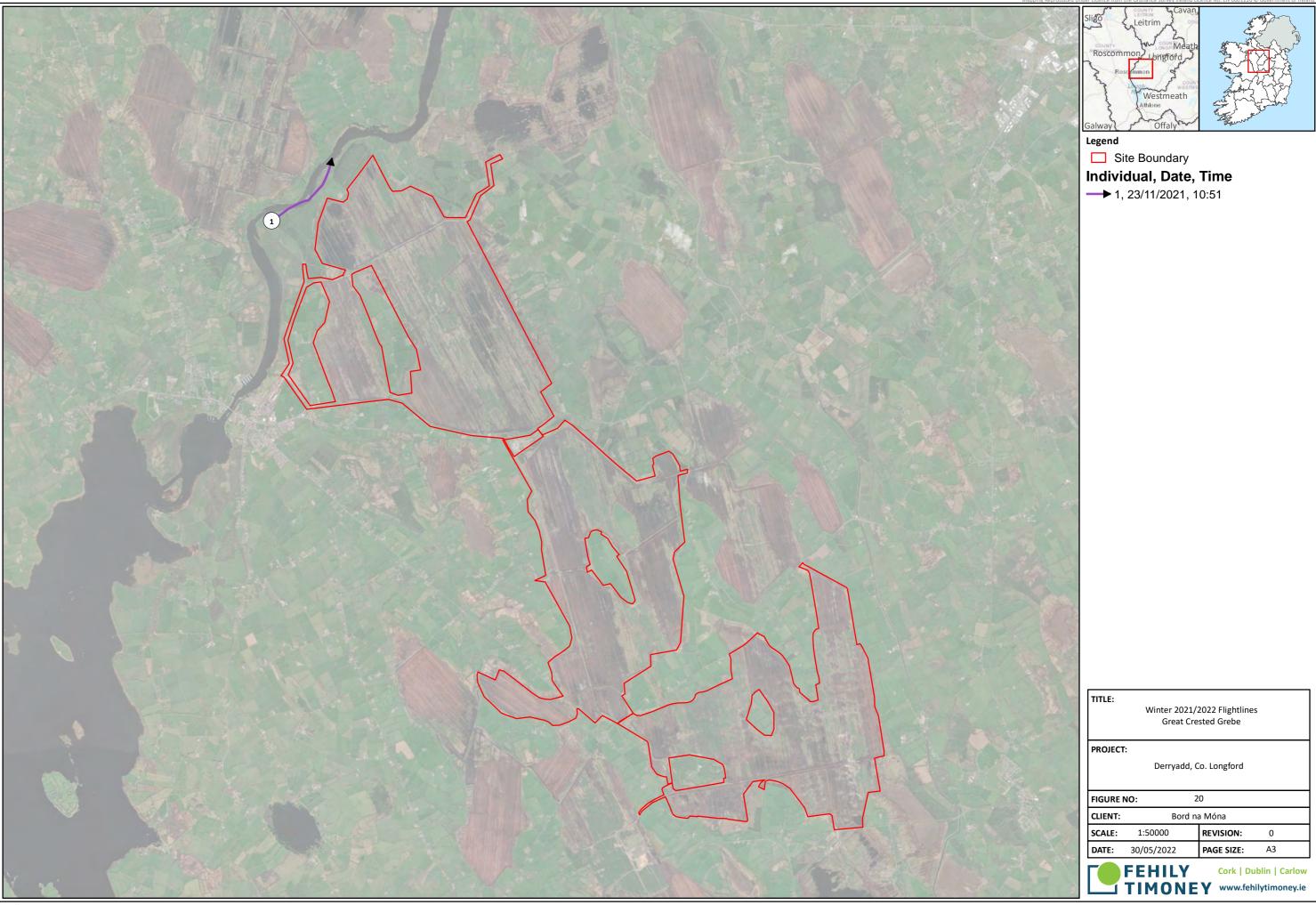
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W E 0 0.5 1 2 Kilometer

28



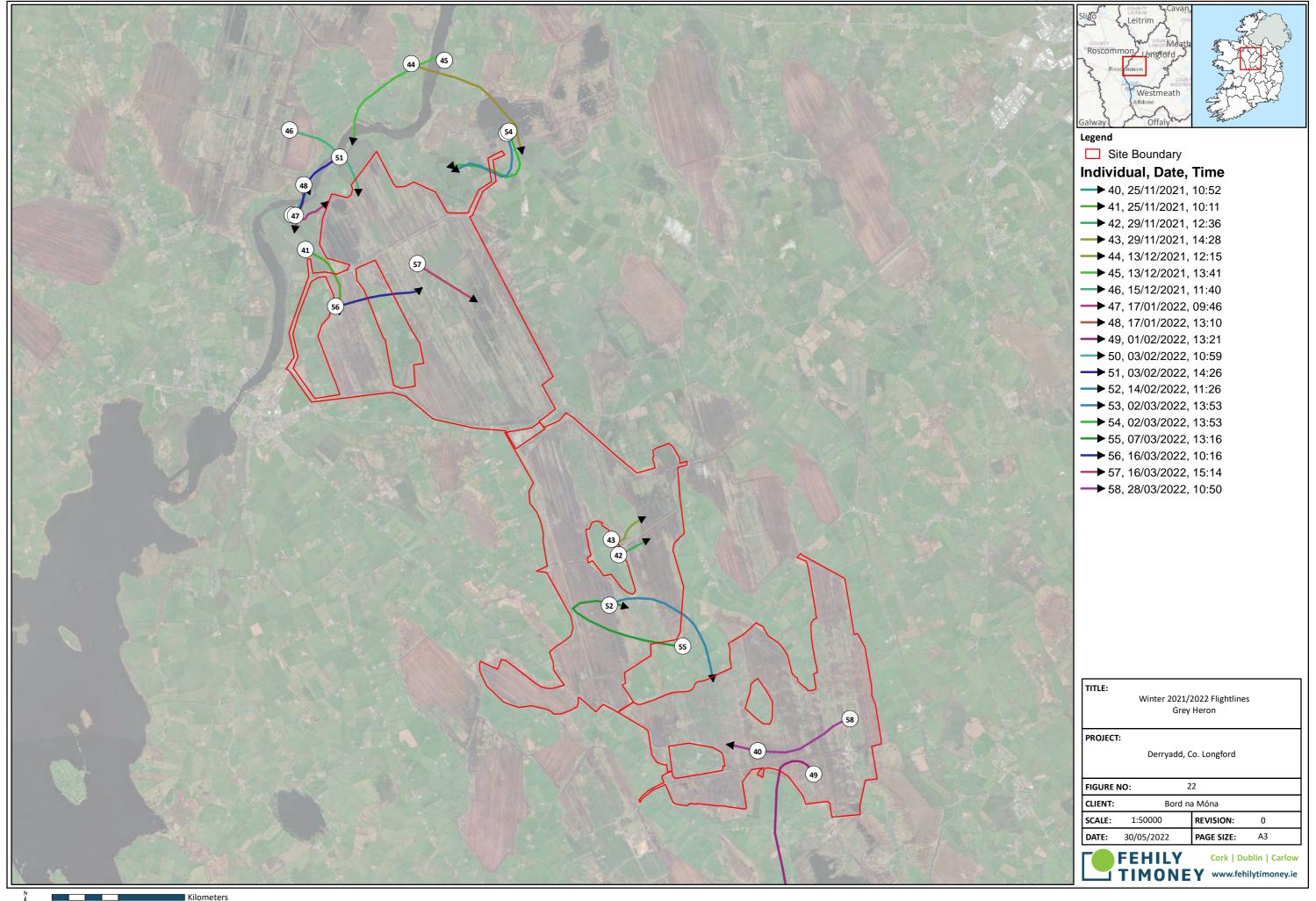
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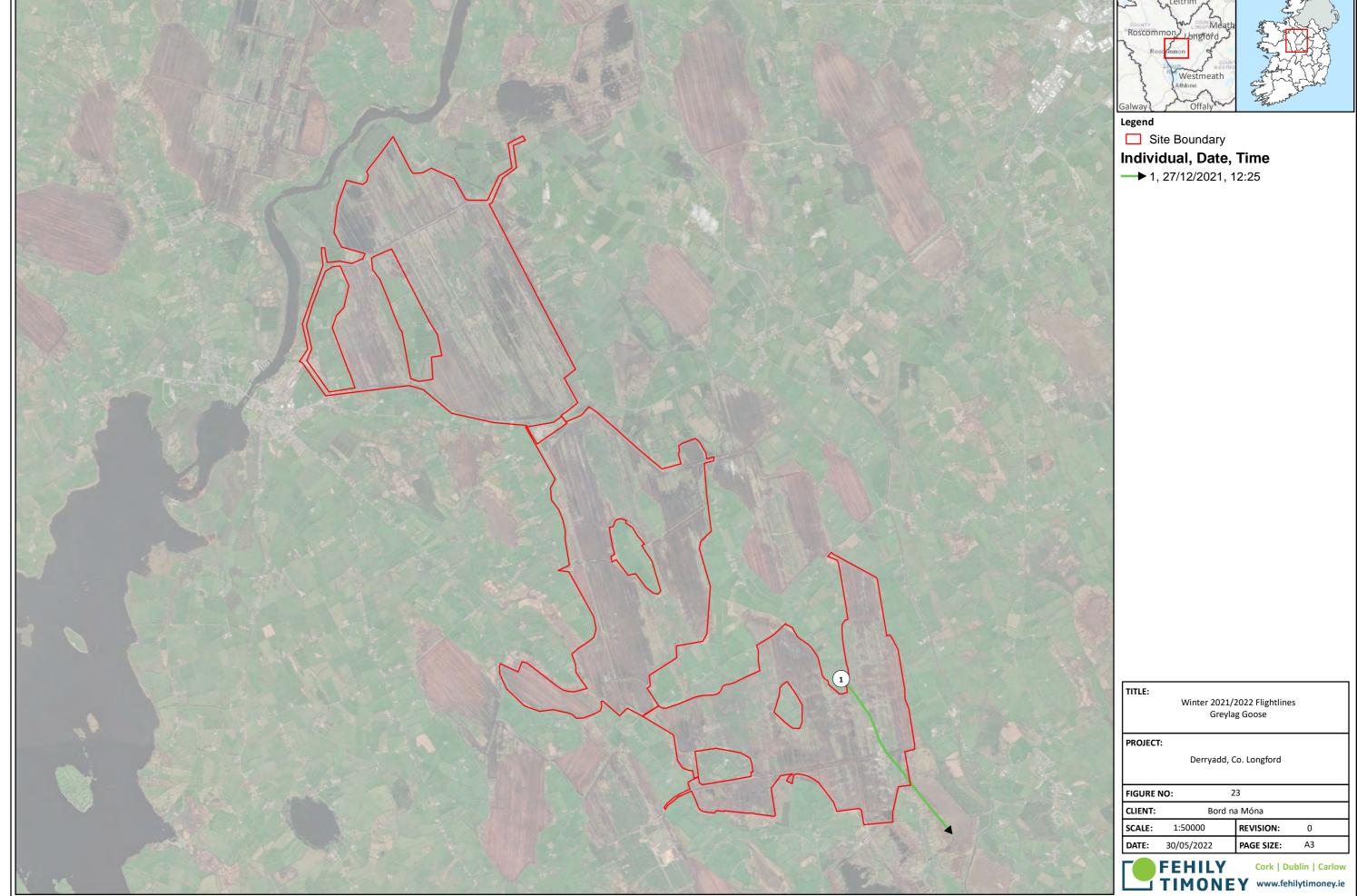
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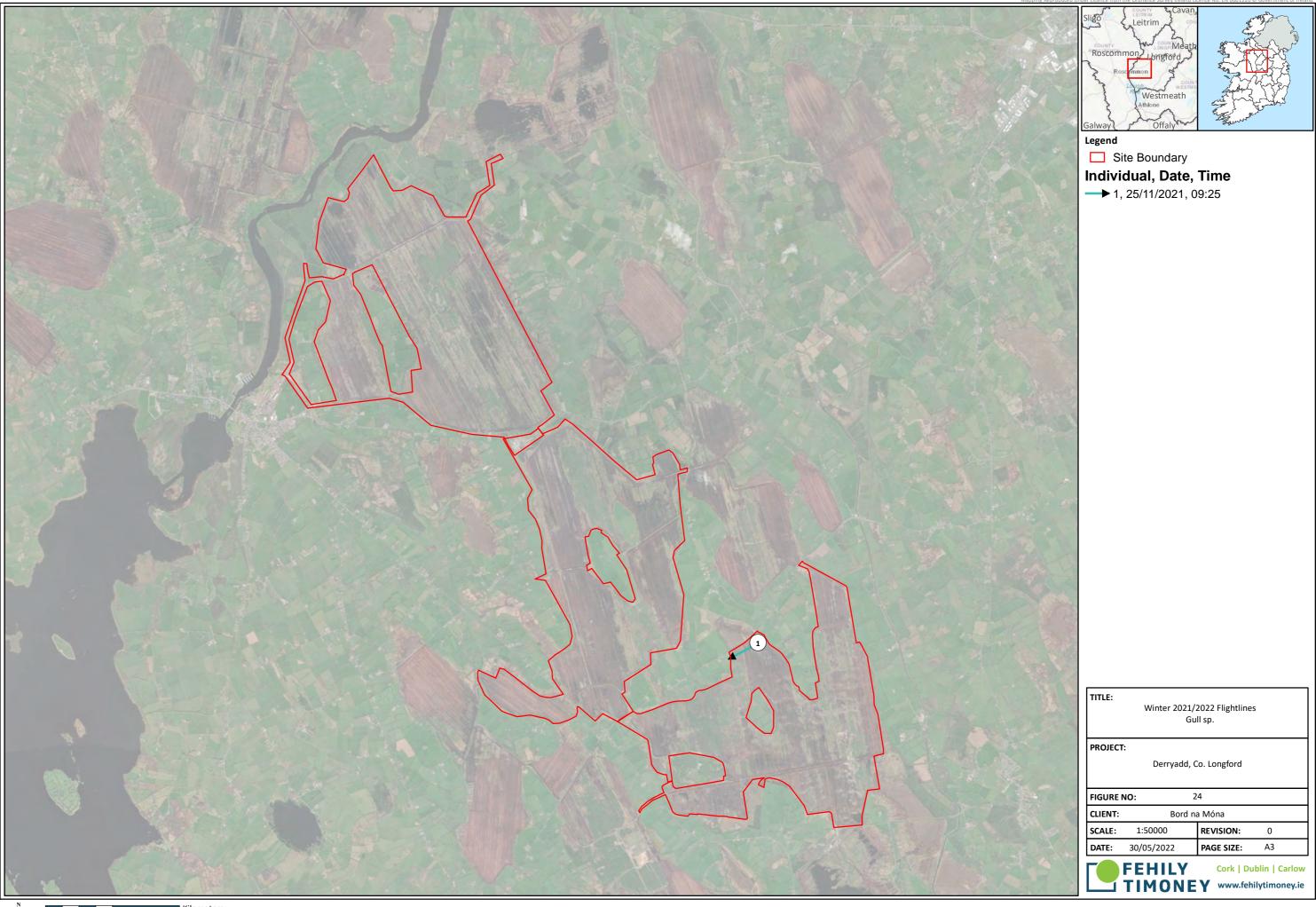
Derryadd, Co. Longford

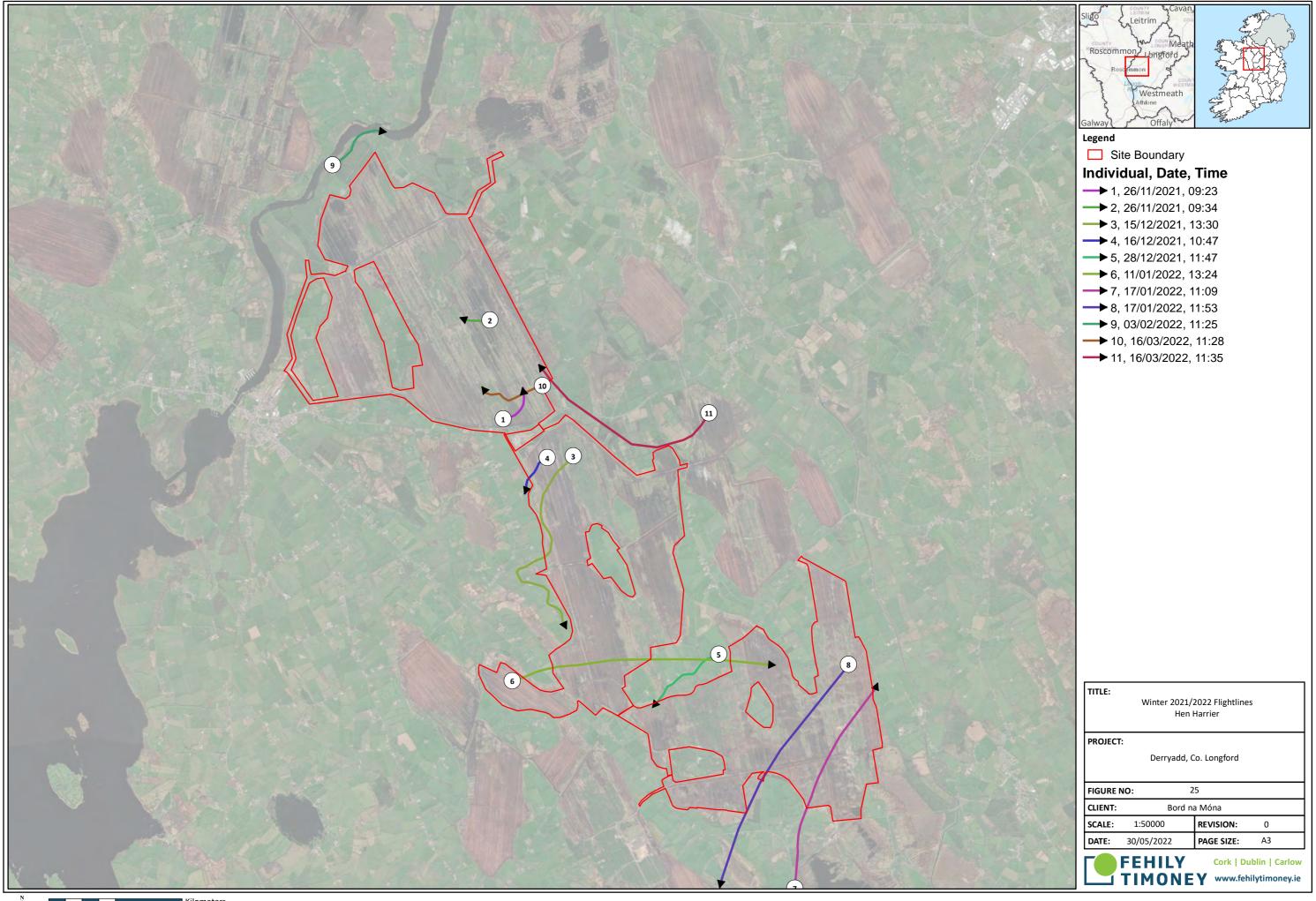
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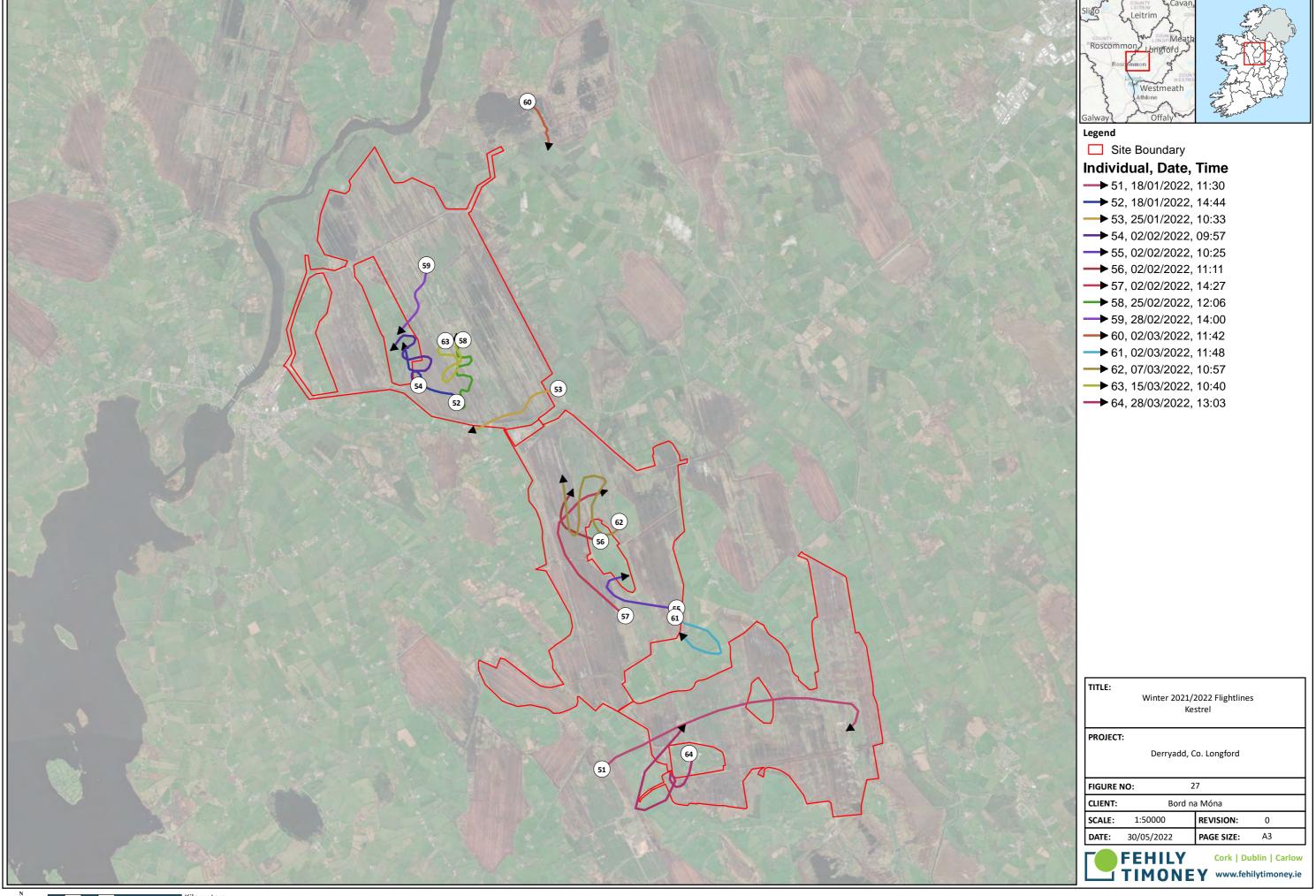
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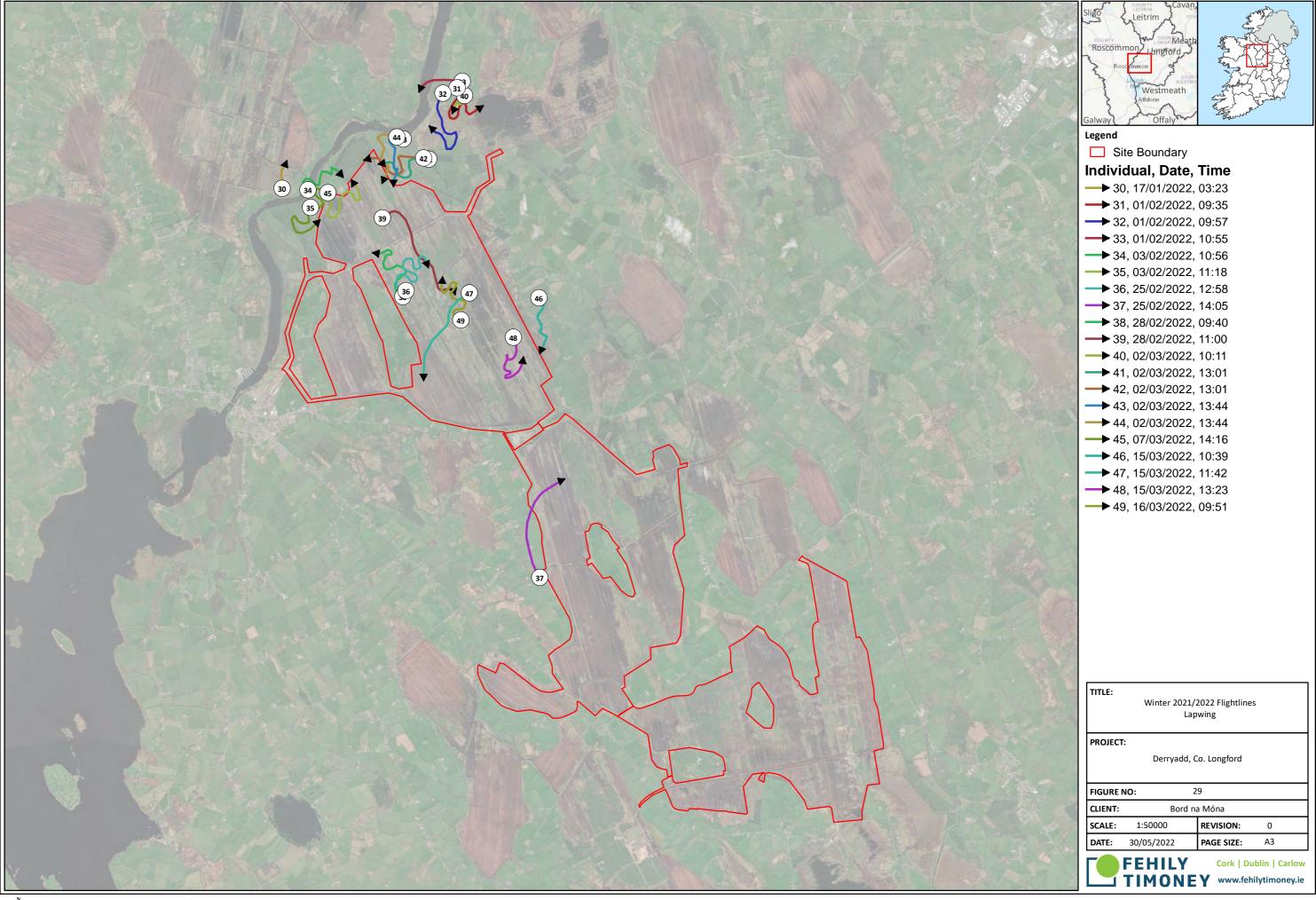


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Legend Site Boundary Individual, Date, Time **→** 4, 01/10/2021, 16:10 **→** 5, 02/10/2021, 09:29 **→** 6, 02/10/2021, 12:06 **→** 7, 02/11/2021, 10:01 **→** 8, 18/11/2021, 11:09 **→** 9, 26/11/2021, 12:58 **→** 10, 02/12/2021, 14:39 **→** 11, 13/12/2021, 11:56 **→** 12, 13/12/2021, 13:31 → 13, 14/12/2021, 10:27 **→** 14, 14/12/2021, 10:40 **→** 15, 14/12/2021, 13:56 **→** 16, 15/12/2021, 10:39 **→** 17, 15/12/2021, 14:07 **→** 18, 16/12/2021, 09:47 **→** 19, 16/12/2021, 10:28 **2**0, 16/12/2021, 10:33 **→** 21, 27/12/2021, 10:43 **→** 22, 17/01/2022, 11:33 **→** 23, 17/01/2022, 11:24 **2**4, 24/01/2022, 10:03 **25**, 24/01/2022, 11:33 **→** 26, 25/02/2022, 14:14 **→** 27, 28/02/2022, 12:05 **→** 28, 15/03/2022, 10:56 (16) → 29, 15/03/2022, 10:57 → 30, 16/03/2022, 09:51 Winter 2021/2022 Flightlines Little Egret PROJECT: (19) Derryadd, Co. Longford FIGURE NO: 30 CLIENT: Bord na Móna

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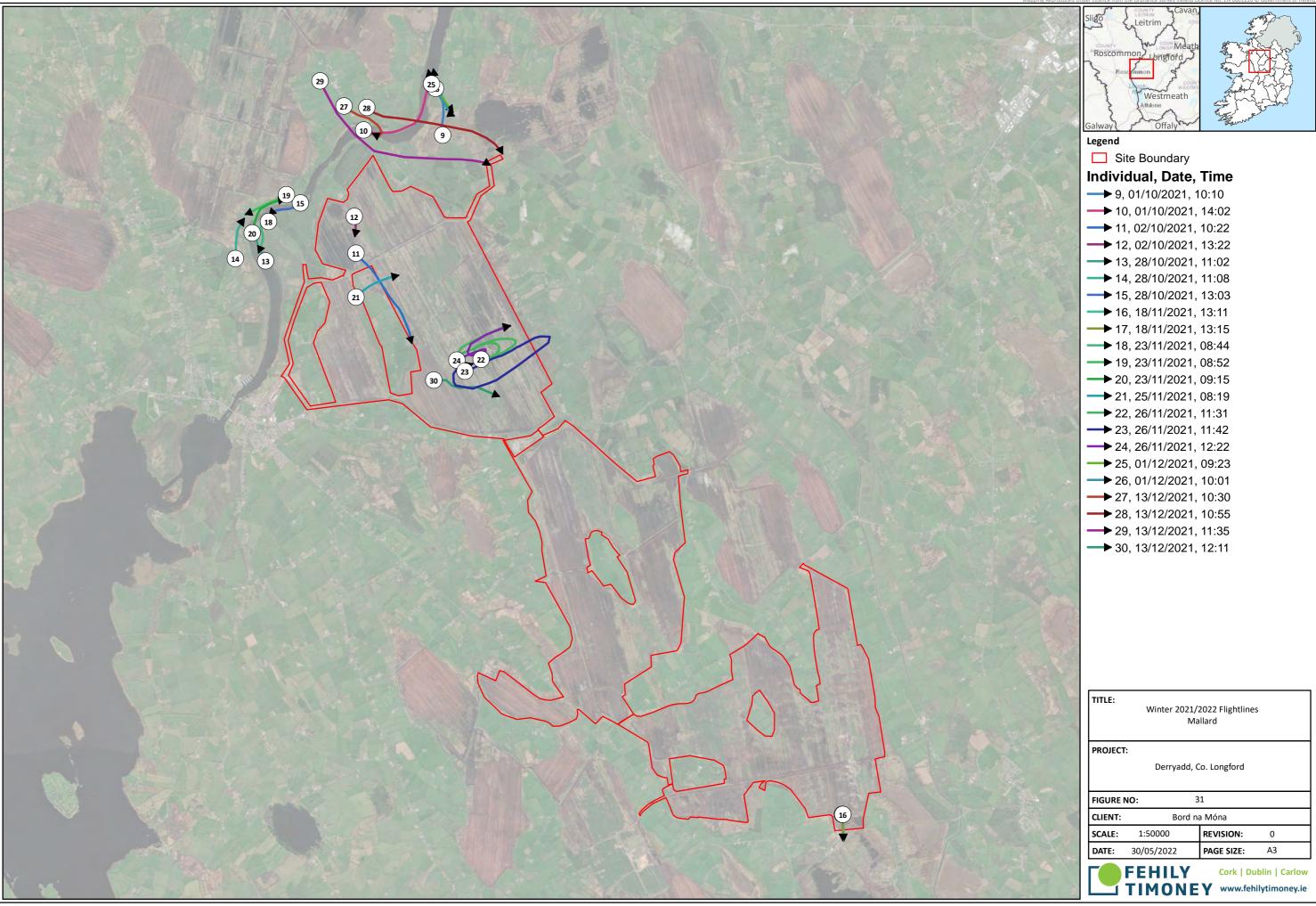
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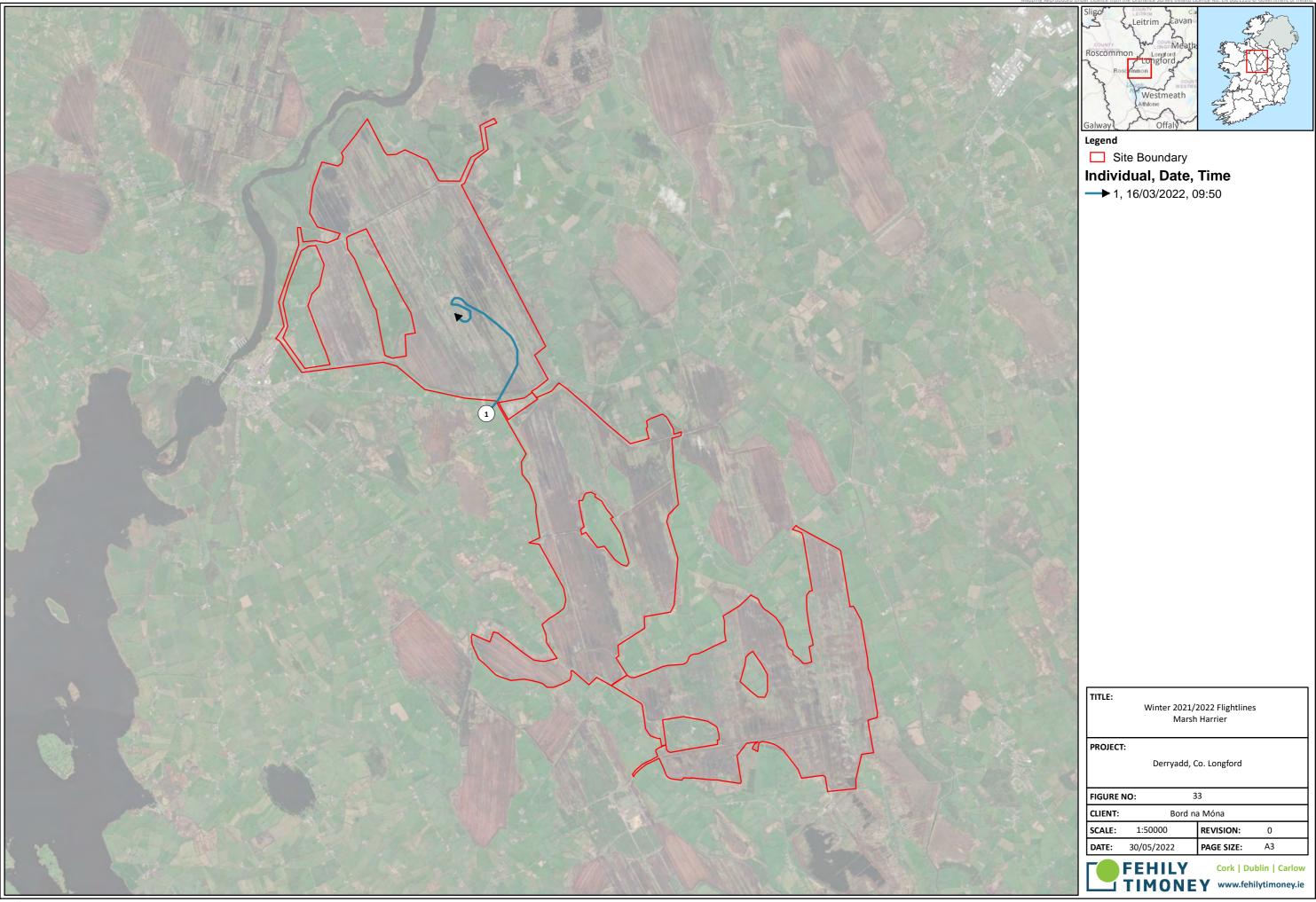
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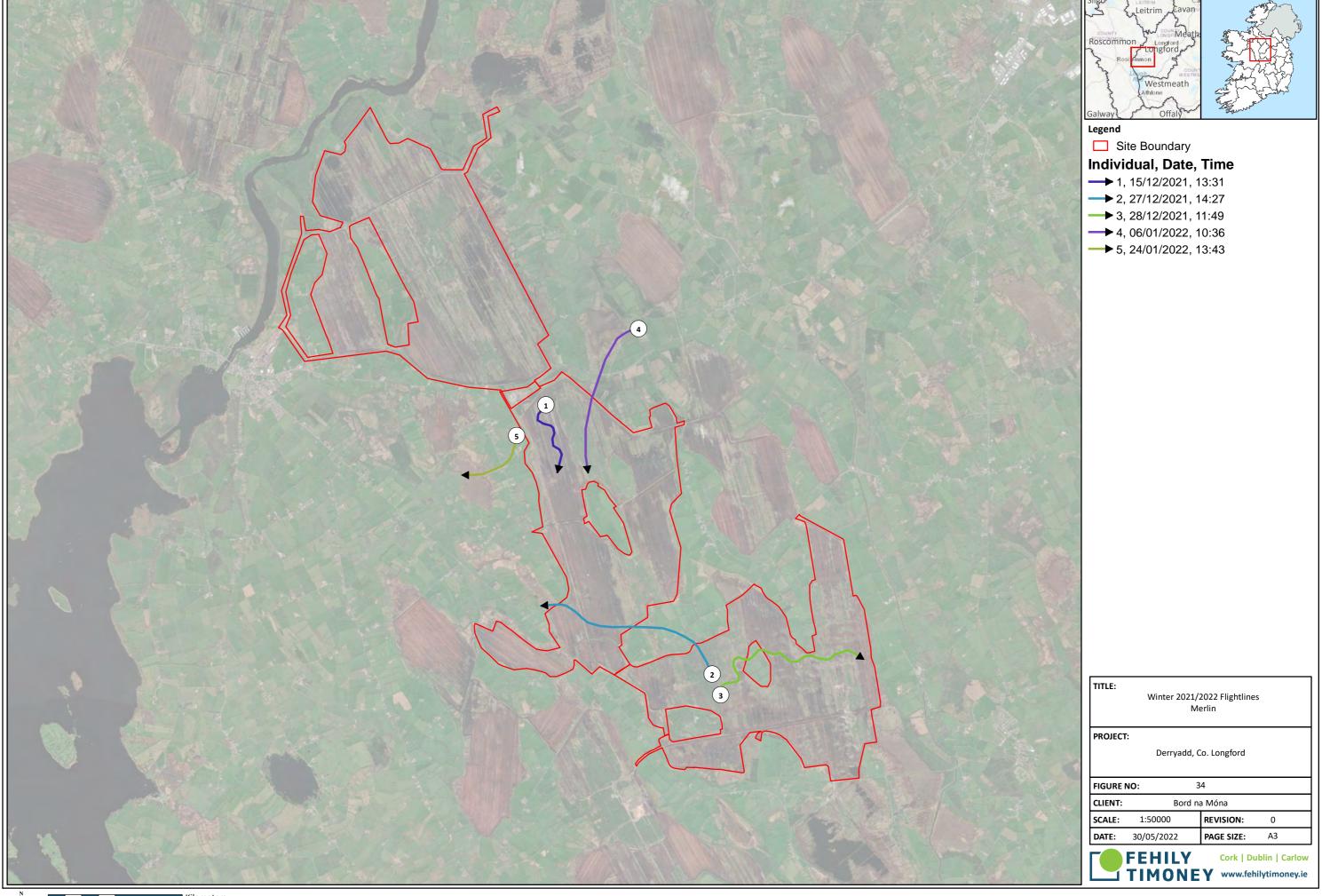
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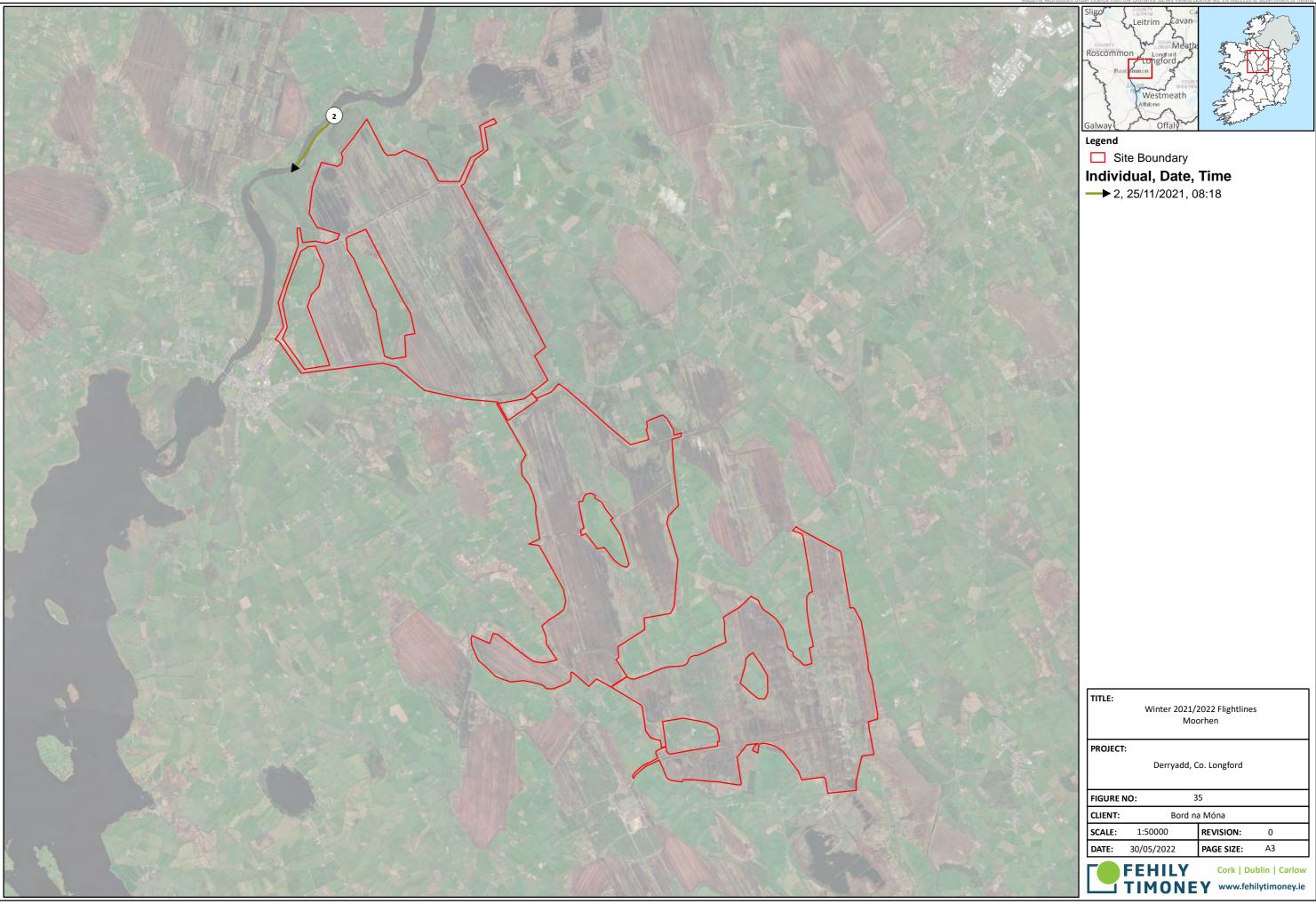
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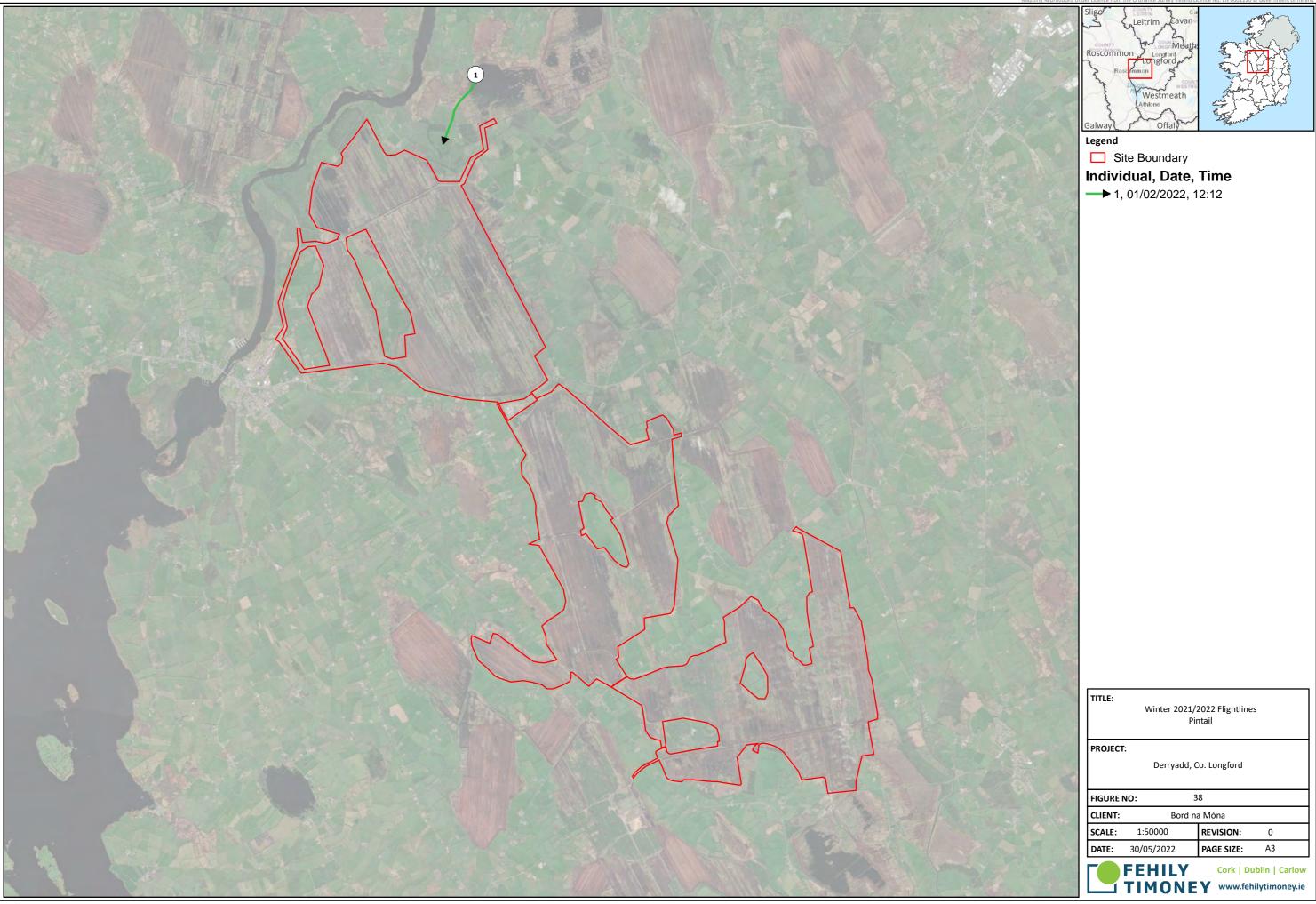
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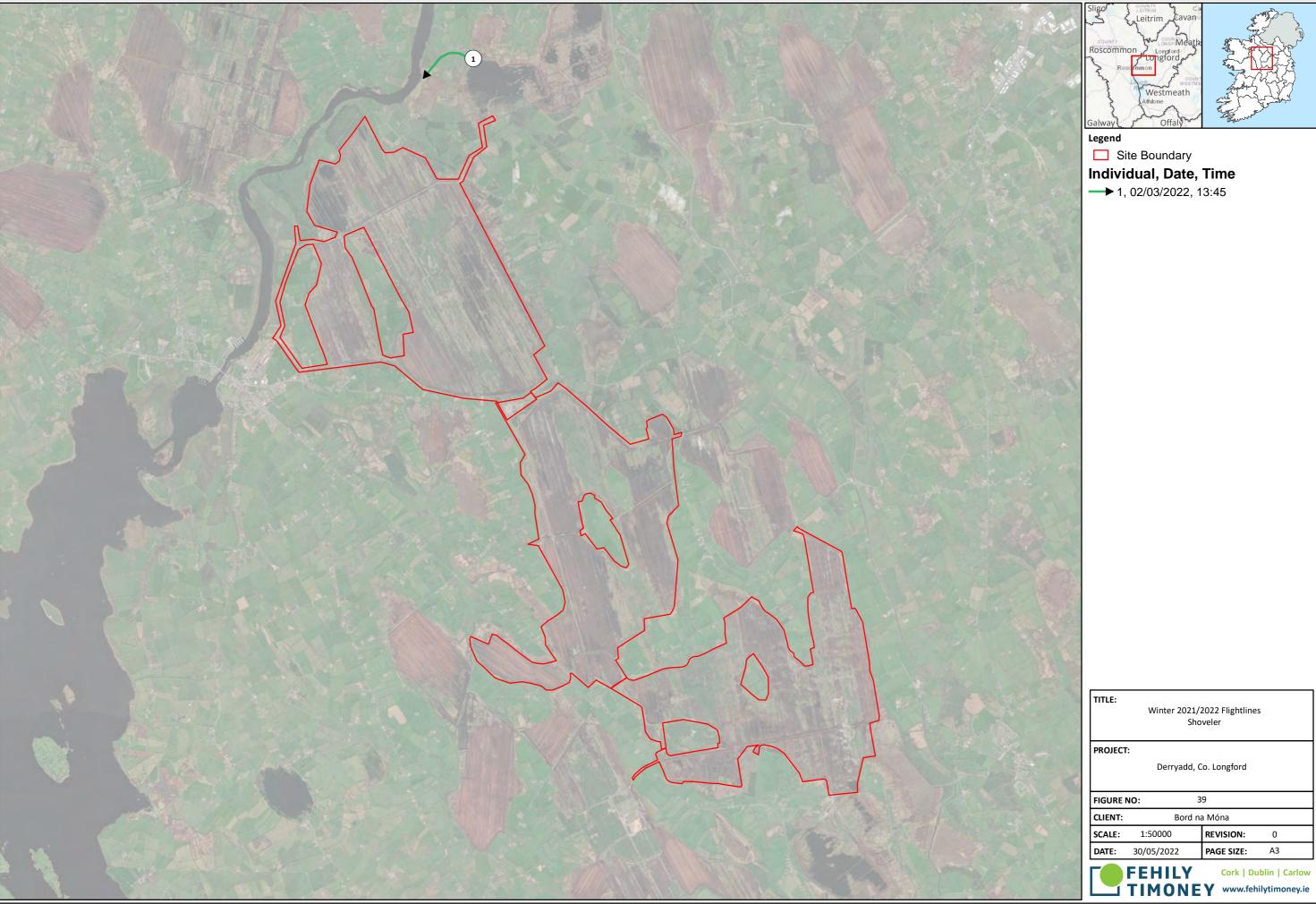


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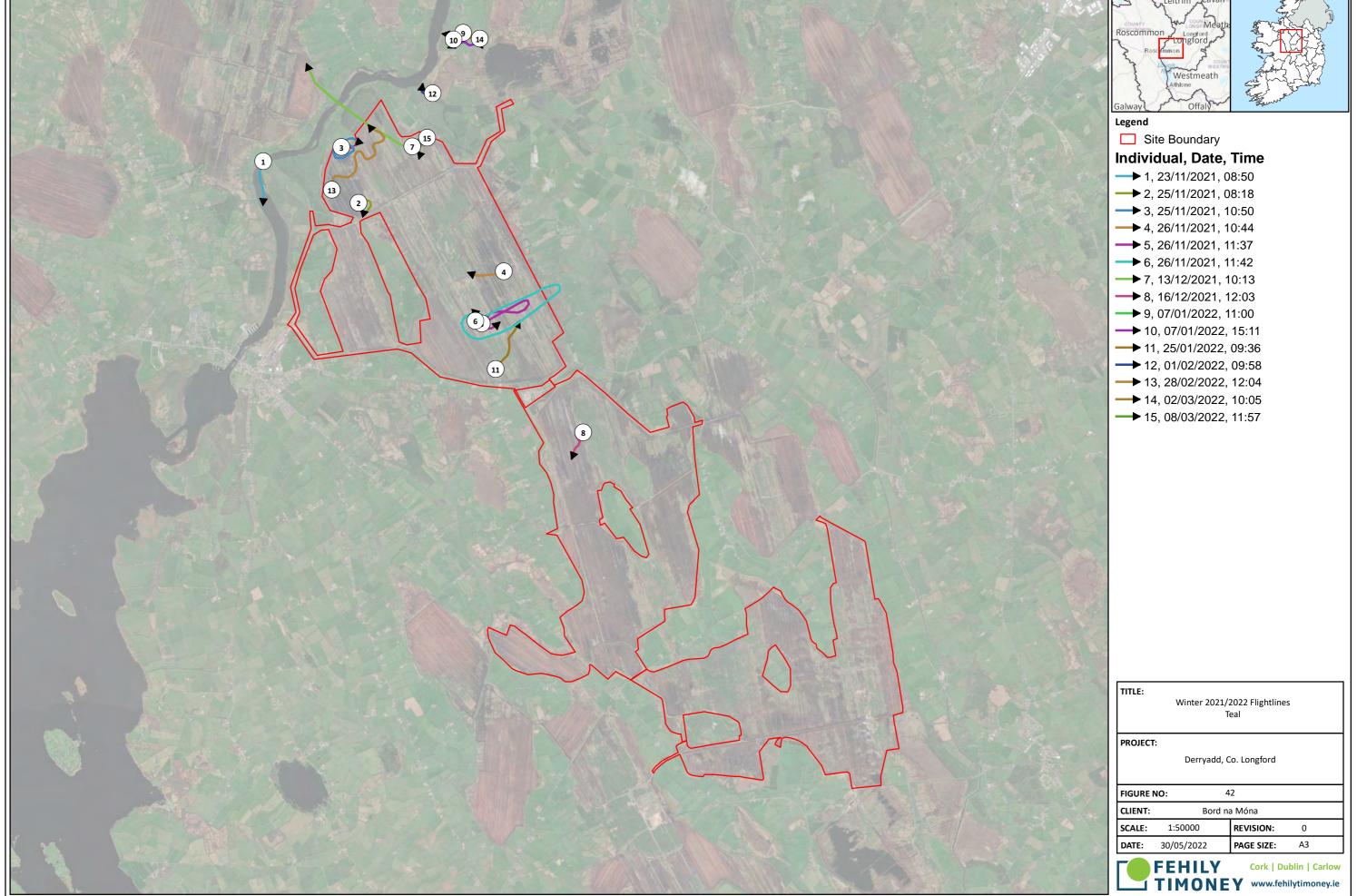
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Legend Site Boundary Individual, Date, Time 62 **→** 46, 07/01/2022, 14:19 **→** 47, 11/01/2022, 10:15 **→** 48, 12/01/2022, 10:35 → 49, 12/01/2022, 10:50 **→** 50, 12/01/2022, 13:13 **→** 51, 18/01/2022, 09:57 **5**2, 25/01/2022, 09:33 **→** 53, 01/02/2022, 09:53 **→** 54, 01/02/2022, 10:17 → 55, 02/02/2022, 11:14 **→** 56, 25/02/2022, 09:41 **→** 57, 25/02/2022, 10:25 → 58, 25/02/2022, 11:12 **→** 59, 25/02/2022, 11:54 **→** 60, 02/03/2022, 09:43 **→** 61, 02/03/2022, 10:31 **→** 62, 07/03/2022, 10:37 **→** 63, 08/03/2022, 11:51 Winter 2021/2022 Flightlines Whooper Swan PROJECT: Derryadd, Co. Longford FIGURE NO: 45 CLIENT: Bord na Móna

> **FEHILY** TIMONEY www.fehilytimoney.ie

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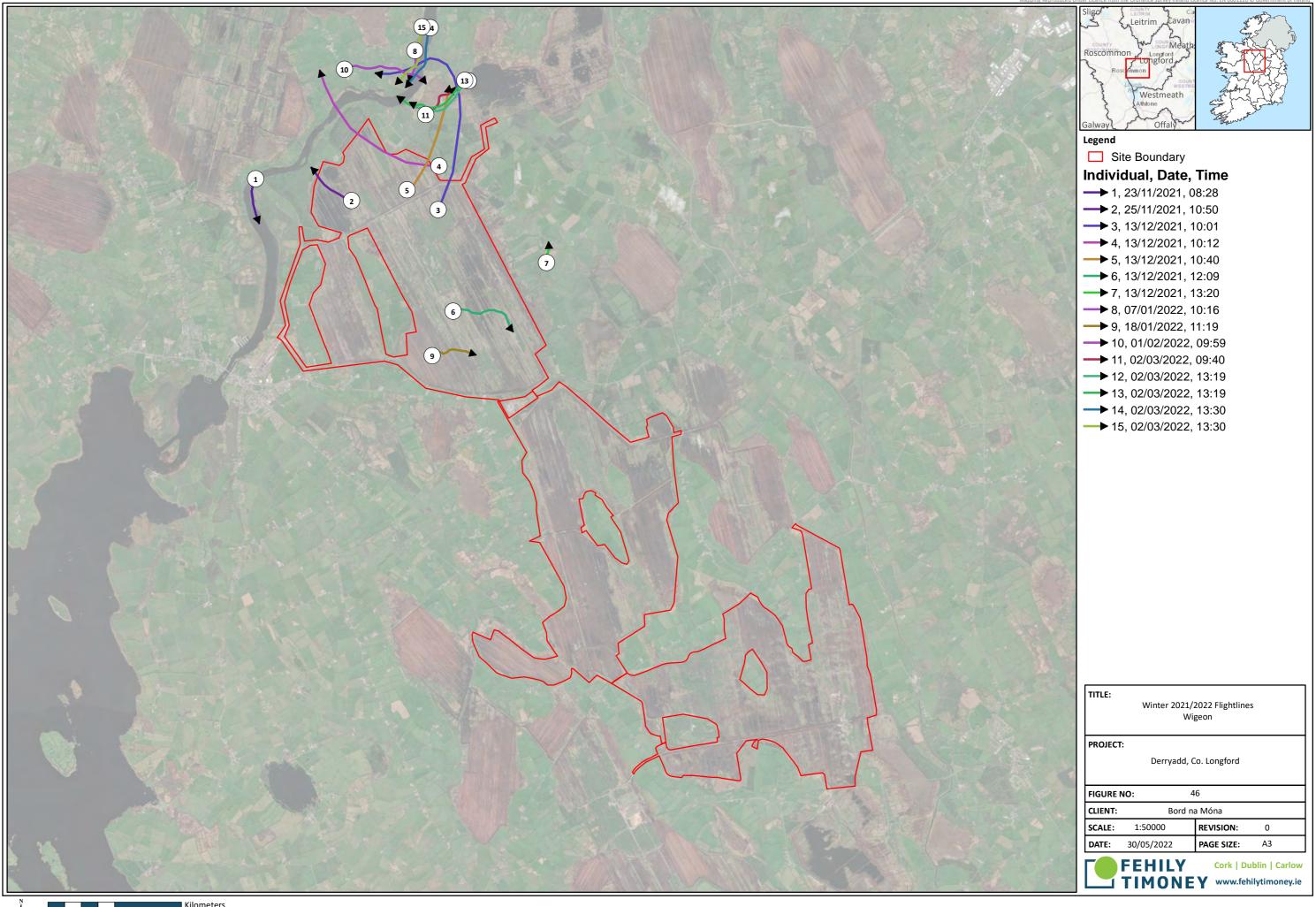
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CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

APPENDIX 4

Hinterland Survey Results



Hinterland Survey Data Migration 2021 and Winter 2021/2022

HVP	Date	Cloud	Visibility	Rain	Wind	Common Name
				Migration 2021		
1	30/09/2021	8	Very Good	Showers	F2 SW	Mallard
1	30/09/2021	8	Very Good	Showers	F2 SW	Moorhen
2	30/09/2021	8	Very Good	Showers	F2 SW	Moorhen
2	30/09/2021	8	Very Good	Showers	F2 SW	Grey Heron
4	30/09/2021	8	Very Good	Showers	F2 SW	Little Egret
4	30/09/2021	8	Very Good	Showers	F2 SW	Mallard
4	30/09/2021	8	Very Good	Showers	F2 SW	Moorhen
4	30/09/2021	8	Very Good	Showers	F2 SW	Water Rail
4	30/09/2021	8	Very Good	Showers	F2 SW	Buzzard
4	30/09/2021	8	Very Good	Showers	F2 SW	Lapwing
5	30/09/2021	8	Very Good	Showers	F2 SW	Great Crested Grebe
5	30/09/2021	8	Very Good	Showers	F2 SW	Mute Swan
5	30/09/2021	8	Very Good	Showers	F2 SW	Mallard
5	30/09/2021	8	Very Good	Showers	F2 SW	Coot
5	30/09/2021	8	Very Good	Showers	F2 SW	Moorhen
5	30/09/2021	8	Very Good	Showers	F2 SW	Grey Heron
5	30/09/2021	8	Very Good	Showers	F2 SW	Little Egret
5	30/09/2021	8	Very Good	Showers	F2 SW	Little Grebe
6	30/09/2021	8	Very Good	Showers	F2 SW	Mute Swan
7	30/09/2021	8	Very Good	Showers	F2 SW	Mute Swan
7	30/09/2021	8	Very Good	Showers	F2 SW	Grey Heron
7	30/09/2021	8	Very Good	Showers	F2 SW	Moorhen
8	30/09/2021	8	Very Good	Showers	F2 SW	Great Black-backed Gull
8	30/09/2021	8	Very Good	Showers	F2 SW	Lapwing
8	30/09/2021	8	Very Good	Showers	F2 SW	Goldeneye
8	30/09/2021	8	Very Good	Showers	F2 SW	Tufted Duck
8	30/09/2021	8	Very Good	Showers	F2 SW	Teal
8	30/09/2021	8	Very Good	Showers	F2 SW	Mallard
8	30/09/2021	8	Very Good	Showers	F2 SW	Great Crested Grebe
8	30/09/2021	8	Very Good	Showers	F2 SW	Little Grebe
8	30/09/2021	8	Very Good	Showers	F2 SW	Mute Swan
8	30/09/2021	8	Very Good	Showers	F2 SW	Little Egret
8	30/09/2021	8	Very Good	Showers	F2 SW	Grey Heron
8	30/09/2021	8	Very Good	Showers	F2 SW	Moorhen
9	30/09/2021	8	Very Good	Showers	F2 SW	Tufted Duck
9	30/09/2021	8	Very Good	Showers	F2 SW	Grey Heron
9	30/09/2021	8	Very Good	Showers	F2 SW	Wigeon
9	30/09/2021	8	Very Good	Showers	F2 SW	Mallard
9	30/09/2021	8	Very Good	Showers	F2 SW	Great Crested Grebe
9	30/09/2021	8	Very Good	Showers	F2 SW	Little Grebe
9	30/09/2021	8	Very Good	Showers	F2 SW	Mallard

HVP	Date	Cloud	Visibility	Rain	Wind	Common Name
9	30/09/2021	8	Very Good	Showers	F2 SW	Coot
9	30/09/2021	8	Very Good	Showers	F2 SW	Cormorant
10	30/09/2021	8	Very Good	Showers	F2 SW	Mute Swan
11	30/09/2021	8	Very Good	Showers	F2 SW	Wigeon
11	30/09/2021	8	Very Good	Showers	F2 SW	Mute Swan
11	30/09/2021	8	Very Good	Showers	F2 SW	Grey Heron
11	30/09/2021	8	Very Good	Showers	F2 SW	Mallard
11	30/09/2021	8	Very Good	Showers	F2 SW	Moorhen
12	30/09/2021	8	Very Good	Showers	F2 SW	Grey Heron
13	30/09/2021	8	Very Good	Showers	F2 SW	No target species
14	30/09/2021	8	Very Good	Showers	F2 SW	Mallard
15	30/09/2021	8	Very Good	Showers	F2 SW	Moorhen
15	30/09/2021	8	Very Good	Showers	F2 SW	Mute Swan
16	30/09/2021	8	Very Good	Showers	F2 SW	No target species
17	30/09/2021	8	Very Good	Showers	F2 SW	No target species
18	30/09/2021	8	Very Good	Showers	F2 SW	No target species
19	30/09/2021	8	Very Good	Showers	F2 SW	Grey Wagtail
20	30/09/2021	8	Very Good	Showers	F2 SW	Buzzard
21	30/09/2021	8	Very Good	Showers	F2 SW	Grey Heron
22	30/09/2021	8	Very Good	Showers	F2 SW	No target species
23	30/09/2021	8	Very Good	Showers	F2 SW	No target species
24	30/09/2021	8	Very Good	Showers	F2 SW	No target species
25	30/09/2021	8	Very Good	Showers	F2 SW	No target species
			V	/inter 2021/2022		
1	26/10/2021	8	Very Good	Showers	F3 SSW	Mallard
2	26/10/2021	8	Very Good	Showers	F3 SSW	Moorhen
2	26/10/2021	8	Very Good	Showers	F3 SSW	Mallard
4	26/10/2021	8	Very Good	Showers	F3 SSW	Moorhen
4	26/10/2021	8	Very Good	Showers	F3 SSW	Water Rail
4	26/10/2021	8	Very Good	Showers	F3 SSW	Grey Heron
4	26/10/2021	8	Very Good	Showers	F3 SSW	Mallard
4	26/10/2021	8	Very Good	Showers	F3 SSW	Whooper Swan
5	26/10/2021	8	Very Good	Showers	F3 SSW	Great Crested Grebe
5	26/10/2021	8	Very Good	Showers	F3 SSW	Mute Swan
5	26/10/2021	8	Very Good	Showers	F3 SSW	Mallard
5	26/10/2021	8	Very Good	Showers	F3 SSW	Coot
5	26/10/2021	8	Very Good	Showers	F3 SSW	Moorhen
5	26/10/2021	8	Very Good	Showers	F3 SSW	Little Grebe
6	26/10/2021	8	Very Good	Showers	F3 SSW	No target species
7	26/10/2021	8	Very Good	Showers	F3 SSW	Moorhen
7	26/10/2021	8	Very Good	Showers	F3 SSW	Mallard
8	26/10/2021	8	Very Good	Showers	F3 SSW	Great Black-backed Gull
8	26/10/2021	8	Very Good	Showers	F3 SSW	Tufted Duck
8	26/10/2021	8	Very Good	Showers	F3 SSW	Lapwing

HVP	Date	Cloud	Visibility	Rain	Wind	Common Name
8	26/10/2021	8	Very Good	Showers	F3 SSW	Goldeneye
8	26/10/2021	8	Very Good	Showers F3 SSW		Teal
8	26/10/2021	8	Very Good	Showers	F3 SSW	Buzzard
8	26/10/2021	8	Very Good	Showers	F3 SSW	Mute Swan
8	26/10/2021	8	Very Good	Showers	F3 SSW	Little Egret
8	26/10/2021	8	Very Good	Showers	F3 SSW	Grey Heron
8	26/10/2021	8	Very Good	Showers	F3 SSW	Moorhen
8	26/10/2021	8	Very Good	Showers	F3 SSW	Great Crested Grebe
9	26/10/2021	8	Very Good	Showers	F3 SSW	Tufted Duck
9	26/10/2021	8	Very Good	Showers	F3 SSW	Wigeon
9	26/10/2021	8	Very Good	Showers	F3 SSW	Mallard
9	26/10/2021	8	Very Good	Showers	F3 SSW	Mute Swan
9	26/10/2021	8	Very Good	Showers	F3 SSW	Little Grebe
9	26/10/2021	8	Very Good	Showers	F3 SSW	Great Crested Grebe
10	28/10/2021	6	Very Good	Light showers	F2 S	Mallard
11	28/10/2021	6	Very Good	Light showers	F2 S	Wigeon
11	28/10/2021	6	Very Good	Light showers	F2 S	Mute Swan
11	28/10/2021	6	Very Good	Light showers	F2 S	Grey Heron
11	28/10/2021	6	Very Good	Light showers	F2 S	Moorhen
11	28/10/2021	6	Very Good	Light showers	F2 S	Mallard
12	28/10/2021	6	Very Good	Light showers	F2 S	No target species
13	28/10/2021	6	Very Good	Light showers	F2 S	Grey Heron
14	28/10/2021	6	Very Good	Light showers	F2 S	Mallard
15	28/10/2021	6	Very Good	Light showers	F2 S	Mute Swan
16	28/10/2021	6	Very Good	Light showers	F2 S	No target species
17	28/10/2021	6	Very Good	Light showers	F2 S	Buzzard
17	28/10/2021	6	Very Good	Light showers	F2 S	Grey Heron
18	29/10/2021	6	Very Good	Dry	F1 SSW	No target species
19	29/10/2021	6	Very Good	Dry	F1 SSW	Buzzard
20	29/10/2021	6	Very Good	Dry	F1 SSW	Grey Heron
21	29/10/2021	6	Very Good	Dry	F1 SSW	Grey Heron
22	29/10/2021	6	Very Good	Dry	F1 SSW	No target species
23	29/10/2021	6	Very Good	Dry	F1 SSW	No target species
24	29/10/2021	6	Very Good	Dry	F1 SSW	Grey Heron
25	29/10/2021	6	Very Good	Dry	F1 SSW	No target species
1	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species
2	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Lapwing
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Wigeon
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mallard
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Grey Heron
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mute Swan
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Shoveler
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Golden Plover

HVP	Date	Cloud	Visibility	Rain	Wind	Common Name	
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Teal	
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Whooper Swan	
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Moorhen	
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Tufted Duck	
4	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Snipe	
5	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mute Swan	
6	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mute Swan	
6	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Little Grebe	
6	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Great Crested Grebe	
6	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Cormorant	
6	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mallard	
6	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Wigeon	
7	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Black-headed Gull	
7	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mute Swan	
7	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Teal	
8	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Wigeon	
8	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mallard	
8	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mute Swan	
8	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Tufted Duck	
9	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Wigeon	
10	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species	
11	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species	
12	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Grey Heron	
12	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Buzzard	
12	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Lapwing	
12	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mute Swan	
15	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mute Swan	
15	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Cormorant	
14	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species	
16	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Buzzard	
16	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mute Swan	
20	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species	
11	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Moorhen	
11	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Grey Heron	
11	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mute Swan	
11	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Lapwing	
11	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Black-headed Gull	
21	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Mute Swan	
21	24/11/2021	8	Excellent	Occasional light rain	F1-F2	Buzzard	
18	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species	
17	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species	
19	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species	
22	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species	
23	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species	

HVP	Date	Cloud	Visibility	Rain	Wind	Common Name
24	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species
25	24/11/2021	8	Excellent	Occasional light rain	F1-F2	No target species
1	25/01/2022	8	No Data	Dry	F1	No target species
2	25/01/2022	8	No Data	Dry	F1	No target species
4	25/01/2022	8	No Data	Dry	F1	Whooper Swan
4	25/01/2022	8	No Data	Dry	F1	Wigeon
4	25/01/2022	8	No Data	Dry	F1	Teal
4	25/01/2022	8	No Data	Dry	F1	Tufted Duck
4	25/01/2022	8	No Data	Dry	F1	Mallard
4	25/01/2022	8	No Data	Dry	F1	Coot
5	25/01/2022	8	No Data	Dry	F1	Mallard
5	25/01/2022	8	No Data	Dry	F1	Mute Swan
6	25/01/2022	8	No Data	Dry	F1	Mute Swan
6	25/01/2022	8	No Data	Dry	F1	Mallard
7	25/01/2022	8	No Data	Dry	F1	Moorhen
7	25/01/2022	8	No Data	Dry	F1	Mute Swan
8	25/01/2022	8	No Data	Dry	F1	Teal
8	25/01/2022	8	No Data	Dry	F1	Little Egret
8	25/01/2022	8	No Data	Dry	F1	Wigeon
8	25/01/2022	8	No Data	Dry	F1	Coot
8	25/01/2022	8	No Data	Dry	F1	Tufted Duck
9	25/01/2022	8	No Data	Dry	F1	Tufted Duck
9	25/01/2022	8	No Data	Dry	F1	Mallard
9	25/01/2022	8	No Data	Dry	F1	Little Egret
9	25/01/2022	8	No Data	Dry	F1	Mute Swan
9	25/01/2022	8	No Data	Dry	F1	Wigeon
10	25/01/2022	8	No Data	Dry	F1	No target species
11	25/01/2022	8	No Data	Dry	F1	Grey Heron
12	25/01/2022	8	No Data	Dry	F1	Moorhen
13	25/01/2022	8	No Data	Dry	F1	No target species
14	25/01/2022	8	No Data	Dry	F1	No target species
15	25/01/2022	8	No Data	Dry	F1	No target species
16	25/01/2022	8	No Data	Dry	F1	No target species
17	25/01/2022	8	No Data	Dry	F1	No target species
18	25/01/2022	8	No Data	Dry	F1	Mute Swan
19	25/01/2022	8	No Data	Dry	F1	No target species
20	25/01/2022	8	No Data	Dry	F1	No target species
21	25/01/2022	8	No Data	Dry	F1	No target species
22	25/01/2022	8	No Data	Dry	F1	No target species
23	25/01/2022	8	No Data	Dry	F1	No target species
24	25/01/2022	8	No Data	Dry	F1	No target species
25	25/01/2022	8	No Data	Dry	F1	No target species
1	28/02/2022	2	Good	Dry	F1	No target species
2	28/02/2022	2	Good	Dry	F1	No target species

HVP	Date	Cloud	Visibility	Rain	Wind	Common Name
4	28/02/2022	2	Good	Dry	F1	Coot
4	28/02/2022	2	Good	Dry	F1	Tufted Duck
4	28/02/2022	2	Good	Dry	F1	Teal
4	28/02/2022	2	Good	Dry	F1	Mallard
4	28/02/2022	2	Good	Dry	F1	Lapwing
4	28/02/2022	2	Good	Dry	F1	Great Crested Grebe
4	28/02/2022	2	Good	Dry	F1	Wigeon
4	28/02/2022	2	Good	Dry	F1	Mute Swan
5	28/02/2022	2	Good	Dry	F1	Mute Swan
5	28/02/2022	2	Good	Dry	F1	Mallard
5	28/02/2022	2	Good	Dry	F1	Wigeon
5	28/02/2022	2	Good	Dry	F1	Teal
5	28/02/2022	2	Good	Dry	F1	Grey Heron
6	28/02/2022	2	Good	Dry	F1	Grey Heron
6	28/02/2022	2	Good	Dry	F1	Coot
6	28/02/2022	2	Good	Dry	F1	Moorhen
6	28/02/2022	2	Good	Dry	F1	Mute Swan
6	28/02/2022	2	Good	Dry	F1	Little Grebe
7	28/02/2022	2	Good	Dry	F1	No target species
8	28/02/2022	2	Good	Dry	F1	Mute Swan
8	28/02/2022	2	Good	Dry	F1	Wigeon
8	28/02/2022	2	Good	Dry	F1	Teal
8	28/02/2022	2	Good	Dry	F1	Tufted Duck
8	28/02/2022	2	Good	Dry	F1	Mallard
9	28/02/2022	2	Good	Dry	F1	No target species
10	28/02/2022	2	Good	Dry	F1	Grey Heron
10	28/02/2022	2	Good	Dry	F1	Coot
11	28/02/2022	2	Good	Dry	F1	Moorhen
12	28/02/2022	2	Good	Dry	F1	Mute Swan
12	28/02/2022	2	Good	Dry	F1	Grey Heron
13	28/02/2022	2	Good	Dry	F1	Grey Heron
14	28/02/2022	2	Good	Dry	F1	No target species
15	28/02/2022	2	Good	Dry	F1	No target species
16	28/02/2022	2	Good	Dry	F1	No target species
17	28/02/2022	2	Good	Dry	F1	No target species
18	28/02/2022	2	Good	Dry	F1	No target species
19	28/02/2022	2	Good	Dry	F1	No target species
20	28/02/2022	2	Good	Dry	F1	No target species
21	28/02/2022	2	Good	Dry	F1	No target species
22	28/02/2022	2	Good	Dry	F1	No target species
23	28/02/2022	2	Good	Dry	F1	No target species
24	28/02/2022	2	Good	Dry	F1	No target species
25	28/02/2022	2	Good	Dry	F1	No target species
1	29/03/2022	4	Good	Dry	F1	No target species

HVP	Date	Cloud	Visibility	Rain	Wind	Common Name
2	29/03/2022	4	Good	Dry	F1	No target species
4	29/03/2022	4	Good	Dry	F1	Tufted Duck
4	29/03/2022	4	Good	Dry	F1	Moorhen
4	29/03/2022	4	Good	Dry	F1	Coot
4	29/03/2022	4	Good	Dry	F1	Mallard
4	29/03/2022	4	Good	Dry	F1	Wigeon
4	29/03/2022	4	Good	Dry	F1	Goldcrest
4	29/03/2022	4	Good	Dry	F1	Teal
5	29/03/2022	4	Good	Dry	F1	Tufted Duck
5	29/03/2022	4	Good	Dry	F1	Teal
5	29/03/2022	4	Good	Dry	F1	Mallard
5	29/03/2022	4	Good	Dry	F1	Grey Heron
5	29/03/2022	4	Good	Dry	F1	Wigeon
5	29/03/2022	4	Good	Dry	F1	Mute Swan
6	29/03/2022	4	Good	Dry	F1	No target species
7	29/03/2022	4	Good	Dry	F1	Mute Swan
7	29/03/2022	4	Good	Dry	F1	Little Egret
7	29/03/2022	4	Good	Dry	F1	Moorhen
8	29/03/2022	4	Good	Dry	F1	Mute Swan
8	29/03/2022	4	Good	Dry	F1	Little Egret
8	29/03/2022	4	Good	Dry	F1	Teal
8	29/03/2022	4	Good	Dry	F1	Wigeon
8	29/03/2022	4	Good	Dry	F1	Mallard
8	29/03/2022	4	Good	Dry	F1	Moorhen
8	29/03/2022	4	Good	Dry	F1	Coot
8	29/03/2022	4	Good	Dry	F1	Tufted Duck
9	29/03/2022	4	Good	Dry	F1	Mute Swan
9	29/03/2022	4	Good	Dry	F1	Grey Heron
9	29/03/2022	4	Good	Dry	F1	Tufted Duck
9	29/03/2022	4	Good	Dry	F1	Goldcrest
10	29/03/2022	4	Good	Dry	F1	Mute Swan
10	29/03/2022	4	Good	Dry	F1	Grey Heron
11	29/03/2022	4	Good	Dry	F1	No target species
12	29/03/2022	4	Good	Dry	F1	Mute Swan
12	29/03/2022	4	Good	Dry	F1	Goldcrest
13	29/03/2022	4	Good	Dry	F1	No target species
14	29/03/2022	4	Good	Dry	F1	No target species
15	29/03/2022	4	Good	Dry	F1	Mute Swan
16	29/03/2022	4	Good	Dry	F1	Grey Heron
16	29/03/2022	4	Good	Dry	F1	Mallard
17	29/03/2022	4	Good	Dry	F1	No target species
18	29/03/2022	4	Good	Dry	F1	No target species
19	29/03/2022	4	Good	Dry	F1	No target species
20	29/03/2022	4	Good	Dry	F1	No target species

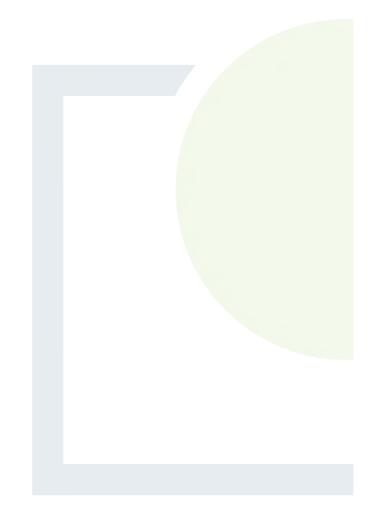
HVP	Date	Cloud	Visibility	Rain	Wind	Common Name
21	29/03/2022	4	Good	Dry	F1	No target species
22	29/03/2022	4	Good	Dry	F1	No target species
23	29/03/2022	4	Good	Dry	F1	No target species
24	29/03/2022	4	Good	Dry	F1	No target species
25	29/03/2022	4	Good	Dry	F1	No target species



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APPENDIX 5

Transect Survey Schedule and Conditions



Date	Transect	Cloud (Okta)	Precipitation	Visibility	Wind	Start Time	End Time
			February 202	2			
03/02/2022	1	5/8	Light Rain	Good	F2	09:15	09:47
03/02/2022	2	5/8	Light Rain	Good	F2	08:25	09:00
03/02/2022	3	5/8	Light Rain	Good	F2	10:10	10:41
03/02/2022	4	5/8	Light Rain	Good	F2	10:55	11:27
04/02/2022	5	5/8	Drizzle	Good	F2	08:30	09:05
04/02/2022	6	5/8	Drizzle	Good	F2	09:17	09:50
04/02/2022	7	5/8	Drizzle	Good	F2	09:58	11:00
04/02/2022	8	5/8	Drizzle	Good	F2	11:20	11:56
07/02/2022	9	7/8	Light Rain	Good	F2	08:25	08:57
07/02/2022	10	7/8	Light Rain	Good	F2	09:10	09:40
07/02/2022	11	7/8	Light Rain	Good	F2	09:55	10:30
07/02/2022	12	7/8	Light Rain	Good	F2	11:00	11:39
11/02/2022	13	6/8	Drizzle	Good	F1	09:01	09:35
11/02/2022	14	6/8	Drizzle	Good	F1	09:45	10:18
11/02/2022	15	6/8	Drizzle	Good	F1	10:30	11:02
11/02/2022	16	7/8	Light Rain	Moderat	F1	11:15	11:45
15/02/2022	17	4/8	Dry	Good	F1	10:28	11:00
15/02/2022	18	4/8	Dry	Good	F1	09:00	09:38
15/02/2022	19	4/8	Dry	Good	F1	09:45	10:16
15/02/2022	20	4/8	Dry	Good	F1	11:15	11:45
15/02/2022	21	4/8	Dry	Good	F1	11:55	12:30
			March 2022				
03/03/2022	1	8/8	Dry	Moderate	F1	09:00	13:00
03/03/2022	2	8/8	Dry	Moderate	F1	09:00	13:00
03/03/2022	3	8/8	Dry	Moderate	F1	09:00	13:00
03/03/2022	4	8/8	Dry	Moderate	F1	09:00	13:00
04/03/2022	5	8/8	Dry	Moderate	F1	08:30	12:40
04/03/2022	6	8/8	Dry	Moderate	F1	08:30	12:40
04/03/2022	7	8/8	Dry	Moderate	F1	08:30	12:40
04/03/2022	8	8/8	Dry	Moderate	F1	08:30	12:40
09/03/2022	9	7/8	Light Drizzle	Good	F1	08:30	12:45
09/03/2022	10	7/8	Light Drizzle	Good	F1	08:30	12:45
09/03/2022	11	7/8	Light Drizzle	Good	F1	08:30	12:45
09/03/2022	12	7/8	Light Drizzle	Good	F1	08:30	12:45
11/03/2022	13	7/8	Dry	Good	F1	08:40	13:10
11/03/2022	14	7/8	Dry	Good	F1	08:40	13:10
11/03/2022	15	7/8	Dry	Good	F1	08:40	13:10

Date	Transect	Cloud (Okta)	Precipitation	Visibility	Wind	Start Time	End Time
11/03/2022	16	7/8	Dry	Good	F1	08:40	13:10
12/03/2022	17	8/8	Dry	Moderate	F1	09:00	13:00
12/03/2022	18	8/8	Dry	Moderate	F1	09:00	13:00
12/03/2022	19	8/8	Dry	Moderate	F1	09:00	13:00
12/03/2022	20	8/8	Dry	Moderate	F1	09:00	13:00
12/03/2022	21	8/8	Dry	Moderate	F1	09:00	13:00



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