



Bird Impact Assessment Report

Sheskin South Wind Farm, Sheskin, Co. Mayo.

SSE Renewables Ireland Limited

February 2023

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1. Introduction

Consent is being sought by Sheskin South Renewable Energy DAC (the Applicant), which is a joint venture between SSE Renewables Ireland Limited and FuturEnergy Ireland, from An Bord Pleanála (ABP) (the competent authority) for the development of a 21 No. turbine wind development and other works in Sheskin and adjacent townlands near the village of Bangor Erris in County Mayo.

An Environmental Impact Assessment Report (EIAR) is being prepared by MKO Planning and Environmental Consultants.

Malachy Walsh and Partners (MWP) Engineering and Environmental Consultants have been undertaking ornithological surveys at the site on behalf of the Applicant on a monthly basis since October 2019. Bird surveys by MWP are on-going at the time of writing this report and are due to continue over the winter 2022/23 and summer 2023 survey periods.

MWP were commissioned by SSE Renewables Ireland Limited to prepare a Bird Impact Assessment Report (BIAR) which will be used by MKO in the preparation of the Ornithology chapter of the Environmental Impact Assessment Report (EIAR) for the Sheskin South Wind Farm project (the “Proposed Development”).

This BIAR describes the ornithology (avian ecology) of the Proposed Development site in County Mayo. The aim of this impact assessment is to assess whether the project is likely to result in significant effects on bird species considered to comprise avian receptors of the Proposed Development. Where potential impacts are identified, mitigation measures have been developed to avoid or reduce significant effects. This assessment is based on a desktop study including published literature, and on ornithological surveys completed consecutively at the study area over the three-year period from October 2019 to September 2022, inclusive.

This BIAR includes descriptions and results of all bird surveys undertaken by MWP during this timeframe, comprising the following survey periods:

- Winter 2019/2020
- Summer 2020
- Winter 2020/2021
- Summer 2021
- Winter 2021/2022
- Summer 2022

Relevant mapping, including the study area and site boundary, was provided by SSE at the outset and throughout the project.

The ornithological study area was defined as the project site and surrounds, extending away from the project site as necessary, to account for birds potentially affected by the Proposed Development.

Areas designated for nature conservation under the EU Habitats Directive and the EU Birds Directive (otherwise known as European Sites) have been considered in a standalone Screening for Appropriate Assessment report and Natura Impact Statement (NIS) report, both prepared by MKO and included as part of this planning application.

1.1 Scope of Assessment

This report comprises an ecological impact assessment of the Proposed Development focusing on avian (bird) species potentially affected by the project. The process will determine whether the site’s avian fauna will be

subject to impacts arising from the Proposed Development and will then characterise these impacts and their effects in terms of significance.

The report is set out as follows:

- **Section 2** describes the methodology used to collect information on the avian features of the site and surrounds (features may comprise species or protected sites of ornithological interest).
- **Sections 3.2 to 3.4** describe the avian features considered to be within the Zone of Influence (ZOI) of the project.
- **Section 3.5** identifies and selects those features considered to comprise receptors upon which impacts ensuing from the Proposed Development are likely. These are referred to as Important Ecological Features (IEFs).
- **Section 4** identifies the potential direct, indirect and cumulative impacts of the Proposed Development that are probable or likely to occur during its lifetime and assesses whether said impacts are likely to result in significant direct, indirect or cumulative effects upon the IEFs.
- **Section 5**, where necessary, proposes mitigation and monitoring measures to remove or reduce those impacts.
- **Section 6** assesses the residual ecological effects of the Proposed Development (those remaining after mitigation).

The 'zone of influence' (ZOI) for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities (CIEEM, 2019). The ZOI of the Proposed Development was established using professional judgement and relevant information including details of the project's extent and characteristics, the desk study and field survey results, Scottish Natural Heritage (SNH) (2016) guidance for establishing connectivity with Special Protection Areas (SPAs), and CIEEM (2019) and EPA (2022) guidance. The ZOI differs between different ecological receptors and is generally considered to extend out to a 500 m distance around the Proposed Development site, out to a maximum of 2 km in the case of some species.

Features of avian significance occurring or likely to occur within the ZOI of the Proposed Development were considered as potential IEFs. These are the important features that could potentially be affected by the project and should be subject to detailed assessment (CIEEM, 2019). IEFs were considered to be bird species identified as important based on results of the ornithological surveys completed at the site over the three-year survey period (October 2019 – September 2022, inclusive), as well as designated sites for nature conservation which support important bird populations.

This report quantifies any potential impacts relating to these IEFs and identifies any measures required to avoid, reduce and mitigate likely significant effects. Identification of effects and prescribed mitigation has been derived following a collaborative approach working with a multi-disciplinary team including ornithologists, ecologists, and project engineers. The results of the ornithological surveys have been utilised to inform the design of the project, thereby minimising potential effects on avian ecology and sensitive habitats.

The information provided in this report describes the baseline ornithological environment; provides an accurate prediction of the potential impacts on identified IEFs from the Proposed Development; prescribes mitigation where necessary; and describes the residual effects on avian ecology.

1.2 Legislation and Guidance

The most important legislation underpinning biodiversity and nature conservation in Ireland are the:

- Wildlife Acts 1976 to 2021 (as amended)
- Council Directive 92/43/EEC (as amended), referred to as the 'Habitats Directive'
- Council Directive 2009/147/EC (as amended), referred to as the 'Birds Directive'
- European Communities (Birds and Natural Habitats) Regulations 2011 to 2015 (as amended)
- Planning and Development Act (2000) (as amended)
- Planning and Development Regulations 2001 to 2022 (as amended)

The impact assessment was undertaken in accordance with the recent EPA best-practice guidance 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, 2022).

The following other guidance documents and relevant publications were also considered:

- Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species (NatureScot, 2022)
- Birds of Conservation Concern in Ireland 4: 2020 – 2026 (Gilbert *et al.*, 2021)
- Guidance document on wind energy developments and EU nature legislation. Guidance document (European Commission, 2020)
- Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2019)
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009)
- European Commission Guidance on the preparation of the Environmental Impact Assessment Report (EC, 2017)
- Best Practice Guidelines for the Irish Wind Energy Industry (Irish Wind Energy Association, 2012)
- Recommended bird survey methods to inform impact assessment of onshore wind farms. Scottish Natural Heritage (SNH, 2017)
- Assessing Connectivity with Special Protection Areas (SPAs). Scottish Natural Heritage (SNH, 2016)
- Assessing the Cumulative Impact of Onshore Wind Energy Developments. Scottish Natural Heritage (SNH, 2012)
- Assessing Significance of Impacts from Onshore Windfarms on Birds Outwith Designated Areas (SNH, 2006)
- Birds and wind farms in Ireland: a review of potential issues and impact assessment (Percival, S. M., 2003)

1.3 Description of the Development

The Proposed Development comprises the construction of 21 No. wind turbines and all associated works. The proposed turbines will have a blade tip height of 200 m above the top of the foundation. The Applicant is seeking a ten-year planning permission. The Proposed Development comprises:

- Construction of 21 No. wind turbines and associated hardstand areas with the following parameters:
 - A total tip height of 200 m,
 - Hub height of 115 m, and
 - Rotor diameter of 170 m.
- All associated underground electrical and communications cabling connecting the turbines to the wind farm substation.
- 1 no. Meteorological Mast of 115 m in height.
- Upgrade of existing tracks and roads, provision of new permanent site access roads including a new site entrance
- 2 no. borrow pits
- 11 no. permanent peat and spoil repository area / Permanent placement of peat and spoil along sections of site access roads as part of the peat and spoil management plan for the site
- 4 no. temporary construction compounds
- Permanent recreation and amenity works, including marked trails, seating areas, amenity car park, and associated amenity signage
- All temporary works associated with the facilitation of turbine component and abnormal load delivery
- Site drainage
- Site signage
- Ancillary forestry felling to facilitate construction and operation of the Proposed Development; and
- All associated site development works.

This application is seeking a ten-year permission and 35-year operational life from the date of the development's commissioning.

The layout of the Proposed Development has been led by consideration of constraints and facilitators, thereby avoiding the environmentally sensitive parts of the site. The roads layout for the Proposed Development maximises the use of the existing onsite access roads and tracks where possible, with approximately 7.8 km of existing roadway/ tracks requiring upgrading and approximately 14.2 km of new access road to be constructed.

The Environmental Impact Assessment Report (EIAR) Site Boundary for the Proposed Development encompasses an area of approximately 1,216 hectares, the majority of which comprises commercial forestry plantation. The permanent footprint of the Proposed Development measures approximately 24.2 hectares.

It is intended to construct a 110 kV substation within the site and to connect this to the existing Bellacorick 110 kV substation, located 5 km southeast of the intended on-site substation location, in the townland of Bellacorick. The intended grid connection route will be via underground cabling (UGC) located within existing forestry tracks, local county roads and national secondary roads. The cabling route measures approximately 6.9 km in total.

The majority of the area encompassed by the EIAR Site Boundary is currently used for commercial forestry, a small proportion of which will be felled to accommodate the Proposed Development. A total area of approximately 106 hectares of commercial forestry will require replacement elsewhere in the State, subject to licence.

1.4 Site Location

The Proposed Development site is located in northwest County Mayo, approximately 5.2 km northeast of Bangor Erris and 20 km northwest of Crossmolina. The site can be accessed via a local road L52928 which travels north from the N59 National Road connecting these towns (see **Figure 1** below). The Proposed Development site comprises mainly commercial forestry surrounded by peatland habitats.

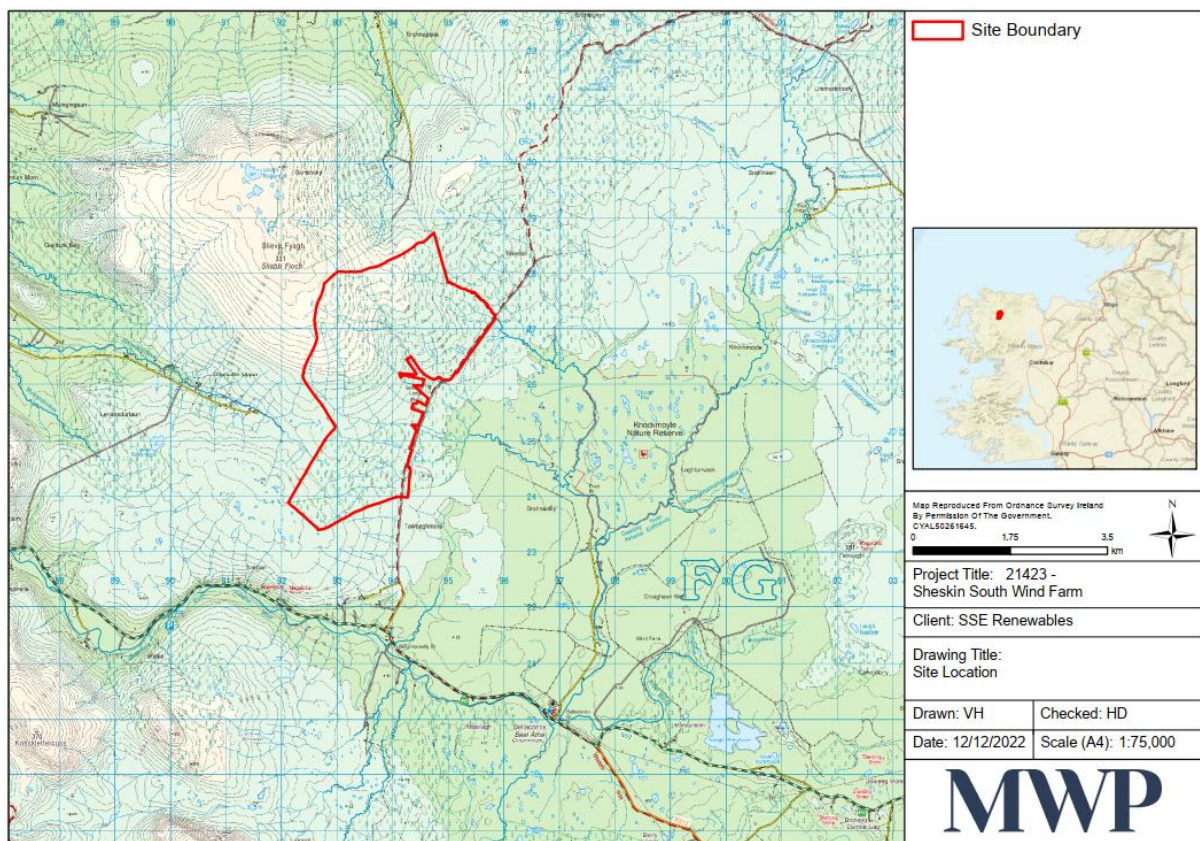


Figure 1. Sheskin South Wind Farm application site boundary and location

1.5 Consultation

A consultation exercise was undertaken by MKO with regard to the Proposed Development. **Table 1** provides a list of the organisations consulted by MKO and notes where responses have been received.

Table 1. Scoping response summary (Source: MKO)

No.	Consultee	Response to Consultation
1	BirdWatch Ireland	No response received
2	National Parks and Wildlife Service	Response received 31 st December 2021
3	Irish Raptor Study Group	No response received
4	Irish Wildlife Trust	No response received
5	Irish Red Grouse Association	No response received

A pre-planning meeting was held between MKO, SSE and NPWS on the 24th of September 2021. During the meeting, the NPWS outlined the importance of Slieve Fyagh in relation to key breeding species and made reference to the potential effects on merlin (*Falco columbarius*) should there be a requirement for pre-construction tree felling. They also emphasised the importance of acquiring bird data, pre and post construction, from other nearby wind farm projects.

A second pre-planning meeting was held with NPWS on the 24th January 2022, attended by MKO, SSE and MWP. During this meeting, merlin and other raptor species were discussed, along with golden plover (*Pluvialis apricaria*) and dunlin (*Calidris alpina*), with reference made to the Slieve Fyagh area and the unpublished NPWS report 'Report on Breeding Waders on Slieve Fyagh SAC Plateau 2018'. Please see **Section 2.4.2.4** and **3.2.7** for more information.

1.6 Statement of Authority

This report has been prepared by Hazel Dalton (BSc., BBus.), Senior Ecologist with MWP, and Deirdre O' Brien (BSc.), Ecologist with MWP, together with Brian Madden (BA. Mod., Ph.D., MCIEEM) of BioSphere Environmental Services, who completed the impact assessment and mitigation sections (**Sections 4, 5 and 6**).

Hazel is a Senior Ecologist with almost eight years' experience with MWP since graduating in 2015, having worked with the company on a periodic part-time basis prior to graduating. She has experience in ecological surveying and impact assessment for both Appropriate Assessment (AA) and EIA and has authored and contributed to numerous screening reports for AA, Natura Impact Statements (NIS) and Ecological Impact Assessment (EclA) reports. She has completed assessments for a wide variety of projects including for renewable energy, infrastructure, coastal development, and other development projects. She is an experienced field ecologist and has a diverse ecological survey profile including for habitats and flora, mammals and birds.

Deirdre has been working with MWP since 2018 and on a full-time basis since 2019. During that time, she has carried out field surveys for flora and invasive species, birds and freshwater macroinvertebrate sampling and identification, including for freshwater pearl mussel. She has been formally trained in Stage 1 and Stage 2 freshwater pearl mussel Surveying (Dr. Evelyn Moorkens). She has also gained experience in standard field survey methodologies including mammal surveying and habitat mapping. She has acquired experience in the completion of AA screening reports, NIS reports and EclA. She has experience with general ecological report writing, has completed numerous reports for bird survey work and is experienced in collation of survey data.

Brian graduated in Natural Sciences from the University of Dublin in 1984 and earned a Ph.D. degree in 1990 from the National University of Ireland for his research on ecosystem processes in raised bogs. Since then, he has carried out botanical surveys and habitat assessments for most terrestrial habitats which occur on the island of Ireland. Brian is an experienced ornithologist, with particular interests in birds of prey and peatland birds. Brian is the principal ecologist with BioSphere Environmental Services. The consultancy specialises in energy related developments, including wind farms, solar farms, overhead power lines and substations. Brian has been the lead ecologist on the Oweninny Wind Farm Project since 2010.

This report was internally reviewed by Úna Williams (BSc., MSc.), Ecologist and Environmental Scientist with MWP. She is experienced in various ecological field survey methodologies including habitat mapping and zoological surveys and has spent time carrying out ecological research in Costa Rica and in Seville. She has undertaken assessments for a wide variety of projects including for renewable energy developments, and infrastructural and coastal development projects. Úna has carried out numerous Collision Risk Models and has completed many ecological reports including screening reports for AA, NIS reports, EIA and EclA.

The field surveys were designed by John N. Murphy (former Project Ornithologist with MWP and consultant Senior Ornithologist), and managed and co-ordinated by Ciara Barry-Hannon (BSc.), former Ecologist with MWP. Field surveyors involved in the project included Páidi Cullinan, Shane Cully, Austin Cooney, John Collins, Luíse Ní Dhonnabháin, Noreen Lynch, Ciara Barry-Hannon and Deirdre O'Brien. The reliability of the survey work was dependent on the observers used to collect the underlying information. Using appropriately skilled and experienced observers is therefore essential.

Individual surveyor profiles outlining surveyor competencies, expertise and previous experience are included in **Appendix 1**.

2. Methodology

2.1 Scientific Nomenclature: Conventions

Species nomenclature follows the standard form of the common name, followed by the binomial, on the first instance of usage in the text or the first instance of usage in a table. Thereafter, for any subsequent usage, common names only are used.

2.2 Desktop Study

In 2019, an initial desktop study was carried out by MWP prior to the commencement of the field surveys. This was supplemented by further desktop studies undertaken during the preparation of the various bird survey reports prepared by MWP for the Proposed Development.

The desktop studies provided the opportunity to gain an understanding of the bird populations' potentially occurring via an investigation of the habitats present and previous species records. The desktop study area included lands directly affected by the Proposed Development, as well as areas that are geographically distant from the project but whose avian interests may be indirectly affected by the various phases of the project from construction through to decommissioning.

A comprehensive desk study was also undertaken by MKO in January 2022 in relation to preparation of the BIAR for the project to search for any relevant information on species of conservation concern that may potentially make use of the Proposed Development site. The MKO desk-top assessment included a thorough review of

available ornithological data and included a review of specially requested records from the NPWS Rare and Protected Species Database. This desk-top study was provided by MKO to MWP and was used in the preparation of this report. Birdwatch Ireland I-WeBS site count data available on-line was reviewed again in January 2023 and the most recent data available was incorporated into the report.

As part of the desk-top studies undertaken, available ornithological information and data was reviewed, including:

- Ordnance Survey Ireland (OSI) aerial photography and 1:50000 mapping, and other sources of online aerial imagery
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC)
- Review of Bird Atlases: (Sharrock, 1976; Lack, 1986; Gibbons *et al.*, 1993; Balmer *et al.*, 2013)
- Review of Birds of Conservation Concern in Ireland (BoCCI) 2020-2026 (Gilbert *et al.*, 2021), and Birds of Conservation Concern in Ireland (BoCCI) 2014-2019 (Colhoun & Cummins, 2013)
- Review of BirdWatch Ireland I-WeBS (Irish Wetland Bird Surveys) site information
- General ornithological information available from BirdWatch Ireland (www.birdwatchireland.ie)
- Review of the 2015 National Survey of Breeding Hen Harrier in Ireland Report (Ruddock *et al.* 2016)
- Other information sources and reports footnoted throughout the report

2.3 Criteria for Identifying Target Species

Target species are typically those species which are afforded a higher level of legislative protection or are considered to be more sensitive to potential impacts from wind farm developments by virtue of their behaviour (SNH, 2017). Target species should be restricted to those likely to be affected by wind farms (SNH, 2017).

A reconnaissance survey was undertaken by the Project Ornithologist prior to the commencement of bird surveys to review the habitats at the Proposed Development site and the general landscape character of the study area in the context of its potential ornithological importance.

The results of the comprehensive desk-top study, in conjunction with the site reconnaissance surveys, were used to identify target bird species which were considered likely to occur within the ZOI of the wind farm development and likely to be susceptible to potential impacts. These target species formed the main focus of the bird surveys undertaken.

With regards to drawing up the target species list for Sheskin South, the SNH (2017) guidance was followed. This guidance outlines important sources of potential target species.

In conjunction with the findings of the desk-top study, the target species list was drawn from:

- Annex I of the EU Birds Directive
- Species protected under the Fourth Schedule of the Wildlife Acts 1976-2012 (buzzards, eagles, falcons, harriers, hawks, kites, osprey, owls)
- Red-listed birds of Conservation Concern (Gilbert *et al.*, 2021; Colhoun & Cummins, 2013)

To ensure other species which may potentially be sensitive to wind farms were not missed during surveys, all other species of gull, wader, duck, diver, goose, swan, cormorant and heron not included as target species were included as secondary species, and flight activity data recorded where it did not infringe on the collection of target species data.

It is generally considered that passerine species are not significantly impacted by wind farms (SNH, 2017); however, counts of passerines seen/heard during VP surveys were recorded to provide a complete picture of bird usage of the site.

2.4 Field Surveys

Initial reconnaissance walkovers of the site were carried out to assist in determining the required scope and extent of the ornithological surveys. Field surveys were undertaken to gather detailed information on bird distribution and flight activity to assist in predicting the potential effects of the wind farm proposal on local bird populations.

The field surveys comprised two main elements: vantage point (VP) watches to gather flight activity data for target species, and targeted distribution and abundance surveys to gain an understanding of bird species occurring in the area which may be subject to impacts from the Proposed Development.

The targeted distribution and abundance surveys comprised the following elements:

- Transect and Point Count surveys
- Winter Season Walkover surveys
- Breeding Season Walkover surveys
- Breeding Season Hinterland surveys
- Winter Season Hinterland surveys
- Hen harrier Winter Roost surveys

2.4.1 Vantage Point (VP) Surveys

VP surveys were carried out in accordance with the Scottish Natural Heritage guidance document '*Recommended bird survey methods to inform impact assessment of onshore wind farms*' (SNH, 2017). The overall aim of these surveys was to quantify the level of target species flight activity within the flight activity survey area which was taken to be that area encompassing the Proposed Development site extending out to a distance of 500 m beyond the Proposed Development site boundary.

SNH (2017) recommends a minimum 2-year survey period comprising 72 hours per VP location divided between seasons (36 hours breeding and 36 hours non-breeding) per year. VP surveys were undertaken at the Proposed Development site on a monthly basis by qualified personnel for the winter and breeding seasons encompassed in the 3-year period October 2019 to September 2022, inclusive. 36 survey hours were achieved at each VP location in each season during the overall survey period (except in the case of VP6 in October 2019 when only 34 VP hours were achieved). Overall, the minimum number of VP hours was achieved at all VPs in line with SNH (2017). Please refer to **Appendix 3** for more detailed information on VP survey effort.

VP surveys are on-going at the site (winter 2022/23) and are due to continue into the summer 2023 bird survey season.

2.4.1.1 Selection of VP Locations

To achieve maximum visibility of the site, VPs should ideally be located on elevated areas or other locations that provide clear views over the survey area. According to SNH (2017), VP viewsheds should extend to 2 km and the full extent readily viewed using a telescope, and since detection of flight activity decreases with distance, VPs should be located as close to the survey area as possible. To minimise observer effect on bird behaviour, VPs are best located outside the survey area where feasible. SNH (2017) stipulates that if VPs are located within the survey

area, they should not be used simultaneously with other VP's which overlook them to minimise potential observer effect on bird behaviour.

VP locations were selected to provide maximum site coverage. Several factors limited selection of VP locations including the forested nature of the site, site topography, and the health and safety (H&S) risks associated with the open moorland and lake habitats surrounding much of the site. This is discussed further in **Section 2.9.2** below.

Six VP locations were selected and surveyed over the course of the winter and breeding seasons. The location of VP6 was revised in December 2019 and moved to an alternative location further south to achieve greater visibility of the survey area. The current location of VP6 has remained unchanged since then.

In April 2022, the location of VP1 had to be temporarily moved due to difficulties in gaining access to the VP, located in the neighbouring Oweninny Wind Farm. An alternative location for VP1 was selected to the south of the Proposed Development site. This revised VP1 location was used for a five-month period (April to August 2022, inclusive) until access issues were rectified, after which the original VP1 location was used again from September 2022 onwards. More than the 2-year SNH recommended minimum VP survey period was achieved at the original VP1 location.

The Irish Transverse Mercator (ITM) grid co-ordinates for each VP location and the minimum survey effort (months) achieved at each VP location are provided in **Table 2** below. Maps showing the locations of each VP and the viewsheds from each VP in order to show the extent of site coverage are provided in **Appendix 2**. A summary of survey effort at individual VPs, including survey dates, times and weather conditions can be found in **Appendix 3**.

Table 2. VP locations at the site and minimum VP survey effort achieved at each VP location

Vantage Point	ITM Grid Coordinates	Survey period covered consecutively to date	Minimum VP Survey Effort
1 (original)	495662 824760	Oct 2019 – March 2022 incl.; Sept 2022	31 months
1 (temporary)	494089 823306	April 2022 – August 2022 incl.	5 months
2	492457 825285	Oct 2019 – September 2022 incl.	36 months
3	493120 828233	Oct 2019 – September 2022 incl.	36 months
4	493942 831479	Oct 2019 – September 2022 incl.	36 months
5	494241 829412	Oct 2019 – September 2022 incl.	36 months
6	495334 826541	Dec 2019 – September 2022 incl.	34 months

2.4.1.2 Viewshed Analysis of VP Locations

Viewshed analysis was undertaken for each VP location to determine visual coverage of the survey area. Viewsheds were set to observer height of 1.6 m and a target height of 25 m. Viewsheds encompassed a 2 km radius with a 360-degree view. Each viewshed was then cropped to a 180-degree arc showing the relevant direction of view. 75% of the current wind farm site boundary is encompassed within the VP viewsheds (please see **Section 2.9.2** below).

Viewsheds from each VP showing the extent of site coverage are provided in **Appendix 2**.

2.4.1.3 Flight Data Recording

During VP surveys the flight behaviour of target species was recorded. Based on the precautionary principle, flight behaviour of secondary species was also recorded; however, recording of secondary species was subsidiary to recording of target species (SNH, 2017). At the time of observation, the following information was recorded for each species:

- The time the bird was detected
- The flight direction and duration (seconds) within various flight height categories
- Sex and age of the bird(s) (adult/juvenile), where possible to determine
- Type of activity/behaviour such as hunting, flying, displaying, etc
- Estimation of actual flight height
- Habitat(s) in which the bird was observed
- Weather conditions at time of sighting including wind speed, direction, degree of visibility.

Once an initial sighting was made, each target or secondary species was observed until lost from view. Flight paths were recorded as they were observed, including where birds travelled to or if observed outside of the flight activity survey area; such that all flight activity within the broader landscape was encompassed.

A unique map identifier code was assigned to each target/secondary species which corresponds to a mapped flight path. This information is provided in tabulated format in **Appendix 4**. All flight paths are provided in **Appendix 5**.

2.4.1.4 Recording of Other Species

During the VP surveys, counts of non-target/secondary species were also recorded where recording did not infringe on recording of target/secondary species flight data. Monthly peak counts of all non-target/secondary species of conservation concern recorded during VP surveys are provided in **Appendix 6**.

2.4.2 Distribution and Abundance Surveys

A variety of distribution and abundance surveys were carried out to record numbers and distributions of local and migrant bird species using the site or surrounding area that might be affected, either directly or indirectly, by the proposal.

2.4.2.1 Transect Survey with Point Counts

A transect survey is a survey along a defined route within the survey area. The overall aim of the transect surveys was to assess general distribution of all bird species, including target species, within the Proposed Development site and gather data on bird usage of the site. The methodology was broadly based on methods described in Bibby *et al.*, (2000) and Gilbert *et al.*, (1998).

Transect surveys were completed within the Proposed Development site using two separate transect routes (A & B) which utilised existing internal forestry access tracks within the site, with a third (C) located along the north-eastern perimeter of the site (see **Appendix 2**). There are no existing forestry tracks within the northern part of the Proposed Development site and so this part of the site was not covered by transect surveys.

Transects were completed generally on a bi-monthly basis in the first year of survey (winter 2019/20 and summer 2020), after which they were completed on a monthly basis (both winter and summer seasons) for the following two full years.

Table 3. Transect survey months (2019 – 2022)

Survey Period	Corresponding Transect Survey Months
Winter 2019/20	November 2019, January and February 2020
Winter 2020/21	October, November, December 2020, January, February and March 2021
Winter 2021/22	October, November and December 2021, January, February and March 2022

Survey Period	Corresponding Transect Survey Months
Breeding 2020	June, August and September 2020
Breeding 2021	April, May, June, July, August and September 2021
Breeding 2022	April, May, June, July, August and September 2022

The transect routes were selected to provide representative coverage of all habitats, both open and closed, occurring within the Proposed Development site, comprising mainly mature forestry and clearfell. There are some ponds located within the south of the site, which were visible from Transect A.

Counts of all bird species seen or heard, typically within 100 m of the transect routes, were recorded, although the topography of the landscape often allowed for detection of birds at greater distances. Where target and/or secondary species were recorded, areas of activity and general behaviour was noted/mapped. Birds were also surveyed during each transect using point count (PC) methodologies. Transect A encompassed three PC locations (PC1- PC3), Transect B encompassed eight PC locations (PC1- PC8) and Transect C encompassed five PC locations (PC1- PC5).

A map showing the transect survey routes and PC locations within the study area is included in **Appendix 2**. Details on each individual transect survey carried out including survey date, time and weather conditions can be found in **Appendix 7**. Tabulated results of peak counts for all species recorded during transect and point count surveys are provided in **Appendix 8**.

2.4.2.2 Breeding Season Hinterland Survey

Driven transects, encompassing the area out to and extending beyond a 5 km radius of the Proposed Development site, were undertaken on the 12th May and the 30th June 2021, and the 26th September 2022. The purpose of these surveys was to identify any potential areas of interest within the area surrounding the site for breeding waterbirds and birds of prey, and record evidence of breeding activity, if any, and encompassed the recommended general 2 km survey area from the site for raptor species.

Maps showing these survey locations are included in **Appendix 2**. Details on each survey carried out including survey date, time and weather conditions and tabulated results can be found in **Appendix 11**.

2.4.2.3 Winter Walkover Surveys

Winter walkover surveys were undertaken to determine the presence of target species within areas of potentially suitable habitat within the study area surrounding the Proposed Development site. The methodology was broadly based on methods described in Bibby *et al.*, (2000). All target and secondary species were recorded, with a focus on red grouse (*Lagopus lagopus hibernicus*), merlin, golden plover and other wader and raptor species. Winter walkover routes were primarily located within the 500 m survey area extending out from the site boundary, and sometimes extending beyond this area, in line with the SNH (2017) guidance on a minimum 500 m main wintering bird survey area.

Please refer to **Appendix 2** for locations of winter walkover survey routes utilised during individual winter seasons.

Winter 2019/20

Walkover surveys were carried out with a focus on red grouse (*Lagopus lagopus hibernicus*), merlin and golden plover on the 27th February 2020. Three walkover routes, located within suitable winter habitat for these species, were surveyed.

Winter 2020/21

Walkover surveys were carried out with a focus on red grouse, merlin and golden plover on the 22nd February 2021. Three walkover routes, located within suitable winter habitat for these species, were surveyed.

Winter 2021/22

Walkover surveys were carried out with a focus on red grouse, merlin and golden plover on the 23rd November 2021, 20th January 2022 and the 15th February 2022. A walkover route encompassing suitable winter habitat for these species was surveyed to the north of the Proposed Development site. This walkover route encompasses lakes in the Slieve Fyagh area, located to the north-west of the site.

Maps showing the winter walkover routes at the Sheskin South site are included in **Appendix 2**. Details on the surveys carried out including survey dates, times and weather conditions and the results can be found in **Appendix 9**.

2.4.2.4 Breeding Season Walkover Surveys

Breeding season walkover surveys were undertaken to determine the presence of target species within areas of potentially suitable habitat within the study area. The methodologies were broadly based on methods described in Bibby *et al.*, (2000) and Gilbert *et al.*, (1998). All target and secondary species were recorded, with a focus on woodcock, red grouse, merlin and other raptors, golden plover and other moorland breeding species such as snipe and dunlin. Breeding season walkover routes were primarily located within the 500 m survey area extending out from the site boundary, and sometimes extending beyond this area, in line with the SNH (2017) guidance on a minimum 500 m main breeding bird survey area.

Breeding Season 2020

Nocturnal walkover surveys for breeding nightjar (*Caprimulgus europaeus*) and woodcock (*Scolopax rusticola*) were carried out on the 11th June 2020 between 23.00 and 01.10 to record any potential breeding activity. Two separate walkover routes (A & B) were utilised within areas of suitable breeding habitat within the Proposed Development site. Surveyors slowly walked the transect routes while recording any displaying and/or calling male birds.

Please refer to **Appendix 2** for the locations of the nocturnal walkover survey routes utilised in the 2020 breeding season.

Breeding Season 2021

Walkover surveys, with a focus on red grouse, merlin and golden plover, were carried out on the 12th May and 9th July 2021. Two survey routes encompassing areas of suitable habitat, partially located within the 500m survey area, were utilised. Any birds seen or heard as surveyors walked along the survey routes were recorded.

A nocturnal walkover survey for breeding woodcock and nightjar was carried out on the 2nd June 2021 between 22.30 and 23.50 to record any potential breeding activity. One walkover route was used which utilised existing internal forestry access tracks within the Proposed Development site, as well as the trackway bounding the eastern perimeter of the Proposed Development site.

Please refer to **Appendix 2** for the locations of the walkover survey routes utilised during the 2021 breeding season.

Breeding Season 2022

A nocturnal walkover survey for breeding woodcock and nightjar was carried out on the 20th June 2022 between 21.45 and 23.15 to record any potential breeding activity. The same nocturnal walkover survey route as was used in 2021 was utilised in 2022. Please refer to **Appendix 2** for the location of the nocturnal walkover survey routes utilised in the 2022 breeding season.

Moorland Breeding Bird Survey (adapted Brown and Shepherd 1993 method)

Following a pre-application consultation with NPWS in January 2022, an additional survey targeting moorland breeding birds was undertaken during the 2022 breeding season. The survey area encompassed the area of bog to the west and north of the Proposed Development site. The survey had a particular emphasis on golden plover and other breeding waders in this area, with a focus on expanding upon the results of the 2018 NPWS survey on breeding waders on the plateau area of the Slieve Fyagh SAC (NPWS, 2018 unpublished report). The SAC boundary is contiguous to the boundary of the Proposed Development site with the plateau area located approximately 150 m north-west of the Proposed Development site boundary. In addition to waders, other target species included raptors, waterbirds, gulls and other species of conservation concern.

The survey methodology employed in the 2022 breeding season was based on an adapted Brown and Shepherd (1993) survey method for moorland breeding birds as outlined in Gilbert *et al.*, (1998) and SNH (2017), and also had regard to the methodology employed during the 2018 NPWS survey. The 2022 survey comprised four separate survey visits. Visits were undertaken on the following dates: 4th May, 21st May, 14th July and 21st July 2022. No visits were undertaken in either April or June 2022 due to survey constraints (see **Section 2.9.3** below).

On a highly precautionary basis, the survey area was extended out to 1 km from the site boundary, exceeding the 500 m survey area buffer typically employed for such surveys. During each visit, four parallel transects were walked. The surveyors walking the transect routes surveyed an area encompassing 125 m to either side of each transect, recording the locations and activity of breeding birds within the survey corridor. Therefore, all areas of suitable habitat within 125 m were walked within the survey area, out to a maximum distance of 1 km from the Proposed Development site boundary.

Please refer to **Appendix 2** for a figure showing the area of survey for the 2022 moorland breeding bird survey.

Birds were considered to represent breeding birds if they were observed displaying or singing, if nest, eggs or young were located, if adults repeatedly alarm called or if they performed distraction displays or were observed in territorial disputes. The number of breeding pairs within the study area was estimated for each survey visit.

After each visit, mapped observations were reviewed to identify breeding pairs / territories taking into account those records considered to comprise duplicate observations. As per adapted Brown and Shepherd (1993), individuals were deemed to represent different breeding pairs at this stage only if the distance between them exceeded 500 m (200 m for dunlin). At the end of the season, all four maps were combined to produce a final map identifying the total estimated number and location of moorland breeding birds present in the survey area. This was done in consultation with the field surveyors who completed the surveys.

Details on the surveys carried out including survey dates, times and weather conditions and the results can be found in **Appendix 10**. Results are mapped in **Appendix 15**.

2.4.2.5 Winter Hinterland Surveys

Winter hinterland surveys were undertaken to identify areas of importance for target species in the wider landscape with a particular focus on large assemblages of wintering waterbirds. Counts were undertaken at selected sites considered to be of importance for wintering waterbirds within a 20 km radius of the Proposed Development site, taking into account the foraging distances of certain species of geese during the winter season (SNH, 2016).

Counts were undertaken in various months during the winter 2019/20, winter 2020/21 and winter 2021/22 seasons at several locations which included Carrowmore Lake, Sruwaddacon Bay, Traw Kirtaun/Barr na Trá Bay, Lough Nahelly and Lough Dahybaun. These are briefly described in the following table.

Table 4. Description of winter hinterland surveys undertaken

Winter Hinterland Survey Site	Location	Brief Description
Lough Dahybaun	6.6 km to south-east of wind farm site	Encompassed within Lough Dahybaun SAC (002177) (refer to Section 3.2.2 below).
Carrowmore Lake	7.4 km west of wind farm site	Encompassed within Carrowmore Lake SPA (004052) designated for Sandwich Tern (<i>Sterna sandvicensis</i>), and Carrowmore lake Complex SAC (000476) (refer to Section 3.2.2 below).
Sruwaddacon Bay	10.2 km northwest of wind farm site	Encompassed within Blacksod Bay/ Broad Haven SPA (004037). Designated for variety of wader and waterbird species. Also encompassed within Glenamoy Bog Complex SAC (000500) (refer to Section 3.2.2 below).
Traw Kirtaun/Barr na Trá Bay	13.8 km to west of wind farm site	Encompassed within Blacksod Bay/ Broad Haven SPA (004037). Designated for variety of wader and waterbird species. Also encompassed within Broadhaven Bay SAC (000472) (refer to Section 3.2.2 below).
Lough Nahelly	17.9 km west of wind farm site	Encompassed within Blacksod Bay/ Broad Haven SPA (004037). Designated for variety of wader and waterbird species. Also encompassed within Mullet/ Blacksod Bay Complex SAC (000470) (refer to Section 3.2.2 below).

Maps showing these survey locations are included in **Appendix 2**. Details on each survey carried out including survey date, time and weather conditions and tabulated results can be found in **Appendix 11**. As these survey areas are located well outside the ZOI of the Proposed Development, species results are summarised in **Appendix 14** Non-core Bird Survey Data.

A summary of the dates on which the winter counts were conducted at each site are provided in the following tables.

Table 5. Winter hinterland surveys – Winter 2019/20 season

Count Site	2019				2020		
	31/10	28/11	11/12	18/12	26/01	28/01	26/02
Carrowmore Lake	x	x	x	x	x		x
Sruwaddacon Bay	x	x	x	x	x		x
Traw Kirtaun (Broadhaven Bay)	x	x	x	x	x		x
Lough Nahelly	x	x	x			x	

Table 6. Winter hinterland surveys – Winter 2020/21 season

Count Site	2020			2021			
	12/10	11/11	08/12	20/01	11/02	17/02	11/03
Carrowmore Lake	x	x	x	x		x	x
Sruwaddacon Bay			x	x	x		
Traw Kirtaun (Broadhaven Bay)			x	x	x		
Lough Nahelly			x	x	x	x	

Table 7. Winter hinterland surveys – Winter 2021/22 season

Count Site	2021					2022					
	05/10	19/11	23/11	25/11	18/12	17/01	21/02	22/02	20/03	21/03	29/03
Carrowmore Lake	x	x			x	x	x				x
Sruwaddacon Bay	x	x			x	x	x				x
Traw Kirtaun (Broadhaven Bay)	x	x			x	x	x		x		x
Lough Nahelly	x	x			x	x	x		x		
Lough Dahybaun	x		x	x	x	x		x		x	

2.4.2.6 Hen Harrier Winter Roost Survey

No potential hen harrier winter roost-sites were identified within a 2 km radius of the Proposed Development site, comprising the recommended survey area for this species, as per SNH, 2017.

An initial winter roost survey for hen harrier was undertaken in January 2020 at a previously known roost-site, located approximately 7.5 km away from the Proposed Development site. This roost-site is located outside the ZOI of the Proposed Development. Surveys were undertaken to gather supplementary data about hen harrier in the wider landscape.

From the commencement of the winter 2020/21 survey season, surveys for roosting hen harrier were undertaken during the winter months at this location on a monthly basis. Surveys had regard to O'Donoghue (2019). Surveys commenced before sunset and continued until visibility was lost. Winter roost watches at this location were conducted on the following dates:

Table 8. Hen harrier winter roost survey months

Survey Period	Corresponding Survey Months
Winter 2019/20	29 th January 2020
Winter 2020/21	12 th October, 11 th November and 8 th December 2020, 20 th January, 22 nd February and 19 th March 2021
Winter 2021/22	5 th October, 23 rd November, 25 th November and 18 th December 2021, 17 th January, 22 nd February and 21 st March 2022

This survey area is located outside the ZOI of the Proposed Development. Survey information, such as survey dates, times and weather conditions, as well as survey results, are included in a confidential appendix (**Appendix 15**), given the highly sensitive nature of the data.

2.5 Evaluation of Conservation Importance of Populations of Key Species

Estimates of national population sizes were obtained from the NPWS Article 12 Reporting (2008-2012) which details the status and trends of bird species occurring in Ireland, as well as other sources referenced in relevant sections of this report. Where available, estimates for mean county wintering populations of relevant species were derived from recent I-WeBS data for sites in County Mayo, provided by MKO.

2.5.1 Geographical Framework

The conservation importance of populations of key species identified to occur within the study area was evaluated with regard to 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009). These guidelines, which are specific to Ireland, set out the context for the determination of value on a geographical basis with a hierarchy (International through to Local) assigned based on the importance of any particular ecological receptor.

The NRA (2009) guidelines provide a basis for determination of whether any particular site or species is of importance on the following scale:

- International
- National
- County
- Local Importance (higher value) and
- Local Importance (lower value)

The NRA (2009) guidelines clearly set out the criteria by which each geographic level of importance can be assigned. At the lowest end of the scale, Locally Important (lower value) receptors contain habitats and species that are widespread, of low ecological significance, and are of importance only in the local area. In contrast, Internationally Important receptors can comprise sites designated for conservation at an international level as part of the Natura 2000 Network (SAC or SPA) or which provide the best examples of habitats, or internationally important populations of protected flora and fauna. The value of bird species is assessed on biodiversity value, legal status and conservation status.

2.6 Identification of Important Ecological Features (IEFs)

For species, Important Ecological Features (IEFs) were considered to be species occurring within the ZOI of the development upon which likely significant effects are anticipated and thus are subject to impact assessment.

Those identified as IEFs (**Section 3.5**) were brought forward to the impact assessment stage (**Section 4**) to determine the likelihood of significant ecological effects to the selected bird species. Species which were not recorded during the surveys undertaken and for which pathways for significant effects could not be identified were not considered as IEFs and thus were excluded from further assessment.

IEFs were also considered to potentially include designated sites for nature conservation which support important bird populations, such as Special Protection Areas (SPAs) (internationally important sites classified for the conservation of birds listed in Annex I of the Birds Directive¹, as well as regularly occurring migratory species not listed in Annex I) and Ramsar sites, as well as other internationally important sites, such as Special Areas of Conservation (SACs), where considered to be of importance for birds.

2.6.1 Determining Sensitivity of Bird Species Selected as IEFs

The sensitivity of a species can be defined as its ecological importance and nature conservation interest at the site being assessed (Percival, 2003). Methodology outlined in Percival (2003) was used to evaluate the sensitivity of those bird species selected as IEFs. This guidance outlines a number of factors used to determine sensitivity:

- Whether the species is listed on Annex I of the EU Birds Directive
- Whether the species is particularly ecologically sensitive – this includes large birds of prey and rare breeding birds (including divers, common scoter, hen harrier, golden eagle, chough etc)
- Whether the site contains populations of species considered to be of international/national importance (>1% of Irish population)

¹ 2009/147/EC

- Whether the site contains populations of species considered to be of regional importance (>1% of regional population, taken at be at the County level)
- Whether the species is subject to special conservation measures, such as red or amber listed species on the Birdwatch Ireland's list of Birds of Conservation Concern in Ireland (BOCCI)

Table 9 presents the criteria used to evaluate the sensitivity of a species, as per Percival (2003).

Table 9. Evaluation of the sensitivity of bird species (adapted from Percival, 2003)

Sensitivity	Determining Factor
Very High	Species that form the cited interest of SPAs and other statutorily protected nature conservation areas. Cited means mentioned in the citation text for the site as a species for which the site is designated.
High	Species that contribute to the integrity of an SPA, but which are not cited as species for which the site is designated. Ecologically sensitive species including the following: divers, common scoter, hen harrier, golden eagle, red necked phalarope, roseate tern and cough. Species present in nationally important numbers (>1% Irish population)
Medium	Species on Annex 1 of the EU Birds Directive. Species present in regionally important numbers (>1% regional (county) population). Other species on BirdWatch Ireland's red list of Birds of Conservation Concern.
Low	Any other species of conservation interest, including species on BirdWatch Ireland's amber list of Birds of Conservation Concern not covered above.

2.7 Impact Assessment Methodology

Significance is a concept related to the weight that should be attached to effects when decisions are made (CIEEM, 2019). A significant effect is an effect that undermines either the long-term distribution or abundance of bird populations, at the appropriate geographical scale (locally, regionally, or in the case of rare and restricted species, nationally (Drewitt and Langston (2006)), or the conservation objectives of a designated site (NRA, 2009; CIEEM, 2019).

Ecological impacts and effects were characterized using EPA (2022) guidance and criteria for characterising ecological impacts.

Table 10. Criteria for assessing impacts based on EPA (2022)

Parameter	Description
Quality	Positive effects: A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities). Neutral effects: No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error. Negative/adverse effects: A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Extent	The size of the area, the number of sites and the proportion of a population affected by an effect.
Context	Whether the extent, duration or frequency will conform or contrast with established (baseline) conditions
Duration	<ul style="list-style-type: none"> • Momentary – effects lasting from seconds to minutes

Parameter	Description
	<ul style="list-style-type: none"> • Brief – effects lasting less than a day • Temporary – effects lasting less than a year • Short-term – effects lasting 1 to 7 years • Medium term – effects lasting 7 to 15 years • Long term – effects lasting 15 to 60 years • Permanent – effects lasting over 60 years • Reversible – effects that can be undone • Frequency – how often effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)
Describing the significance of effects (EPA, 2022)	Imperceptible An effect capable of measurement but without significant consequences.
Describing the significance of effects (EPA, 2017)	Not significant An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very significant An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound An effect which obliterates sensitive characteristics

2.7.1 Collision Risk Assessment

A collision risk model was undertaken separately by MKO for four species of conservation concern: kestrel, merlin, sparrowhawk and snipe. The collision risk assessment was based on vantage point surveys undertaken at the wind farm site from October 2019 to September 2021, inclusive. This represents a 24-month survey period, consisting of two breeding seasons and two winter seasons.

The Band Collision Risk Model (Band *et al.*, 2007) was used in this assessment. The Band Model is used to predict the number of bird collisions that might be caused by a wind farm development. It uses species-specific information on bird biometrics, flight characteristics and the expected amount of flight activity, along with the number and layout of turbines and turbine specifications such as hub height, rotor diameter, pitch and rotational speed to estimate the risk of collision.

The Band modelling method involves two stages:

Stage 1: Estimating the number of birds or flights that pass through the air space swept by the turbine rotors. These transits are calculated by using either the “Regular or Random flight” model depending on flight distribution and behaviour.

Stage 2: Calculating the probability of a bird being struck (collision risk) when making a transit through a rotor.

The figures obtained in both stages are then multiplied together to give a theoretical annual collision mortality rate based on the supposition that birds make no attempt to avoid collision. However, in “real-life” circumstances, birds demonstrate high rates of avoidance - usually 98-99% according to SNH (2018). To account for these evasion measures, known avoidance rates are applied as a percentage to the theoretical collision value as a final step.

Band Model values are theoretical predictions and draw conclusions by assuming likely levels of active avoidance by specific species. Accordingly, results obtained are dependent on the quality of field observation data and accuracy of the avoidance rates used and must therefore be interpreted with a certain degree of caution.

2.8 Mitigation

Where potential effects on IEFs are predicted, mitigation has been prescribed to avoid, reduce and/or remove such effects.

Proposed best practice design and mitigation measures are specifically set out and are realistic in terms of cost and practicality. They have been subject to detailed design and will effectively address the effects on the identified IEFs.

The potential effects of the Proposed Development were considered and assessed to ensure that all effects on IEFs are adequately addressed, and no significant residual effects are likely to remain following the implementation of mitigation measures/best practice.

2.9 Statement on Limitations and Difficulties Encountered

2.9.1 COVID-19 Restrictions and Implications for Survey Effort in 2020

Scheduling and resourcing of bird surveys during the very end of the 2019/20 winter and 2020 breeding season survey periods were significantly constrained due to Covid 19 government restrictions with regards to work, travel and overnight accommodation, and the resulting knock-on field survey implications.

Due to Covid-19 restrictions, no field surveys were completed at the site in March 2020. MWP were asked by the client to prioritise VP surveys when fieldwork resumed in April 2020. These were undertaken as soon as was practicably possible (mid-late April 2020). As a result of this, some of the April 2020 VP surveys were delayed and were not completed until the 1st May 2020. There were no impacts on VP surveys for the remainder of the 2020 breeding season. However, the prioritisation of VP surveys in April and May had knock-on effects on the completion of other 2020 breeding season surveys (see **Section 2.9.3** below).

Due to the limitations imposed on the March and April 2020 field surveys, as outlined above, a precautionary approach has been taken with regard to data collected during the 2020 breeding season. This is in line with recommendations contained within the CIEEM guidance document ‘*Guidance on Ecological Survey and Assessment in the Republic of Ireland and Northern Ireland during the Covid-19 Outbreak*’ (CIEEM, 2020). The 2021 and 2022 breeding season survey periods were unaffected with regards to Covid-19 restrictions and were thus unaffected in terms of data collection as part of VP and distribution and abundance surveys.

2.9.2 Vantage Point Surveys

SNH (2017) stipulates that where VPs are located within the survey area, they should not be used simultaneously with other VP’s which overlook them to minimise potential observer effect on bird behaviour. VP4 overlooks VP5

and VP1 overlooks VP6. There was a minor degree of overlap in timing between some of the VP survey watches undertaken at VP4 and VP5, and VP1 and VP6.

Efforts were made to ensure that the most appropriate VP locations were selected, as per SNH. VPs were selected to maximise coverage of the site. The extent of site coverage has been affected by several changes to the Proposed Development site boundary since VP surveys commenced in October 2019. A separate area located to the north, known as 'Baroosky', was originally included within the Proposed Development site boundary. This former section of the site was covered by VP4 and VP5. This area was subsequently dropped; however, VP surveys continued in this area and are still on-going, providing supplementary data about bird activity and movements in the area north of the current Proposed Development site.

The southern section of the current Proposed Development site boundary was added in 2021, subsequent to bird surveys commencing. This additional area was already largely covered by VP2 and VP1 (commenced October 2019); however, the most south-western corner of this new part of the site was not encompassed within any VP viewshed (see **Appendix 2**).

As well as the south-western corner of the site, outlined above, the north-eastern corner of the Proposed Development site and an area in the centre of the site are also outside of any of the viewshed areas. The total percentage area of the current Proposed Development site not within the viewsheds of the 6 No. VPs is 25%. Three of the 21 no. proposed turbines are not covered by the VP viewsheds. This percentage of the site not covered by VPs is due primarily to topography, the extent of forestry cover, which constrained viewshed coverage of the site, as well as changes to the site boundary, as described above, which, in the case of the most south-westerly corner of the site, has subsequently resulted in the current Proposed Development site boundary extending beyond the original extent of viewshed coverage.

H&S risks posed to surveyors by certain areas of the surrounding open landscape (e.g. lake/bog pool complexes, floating/quaking bog habitat) also constrained the selection of VP locations. Much of the bog surrounding Sheskin is dangerous. This posed, and continues to pose, a H&S risk to surveyors and has resulted in constraints with regard to the siting of VPs and surveys of open habitats around the site.

Although there is a large degree of overlap between the VP6 and VP1 viewsheds, VP6 also covers the north-eastern corner of the site's buffer area, while VP1 also covers the south-eastern corner of the site and buffer area. It was not possible to position VP6 further east and looking back towards the site due to H&S concerns regarding the bog east of VP6. It is worth noting that VP1 provides an expansive view of the site, including some of the site's north-eastern corner beyond VP6, although this is not shown on the viewshed mapping in light of the SNH 2km radius viewshed cut-off. Reduced rates of detection with distance are acknowledged, as outlined in SNH (2017).

To increase coverage of the area inside the Proposed Development site boundary not encompassed within VP viewsheds, the frequency of transect surveys inside the site was increased from bi-monthly to monthly to enhance survey effort within the site. Monthly transects commenced at end of year one and continued for the following two full years (see **Section 2.4.2.1** above).

2.9.3 Breeding Season Distribution and Abundance Surveys

2020 Breeding Season

Completion of the 2020 breeding season distribution and abundance surveys was significantly constrained due to knock-on implications arising from Covid-19, as outlined in **Section 2.9.1** above. The early part of the 2020 breeding season (April/May) was missed for transect surveys, which were subsequently undertaken in June, August and September 2020. No other distribution and abundance surveys were completed for breeding upland and open country species during the 2020 breeding season.

2021 Breeding Season

In addition to monthly transects within the Proposed Development site, walkovers of the open bog to the south and south-east of the site, with a focus on red grouse, merlin and other raptors, golden plover and other moorland breeding species, were undertaken in May and July 2021, utilising two walkover routes, partially located within the 500m site buffer. At the time of the 2021 breeding surveys, the Proposed Development site boundary was surrounded by a greater degree of forestry in contrast to the current site boundary (refer to Section 2.9.2 above). This was a factor in the selection of the 2021 walkover routes used in terms of habitat suitability.

The adapted Brown and Shepherd (1993) survey method for moorland breeding birds requires four survey visits at least seven days apart which should cover the whole breeding season between mid-April and early July. While the 2021 breeding walkover surveys were undertaken during this core breeding period, they were in turn limited in terms of the number of survey visits achieved (two visits as opposed to four) and the area of the site which was covered, which did not include the area of open bog to the west and south/south-west of the Proposed Development site. This area to the south and south-west of the site supports open blanket peats, floating bog and small peatland lake system complexes. There were survey constraints associated with considerable H&S risks relating to safe access for surveyors in this area.

2022 Breeding Season

In addition to monthly transects within the Proposed Development site, a Brown and Shepherd (1993) moorland breeding bird survey was undertaken in 2022. This methodology is devised to census certain upland breeding wader species such as golden plover, dunlin etc. Certain other species, such as snipe, can be under-recorded using this method, as although during the survey surveyors walked to within 125 m of all areas of suitable habitat within the survey area, snipe (*Gallinago gallinago*) have a tendency not to flush unless approached very closely.

This survey commenced as soon as was practicably possible with the first survey visit completed in early May 2022 (4th May), with a subsequent visit completed in mid-May 2022 (21st May). Due to unexpected poor weather conditions which hampered the surveys and Covid-related resource constraints, no survey visits were completed in June 2022, with the second two visits undertaken on 14th July and 21st July 2022 respectively. Therefore, no survey visits were completed in the months of either April or June 2022 over the course of the 2022 moorland breeding bird survey. The survey timings may have impacted upon the number of breeding waders recorded during the survey.

On the basis of the potential suitability of the habitats occurring, and consultation undertaken with NPWS regarding the importance of the Slieve Fyagh Bog SAC (000542) plateau for breeding golden plover and dunlin (NPWS, 2018), and with regard to considerable H&S concerns surrounding surveying of certain areas of open bog/lake complex habitats to the south and south-west of the wind farm site, the 2022 moorland breeding bird survey focussed on the area of bog to the west and north of the Proposed Development site, which is partially encompassed within the SAC boundary. It is noted that the area of bog to the south-west and south of the site, excluded from the survey area, is considered to comprise suitable habitat for a variety of breeding waders and other species such as red grouse.

Transects undertaken within the Proposed Development site, completed generally on a bi-monthly basis in the first year of survey (winter 2019/20 and summer 2020, and then a monthly basis (both winter and summer seasons) for the following two full years, would have contributed to capture of data regarding waders and waterfowl potentially breeding and/or foraging/roosting within the Proposed Development site. While it is acknowledged that habitats within the site boundary are of limited use to waders and wildfowl, there are some permanent ponds located within the site i.e. in the southern section, which were covered from Transect A. Temporary standing water was also present within parts of the site on occasion. Monthly transects within the site

would therefore have contributed to the capture of data regarding wader and wildfowl species potentially breeding within the Proposed Development site.

However, due to the temporal and spatial limitations of the surveys for breeding waders in general, a precautionary approach has been taken with regard to the numbers of breeding waders recorded.

Breeding Raptor Surveys

Targeted breeding raptor surveys in line with Hardey *et al.* (2013) were not undertaken within the Proposed Development site or within a 2 km radius of the site. However, other breeding season surveys undertaken in 2022 and 2021 largely coincided with the recommended survey schedule as set out in Hardey *et al.*, (2013) for species such as kestrel, merlin and sparrowhawk.

Hardey *et al.*, (2013) recommends that for such species a total of four survey visits should be made throughout the breeding season in line with a specific survey schedule to capture key periods. However, if time is limited and a home range appears to be unoccupied on the basis of the first two visits, then further visits to that home range can be omitted for kestrel and merlin. Four visits are still recommended for sparrowhawk (Hardey *et al.*, 2013).

During the 2022 breeding season, the timing of visits for the moorland breeding bird survey undertaken coincided with Visit 1 and Visit 2 of the breeding season survey schedule for both kestrel and sparrowhawk, as recommended in Hardey *et al.*, (2013). However, while the Visit 2 survey period for merlin was achieved during the correct period, it is acknowledged that the initial recommended survey window for merlin (late March to April), as outlined by Hardey *et al.*, (2013), was missed by the 2022 survey.

The 2021 breeding season walkover surveys were limited in terms of frequency and recommended survey timings, and with regard to the extent of survey area covered, encompassing the open bog to the north and south-east of the site only.

Both transects and VPs were undertaken throughout 2021 and 2022 on a monthly basis and encompassed both open and more closed habitats contained within the Proposed Development site, as well as the relatively more open areas surrounding it. The 2021 and 2022 breeding season driven hinterland surveys, out to approximately 5 km radius of the Proposed Development site, would have encompassed suitable habitats for breeding raptors, visible from the driven route. These surveys would have contributed to the capture of breeding activity data for raptors, if present, during all key periods of breeding activity.

However, due to the temporal and spatial limitations outlined above, a precautionary approach has been taken with regard to breeding raptors.

Breeding Woodcock

Surveys for breeding woodcock were limited to one visit in June of each of the 2020, 2021 and 2022 breeding seasons, which represents a reduced survey effort relative to that outlined in Gilbert *et al.* (1998), which recommends three visits per breeding season. There were therefore limitations regarding the survey effort for breeding woodcock, and as such, a precautionary approach has been taken.

3. Existing Environment

3.1 Site Description

The Proposed Development site lies within the rural upland setting of northwest County Mayo, approximately 5.2 km northeast of Bangor Erris and 20 km northwest of Crossmolina. The Proposed Development site encompasses the townland of Sheskin.

The Proposed Development site location and surrounds are upland in character and dominated by bog and heath habitats with large commercial conifer plantations distributed throughout. Much of the surrounding landscape is undeveloped and remains in a good natural state, as is evidenced by the number of Natura 2000 sites present. Internal forestry access roads are located within a portion of the site. According to the CORINE (Co-ordinated information on the Environment) data series (last updated 2018), land cover on the site comprises of 'Coniferous forests' (312), 'Transitional woodland (324)' and 'Peat bogs (412)' in the surrounding area².

The Proposed Development site is drained by the 'Blacksod-Broadhaven' catchment. The north of the site lies in the 'Glenamoy_SC_010' Sub-catchment and is primarily drained by the 'Baroosky' (EPA Code 'IE_WE_33B080400'), a third order stream. The south lies within the 'Owenmore [Mayo]_SC_010' Sub-catchment and is primarily drained by the 'Sheskin (Stream)' (EPA Code 'IE_WE_33S030150'), a fourth order stream. 'Carrowmore Lake' lies just over 7 km east of the Proposed Development site boundary and is drained by the 'Munhin_SC_010' Sub-catchment.

3.2 Desktop Study

3.2.1 Other Wind Farm Developments

A search was undertaken for other wind farm projects with which the Proposed Development could potentially interact to result in cumulative impacts to avian receptors. The following table outlines operational, permitted and proposed wind farm projects located within a 20 km radius of the Proposed Development.

Table 11. Wind farms located within a 20 km radius

Wind Farm	No. Turbines	Distance	Status
ABO Sheskin	8	0-5 km	Under construction since February 2022
Oweninny 2	25	0-5 km	Under construction, due to be operational in 2023
Oweninny 1	29	5-10 km	Operational since 2019
Oweninny 3	18	5-10 km	Pre-application consultation (PC16.309375) determined that the development is a Strategic Infrastructure Development on 4th April 2022 ³ . Application for construction/operation not yet submitted.
Bellacorrick	21	5-10 km	Operational
Bunnahowen	3	15-20km	Existing

3.2.2 Natura 2000 Designated Sites

3.2.2.1 Special Protection Areas (SPAs)

The European Union Directive on the Conservation of Wild Birds, known as the Birds Directive (Directive 2009/147/EC) requires Member States to designate legally protected areas for the conservation of endangered

² <https://gis.epa.ie/EPAMaps/>

³ [309375 | An Bord Pleanála \(pleanala.ie\)](#)

or migratory species of bird, as listed on Annex I of the Directive. These areas are known as Special Protection Areas (SPAs) and, since 1994, all SPAs form part of the Natura 2000 network of protected sites. The EU Birds Directive is implemented in Irish law under the European Communities (Birds and Natural Habitats) Regulations 2011, as amended.

An on-line search for SPAs within the greater area surrounding the Proposed Development site was carried out to identify any potential for 'connectivity' between the site and SPAs by assessing whether pathways exist through which the proposal could impact on certain qualifying interest species, as recommended in the guidance document 'Assessing Connectivity with Special Protection Areas (SPAs)' (SNH, 2016). Within this SNH document, core foraging ranges from nest-sites and roost-sites are published for both the breeding and winter seasons for the bird species frequently encountered when considering wind farm development proposals. SNH recommends that typically the core foraging range should be used when determining whether there is connectivity between the proposal and qualifying interest species. Core foraging ranges for wind farm sensitive species can range from <5 km to up to 20 km, in the case of certain wide-ranging species of geese in the winter season (SNH, 2016).

Therefore, an on-line search for SPAs located within 20 km of the Proposed Development was carried out. This search determined that there are four SPAs within 20 km, as outlined in **Table 12** and **Figure 2** below.

Table 12. SPAs within a 20 km radius of the Proposed Development

Designated Site	Distance from Proposed Development	Special Conservation Interests (SCIs)
Owenduff/Nephin Complex SPA (004098)	0.1 km	<ul style="list-style-type: none"> Merlin (<i>Falco columbarius</i>) [A098] Golden Plover (<i>Pluvialis apricaria</i>) [A140]
Carrowmore Lake SPA (004052)	6.9 km	<ul style="list-style-type: none"> Sandwich Tern (<i>Sterna sandvicensis</i>) [A191]
Blacksod/Broad Haven Bay SPA (004037)	9.2 km	<ul style="list-style-type: none"> Red-throated Diver (<i>Gavia stellata</i>) [A001] Great Northern Diver (<i>Gavia immer</i>) [A003] Slavonian Grebe (<i>Podiceps auritus</i>) [A007] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Common Scoter (<i>Melanitta nigra</i>) [A065] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Sanderling (<i>Calidris alba</i>) [A144] Dunlin (<i>Calidris alpina</i>) [A149] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Sandwich Tern (<i>Sterna sandvicensis</i>) [A191] Dunlin (<i>Calidris alpina schinzii</i>) [A466] Wetland and Waterbirds [A999]
Illanmaster SPA (004074)	13.9 km	<ul style="list-style-type: none"> Storm Petrel (<i>Hydrobates pelagicus</i>) [A014]

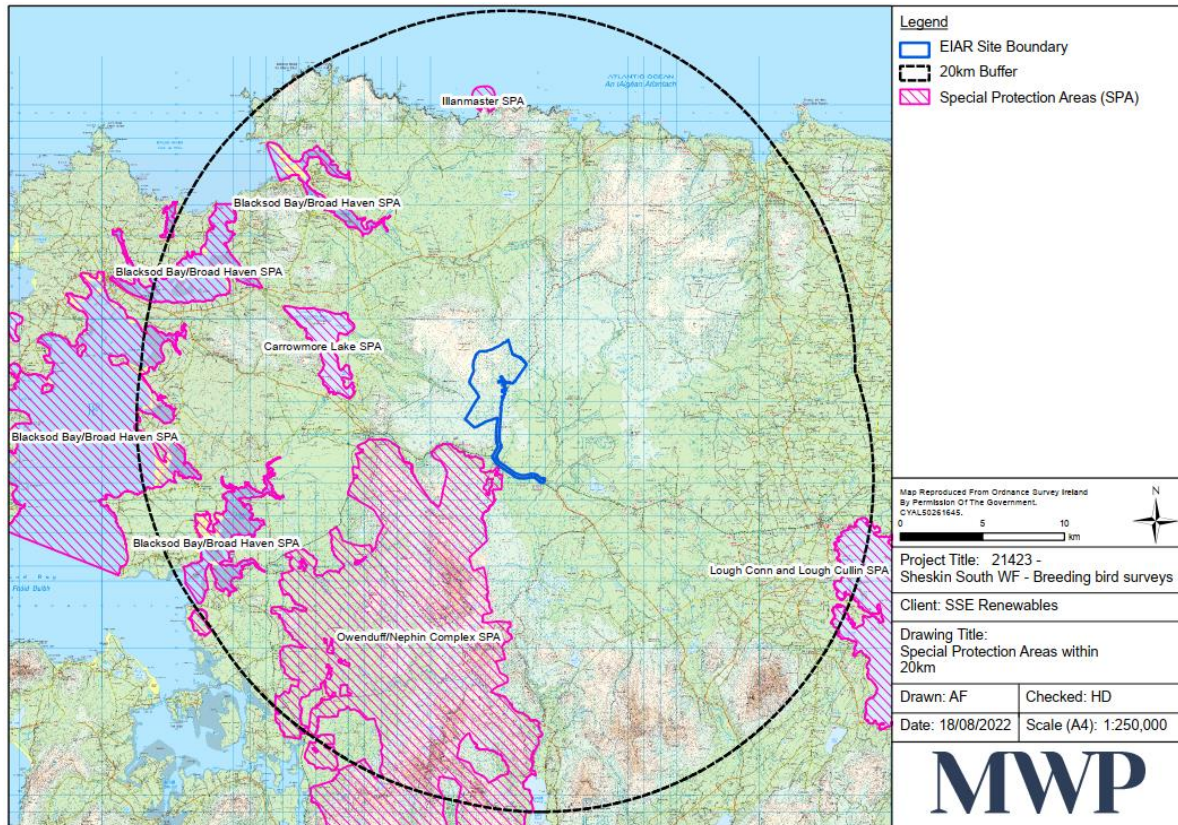


Figure 2. SPAs located within 20 km radius of the Proposed Development site

3.2.2.2 Special Areas of Conservation (SACs)

Although not designated for qualifying bird species, Special Areas of Conservation (SACs) can provide important habitats that support bird populations which are of conservation concern, and which have the potential to be impacted by the proposal. On a precautionary basis, it was therefore decided to include SACs as part of the desk-top search for designated sites within the potential ZOI of the proposal.

An on-line search of SACs considered to be of importance for bird species within a 20 km radius of the Proposed Development was carried out. This search was based on reviews of the SAC site synopses or other information gathered as part of the desk-top study. Only those designated sites identified to be of ornithological importance as part of this review have been included here. The sites are included in **Table 13** below and shown in **Figure 3** below,

Table 13. SACs of ornithological interest within a 20 km radius of the Proposed Development

Designated Site	Distance from Proposed Development	Ornithological relevance (based on desk-top study)
Glenamoy Bog Complex SAC (000500)	Contiguous to the site's northern boundary.	Of importance for: <ul style="list-style-type: none"> Variety of breeding seabird species Breeding peregrine (<i>Falco peregrinus</i>), chough, merlin and golden plover Wintering barnacle goose (<i>Branta leucopsis</i>)
Slieve Fyagh Bog SAC (000542)	Contiguous to the site's western boundary.	Of importance for: <ul style="list-style-type: none"> Breeding golden plover, dunlin and redshank (<i>Tringa tetanus</i>)
Carrowmore Lake Complex SAC (000476)	Contiguous to the sites south-western boundary	Of importance for:

Designated Site	Distance from Proposed Development	Ornithological relevance (based on desk-top study)
		<ul style="list-style-type: none"> Greenland white-fronted goose (<i>Anser albifrons flavirostris</i>) (sub-flock of the nationally important Bog of Erris flock) Breeding merlin, golden plover, Arctic tern (<i>Sterna paradisaea</i>), sandwich tern, common gull (<i>Larus canus</i>) Tufted duck (<i>Aythya fuligula</i>), pochard (<i>Aythya farina</i>), wigeon (<i>Anas penelope</i>), goosander (<i>Mergus merganser</i>)
Owenduff/Nephin Complex SAC (000534)	0.1 km	Of importance for: <ul style="list-style-type: none"> Greenland white-fronted goose Breeding golden plover and merlin
Broadhaven Bay SAC (000472)	13.6 km	Of importance for: <ul style="list-style-type: none"> Breeding sandwich tern, common tern (<i>Sterna hirundo</i>), Arctic tern, little tern (<i>Sternula albifrons</i>), black-headed gull (<i>Larus ridibundus</i>) Wintering waterfowl (red-breasted merganser, ringed plover, grey plover (<i>Pluvialis squatarola</i>), sanderling, dunlin, bar-tailed godwit, brent goose, oystercatcher (<i>Haematopus ostralegus</i>), golden plover, lapwing (<i>Vanellus vanellus</i>), knot (<i>Calidris canutus</i>), curlew, redshank, turnstone (<i>Arenaria interpres</i>))
Mullet/Blacksod Bay Complex SAC (000470)	17.6 km	Of importance for: <ul style="list-style-type: none"> Wintering great-northern diver, red-throated diver, barnacle goose, Greenland white-fronted goose, brent goose, ringed plover, whooper swan (<i>Cygnus cygnus</i>), golden plover, bar-tailed godwit, common scoter, red-breasted merganser, grey plover, knot, sanderling, dunlin Breeding little tern, red-necked phalarope, dunlin, lapwing, snipe, ringed plover

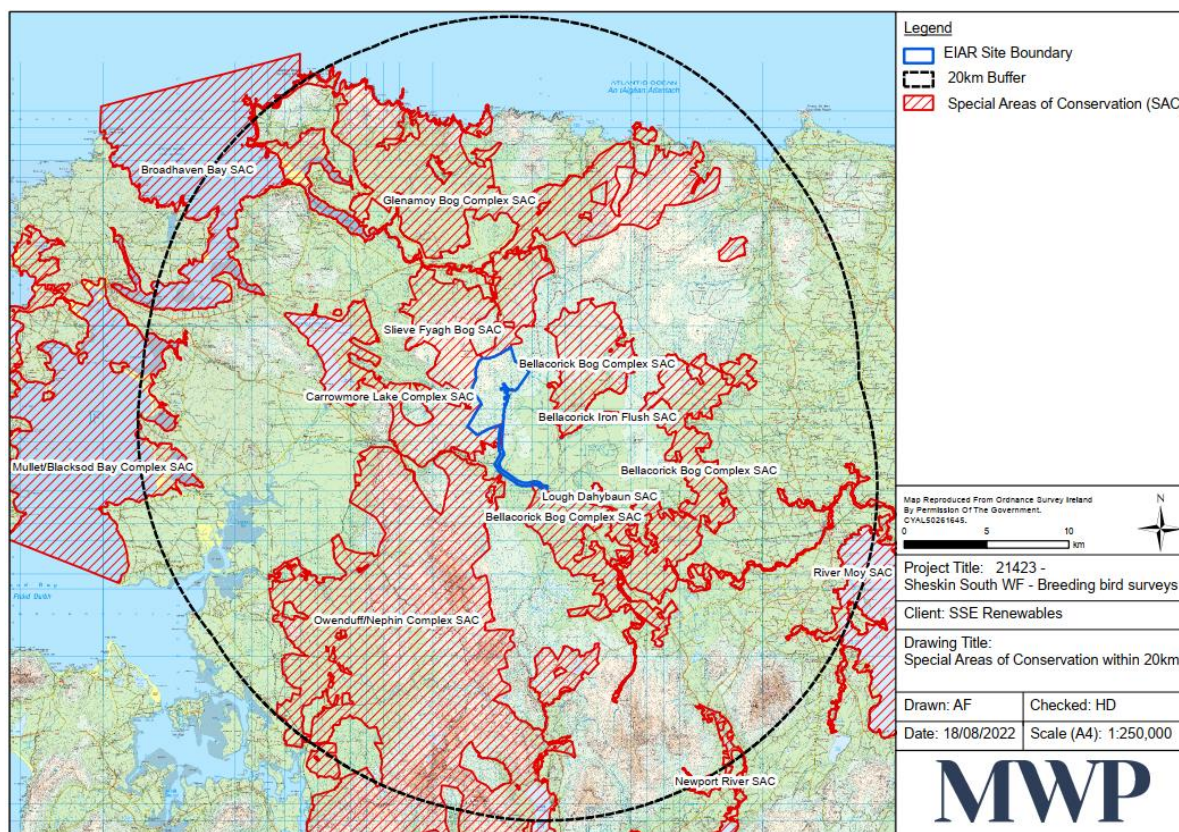


Figure 3. SACs within a 20 km radius of the Proposed Development

3.2.3 Ramsar Sites/Important Bird and Biodiversity Areas (IBAs)

The Convention on Wetlands, also known as the Ramsar Convention, is an intergovernmental treaty which aims to conserve and protect wetlands and their resources around the world⁴. It was ratified by Ireland in 1984 and came into force on 15th March 1985. While this convention is not legislation, it is an international treaty. Ireland presently has 45 sites designated as Wetlands of International Importance, with a surface area of 66,994 hectares. The desk-top review concluded that there are three Ramsar sites within 20 km of the Proposed Development site: 'Knockmoyle/Sheskin' located approximately 2.7 km to the east, 'Owenboy' located approximately 7.6 km to the south-east and 'Owenduff catchment' located approximately 8.9 km to the south.

The Important Bird and Biodiversity Areas (IBAs) Programme, overseen by Birdlife International, aims to identify, conserve and protect those areas throughout the world considered to be of the greatest significance to bird populations⁵. The desk-top review concluded that there are three IBA sites within 20 km of the Proposed Development site boundary: 'Owenduff River catchment and Nephin Beg'⁶, approximately 1.6 km to the south, 'Illunmaistir (Oileán Máistir)'⁷, approximately 14.6 km to the north-west and 'Broadhaven, Blacksod and Tullaghan Bays and parts of the Mullet peninsula'⁸, approximately 8.2 km to the south-west.

⁴ <http://www.ramsar.org/>

⁵ <http://www.birdlife.org/worldwide/programmes/important-bird-and-biodiversity-areas-ibas>

⁶ <http://datazone.birdlife.org/site/factsheet/662>

⁷ <http://datazone.birdlife.org/site/factsheet/567>

⁸ <http://datazone.birdlife.org/site/factsheet/570>

3.2.4 I-WeBS Sites

I-WeBS (Irish Wetland Bird Survey) is a joint project between BirdWatch Ireland and the National Parks and Wildlife Service (NPWS) in which specific wetland sites are surveyed (BirdWatch Ireland, 2019). In order to count the wetland birds, a 'look-see' method (Bibby *et al*, 2000) is used in which all birds present within a pre-defined area are counted. The aim of these surveys is to monitor non-breeding birds in Ireland and contribute to population counts. The information is also important to help assess the quality of these wetland areas. The bird groups to be counted for I-WeBS consist of swans and geese, ducks, divers, waders and gulls. Counts are made once per month from September to March annually (BirdWatch Ireland, 2019)⁹.

The Proposed Development site is not located within, or near, any I-WeBS site. The nearest site is located approximately 7.2 km to the west at Carrowmore Lake. Data from I-WeBS sites in County Mayo can be used to estimate county populations of wintering waterbirds.

Datasets for the following sites were downloaded from www.birdwatchireland.ie by MKO in January 2023. There are a total of 35 I-WeBS sites located in County Mayo.

3.2.4.1 Mayo I-WeBS Sites

- Achill Island
- Attymass Lake
- Balla Wetlands
- Ballybackagh
- Ballyglass Wetlands
- Ballyhaunis Lakes
- Blacksod & Tullaghan Bays
- Brees Wetlands
- Broadhaven & Sruwaddacon Bays
- Callows Lakes
- Carrowmore Beach
- Carrowmore Lake
- Carrownacon Lakes
- Cashel Turlough
- Castlebar Lakes/Islandeady Chain
- Clew Bay
- Keel Lough
- Kilglassan Turlough/Greaghans
- Killala Bay
- Knappaghbeg Lough
- Lough Conn
- Lough Cullin
- Lough Levally
- Lough Mask

⁹ <https://birdwatchireland.ie/our-work/surveys-research/research-surveys/irish-wetland-bird-survey/>.

- Lough Muck (Mayo)
- Lough Nahaltora
- Manulla Lakes
- Mullet West
- River Moy
- Rostaff Lake
- South Mayo Coast
- Tawnyard Lough
- Termoncarragh & Annagh Marsh
- Washpool Lough
- Wetland near Drumcarrabaun (Belcarra/Ballyglass Road)

Datasets for the above I-WeBS sites were obtained from the BirdWatch Ireland website and reviewed by MKO as part of their desk-top study. Summary tables for the species recorded at each of these sites during the most recent 5-season I-WeBS survey period available (2016/17 to 2020/21) were reviewed and used to calculate mean counts for wintering species within the county. Of the I-WeBS sites located in County Mayo, three of these are situated within 20 km of the Proposed Development site (see **Table 14** below).

Table 14. I-WeBS sites within 20 km of the Proposed Development

I-WeBS Site	Proximity to Proposed Development
Carrowmore Lake (Site code – OD062)	7.2 km west of the site
Broadhaven & Sruwaddacon Bays (Site code – OD475)	9.4 km northwest of the site
Blacksod & Tullaghan Bays (Site code – OD410)	11.6 km north southwest of the site

3.2.5 BirdWatch Ireland Bird Sensitivity Tool

A Bird Sensitivity Mapping Tool for wind energy development was developed by BirdWatch Ireland and provides a measured spatial indication of where protected birds are likely to be sensitive to wind energy developments. The tool can be accessed via the National Biodiversity Data Centre Website (www.biodiversityireland.ie) and is accompanied by a guidance document (McGuinness *et al.* (2015)). The criteria for estimating a zone of sensitivity (i.e., 'low', 'medium', 'high' and 'highest') is based on a review of the behavioural, ecological and distributional data available for each species.

The Proposed Development site lies partially within a zone of low sensitivity for dunlin, to the west of the site. The site also lies partially within two zones of low sensitivity for red grouse, one to the northwest and one to the east. There is a zone of medium sensitivity for dunlin and golden plover immediately adjacent and to the west of the Proposed Development site. There is an area of high sensitivity approximately 1 km to the west of the site for dunlin, golden plover and red grouse. There is an area of medium sensitivity for golden plover and red grouse, approximately 500 m southwest of the Proposed Development site. Please see **Figure 4** below.

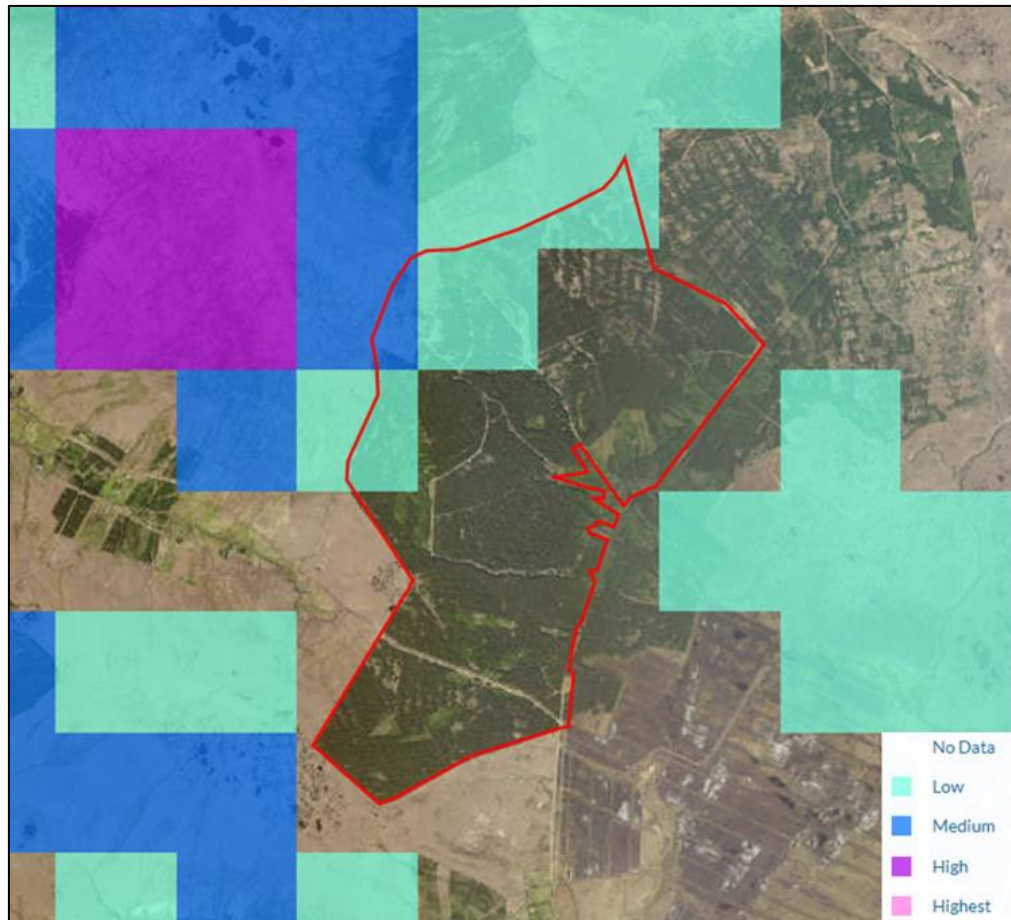


Figure 4. Application site boundary in the context of Bird Sensitivity Mapping as per tool available on the NBDC website (Adapted from <https://maps.biodiversityireland.ie/Map>)

3.2.6 Bird Atlas Records and Distribution

'*Bird Atlas 2007-11: The breeding and wintering birds of Britain and Ireland*' (Balmer *et al.*, 2013) is the most recent comprehensive work on wintering and breeding birds in Ireland. Previous Bird Atlases have been the primary source of information on the distribution and abundance of British and Irish birds prior to Bird Atlas 2007–11. The three previously published atlases were:

- Sharrock, J.T.R. (1976) The atlas of breeding birds in Britain and Ireland.
- Lack, P.C. (1986) The atlas of wintering birds in Britain and Ireland.
- Gibbons, D.W., Reid, J.B. & Chapman, R.A. (1993) The new atlas of breeding birds in Britain and Ireland: 1988-1991.

The Proposed Development site lies within hectad F92. **Table 15** presents Breeding Bird Atlas data for potential target species previously recorded within this hectad. **Table 16** below presents Wintering Bird Atlas data for potential target species previously recorded within this hectad. The full list of all bird species which have been previously recorded in the hectad, including their conservation and protection status in an Irish and European context and their most recent Bird Atlas wintering and breeding status, is provided in **Appendix 13**.

Table 15. Breeding Bird Atlas data (F92) with breeding status¹⁰

Species Name	Breeding Atlas (68-72)	Breeding Atlas (88-91)	Breeding Atlas (07-11)	Conservation Status ¹¹
Corncrake (<i>Crex crex</i>)	Probable	-	-	BD, RL
Curlew (<i>Numenius arquata</i>)	Possible	-	-	RL, SCI
Dunlin (<i>Calidris alpina</i>)	-	Breeding	Confirmed	BD, RL, SCI
Golden Plover (<i>Pluvialis apricaria</i>)	Confirmed	Breeding	Confirmed	BD, RL, SCI
Kestrel (<i>Falco tinnunculus</i>)	-	Seen	Possible	RL
Red Grouse (<i>Lagopus lagopus</i>)	Probable	Breeding	Probable	RL
Ringed Plover (<i>Charadrius hiaticula</i>)	-	Confirmed	SCI	
Snipe (<i>Gallinago gallinago</i>)	Probable	Breeding	Probable	RL
Sparrowhawk (<i>Accipiter nisus</i>)	Possible	Breeding	Possible	Schedule IV

Table 16. Wintering Bird Atlas data (F92) with wintering status

Species Name	Wintering Atlas (81-84)	Wintering Atlas (07-11)	Conservation Status ¹²
Barnacle Goose (<i>Branta leucopsis</i>)	-	Present	BD
Golden Plover (<i>Pluvialis apricaria</i>)	Present	Present	BD, RL, SCI
Hen Harrier (<i>Circus cyaneus</i>)	-	Present	BD
Kestrel (<i>Falco tinnunculus</i>)	Present	Present	RL
Merlin (<i>Falco columbarius</i>)	Present	-	BD, SCI
Peregrine (<i>Falco peregrinus</i>)	-	Present	BD
Red Grouse (<i>Lagopus lagopus</i>)	Present	Present	RL
Snipe (<i>Gallinago gallinago</i>)	Present	Present	RL
Sparrowhawk (<i>Accipiter nisus</i>)	Present	Present	Schedule IV
Woodcock (<i>Scolopax rusticola</i>)	Present	Present	RL

¹⁰ Breeding status: Seen = recorded; Possible = possible breeding; Probable = probable breeding; Confirmed = confirmed breeding; - = not recorded; Non-B = non-breeding; Breed = breeding

¹¹ Conservation Status: BD = Annex I of the Birds Directive; RL = BoCCI Red-listed; SCI = Species Conservation Interest of nearby SPA; Schedule IV = protected under Schedule IV of the Wildlife Act

¹² Conservation Status: BD = Annex I of the Birds Directive; RL = BoCCI Red-listed; SCI = Species Conservation Interest of nearby SPA; Schedule IV = protected under Schedule IV of the Wildlife Act

3.2.7 Previous Bird Records in the Area

As part of the desktop study, a detailed review of previous bird records for the area, available on-line and/or in published sources, was undertaken.

The Slieve Fyagh area, located immediately west-northwest of the Proposed Development site and encompassed within the Slieve Fyagh Bog SAC (000542), is of great importance for both breeding golden plover and dunlin. Previous surveys identified this area to be one of the most important breeding sites for dunlin in Ireland (Suddaby *et al.* 2008).

Following the pre-application meeting with NPWS, the unpublished NPWS report '*Report on Breeding Waders on Slieve Fyagh SAC Plateau 2018*' was requested and reviewed by MWP with regard to breeding records of golden plover and dunlin within the vicinity of the wind farm site. This survey, undertaken by NPWS in 2018, recorded four pairs of dunlin and fourteen pairs of golden plover in the Slieve Fyagh area (Birch, 2018). The Owenduff/Nepin Complex SPA (004098), located 1.6 km from the wind farm site and designated for golden plover and merlin, supports a nationally important population of golden plover (15 pairs recorded in 2004) (NPWS, 2015).

As part of the desk-top study, a review was carried out of the report '*Breeding bird populations on the Oweninny cutaway peatlands, County Mayo*' (Copland *et al.*, 2011) pertaining to surveys of rehabilitating cutover bogs at Bellacorick and Bangor, Co. Mayo in 2009. The Bellacorick survey area encompassed the area of cutover bog at the south-east corner of the Proposed Development site stretching further south-westwards. A summary of the bird survey results is given as follows. More detailed information can be found in Copland *et al.*, (2011). Annex I species recorded included a single dunlin (believed likely to have been a failed or non-breeder) and a golden plover (probable breeding). Teal (*Anas crecca*) and kestrel were recorded as probable breeding species., while snipe and common sandpiper (*Actitis hypoleucos*) were recorded as possible breeding species. Little grebe (*Tachybaptus ruficollis*) (1 pair), ringed plover (1 pair confirmed with at least 5 territories recorded), common gull (3 pairs) and meadow pipit (*Anthus pratensis*) were confirmed breeding (Copland *et al.*, 2011).

A review of records from other wind farms in the area, together with local bird knowledge, ascertained that one pair of breeding golden plover are known from O'Boyle's Bog, located approximately 1.5 – 2 km to the east of the site. This pair were recorded during surveys for Oweninny Wind Farm (ABP Ref No. PL16.PA0029) between 2010 and 2012 and have occurred at this location annually since at least that period. During the Oweninny Wind Farm surveys, low numbers of wintering golden plover were also recorded. Similar species as those recorded during the 2009 Oweninny cutover bog surveys (Copland *et al.*, 2011), along with a breeding attempt by greenshank (*Tringa nebularia*), were recorded during the Oweninny Wind Farm surveys between 2010 and 2013.

Surveys undertaken for Oweninny Wind Farm (2010 – 2013) recorded low numbers of whooper swan occurring on an occasional basis. Greenland white-fronted geese were recorded on one occasion. Dedicated surveys for Greenland white fronted geese undertaken as part of the Tawnanasool Environmental Impact Statement (EIS) (Planning Ref. No. P14/666. ABP Ref No. PL 16.245355 recorded no individuals. Merlin was recorded during both summer and winter surveys although this species is not thought to have bred within the Oweninny site. Merlin was recorded twice during winter surveys for Cluddaun Wind Farm (ABP Ref No. PL16.PA0031) and was also recorded during surveys for Corvoderry Wind Farm (Planning Ref No. P11/838). Red grouse were found to be widely distributed across the Oweninny site in areas of suitable habitat. Similarly, red grouse was recorded during surveys for the Cluddaun wind farm EIS and the Corvoderry wind farm EIS (surveys in 2011-2012). Evidence of red grouse was recorded during surveys at Tawnanasool in 2012.

The revised EIAR for the proposed amendments to the previously permitted Sheskin Wind Farm (ABO Wind Energy Ltd.) was reviewed (ABP Ref No. PL16.311157; Planning Ref No. 20834). The avian baseline information was gathered during surveys for the original permitted wind farm development. These surveys, undertaken in 2014 and 2015, recorded several species of note, including golden plover, curlew, merlin, peregrine, kestrel,

sparrowhawk, red grouse, snipe, teal, woodcock and lesser black-backed gull (*Larus fuscus*). During the breeding season, golden plover were observed approximately 3 km from the site boundary on Slieve Fyagh. A possible breeding pair was recorded during April 2015. This may have been the pair previously recorded on Boyle's Bog. At least one pair of kestrel are thought to have bred in the vicinity of the site, most-likely in conifer plantation. There were two observations of merlin during VP surveys; however, targeted merlin walkover surveys in areas of suitable habitat within the study area did not identify any breeding sites or find any evidence of merlin. A merlin territory may have been located approximately 3 km northwest of the site boundary. Late August observations of two male merlin towards the south of the site suggested possible breeding pairs in this area. An estimated 4-5 red grouse territories were believed to occur within the survey area on intact lowland blanket bog to the east and the northwest of the site. A minimum of 4 pairs of snipe were recorded breeding approximately 2 km northwest of the site during surveys in 2015. One breeding pair was recorded on the lowland blanket bog to the west of the site. During hinterland surveys within 6 km of the proposed development site between April and July 2015, golden plover, red grouse, peregrine and merlin were recorded. During the winter months, hinterland surveys recorded whooper swan at Carrowmore Lake.

3.2.8 NPWS Rare and Protected Species Dataset

An information request was sent by MKO to the NPWS requesting any bird records from the NPWS Rare and Protected Species Database for the hectad encompassing the Proposed Development site (F92). Data was received on the 31st December 2021. No bird records were included in the dataset received.

3.2.9 National Surveys of Hen Harrier in Ireland

The results of the 2015 National Hen Harrier Survey were consulted by MKO to identify hen harrier breeding sites within the relevant hectad. There were no records of breeding hen harrier in hectad F92 in the 2015 survey. Additionally, there were records of hen harrier wintering in hectad F92, but no records of birds roosting within this hectad. The distribution data is from the 2007-11 Bird Atlas and the roost site locations are sourced from unpublished Irish Winter Hen Harrier Survey data.

3.2.10 Hen Harrier Project

The Hen Harrier Project reports were reviewed by MKO for any relevant data on hen harrier within the Proposed Development site and its hinterland. The Hen Harrier Project operates in SPAs designated for hen harrier, none of which are within or near the wind farm site. It was therefore unnecessary to send a consultation request to this organisation.

3.2.11 Whooper Swan Census - 2020

The results of the 8th International Swan Census were consulted by MKO to identify whooper swan habitat use and distribution within relevant 10 km hectads (Burke *et al.*, 2021). A total population of 973 birds were recorded in county Mayo. No flocks of international or national importance were identified within the county. Three populations of <50 birds and one population of 50-100 birds were recorded within the Blacksod/Broadhaven Bay SAC.

3.2.12 Greenland White-fronted Goose

Greenland white-fronted geese are known to occur regularly on Bangor Erris Bog, located approximately 10 km south-west of the site. This area of lowland blanket bog is encompassed within the Bangor Erris Bog NHA (001473). A review of the most recent Greenland White-fronted Goose Study/NPWS census report from 2020/21 (GWGS/NPWS, 2021) determined that a maximum count of 9 birds was recorded for the autumn and spring census for the Bog of Erris during 2020/21. No counts were available for the 2019/20 census period.

3.2.13 Identification of Target Species

The following table (Table 17) outlines those species for which past records exist or which have otherwise been identified as part of the desk-top study and which meet one or more of the target species selection criteria as outlined in Section 2.3 above. Wind farm sensitive species meeting the selection criteria that were not identified as having previously occurred within the relevant hectad during the desk-top study search for previous species records, such as buzzard (*Buteo buteo*), were also included as target species on a precautionary basis. The conservation status/level of protection afforded to each species is also included.

As outlined above and as set out in SNH (2017), target species typically comprise those species which are afforded a higher level of legislative protection and should be restricted to those likely to be affected by wind farms. Therefore, only red-listed species have been included as target species, unless the species meets one of the other target species selection criteria as outlined above e.g. Annex I.

Table 17. Identification of target species for the proposed Sheskin South Wind Farm

Target Species	Conservation Status ¹³	Typical Habitat ¹⁴	Target Species for Site Y/N
Peregrine Falcon (<i>Falco peregrinus</i>)	Annex I EU Birds Directive / BoCCI Green-listed/ Wildlife Acts	<p>Breeding Breeds on coastal and inland cliffs. Most birds on the coast breed on the south, west and north coasts, coastal breeding on the east coast is limited by the availability of suitable nesting cliffs. Most inland birds breed on mountain cliffs but will also breed at lower levels.</p> <p>Wintering Resident in Ireland but shows some movement away from its breeding areas in the winter. Can be found on the coast, especially on estuaries where they hunt water birds. Some birds move into cities. Wintering birds may also comprise individuals which have arrived from Britain or even further afield.</p>	Y
Merlin (<i>Falco columbarius</i>)	Annex I EU Birds Directive/ BoCCI Amber-listed/ Wildlife Acts/ SCI	<p>Breeding A rare breeding bird in Ireland. Nests on the ground on moorland, mountain and blanket bog. Also nests in woodland and has taken to nesting in forestry plantations adjacent to moorland.</p> <p>Wintering Much more widely distributed in the winter, than in the breeding season. Merlins move away from high</p>	Y

¹³ BOCCI 4 (Gilbert, *et al.*, 2021)

¹⁴ birdwatchireland.ie

Target Species	Conservation Status ¹³	Typical Habitat ¹⁴	Target Species for Site Y/N
		ground at this time of the year and can often be seen on the coast, where concentrations of other birds are attractive as prey species	
Hen Harrier (<i>Circus cyaneus</i>)	Annex I EU Birds Directive/ BoCCI Amber-listed/ Wildlife Acts	<p>Breeding Breeding birds are confined largely to heather moorland and young forestry plantations, where they nest on the ground.</p> <p>Wintering Spends winter in more coastal and lowland areas throughout Ireland hence most easily seen on the coast in the winter months.</p>	Y
Kestrel (<i>Falco tinnunculus</i>)	BoCCI Red-listed/Wildlife Acts	<p>Breeding A widespread breeder throughout the country. Nests in trees, buildings or in cracks in cliffs. Will use old crows' nests. Found in wide variety of open habitats including coasts, moor land, farmland, wetlands, roadside verges and town parks.</p> <p>Wintering Largely resident within breeding territory. Some birds move within the country, especially down from the uplands.</p>	Y
Sparrowhawk (<i>Accipiter nisus</i>)	BoCCI Green-listed / Wildlife Acts	<p>Breeding Probably the most common bird of prey in Ireland. Widespread in woodland, farmland with woods, larger parks and gardens.</p> <p>Wintering Resident in Ireland. Can be seen throughout the country.</p>	Y
Buzzard (<i>Buteo buteo</i>)	BoCCI Green-listed/ Wildlife Acts	<p>Breeding Widespread breeding species. Nests in trees and sometimes on cliffs, usually with access to open land including farmland, moorland and wetland.</p> <p>Wintering Largely resident.</p>	Y
Golden Eagle (<i>Aquila chrysaetos</i>)	Annex I EU Birds Directive/ BoCCI Red-listed/ Wildlife Acts	<p>Breeding Formerly bred in Ireland and recently re-introduced to County Donegal to re-establish an Irish breeding population.</p> <p>Wintering Eagles are generally resident, though young birds may wander during the winter.</p>	Y
White-tailed Eagle (<i>Haliaeetus albicilla</i>)	Annex I EU Birds Directive/ BoCCI Red-listed/ Wildlife Acts	<p>Breeding Re-introduced species. Formerly a widespread resident along all Irish coasts.</p> <p>Wintering Resident. Young birds move to new territories after fledging.</p>	Y

Target Species	Conservation Status ¹³	Typical Habitat ¹⁴	Target Species for Site Y/N
Snowy Owl (<i>Bubo scandiaca</i>)	Annex I EU Birds Directive/ BoCCI Red-listed/ Wildlife Acts	<p>Breeding Does not breed in Ireland. The majority of the European population breeds in Scandinavia and Russia.</p> <p>Wintering Rare winter visitor, mainly to western counties such as Mayo. Most often seen roosting during the day on bogs. Some sightings may possibly relate to escaped cage birds, as this species is common in captivity.</p>	Y
Redshank (<i>Tringa totanus</i>)	BoCCI Red-listed/ Wildlife Acts	<p>Breeding Nests on the ground in grassy tussocks, in wet, marshy areas and occasionally heather. Breeds mainly in midlands (especially Shannon Callows) and northern half of the country.</p> <p>Wintering Winters all around the coasts of Ireland, Britain and many European countries. Favours mudflats, large estuaries and inlets. Smaller numbers at inland lakes and large rivers.</p>	Y
Golden Plover (<i>Pluvialis apricaria</i>)	Annex I EU Birds Directive/ BoCCI Red-listed/ Wildlife Acts/ SCI	<p>Breeding Breeds in heather moors, blanket bogs and acidic grasslands. Distribution limited to the uplands of northwestern counties in Ireland.</p> <p>Wintering Throughout the winter, are regularly found in large, densely packed flocks, and in a variety of habitats, both coastal and inland. Distribution is widespread in Ireland.</p>	Y
Dunlin (<i>Calidris alpina</i>)	Annex I EU Birds Directive/ BoCCI Red-listed/ Wildlife Acts	<p>Breeding Nests on the ground in sparse, low vegetation - in Ireland favours machair habitats.</p> <p>Wintering Common along all coastal areas - especially on tidal mudflats and estuaries. Very few inland.</p>	Y
Ringed Plover (<i>Charadrius hiaticula</i>)	BoCCI Amber-listed/ Wildlife Acts	<p>Breeding Mostly coastal breeding distribution, preferring to nest on exposed wide sandy or shingle beaches. Some breed inland, particularly in the west, where their preferred nesting habitat is on short-grazed pasture beside rivers and lakes.</p> <p>Wintering Winter around the entire coastline but are quite sparse along the north and south east coasts. Mostly recorded along sandy stretches or along the upper shores of estuaries and non-estuarine coastline</p>	Y
Snipe (<i>Gallinago gallinago</i>)	BoCCI Red-listed/ Wildlife Acts	<p>Breeding Nests on the ground, usually concealed in a grassy tussock, in or near wet or boggy terrain.</p> <p>Wintering</p>	Y

Target Species	Conservation Status ¹³	Typical Habitat ¹⁴	Target Species for Site Y/N
		Highly dispersed distribution in winter. They forage across a variety of wetland and damp habitats. Particularly high concentrations are found on the fringes of lowland lakes.	
Curlew (<i>Numenius arquata</i>)	BoCCI Red-listed/Wildlife Acts	<p>Breeding</p> <p>Nests on the ground inland in rough pastures, meadows and heather. Not a common breeder but found in most parts of the country.</p> <p>Wintering</p> <p>Winters in a wide range of wetland habitats (coastal and inland) and other good feeding areas including damp fields.</p>	Y
Corncrake (<i>Crex crex</i>)	Annex I Bird Species/ BoCCI Red-listed/ Wildlife Acts	<p>Breeding</p> <p>Summer visitor. Nests on the ground in tall vegetation. Formerly common. Now confined to areas of difficult terrain where farming practices have not intensified, mainly North Donegal and western parts of Mayo and Connaught.</p>	Y
Red Grouse (<i>Lagopus lagopus hibernicus</i>)	BoCCI Red-listed/ Wildlife Acts	<p>Breeding</p> <p>Nest on the ground. Found on mountains, moorland and lowland blanket bogs and raised bogs, where it is associated with heather, requires it for food, shelter and nesting. As a 'game' species it has benefited from past management of heather moorland.</p> <p>Wintering</p> <p>Resident and sedentary (non-migratory). If snow is on the ground, will move to wind swept ridges and lower ground.</p>	Y
Woodcock (<i>Scolopax rusticola</i>)	BoCCI Red-listed / Wildlife Acts	<p>Breeding</p> <p>Nests on the ground in forests and woodland, usually well camouflaged amongst dead leaves and low vegetation.</p> <p>Wintering</p> <p>Wider distribution in winter, occurring in woodland, also scrub and some open areas (bracken and heather-covered hills).</p>	Y
Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)	Annex I EU Birds Directive/ BoCCI Amber-listed/ Wildlife Acts	<p>Wintering</p> <p>Scarce winter visitor to Ireland. Highly gregarious. Traditionally occurred in peatland areas, though now mostly seen feeding on intensively managed grasslands.</p>	Y
Barnacle Goose (<i>Branta leucopsis</i>)	Annex I EU Birds Directive / BoCCI Amber-listed/ Wildlife Acts	<p>Wintering</p> <p>Local winter visitor from Greenland. Winters mostly on remote islands in the northwest. Highly gregarious.</p>	Y
Light-bellied Brent Goose (<i>Branta bernicla hrota</i>)	BoCCI Amber-listed/ Wildlife Acts/ SCI	<p>Wintering</p> <p>Mostly found on coastal estuaries during the autumn and early winter, and on grasslands from mid-winter, until departure for breeding grounds.</p>	Y

Target Species	Conservation Status ¹³	Typical Habitat ¹⁴	Target Species for Site Y/N
Whooper Swan (<i>Cygnus cygnus</i>)	Annex I EU Birds Directive/ BoCCI Amber-listed/ Wildlife Acts	<p>Breeding Mainly nest in Iceland during the summer. However, each year a small number stay in Ireland for the summer and there have been occasional breeding records on lakes in the midlands and northwest.</p> <p>Wintering Mostly on lowland open farmland around inland wetlands, regularly seen while feeding on grasslands and stubble.</p>	Y
Tufted Duck (<i>Aythya fuligula</i>)	BoCCI Amber-listed/ Wildlife Acts	<p>Breeding Preference for large open lakes in lowland areas, where nests are built in waterside vegetation. Many nests in close proximity to each other.</p> <p>Wintering Lowland freshwater lakes. Often seen on town lakes, canals and slow-moving rivers.</p>	Y
Pochard (<i>Aythya ferina</i>)	BoCCI Red-listed/ Wildlife Acts	<p>Breeding Nests on the ground among waterside vegetation.</p> <p>Wintering Show a preference for large shallow eutrophic waters, particularly those with well-vegetated marshes and swamps and slow flowing rivers.</p>	Y
Wigeon (<i>Anas penelope</i>)	BoCCI Amber-listed/ Wildlife Acts	<p>Wintering Coastal marshes, freshwater and brackish lagoons, estuaries, bays. Many on inland wetlands, lakes, rivers and turloughs.</p>	Y
Goosander (<i>Mergus merganser</i>)	BoCCI Amber-listed/ Wildlife Acts	<p>Breeding Breed on freshwater lakes and pools.</p> <p>Wintering Winter on large unfrozen lakes and brackish lagoons and occasionally on coastal estuaries.</p>	Y

3.3 Field Survey Results

3.3.1 Target Species

The following target species were recorded during ornithological surveys for the Proposed Development conducted between October 2019 and September 2022, inclusive. Target species observations are summarised in the following sub-sections. Annex I species are highlighted in bold.

- **Merlin**
- **Hen Harrier**
- Kestrel
- Sparrowhawk
- Buzzard
- **Peregrine**
- Woodcock
- Red Grouse
- **Golden Plover**
- Ringed Plover
- Snipe
- **Dunlin**
- Goosander
- **Great Northern Diver**

Tabulated summaries of target species VP survey observations, including flight information, are available in **Appendix 4**. VP flight line and activity area mapping for each target species are available in **Appendix 5**.

3.3.1.1 Merlin

Vantage Point Surveys

Merlin was recorded on two occasions during VP surveys in October 2019. On both occasions, an adult male was observed in flight. One of these flights occurred inside the flight activity survey area (taken to be the Proposed Development site boundary plus a 500 m buffer). An adult male was also observed from VP6 flying south-westerly and low to the ground in clearfell and 2nd rotation forestry within the flight activity survey area in May 2020.

In October 2020, an adult female was observed from VP1 on two separate occasions. In both instances the bird was seen hunting low over bogland outside the 500 m flight activity survey area. An adult female was observed outside the flight activity area perched in a small tree northeast of VP1 in November 2021.

There were no sightings of merlin during the 2021 or 2022 breeding season VP surveys.

Incidental Observations

In late November 2019, there was an incidental sighting of an adult male sitting in vegetation whilst the surveyor travelled to VP2.

There were no additional observations of merlin recorded during the 3-year survey period October 2019 to September 2022, inclusive.

3.3.1.2 Hen Harrier

Vantage Point Surveys

Hen harrier was recorded on one occasion during winter 2020/21. An adult female was observed to the north-east of the site in February 2021, north of VP6 (outside the flight activity survey area). This individual flew just above ground height over young forestry before going out of view.

There were two sightings of hen harrier during the 2022 breeding season. An adult female was observed on 18th May to the southwest of VP4 travelling in a north-westerly direction hunting over the top of Slieve Fyagh. This sighting was in excess of 2.4 km from the flight activity survey area. There was a sighting of a juvenile bird on the 17th August to the north of VP5 (outside the flight activity survey area). This individual flew in a south-westerly direction over forestry, grassland and bog while being mobbed by ravens (*Corvus cornax*).

There were no observations of hen harrier during VP surveys in winter 2019/20, summer 2020, summer 2021 or winter 2021/22.

Winter Walkover Survey

In late February 2021, an immature female hen harrier was observed flying west outside the site boundary to the south-west of VP1 (see **Appendix 9**). This individual was observed hunting low over the bog (2 m height). This flight path occurred within the flight activity survey area.

There were no other winter walkover observations of hen harrier recorded.

Incidental Observations

The 2nd calendar-year bird observed at the winter roost-site in late February 2021 was observed earlier on the same date at the entrance to the Sheskin site.

There was an incidental sighting of a female hen harrier on 20th May 2022. This bird was observed flying west across the road as the surveyor left the site. It landed in the bog on the far side of the road where it remained for approximately seven minutes before taking flight and heading north into the site.

There were no additional observations of hen harrier recorded during the 3-year survey period October 2019 to September 2022, inclusive.

3.3.1.3 Kestrel

Vantage Point Surveys

There was one observation of kestrel recorded during the winter 2019/20 VP survey period. In mid-December, a kestrel, believed to be an immature female, was observed from VP6 hunting within the flight activity survey area.

There were three sightings of kestrel during the 2020 breeding season. In early June, an adult female was observed very briefly in flight to the north of the site outside the flight activity survey area. There were two sightings of kestrel in mid-August, one of which comprised an individual hunting just inside the western site boundary and 500 m buffer area. In mid-September, an adult female was observed to the north of the site, outside the flight activity survey area. This individual was seen to the northwest of VP4 flying south over scrub and improved grassland.

There were no observations of kestrel during winter 2020/21 VP surveys.

Kestrel was the most frequently observed target species during the 2021 breeding season VP surveys. A total of eleven kestrel flight paths were recorded.

An adult was observed northeast of VP3 in mid-April 2021 flying south over bog, grassland and 1st rotation forestry at heights of up to 40 m. This flight path traversed the 500 m flight survey area and entered the site boundary.

In late June 2021, a female was seen to the northeast of VP1 (outside the flight activity survey area). It was flying westward across the bog at 25 m height. In early July 2021, a female was observed east of VP2 travelling southwards along the western boundary of the site and heading into the south-west corner of the site.

In early August 2021, a kestrel was observed east of VP4 (outside the flight activity survey area) flying north carrying prey. In mid-August, a kestrel was seen hunting to the northeast of VP3. This bird flew south and travelled into the flight activity survey area. A female was observed hunting in mid-August to the northwest of VP1 (outside of the flight activity survey area).

In early September 2021, a kestrel was observed west of VP3 flying low over the bog before alighting on a pole. This bird flew off low in a northerly direction (inside the flight activity survey area) flying over a hill and out of sight. A kestrel was recorded in early September to the southeast of VP4 (inside the flight activity survey area). It was flying in a north-easterly direction over bog at 15 m height. An adult female was observed in early September hunting to the north of VP5. A female was recorded in early September hunting to the northeast of VP1. Both of these flights occurred outside the flight activity survey area.

Kestrel was observed flying outside the flight activity survey area on three occasions over the winter 2021/22 period. In early October 2021, a kestrel was observed to the west of VP4. In late November, a kestrel was observed hunting to the northeast of VP1. In late January 2022, a female was observed east of VP1, flying north over bog.

Kestrel was the most frequently observed target species during the 2022 breeding season with 25 separate flight paths recorded from all VPs. Observations were made in April, July, August and September 2022. Fourteen of these flight paths occurred within the site/flight activity survey area.

Kestrel was recorded from VP2, VP3 and VP6 in late April. On two occasions, juvenile birds were recorded. Kestrel was recorded from VP3, VP5 and VP6 in late July 2022. A family group was observed north of VP6 on the 26th July. On 27th July, two kestrels were observed northwest of VP5 hunting and being mobbed by a sparrowhawk. On the following day, a kestrel was observed north of VP5 flying north-west. On 29th July, a juvenile was observed being mobbed by a sparrowhawk from VP3.

There were two sightings of kestrel in mid-August 2022, one to the north-east of VP3 (inside the site boundary) and one to the north-east of VP5 (outside the site boundary). There were a further two sightings of kestrel in late August, one from VP2 and one from VP1 (both occurred within the flight activity survey area).

In mid-September 2022, there were four observations of a juvenile kestrel hunting from VP4 on one date (all of which occurred outside the flight activity survey area). A kestrel was also seen hunting to the north-west of VP2 moving east towards the site and entering the flight activity survey area.

In late September, a juvenile male was observed north of VP5 (outside the flight activity survey area) while flying north-westerly hunting over improved grassland. There were two sightings of kestrels hunting from VP1 at the end of September. These observations occurred outside the flight activity survey area.

Transect and Point Count Surveys

A kestrel was recorded during Transect B in June 2020. A kestrel was recorded during Transect C in September 2020.

One kestrel was recorded during Transect B in July 2021. Four kestrels were recorded during Transect A in August 2021.

A kestrel was recorded during Transect B in November 2021.

Hinterland Surveys

One bird was recorded west of the Proposed Development site near the Glencullin River during the September 2022 driven hinterland survey (see **Appendix 11**).

Incidental Observations

During winter 2020/21, there was an incidental observation of a kestrel in early December 2020 as a surveyor travelled to VP3.

There were no additional observations of kestrel recorded during the 3-year survey period from October 2019 to September 2022, inclusive.

3.3.1.4 Sparrowhawk

Vantage Point Surveys

There were several observations of sparrowhawk during the winter 2019/20 VP survey period. In late October 2019, an adult female was observed west of VP4 flying north over Baroosky stream, rough grassland and thicket. Also in late October, an immature male was observed from VP5 flying out of spruce plantation on the west side of the valley and into the site. An adult female was also briefly observed from VP5 flying low in a drain to the east of the road and over VP4. All of these flights occurred outside the flight activity survey area. In mid-December, a female was observed from VP2 flying out of woodland in the south-west corner of the site (within the flight activity survey area).

In late April 2020, an adult male was observed from VP2 in the southwest corner of the site flying out of spruce plantation and bog, hunting for a time before returning to the forestry (flight occurred within the flight activity survey area). In mid-August, a male was observed to the southeast of VP2. This bird flew in a north-westerly direction within the flight activity survey area just above ground height over 1st rotation forestry and scrub and crossed into the site. Also in mid-August, an individual was observed to the northwest of VP5 (outside the flight activity survey area), hunting in an easterly direction over 1st rotation forestry and heather moorland just above ground height.

During the winter 2020/21 season there was one observation of sparrowhawk. An adult male was observed north of VP2 flying just above ground height over bog in mid-October 2020. This flight path occurred within the 500 m flight activity survey area.

During the summer 2021 VP season, a total of eight flights were recorded. An adult male was observed south of VP5 (outside the flight activity survey area) flying low to the ground in mid-April 2021. In mid-May, an adult male was observed to the west of VP4 hunting low over bog. A juvenile was observed southwest of VP4 in early July flying low over improved grassland. Both flights occurred outside the flight activity survey area.

Also in early July, an adult male was observed west of VP5 (outside the flight activity survey area). This bird flew out of coniferous forestry and caught a swallow that was feeding its young in a shed nearby, before flying low in a south-easterly direction with the prey.

In mid-August 2021, an adult female was observed to the northwest of VP4 carrying prey. This individual flew in a southerly direction very low over improved grassland and scrub. In early September, a sparrowhawk was observed to the east of VP4 flying low in a south-westerly direction over bog and scrub. Both flights occurred outside the flight activity survey area. A sparrowhawk was also observed to the northeast of VP6 (inside the flight activity survey area) flying in a south-easterly direction over 2nd rotation forestry. A juvenile was also observed to the northwest of VP4 (outside the flight activity survey area) hunting and flying in a south-easterly direction over improved grassland and bog, just above ground height.

During winter 2021/22, in mid-December, an adult female was observed south of VP6 (inside the flight activity survey area) hunting over clearfell and 1st and 2nd rotation forestry. An adult female was also observed flying north of VP5 (outside of the flight activity survey area).

There were eight observations of sparrowhawk during the 2022 breeding season, two from VP2, three from VP5, two from VP4 and one from VP3. These were recorded during May, July, August and September 2022.

In mid-May, an adult female was observed to the north of VP5 (outside the flight activity survey area) being mobbed by a pair of hooded crows (*Corvus cornix*). In late May, an adult female was observed east of VP2. This individual travelled eastwards into the site carrying prey and was considered to be nesting on-site.

In late July, a juvenile was observed northeast of VP2 (within the site). An adult male was also observed northeast of VP3 (partially within the flight activity survey area) mobbing an adult and juvenile kestrel. A sparrowhawk was observed northwest of VP5 (outside of the flight activity survey area) mobbing two kestrels over the bog.

In mid-August, two juvenile sparrowhawks were observed north-east of VP5 (outside the site boundary) flying in and out of forestry practicing hunting. An adult female was observed on the following day south-east of VP4 (outside the site boundary) flying in a westerly direction while hunting. In mid-September, a sparrowhawk was observed south-west of VP4 (inside the site boundary) circling and soaring over bog.

Transect and Point Count Surveys

A sparrowhawk was recorded during Transect A in June 2021. Three individuals were observed during Transect A in August.

A sparrowhawk was observed during Transect B (section T3) in July carrying prey.

A sparrowhawk was observed during Transect A in September 2022. A sparrowhawk was also observed in-flight during Transect C this month.

Incidental Observations

At the end of November 2021, a female juvenile was recorded hunting northeast of VP3 (partially inside the flight activity survey area) as a surveyor was leaving site.

For non-core survey data relating to sparrowhawk, please see **Appendix 14**.

There were no additional observations of sparrowhawk recorded during any of the other surveys carried out between October 2019 and July 2022.

3.3.1.5 Buzzard

Vantage Point Surveys

There were no observations of buzzard flights during the winter 2019/20, breeding season 2020 or winter 2020/21 VP survey periods.

During the 2021 breeding season VP surveys, there were two buzzard observations recorded. In early August 2021, a buzzard was observed to the northeast of VP3 perched on a conifer tree. It flew northwest and went out of view. In early September, a buzzard was observed to the north of VP5 moving low in a north-westerly direction over improved grassland. Both flights were outside the flight activity survey area.

During winter 2021/22, buzzard was recorded on two occasions during November and December 2021. In late November, a buzzard was observed northwest of VP4. It perched on the chimney of a derelict house and then flew south low along a river before landing in a field. Hooded crows forced the bird upwards, after which it flew south into conifer plantation. In mid-December, a juvenile was observed west of VP4 feeding on insects on the

ground in improved grassland. After being mobbed by ravens, it flew north low to the ground. Both flights occurred outside the flight activity survey area.

There were four records of buzzard during the 2022 breeding season. On 26th July, an adult buzzard was observed to the southwest of VP1 (outside the flight activity survey area). It flew generally northwards parallel to the eastern boundary of the site over bog, scrub, cutover bog, and clear fell. In late August, there were two sightings of buzzard during a watch at VP2. An adult was observed to the north of the VP flying east. This bird flew south, perched for a time, then flew south into clearfell. At the end of the watch, presumably the same bird, flew out of clearfell and moved north. Both of these flights occurred inside the flight activity survey area. In late September, an adult was observed north of VP5 (outside the site boundary) circling over farmland, forestry and bog.

Transect and Point Count Surveys

A juvenile buzzard was recorded in-flight while being mobbed during Transect B in September 2022.

Incidental Observations

There were two incidental observations of buzzard made outside of the VP survey periods. On 3rd September 2021, a buzzard was observed to the south of VP4 (outside of the site boundary). This buzzard was perched on a pole when the surveyor was leaving the site. On the 23rd August 2022, a buzzard was flushed from a tree by a surveyor during Transect B.

There were no additional observations of buzzard recorded during the 3-year survey period October 2019 to September 2022 inclusive.

3.3.1.6 Peregrine

Vantage Point Surveys

There was one sighting of peregrine during VP surveys over the course of the 3-year survey period. This sighting occurred during the 2022 breeding season. An adult was observed northeast of VP3 on 21st April (outside of the site boundary) flying over 1st rotation forestry and bog. This individual circled continuously to the north of VP3 generally moving westwards, before moving south and southeast crossing into the flight activity survey area and entering the north-west corner of the site.

For non-core survey data relating to peregrine, please see **Appendix 14**.

There were no additional observations of peregrine recorded during the 3-year survey period October 2019 to September 2022 inclusive.

3.3.1.7 Woodcock

Vantage Point Surveys

There were two records of woodcock during the winter 2019/20 VP surveys. In mid-December, a woodcock was observed in flight outside the flight activity survey area from VP1. This bird flew east just above ground height over bog before moving out of view. There was one other record of woodcock, recorded in late November from VP1, however no flight path was recorded.

There were no observations of woodcock during the breeding season 2020, winter 2020/21, breeding season 2021 or 2022 VP surveys.

There was one observation of woodcock during the winter 2021/22 VP surveys. In mid-February, one was briefly observed northeast of VP3 (outside the flight activity survey area) flying across a track in a westerly direction just above ground height.

Breeding Season Walkover Surveys

Woodcock was not recorded during the walkover surveys conducted on the 11th June 2020, 2nd June 2021 or 20th June 2022 (see **Appendix 10**).

Transect and Point Count Surveys

One woodcock was recorded during Transect A in January 2021. One woodcock was recorded during Transect B in March 2021 (see **Appendix 8**).

Incidental Observations

In late October 2019 a woodcock was flushed off the track within the site boundary from VP5. It flew low north-easterly over rough and improved grassland before returning to cover. Individual woodcock were also flushed by surveyors at VP5 in late November and VP1 in late January 2020.

In mid-January 2021, two woodcock were flushed as the surveyor was walking to VP6. One individual was also flushed in mid-January as a surveyor travelled to VP2. No flight paths were drawn for these incidental observations.

On 10th December 2021, two individuals were flushed as the surveyor made their way by car to VP6. No flight path was recorded for this observation. In mid-December, one woodcock was observed northwest of VP4. It was flushed from the side of the road, flying south-west over 1st rotation forestry. Later that same morning, another bird was flushed from the road north of VP5. This individual flew low over rough grassland. Both flights occurred outside the flight activity survey area.

In mid-February 2022, there was an incidental sighting of a woodcock as the surveyor was driving from VP2 to VP6. This woodcock flew out of the ditch beside the road. No flight path was drawn for this observation. In late-February one was observed northeast of VP3 (outside the flight activity survey area). It was flushed from a stream, flying briefly in a southerly direction just above ground height.

There were no additional observations of woodcock recorded during the 3-year survey period October 2019 to September 2022 inclusive.

3.3.1.8 Red Grouse

Vantage Point Surveys

There were no observations of red grouse in-flight during any of the winter or breeding season VP surveys conducted monthly between October 2019 and March 2022, inclusive. There were incidental records of red grouse from VP surveys (see below).

During the 2022 breeding season, red grouse were observed in-flight on two occasions in May. On 18th May, a pair of red grouse were observed to the northeast of VP3 (within the flight activity survey area) flying north over bog. On 26th May, a pair of red grouse were observed in-flight north of VP2 (within the flight activity survey area).

Winter Walkover Surveys

During the walkover survey on the 27th February 2020, one red grouse was observed close to VP3.

During the walkover survey on the 22nd February 2021, red grouse droppings were discovered. Two red grouse were also heard calling but were not observed.

During the walkover survey on the 23rd November 2021, individuals were flushed on two separate occasions. A pair of red grouse was also flushed during the walkover. Both fresh and old red grouse droppings were found at several locations along the route.

During the walkover survey on the 20th January 2022, a pair of red grouse were flushed. Red grouse droppings were recorded at several locations.

During the walkover survey on the 15th February 2022, one red grouse was observed in flight.

See **Appendix 9** for more information.

Breeding Season Walkover Surveys

During the walkover surveys on the 12th May and 9th July 2021, no red grouse or any evidence of their presence was not recorded.

During the moorland breeding bird survey undertaken in the 2022 breeding season, an estimated three pairs of red grouse were identified within the survey area (which encompassed the area from the site boundary extending out to a 1 km distance). These birds were considered possible breeders based on the activity observed. Breeding by red grouse was not confirmed within the survey area. The closest of these birds was located approximately 550 m from the nearest turbine location.

See **Appendix 10** and **Appendix 15** for more information.

Incidental Observations

In early February 2021, a red grouse was heard calling east of VP5. This individual was not observed.

In early October 2021, there was an incidental observation of two red grouse prior to the commencement of a watch at VP3. This pair was flushed from the bog and flew low south-eastwards.

In mid-December 2021, one red grouse was heard calling to the north of VP5.

In April and June 2022, red grouse were heard calling on several occasions from VP1, VP3 and VP4.

There were no additional observations of red grouse recorded during the 3-year survey period October 2019 to September 2022 inclusive.

3.3.1.9 Golden Plover

Vantage Point Surveys

In late October 2019, a flock of 30 golden plover was observed in-flight northeast of VP4 (outside the flight activity survey area). This flock circled low over grassland moorland before landing on the ground. The same group was observed again during the same VP watch sitting east of the VP location. There were no observations of golden plover in flight during the breeding season 2020 or winter 2020/21 VP survey periods.

Golden plovers were heard calling on a number of occasions during the 2021 breeding season (see Incidental Observations below); however, no observations were made, or flight paths recorded.

There were no observations of golden plover during the winter 2021/22 or 2022 breeding season VP surveys.

The flock of 30 birds seen in late October 2019 comprised the only flight path recorded for golden plover over the course of the 3-year VP survey period.

Transect and Point Count Surveys

One bird was recorded during Transect A in October 2021.

Winter Walkover Surveys

Golden plovers were heard calling high up on a hill west of VP3 during the walkover survey on the 27th February 2020.

Three golden plovers were heard calling during the morning survey conducted on the 22nd February 2021. There were no observations or evidence of golden plover recorded during the survey conducted on the 23rd November 2021.

During the walkover survey on the 20th January 2022, a flock of 48 golden plovers was observed to the southwest of the route. During the walkover survey on the 15th February 2022, two separate groups of golden plovers, comprising three and two birds respectively, were observed in flight during the walkover route.

See **Appendix 9** for more information.

Breeding Season Walkover Surveys

There were no observations of golden plover nor was there any evidence of their presence recorded at the site during the walkover surveys carried out on the 12th May and 9th July 2021.

During the 2022 moorland breeding bird survey, an estimated two pairs of golden plover were identified within the survey area (which encompassed the area from the site boundary extending out to a 1 km distance). At least one of these pairs was confirmed to have successfully bred as a pair with two chicks was recorded on the 14th July 2022. These pairs were located approximately 590 m and 920 m from the nearest turbines.

See **Appendix 10** and **Appendix 15** for more information.

Incidental Observations

On 27th November 2019 a golden plover was heard calling from VP2. On 24th April 2020, a golden plover was heard calling high over VP3. No observations were made, and no flight paths were recorded.

Golden plovers were heard calling on four separate occasions during VP watches in the 2021 breeding season. Birds were heard calling from areas of bog and/or scrub from VP2 and VP3 during May and June 2021. In mid-May, golden plover was heard calling west of VP2 on more than one occasion. In late June, golden plover was heard calling in bog and scrub habitat west and south of VP3.

For non-core survey data relating to golden plover, please see **Appendix 14**.

There were no additional observations of golden plover recorded during the 3-year survey period October 2019 to September 2022 inclusive.

3.3.1.10 Ringed Plover

Vantage Point Surveys

There were no flight paths recorded for ringed plover during VP surveys undertaken between October 2019 and March 2022, inclusive.

During the 2022 breeding season, ringed plover was observed on two occasions in June 2022 from VP1. On 30th June, a pair was observed to the north of VP1 flying south-easterly over cutover bog and scrub (inside the flight activity survey area). Later on the same date, a ringed plover was observed to the east of VP1 on the ground beside a pond. This bird was presumably one of the birds that was previously observed on site. It flew north briefly low to the ground (outside the flight activity survey area).

Winter Walkover Survey

During the walkover survey on the 22nd February 2021, two ringed plover were observed on the ground by standing water. See **Appendix 9** for more information.

Breeding Season Walkover Survey

One ringed plover was observed to the south-east of the site boundary during a walkover survey for golden plover and merlin on the 12th May 2021. See **Appendix 10** for more information.

Incidental Observations

In mid-April 2020, two ringed plovers were heard calling from VP1 to the southeast of the site. Later in April, one was heard calling from VP1, and one was heard calling high above VP3. At the end of April, a male was observed calling in a pond south of VP1, outside the site and 500 m buffer area. In mid-May, one was observed south of VP1 (outside the site and 500 m buffer area). This bird was foraging beside a pond within the bog located west of the track. A ringed plover was recorded from VP1 during June (bird observed by a pool on approach to the VP location). One was heard calling north of VP1 in July 2020. A ringed plover was heard calling east of VP1 in March 2021.

On three occasions ringed plovers were heard calling during VP surveys in the 2021 breeding season. These birds were recorded from VP1 calling over bogland habitat during May and June. No visual sightings were made during the VP surveys.

There were no additional observations of ringed plover recorded during the 3-year survey period October 2019 to September 2022 inclusive.

3.3.1.11 Snipe

Vantage Point Surveys

There were no observations of snipe in-flight during the winter 2019/20 or breeding season 2020 VP surveys.

During the winter 2020/21 VP surveys, there were three observations of snipe in flight. A snipe was observed to the south-west of VP3 in mid-October 2020. This flight path crossed into the site. In early February 2021, a snipe was observed to the south-east of VP3. In mid-March, a snipe was observed to the east of VP3 heading north-east. Both of these flight paths occurred within the 500 m flight activity survey area.

During the breeding season 2021 VP surveys, there were several records of snipe, the majority of which comprised non-flight or incidental records (see below). In mid-May 2021, a snipe was heard chipping and singing while in display flight to the north-east of VP3 (outside the flight activity survey area). In early June, a snipe was heard chipping and seen displaying southeast of VP3 (inside the flight activity survey area). In early July, a snipe was observed circling south of VP1 and heard drumming over bog before drifting off and dropping into cover. Also in early July 2021, two snipe were observed east of VP1 flying in a westerly direction over bog. Both flight paths were outside the flight activity survey area. A snipe was also heard drumming and chipping over bog and rough grassland east of VP3 (within the flight activity survey area and site boundary). This bird was subsequently observed displaying in the same area.

In mid-December 2021, a snipe was observed flying low north-east of VP3 over bog and rough grassland. In mid-January 2022, a snipe was observed just east of VP3 flying in a north-easterly direction low over bog and rough grassland. In mid-February 2022, a snipe was observed north-east of VP2 flying in a westerly direction low over bog. A snipe was also observed north-east of VP3 flying in a south-westerly direction over 1st rotation forestry, bog and rough grassland. All these flights occurred inside the flight activity survey area.

To date there have been a total of eleven flight paths recorded for snipe in the 2022 breeding season. Snipe were also heard calling/chipping on eight occasions during VP surveys. Records were made from all VP locations except from VP6 and in all months, except August 2022.

In mid-April, a snipe was heard chipping south of VP5, no observation was made. Snipe were observed on two occasions from VP3. Initially, one was heard chipping east of VP3 and was later seen flying north-east. Later, on

the same date, a snipe was again heard chipping east of VP3. One was also heard drumming after which it was observed displaying and circling over bog, rough grassland and 1st rotation forestry to the northeast of the VP.

A total of eight snipe were seen in-flight from VP4 in mid-April. A snipe was also heard calling to the east of VP4, but no observation was made. Snipe were also heard chipping west of VP2 and south of VP3.

In mid-May, there were two observations of snipe from VP3. These sightings comprised two pairs that were observed from VP3 circling and displaying. One pair dropped to the ground just below VP3, following this both pairs were lost from sight. Subsequently, one of the pairs was seen displaying north-east of VP3. One of the flight paths recorded traversed the site boundary. The other occurred outside the flight activity survey area.

In late June, a snipe was heard chipping east of VP3, no observation was made. An adult male was observed displaying over bog and moorland northeast of VP3 (inside the flight activity survey area). A snipe was heard chipping south of VP2, no observation was made. A snipe was heard chipping west of VP1, no observation was made. In late July, a snipe was heard to the south of VP1 and then two were observed to the northeast of VP1 (inside the site and flight activity survey area) flying in a westerly direction. In late September, a snipe was seen dropping into rushes east of VP1 (outside the site boundary).

Transects and Point Counts

There were no observations of snipe during the breeding season 2020 transect surveys.

One snipe was recorded during Transect A in October 2020.

One snipe was recorded during Transect A and also Transect C in June 2021.

Breeding Season Walkover Survey

During the 2022 moorland breeding bird survey, an estimated three pairs of snipe were identified within the survey area (which encompassed the area extending from the site boundary out to a 1 km distance). The closest of these pairs was located 870 m from the nearest turbine location. See **Appendix 10** and **Appendix 15** for more information.

Winter Walkover Survey

During the survey undertaken on the 22nd February 2021, seven snipe were recorded. See **Appendix 9** for more information.

Incidental Observations

A snipe was flushed south-west of VP3 and outside the site boundary by a surveyor in mid-October 2020 and again on two occasions in early December 2020. All three flights occurred inside the flight activity survey area.

Two snipe were heard calling in mid-January 2021 from VP1. In early February, a snipe was heard calling northeast of VP1. A snipe was also flushed southeast of VP3 (inside the flight activity survey area). Two were flushed by a surveyor on the way to VP2 in mid-March 2021. Also in mid-March, a snipe was flushed east of VP3. This bird flew over grassland/moorland flying north just above ground-level.

In mid-April 2021, a snipe was observed flying low over bog to the south-east of VP3 as the surveyor made their way to VP3.

In mid-May 2021, a snipe was heard calling southeast of VP1. There was no sighting of this species. A snipe was also heard chipping west of VP5 but again there was no sighting of this species. A snipe was also flushed from the track up to VP3. The bird flew north-easterly low to the ground over bog and grassland moorland (inside the flight activity survey area). A snipe was also heard chipping to the north-west of the track near VP3, but not observed. A snipe was also heard to the southwest of VP3 but there was no sighting made.

In early June 2021, a snipe was flushed from the ground north-east of VP3 (inside the flight activity survey area). It flew northwest just above ground level over bog and rough grassland before landing.

In early October 2021, there was an incidental observation of a snipe as the surveyor was on their way to VP3. This bird was observed northeast of VP3. It was flushed from the forestry track and flew northeast over bog at a height of 0-1 m. This flight occurred inside the flight activity survey area.

In mid-January 2022, there was an incidental observation of snipe as the surveyor was traveling to VP3. This snipe was flushed on the track, no flight path was drawn. In mid-March 2022, a snipe was flushed from a drain by a surveyor north-east of VP3 (inside the flight activity survey area).

In mid-April 2022, there was an incidental record of a snipe heard drumming between VP3 and VP5, no observation was made. In mid-September 2022, a snipe was flushed north-east of VP3 (inside the site boundary). In late September, a snipe was flushed by a surveyor during VP1 (outside the site boundary).

For non-core survey data relating to snipe, please see **Appendix 14**.

There were no additional observations of snipe recorded during the 3-year survey period October 2019 to September 2022 inclusive.

3.3.1.12 Dunlin

Breeding Season Walkover Survey

During the 2022 moorland breeding bird survey, an estimated one pair of dunlin were identified within the survey area (which encompassed the area extending from the site boundary out to a 1 km distance). This pair was located approximately 1.2 km from the nearest turbine location. See **Appendix 10** and **Appendix 15** for more information.

There were no additional observations of dunlin recorded during any of the other surveys carried out over the 3-year survey period October 2019 to September 2022 inclusive.

3.3.1.13 Goosander

Vantage Point Surveys

During the winter 2019/20 survey period, three male goosanders were observed to the north-west of VP4 flying upriver in late November. On the same day, three were observed from VP5 as they flew up the river, flushed by a farmer and his dog walking the field edge. Both flight paths occurred outside the flight activity survey area. On 28th November 2020 a goosander was observed from VP2 as it flew up a tributary of the Baroosky Stream and into forestry where there are two small lakes. This flight occurred inside the flight activity survey area.

For non-core survey data relating to goosander, please see **Appendix 14**.

There were no additional observations of goosander recorded during the 3-year survey period October 2019 to September 2022 inclusive.

3.3.1.14 Great Northern Diver

Vantage Point Surveys

- Summer 2021, a great northern diver was observed in-flight from VP4 on 3rd September 2021. This bird flew in from the west over bog and improved grassland (outside of the flight activity survey area).

For non-core survey data relating to great northern diver, please see **Appendix 14**.

There were no additional observations of great-northern diver recorded during the 3-year survey October 2019 to September 2022.

A summary of records of target species recorded outside the ZOI of the Proposed Development during supplementary hinterland surveys is included in **Appendix 14** Non-core Bird Survey Data.

3.3.2 Secondary Species

The following secondary species were recorded during ornithological surveys conducted in relation to the Proposed Development between October 2019 and September 2022, inclusive. Observations of secondary species are summarised as per surveys undertaken in the following sub-sections.

Tabulated summaries of secondary species VP observations, including flight information, are available in **Appendix 4**. VP flight line and activity area maps are available in **Appendix 5**.

3.3.2.1 Grey Heron

Vantage Point Surveys

- Winter 2019/20, grey heron (*Ardea cinerea*) was recorded from VP5 in both late October and mid-December 2019.
- Summer 2020, grey heron was recorded from VP2 and VP6 in mid-May. All flight paths occurred within the flight activity survey area.
- Winter 2020/21, grey heron was recorded from VP6 in late October 2020, and VP1 in early February 2021. Both flight paths occurred outside the flight activity survey area.
- Summer 2021, grey heron was recorded from VP1 in mid-April, and from VP6 in May and June. Grey heron was also recorded from VP4 in early June and VP1 in late June. All flight paths were outside the site boundary, two occurred within the 500 m flight activity survey area.
- Winter 2021/22, grey heron was recorded from VP1 in late November 2021 and late January 2022. There were three separate sightings of grey heron from VP2 in mid-March 2022. In late March, one was observed from VP1 in-flight outside the site boundary.
- Summer 2022, three grey heron flight paths recorded from VP1, VP3 and VP6 in May, June and September, respectively. One of these occurred inside the flight activity survey area.

Transect and Point Count Surveys

- A grey heron was recorded during Transect B in October 2020 and during Transect B in May 2021.
- Two grey herons were recorded in-flight during Transect A in September 2022.

Hinterland Surveys

- Summer 2022, one grey heron recorded approximately 1 km south of the site during the driven hinterland survey on the 26th September 2022. See **Appendix 11** for more information.

Incidental Observations

There were two incidental observations of grey heron made outside the VP surveys. On 5th July 2021 one was observed perched in a tree west of VP4 when the surveyor was leaving the site. On 3rd September 2021 one was observed >2 km northwest of VP2. No flight path maps were drawn for these observations.

On 7th October 2021, there was an incidental observation of grey heron to the west of VP5. This bird was flying south along the river at a height of 2 m.

For non-core survey data relating to grey heron, please see **Appendix 14**.

There were no additional observations of grey heron recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.

3.3.2.2 Cormorant

Vantage Point Surveys

- Winter 2019/20, two cormorants (*Phalacrocorax carbo*) were observed separately from VP1 in December 2019 (adult and juvenile).
- Winter 2020/21, a cormorant (juvenile) observed from VP1 in mid-November (outside the flight activity survey area), one cormorant observed from VP2 in mid-December (inside the flight activity survey area).
- Winter 2021/22, eight observations of cormorant made from VP1. Observations were made in November 2021 and in January and February 2022. No flight paths traversed the flight activity survey area.

For non-core survey data relating to cormorant, please see **Appendix 14**.

There were no additional observations of cormorant recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.

3.3.2.3 Greylag Goose

Vantage Point Surveys

- Winter 2019/20, a greylag goose (*Anser anser*) was observed in-flight southeast of VP2 flying over bog and thicket forestry in late November.

There were no additional observations of greylag goose recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.

3.3.2.4 Pink-footed Goose

Vantage Point Surveys

- Winter 2020/21, an adult pink-footed goose (*Anser brachyrhynchus*) was observed in-flight to the southwest of VP5 in October 2020. This individual headed northwards past the VP. The flight path was outside the flight activity survey area.

There were no additional observations of pink-footed goose recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.

3.3.2.5 Mallard

Vantage Point Surveys

- Winter 2019/20, two adult mallards (*Anas platyrhynchos*) were observed in late February 2020 to the southeast of VP6 flying in a westerly direction over the bog. In late April, two adults were observed from VP6 to the east of the site boundary.
- Summer 2020, an adult male was observed outside the site boundary to the west of VP1 in mid-May flying northeast over the bog. This flight path occurred within the flight activity survey area.
- Winter 2020/21, an adult male was observed to the north of VP1 flying south-east over the bog (outside the flight activity survey area).

- Summer 2021, observations of mallard were made from all VP's except from VP3 and VP5. In early April, an adult female was observed northeast of VP6. In mid-May, an adult female was observed north of VP4. On the same date, an adult male was observed east of VP1. Also in mid-May, a male was observed in-flight from VP2. In mid-August, four mallards were observed coming into view northwest of VP1. Two adult females were also observed south of VP1. All flight activity occurred outside the site boundary, two occurred within the 500 m flight activity survey area.
- Winter 2021/22, mallard was observed on seven occasions from VP1 in October and November 2021 and in January 2022. Five observations were made from VP1 on 6th October. A female mallard was observed northwest of VP1 flying south-east over the bog. A pair of mallards was also observed southwest of VP1 flying north over bog. Four mallards were observed flying southeast of VP1. One mallard was observed northeast of VP1 flying north over bog. A mallard was also observed in-flight east of VP1 before dropping onto a pond. In late November, one adult male was observed east of VP1 flying south over bog before landing on a pond. In late January a pair was observed north of VP1. This pair was observed flying southwest over bog and a pond. All flight paths occurred outside the flight activity survey area.
- Summer 2022, four observations of mallard from VP1, VP2 and VP4. One of these occurred inside the site boundary and flight activity survey area.

Incidental Observations

A mallard was recorded on a pond to the east of VP1 in late February 2020. In early September 2021, a mallard was heard calling south of VP1, however no observation was made.

In mid-January 2022, there was an incidental observation of four mallards east of VP2 (within the flight activity survey area). This observation was made just after the end of the VP survey time. These four mallards were first heard calling east of VP2 and were then observed flying at 15 – 20 m height for 5 seconds. They were observed flying over clear fell and 1st rotation forestry.

In late September 2022, a male and two females/juveniles were seen on a pond (outside the 500 m survey area).

For non-core survey data relating to mallard, please see **Appendix 14**.

There were no additional observations of mallard recorded during any of the other surveys carried out during the 3-year survey period October 2019 to September 2022, inclusive.

3.3.2.6 Teal

Vantage Point Surveys

- Winter 2021/22, four teal were observed east of VP1 (outside the flight activity survey area) in early October 2021. These birds were flying low over the bog before dropping onto a pond.
- Summer 2022, a drake (male) teal seen in flight from VP1 in late September 2022 (outside the flight activity survey area) and eight teal (mix of females and juveniles) also seen in flight to the east of VP1 before dropping onto the bog.

Incidental Observations

One teal recorded in July 2021 on a pond during VP1. In late January 2022, teal were heard calling to the north of VP1 on two occasions. In mid-February, a teal was heard calling north-west of VP1. No observations of these birds were made.

There were two incidental sightings of teal in the 2022 breeding season. In mid-May, three males were observed loafing on the ponds to the southeast of VP2. In late May, a pair were observed loafing on the ponds to the west of VP1. Both observations occurred inside the site boundary.

For non-core survey data relating to teal, please see **Appendix 14**.

There were no additional observations of teal recorded during any of the other surveys carried out during the 3-year survey period October 2019 to September 2022, inclusive.

3.3.2.7 Black-headed Gull

Vantage Point Surveys

- Winter 2021/22, one black headed gull was recorded southeast of VP4 in February 2022. This flight path occurred outside the flight activity survey area.

For non-core survey data relating to black-headed gull, please see **Appendix 14**.

There were no additional observations of black-headed gull recorded during any of the other surveys carried out during the 3-year survey period October 2019 to September 2022, inclusive.

3.3.2.8 Great Black-backed Gull

Vantage Point Surveys

- Winter 2019/20, great black-backed gull (*Larus marinus*) recorded in-flight on three occasions in February and April 2020 from VP4 and VP6.
- Summer 2020, observed on ten occasions in May and June during the breeding season. A total of five flight paths were recorded. All of these occurred within the flight activity survey area, including one which traversed the south-western corner of the site boundary. Great black-backed gull was recorded to the north-east of VP3, north-west and south of VP2, circling over VP3 and east of VP5.
- Winter 2020/21, great black-backed gull was recorded in December 2020 and January, February, and March 2021. Observations were made from all VP locations. A total of five flightpaths were recorded, all of which occurred outside the flight activity survey area.
- Summer 2021, great black-backed gull was recorded on four occasions from VP2, VP4 and VP6. Three observations were made during April and one during May. Three flight paths occurred outside the flight activity survey area. One flight traversed into the south-western corner of the site.
- Winter 2021/22, a total of ten observations of great black-backed gull were recorded, the majority of these were observed from VP4 to the north of the site. Observations were made during December 2021 and in January, February and March 2022. Three of these flight paths occurred inside the flight activity survey area.
- Summer 2022, a total of four observations of great black-backed gull were recorded from VP1 and VP2 in May and June. Three of these flight paths occurred within the site boundary/flight activity survey area.

Transect and Point Count Surveys

- One great black-backed gull recorded during Transect A in October 2020.
- Two great black-backed gulls recorded during Transect A in April 2022.

Incidental sightings:

Two great black-backed gulls (an adult and a 2nd calendar year) were observed when surveyors were driving past VP4 in November 2021.

For non-core survey data relating to great black-backed gull, please see **Appendix 14**.

There were no additional observations of great black-backed gull recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.

3.3.2.9 Lesser Black-backed Gull

Vantage Point Surveys

- Summer 2020, lesser black-backed gulls were observed on two occasions in September 2020. In mid-September, one bird was observed from VP4 travelling northwards (outside the flight activity survey area).
- Winter 2020/21, an adult and a juvenile were observed from VP4 travelling northwards (outside the flight activity survey area).
- Summer 2021, nine flight paths were recorded. These were recorded from all VP's except for VP1 and VP6. Flights were observed during April, May and July 2021. Four flight paths traversed the 500 m flight activity survey area, the remainder occurred outside the area.
- Winter 2021/22, one lesser black-backed gull was observed north of VP4 outside the flight activity survey area.
- Summer 2022, eight flight paths recorded from VP1, VP2 and VP4 in April, May and July. All of these occurred outside the site boundary. Four of these occurred inside the flight activity survey area.

Transect and Point Count Surveys

- One lesser black-backed gull recorded during Transect B in August 2020.

For non-core survey data relating to lesser black-backed gull, please see **Appendix 14**.

There were no additional observations of lesser black-backed gull recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.

3.3.2.10 Herring Gull

Vantage Point Surveys

- Winter 2021/22, there was one record of herring gull (*Larus argentatus*). Two birds were observed from VP4 in October 2021 outside the flight activity survey area.
- Summer 2022, five flight paths recorded from VP4 and VP5 in June and July. All of these occurred outside the site boundary/flight activity survey area.

Incidental sightings

There was an incidental observation of a 2nd calendar year herring gull made by a surveyor in the vicinity of VP4 in November 2021.

For non-core survey data relating to herring gull, please see **Appendix 14**.

There were no additional observations of herring gull recorded during any of the other surveys carried out during the 3-year survey period October 2019 to September 2022, inclusive.

3.3.2.11 Gannet

Incidental sightings:

On 4th October 2021, a juvenile gannet (*Morus bassana*) was observed to the west of VP5 (outside the flight activity survey area) during the vantage point survey. This individual appeared grounded on the bog at the side of a hill because of bad weather. No flight path was observed.

There were no additional observations of gannet recorded during any of the other surveys carried out during the 3-year survey period October 2019 to September 2022, inclusive.

3.3.2.12 Common Sandpiper

Vantage Point Surveys

There were two records of common sandpiper during the 2022 breeding season VP surveys. On 21st June, one was heard calling to the north of VP4 and was subsequently observed on the ground in improved grassland beside a river (outside the flight activity survey area). A second bird was heard returning the call but was not observed until later when both birds were seen together in the field beside the river. The surveyor identified these birds as a likely breeding pair. On 23rd June, one was heard calling northwest of VP4 along the river, no observation was made.

There were no additional observations of common sandpiper recorded during any of the other surveys carried out during the 3-year survey period October 2019 to September 2022, inclusive.

3.3.2.13 Jack Snipe

Incidental sightings

There was an incidental sighting of a jack snipe (*Limnocryptes minimus*) in February 2021 when one was flushed from VP3 by a surveyor. This bird flew low to the ground before dropping into rushes. This flight occurred inside the flight activity survey area.

A jack snipe was flushed by a surveyor during a winter walkover survey on the 20th January 2022.

There were no additional observations of jack snipe recorded during any of the other surveys carried out during the 3-year survey period October 2019 to September 2022, inclusive.

3.4 Evaluation of Conservation Importance of Populations of Key Species

The conservation importance of the populations of key species which have been identified within the ZOI is evaluated with regard to national species population estimates and mean county population data, where available for certain species.

3.4.1 Merlin

Merlin is listed under Annex I of the EU Birds Directive and is amber listed in Ireland (Gilbert *et al.*, 2021). To date there has been no systematic national survey undertaken for merlin. As per the latest NPWS Article 12 reporting, the national breeding population of merlin is estimated to be between 200 and 400 pairs. This NPWS Article 12 breeding population estimate is based largely on expert opinion (Hardy *et al.*, 2009).

Merlin was recorded on seven occasions over the course of the overall survey period. Two of these observations occurred in/ within 500 m of the Proposed Development site. No merlin breeding activity was recorded during either the VP surveys or distribution and abundance surveys undertaken within the study area over the 3-year

survey period; however, it is acknowledged that targeted breeding raptor surveys were not completed (see Section 2.9.3).

Taking a precautionary approach, the merlin population recorded has been assigned a conservation importance rating of **Local Importance (Higher Value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

3.4.2 Hen Harrier

Hen harrier is listed under Annex I of the EU Birds Directive and is amber listed in Ireland (Gilbert *et al.*, 2021).

Wintering

There were three observations of hen harrier in/within a 500 m radius of the wind farm site during the survey period. An adult female was recorded on two separate occasions, as well as one record of a 2nd calendar-year bird. No hen harrier winter roosts were identified within a 2 km radius of the wind farm site.

As per the latest NPWS Article 12 reporting, the estimated national wintering population of hen harrier in Ireland is 269-349 individuals (1% of this population equates to 2-3 birds). On a precautionary basis, therefore, the individuals recorded during the winter season surveys at the Proposed Development site are taken to form part of a wintering population of **National/International importance**, as per NRA (2009).

Breeding

A review of the most recent national survey of breeding hen harrier in Ireland (Ruddock *et al.*, 2016) determined that the national breeding population is estimated to comprise between 108-157 pairs. Therefore, the presence of one breeding pair would be taken to comprise a population of National/International importance.

There were three sightings of hen harriers during the 2022 summer season, comprising a female observed southwest of VP4 on the 18th May 2022 and a juvenile seen on the 17th August to the north of VP5 (both sightings occurred outside the flight activity survey area). There was also an incidental sighting of a female on 20th May 2022. This individual was observed entering the site.

These comprise the only summer season observations of hen harrier recorded over the course of the 3-year bird survey period encompassing 2020, 2021 and 2022.

No hen harrier breeding activity has been recorded within the study area over the course of the bird survey period. The incidental sighting on 20th May 2022 comprised the only breeding season flight path recorded for hen harrier in/within a 500 m radius of the wind farm site over the survey period.

No breeding population of hen harrier has been identified within the vicinity of the wind farm site on the basis of the results of the VP surveys and distribution and abundance surveys undertaken within the study area over the 3-year survey period; however, it is acknowledged that targeted breeding raptor surveys were not completed (see **Section 2.9.3**).

3.4.3 Kestrel

Kestrel is not listed on Annex I of the EU Birds Directive. However, kestrel is red listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021). As per the latest NPWS Article 12 reporting, the national breeding population of kestrel is estimated to be between 12,100 and 21,200 individuals.

There were 47 separate observations of kestrel over the course of the survey period. Of these, 19 observations occurred in/within 500 m of the site. Kestrels were observed in both breeding and non-breeding seasons within the survey period. In early August 2021, a kestrel was observed east of VP4 (outside the flight activity survey area)

carrying prey. Juvenile birds were recorded during VP watches in April 2022. A family group was observed in July 2022. No other evidence of kestrel having bred in the area was recorded during the VP surveys and distribution and abundance surveys undertaken within the study area over the 3-year survey period. One pair of kestrels is estimated to have bred in the area over the course of the survey period; however, it is acknowledged that targeted breeding raptor surveys were not completed (see **Section 2.9.3**).

Taking a precautionary approach, the population recorded has been assigned a conservation importance rating of **Local Importance (Higher Value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

3.4.4 Sparrowhawk

Sparrowhawk is not listed on Annex I of the EU Birds Directive and is green listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021). As per the latest NPWS Article 12 reporting, the national breeding population of sparrowhawk is estimated to be between 9,100 and 14,830 individuals.

There were 30 separate observations of sparrowhawk over the course of the survey period. Of these observations, 12 occurred in/within 500 m of the site. Sparrowhawk was observed in both the breeding and non-breeding seasons. There were three sightings of sparrowhawk carrying prey. An adult female observed with prey in late May 2022 east of VP2 (inside the site boundary) was considered by the surveyor to be nesting on-site. In late July 2022, a juvenile was observed northeast of VP2 (inside the site boundary). It is acknowledged that targeted breeding raptor surveys were not completed (see **Section 2.9.3**).

Taking a precautionary approach, the population recorded has been assigned a conservation importance rating of **Local Importance (Higher Value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

3.4.5 Buzzard

Buzzard is not listed on Annex I of the EU Birds Directive and is green listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021). As per the latest NPWS Article 12 reporting, the national breeding population of buzzard is estimated to be 1,500 pairs.

There were nine separate observations of buzzard over the course of the survey period. Of these observations, two occurred in/within 500 m of the site. Buzzard was observed in both the breeding and non-breeding seasons. No evidence of breeding activity was recorded during the VP surveys and distribution and abundance surveys undertaken within the study area over the 3-year survey period; however, it is acknowledged that targeted breeding raptor surveys were not completed (see **Section 2.9.3**).

Taking a precautionary approach, the population recorded has been assigned a conservation importance rating of **Local Importance (Higher Value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

3.4.6 Peregrine

Peregrine is listed on Annex I of the EU Birds Directive and is green listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021). As per the latest NPWS Article 12 reporting, the national breeding population of peregrine is estimated to be 515 pairs.

There were two observations of peregrine over the course of the survey period. These sightings comprised an individual recorded at Lough Nahelly, located approximately 18 km west of the Proposed Development site, during winter hinterland surveys in February 2021, and an adult bird observed during VP3 on 21st April 2022. This individual was originally observed to the north-east of the VP (outside the flight activity survey area). It moved westwards and eventually south crossing into the site.

There were no other observations of peregrine in the vicinity of the wind farm site over the course of the bird survey period. Results of the VP surveys and distribution and abundance surveys undertaken within the study area over the 3-year survey period indicate that the site does not support a resident or regularly occurring population of peregrine; however, it is acknowledged that targeted breeding raptor surveys were not completed (see **Section 2.9.3**).

3.4.7 Woodcock

Woodcock is not listed on Annex I of the EU Birds Directive but is red listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021). A review of the latest NPWS Article 12 reporting determined that due to the uncertainty that exists between the ratio of calling males (recommended reporting unit) to breeding pairs, no reliable population estimate for breeding woodcock is available. However, a population estimate of 2,500 – 9,999 pairs may still be relevant.

There were 17 separate observations of woodcock over the course of the survey period. Of these observations, 3 occurred in/within 500 m of the site. All sightings were made during the winter survey periods. Woodcock was not observed during any of the breeding season woodcock surveys. No evidence of woodcock breeding activity was recorded.

It is acknowledged in Section 2.9.3 above that there were survey limitations with regard to breeding woodcock. Taking a precautionary approach, the population recorded has been assigned a conservation importance rating of **Local Importance (Higher Value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

3.4.8 Red Grouse

Red grouse is not listed on Annex I of the EU Birds Directive but is red listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021). As per the latest NPWS Article 12 reporting, the national breeding population of red grouse is estimated to be between 1,708 and 2,116 pairs. Results of a 2012 NPWS survey of red grouse in the Owenduff/Nepin Complex SPA (004098), located 1.6 km south of the site, indicated a population of 790-832 individuals within the SPA (Murray, et al., 2013).

There were 17 separate observations of red grouse over the course of the survey period. During the moorland breeding bird survey undertaken in the 2022 breeding season, an estimated total of three pairs of red grouse were identified within the survey area (which encompassed the area from the site boundary out to a 1 km distance). Red grouse were also heard calling on multiple occasions and red grouse droppings was also recorded.

Taking a precautionary approach, the population recorded has been assigned a conservation importance rating of **Local Importance (Higher Value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

3.4.9 Golden Plover

Golden plover is listed on Annex I of the EU Birds Directive and is red listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Wintering

A review of ‘*Estimates of waterbird numbers wintering in Ireland, 2011/12 – 2015/16*’ (Burke *et al.*, 2018) determined that the national wintering population of golden plover is estimated at 80,707 birds (ROI). As per NRA (2009), a regularly occurring population of 807 golden plover would be required for classification as National/International importance. Based on the size of the largest flock of golden plover recorded during the winter periods, this wintering population does not meet the criteria for a population of either National/International importance.

In order to estimate the county population of golden plover, a review of I-WeBS site data for the county was undertaken in January 2023. It is acknowledged that I-WeBS counts underestimate the numbers of certain species (e.g. golden plover) as these species regularly forage away from wetland sites (Burke *et al.*, 2018). The following mean counts have been recorded for golden plover at I-WeBS sites within the county over the most recent 5-year count period (2016/17 to 2020/21):

- Balla Wetlands: 41
- Ballybackagh: 150
- Ballyglass Wetlands: 6
- Ballyhaunis Lakes: 59
- Blacksod & Tullaghan Bays: 506
- Clew Bay: 139
- Killala Bay: 186
- Lough Cullin: 117
- Lough Mask: 19
- Mullet West: 7
- South Mayo Coast: 187
- Termoncarragh & Annagh Marsh: 302

Based on the above count data for the period 2016/17 to 2020/21, the estimated total mean wintering population for the county is 1,719 individuals. Therefore, a regularly occurring population of 17 individuals (1% of the county population) would be considered to be of County importance.

There were 10 observations of golden plover over the course of the winter survey periods. In late October 2019, a flock of 30 golden plover were observed northeast of VP4. This group remained on the ground for the duration of the VP watch. The largest flock of golden plover recorded comprised 48 birds observed to the south-west of the winter walkover route flying south on the 20th January 2022.

These two flocks are considered to be of **County importance** given the numbers that were recorded. Both these flocks were observed outside of the site and 500 m buffer area. No other flocks of County importance were recorded during the bird surveys undertaken.

Breeding

There were no observations of golden plover in flight during the breeding season 2020; however, a golden plover was heard calling in April 2020 during a VP watch. No observations were made and no flight paths were recorded.

Golden plovers were heard calling on a number of occasions during the 2021 breeding season; however, no observations were made or flight paths recorded. There were no observations of golden plover nor was there any evidence of their presence recorded at the site during the breeding season walkover surveys carried out on the 12th May and 9th July 2021.

There were no observations of golden plover during the 2022 breeding season VP surveys. During the moorland breeding bird survey undertaken in 2022, an estimated total of two to three pairs were identified within the survey area (which encompassed the area from the site boundary out to a 1 km distance). At least one of these was confirmed to have successfully bred with a pair with two chicks recorded on the 14th July 2022. The closest of these pairs were located 590 m and 920 m from the nearest turbines in the south-western and north-western corners of the development site respectively.

An unpublished NPWS 2018 survey report on breeding golden plover in the Slieve Fyagh Bog SAC (000542), which is contiguous to the wind farm sites western boundary, recorded a total of 14 pairs in the area encompassing the Slieve Fyagh plateau and the lands to the west of the wind farm site (Birch, 2018).

As per the latest NPWS Article 12 reporting, the national breeding population of golden plover is estimated to be between 134 and 156 pairs. Therefore, a regularly occurring population of 1 pair (1% of the national population) would be considered to be of National/International importance. Therefore, the individuals recorded during the breeding season surveys are taken to form part of a breeding population of **National/International importance**, as per NRA (2009).

3.4.10 Ringed Plover

Ringed plover is not listed on Annex I of the EU Birds Directive and is amber listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Wintering

As per the latest NPWS Article 12 reporting, the national wintering population of ringed plover is estimated at 9,060 individuals. A review of Burke *et al.*, (2018) determined that the national wintering population of ringed plover is estimated at 10,545 birds (ROI). Based on this more recent estimate, as per NRA (2009), a regularly occurring population of 105 ringed plover would be required for classification as National importance.

In order to estimate the county population of ringed plover, a review of I-WeBS site data for the county for the most recent period available (2016/17 to 2020/21) was undertaken in January 2023. It is acknowledged that a large proportion of various wader species populations, particularly ringed plover, sanderling, purple sandpiper (*Calidris maritima*) and turnstone, occur along non-estuarine coastal areas not monitored during WeBS core counts (Burke *et al.*, 2018).

The following mean counts have been recorded for ringed plover over the most recent five-year count period (2016/17 to 2020/21):

- Achill Island: 41
- Blacksod & Tullaghan Bays: 474
- Broadhaven & Sruwadacon Bays: 53
- Carrowmore Beach: 80

- Clew Bay: 184
- Killala Bay: 130
- Lough Cullin: 13
- Lough Mask: 1
- Mullet West: 63
- South Mayo Coast: 222
- Termoncarragh & Annagh Marsh: 168

Based on the above count data for the period 2016/17 to 2020/21, the estimated total mean wintering population for the county is 1,429 individuals. Therefore, a regularly occurring population of 14 individuals (1% of the county population) would be considered to be of County importance.

There was one observation of ringed plover over the course of the winter survey periods. This sighting pertained to two birds observed on the ground by standing water during a winter walkover survey in February 2021. This observation occurred outside the 500 m site buffer.

Taking a precautionary approach, the winter population recorded has been assigned a conservation importance rating of **Local Importance (Higher Value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

Breeding

As per the latest NPWS Article 12 reporting, the national breeding population of ringed plover is estimated at 1,045 pairs. Therefore, a regularly occurring population of 10 pairs (1% of the national population) would be considered to be of National importance.

There were eight records of ringed plover over the course of the breeding survey periods. Ringed plover was observed on two occasions in June 2022 from VP1. Ringed plovers were also heard calling on several occasions during the 2020 and 2021 breeding seasons and one individual was observed to the south-east of the site boundary during a walkover survey in May 2021. Only one observation occurred within 500 m of the site. Ringed plovers were not recorded during the moorland breeding bird survey undertaken in 2022. Ringed plovers were not confirmed breeding at any stage during the survey period.

Taking a precautionary approach, the population recorded has been assigned a conservation importance rating of **Local Importance (Higher value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

3.4.11 Snipe

Snipe is not listed on Annex I of the EU Birds Directive but is red listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Wintering

A review of the latest NPWS Article 12 reporting and Burke *et al.*, (2018) determined that a national wintering population estimate is not available for snipe. Burke *et al.*, (2018) references the elusive nature of snipe and certain other species as the reasoning for exclusion from the waterbird population analysis carried out.

In order to estimate the county population of snipe, a review of I-WeBS site data for the county was undertaken in January 2023. The following mean counts have been recorded for snipe over the most recent five-year count period available (2016/17 to 2020/21):

- Ballybackagh: 1
- Ballyhaunis Lakes: 4
- Blacksod & Tullaghan Bays: 11
- Castlebar Lakes/Islandeady Chain: 1
- Clew Bay: 4
- Killala Bay: 1
- Lough Mask: 17
- South Mayo Coast: 2
- Termoncarragh & Annagh Marsh: 65
- Wetland near Drumcarrabaun (Belcarra/Ballyglass Road): 1

Based on the above count data for the period 2016/17 to 2020/21, the estimated total mean wintering population for the county is 107 individuals. Therefore, a regularly occurring population of one individual (1% of the county population) would be considered to be of County importance. As per Burke *et al.*, (2018), the county population estimate of wintering snipe, as per I-WeBS data available, likely comprises a considerable under-estimate.

There were 18 observations of snipe over the course of the winter survey periods. Nine of these observations occurred in/within 500 m of the site. Taking a precautionary approach, the winter population recorded has been assigned a conservation importance rating of **County Importance** on the basis of a resident/regularly occurring population assessed to be important at the county level.

Breeding

There were 33 observations of snipe during the breeding season survey periods, and snipe were heard calling/drumming/chipping on multiple occasions.

As per the latest NPWS Article 12 reporting, the national breeding population of snipe is estimated at 4,275 pairs. Therefore, a regularly occurring population of 42 pairs (1% of the national population) would be considered to be of national importance.

During the moorland breeding bird survey undertaken in the 2022 breeding season, an estimated three pairs of snipe were identified within the survey area (which encompassed the area from the site boundary out to a 1 km distance). The closest of these pairs was located 870 m from the nearest turbine location. This breeding population estimate within the study area is taken as a minimum number of breeding pairs due to survey limitations for this species (see **Section 2.9.3** above).

Taking a precautionary approach, the population recorded has been assigned a conservation importance rating of **Local Importance (Higher Value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

3.4.12 Redshank

Redshank is not listed on Annex I of the EU Birds Directive but is red listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021). As per the latest NPWS Article 12 reporting, the national breeding population of redshank is estimated at 500 pairs.

There were no sightings of redshank in the ZOI of the Proposed Development site over the course of the bird survey period. Results indicate that the site does not support a resident or regularly occurring population of redshank.

3.4.13 Dunlin

Dunlin is listed on Annex I of the EU Birds Directive and is red listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Wintering

Dunlin was not recorded during any of the winter season surveys. Results indicate that the site does not support a wintering population of dunlin.

Breeding

Dunlin was not recorded during any of the breeding VP surveys. There were three records of dunlin during the moorland breeding bird survey undertaken in 2022. These were the only records of dunlin over the course of the bird survey period. Of these, one observation occurred within 500 m of the site. An estimated one pair of dunlin were identified during the 2022 moorland breeding bird survey (which encompassed the area extending from the site boundary out to a 1 km distance). This pair was located approximately 1.2 km from the nearest proposed turbine location

As per the latest NPWS Article 12 reporting, the national breeding population of dunlin is estimated at 150 pairs. Therefore, a regularly occurring population of one pair (1% of the national population) would be considered to be of National/International importance.

Therefore, the individuals recorded during the breeding season surveys are taken to form part of a breeding population of **National/International importance**, as per NRA (2009).

3.4.14 Curlew

Curlew is not listed on Annex I of the EU Birds Directive but is red listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

There were no sightings of curlew in the ZOI of the Proposed Development site over the course of the bird survey period. No flight paths were recorded. Results indicate that the site does not support a wintering or breeding population of curlew.

3.4.15 Whooper Swan

Whooper swan is listed on Annex I of the EU Birds Directive and is amber listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Whooper swan was recorded during winter hinterland surveys at Carrowmore Lake (located 7.4 km to the west) and Lough Nahelly (located 17.9 km to the west). The only sighting of whooper swan within the vicinity of the site

comprised three individuals in-flight observed at the end of September 2022, approximately 4.8 km north of the site boundary, recorded during a driven hinterland survey.

There were no other sightings of whooper swan in the vicinity of the Proposed Development site over the course of the bird survey period. Results indicate that the site does not support a wintering population of whooper swan.

3.4.16 Light-bellied Brent Goose

Brent goose is not listed on Annex I of the EU Birds Directive and is amber listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Brent goose was only recorded during winter hinterland surveys at Traw Kirtaun (located 13.8 km to the west) and Sruwaddacon Bay (located 10.2 km to the north-west). There were no other sightings of Brent goose in the vicinity of the Proposed Development site over the course of the bird survey period. No flight paths were recorded. Results indicate that the site does not support a wintering population of Brent goose.

3.4.17 Greenland White-fronted Goose

Greenland white-fronted goose is listed on Annex I of the EU Birds Directive and is amber listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Greenland white-fronted goose was only recorded during winter hinterland surveys at Carrowmore Lake (located 7.4 km to the west). There were no other sightings of Greenland white-fronted goose in the vicinity of the Proposed Development site over the course of the bird survey period. No flight paths were recorded. Results indicate that the site does not support a wintering population of Greenland white-fronted goose.

3.4.18 Tufted Duck

Tufted duck is not listed on Annex I of the EU Birds Directive and is amber listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Tufted duck was only recorded during winter hinterland surveys at Carrowmore Lake (located 7.4 km to the west). There were no other sightings of this species in the vicinity of the wind farm site over the course of the bird survey period. No flight paths were recorded. Results indicate that the Proposed Development site does not support a breeding or wintering population of tufted duck.

3.4.19 Wigeon

Wigeon is not listed on Annex I of the EU Birds Directive and is amber listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Wigeon was only recorded during winter hinterland surveys at Carrowmore Lake (located 7.4 km to the west) and Lough Nahelly (located 17.9 km to the west). There were no other sightings of this species in the vicinity of the wind farm site over the course of the bird survey period. No flight paths were recorded. Results indicate that the Proposed Development site does not support a breeding or wintering population of wigeon.

3.4.20 Goosander

Goosander is not listed on Annex I of the EU Birds Directive and is amber listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Wintering

A review of the latest NPWS Article 12 reporting and Burke *et al.*, (2018) determined that a national wintering population estimate is not available for goosander.

In order to estimate the county population of goosander, a review of the most recent I-WeBS site data for the county was undertaken in January 2023. Goosander was not recorded at any of the I-WeBS sites counted during this period. The next most recent I-WeBS five-year count period (2013/14 to 2017/18) was then reviewed. The following mean counts were recorded for goosander during the count period (2013/14 to 2017/18):

- Cashel Turlough: 1
- Clew Bay: 1
- Keel Lough: 0
- Lugh Cullin: 0

Based on the above count data, the estimated total mean wintering population for the county is two individuals. Therefore, a regularly occurring population of one individual (1% of the county population) would be considered to be of County importance.

There were three observations of goosander within the vicinity of the Proposed Development site during the survey period. Three goosanders were observed from both VP4 and VP5 in late November 2019. In late November 2020, one was observed from VP2 as it flew up a tributary of the Baroosky stream. Of these observations, one occurred inside the flight activity survey area.

During winter hinterland surveys, low numbers of goosander were recorded at Carrowmore Lake (located 7.4 km to the west) in mid-January 2021 and late March 2022.

Taking a precautionary approach, the winter population recorded has been assigned a conservation importance rating of **County Importance** on the basis of a resident/regularly occurring population assessed to be important at the county level.

Breeding

As per the latest NPWS Article 12 reporting, the national breeding population of goosander is estimated at a maximum of five pairs. Therefore, a regularly occurring population of one pair (1% of the national population) would be considered to be of national importance. The current breeding population (maximum of 5 pairs) is centred in Co. Wicklow where nest boxes have been used with some success. Occasional breeding has also been recorded in Co. Donegal (Irish Rare Breeding Bird Reports 2003-2011, P. Hillis).

No goosander breeding season observations were recorded within the study area over the course of the bird survey period. No breeding population of goosander has been identified within the vicinity of the Proposed Development site.

3.4.21 Great Northern Diver

Great northern diver is listed on Annex I of the EU Birds Directive and is amber listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021). Great northern diver is not a breeding species in Ireland. The closest breeding population is located in Iceland.

Great northern diver was recorded during winter hinterland surveys at Sruwaddacon Bay (located 10.2 km to the north-west) in January 2021. In September 2021, a great northern diver was observed in-flight outside the site

boundary from VP4. This was the only flight path recorded for this species. There were no other sightings of this species in the vicinity of the Proposed Development site over the course of the bird survey period.

3.4.22 Bar-tailed Godwit

Bar-tailed godwit is listed on Annex I of the EU Birds Directive and is red listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021). The species does not breed in Ireland. The wintering distribution of bar-tailed godwit is entirely coastal.

Bar-tailed godwit was only recorded during winter hinterland surveys at Sruwaddacon Bay (located 10.2 km to the north-west) and Traw Kirtaun (located 13.8 km to the west) in October and December 2021. There were no sightings of this species in the vicinity of the Proposed Development site over the course of the winter bird survey period. No flight paths were recorded.

3.4.23 Little Egret

Little egret is listed on Annex I of the EU Birds Directive and is green listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Little egret was only recorded during winter hinterland surveys at Carrowmore Lake (located 7.4 km to the west) and Traw Kirtaun (located 13.8 km to the west) in December 2020, January, November and December 2021. There were no sightings of this species in the vicinity of the Proposed Development site over the course of the bird survey period. No flight paths were recorded.

3.4.24 Kingfisher

Kingfisher is listed on Annex I of the EU Birds Directive and is amber listed as per the most recent assessment of species conservation status in Ireland (Gilbert *et al.*, 2021).

Kingfisher was only recorded during winter hinterland surveys at Carrowmore Lake (located 7.4 km to the west) in November 2019 and January 2022. There were no sightings of this species in the vicinity of the Proposed Development site over the course of the bird survey period. Results indicate that the site does not support a population of kingfisher.

3.4.25 Passerines (Red-listed)

Red-listed passerines recorded over the course of the bird surveys at the site comprised grey wagtail, meadow pipit, redwing and swift. Meadow pipit and grey wagtail were relatively much more abundant.

Taking a precautionary approach, the populations of meadow pipit and grey wagtail have been assigned a conservation importance rating of **Local Importance** (Higher value) on the basis of resident/regularly occurring populations assessed to be important at the local level.

Taking a precautionary approach, the populations of redwing and swift have been assigned a conservation importance rating of **Local Importance** (Lower value) on the basis of resident/regularly occurring populations assessed to be important at the local level.

3.5 Identification of Important Ecological Features (IEFs)

The following table (**Table 18**) presents the rationale for either the inclusion or exclusion of species identified during surveys as IEFs based on criteria set out in **Section 2.6**. The likely significance of the project on avian species that are included as IEFs is considered further in **Section 4**.

Table 18. Identification of IEFs

Species	Conservation Status ¹⁵	NRA Evaluation (NRA, 2009)	IEF (Yes/No)	Rationale for Inclusion/Exclusion
Merlin	Annex I EU Birds Directive/ BoCCI Amber-listed/ Wildlife Acts/ SCI	Local Importance (Higher Value)	Yes	Merlin was recorded on seven occasions over the course of the overall survey period. Two flight paths occurred in/within 500 m of the wind farm site. No merlin breeding activity was recorded within the study area over the course of the bird surveys. Further assessment is required in relation to merlin.
Hen Harrier	Annex I EU Birds Directive/ BoCCI Amber-listed/ Wildlife Acts	<u>Wintering</u> National/International importance	Yes	No hen harrier breeding activity has been recorded within the study area over the course of the bird survey period. One breeding season flight path was recorded in/within 500 m of the wind farm site. No breeding population of hen harrier has been identified within the vicinity of the wind farm site during the surveys undertaken. There were three observations of hen harrier in/within 500 m of the wind farm site during the winter survey period. No hen harrier winter roosts were identified within 500 m of the wind farm site. Further assessment is required in relation to hen harrier.
Kestrel	BoCCI Red-listed/ Wildlife Acts	Local Importance (Higher Value)	Yes	There were 47 separate observations of kestrel over the course of the survey period. Of these, 19 observations occurred in/within 500 m of the wind farm site. Kestrels were observed in both breeding and non-breeding seasons within the survey period. Further assessment is required in relation to kestrel.
Buzzard	BoCCI Green-listed/ Wildlife Acts	Local Importance (Higher Value)	Yes	There were nine separate observations of buzzard over the course of the survey period. Of these observations, two occurred in/within 500 m of the wind farm site. Buzzard was observed in both the breeding and non-breeding seasons. No evidence of breeding activity was recorded during the surveys undertaken. Further assessment is required in relation to buzzard.
Sparrowhawk	BoCCI Green-listed / Wildlife Acts	Local Importance (Higher Value)	Yes	There were 30 separate observations of sparrowhawk over the course of the survey period. Of these observations, 12 occurred in/within 500 m of the wind farm site. Sparrowhawk was observed in both the breeding and non-breeding seasons.

¹⁵ [Wildlife Act, 1976 \(irishstatutebook.ie\)](http://www.irishstatutebook.ie/1976/wildlife-act)

Species	Conservation Status ¹⁵	NRA Evaluation (NRA, 2009)	IEF (Yes/No)	Rationale for Inclusion/Exclusion
				Evidence of sparrowhawk breeding in the area was recorded. Further assessment is required in relation to sparrowhawk.
Woodcock	BoCCI Red-listed / Wildlife Acts	Local Importance (Higher Value)	Yes	Woodcock was not observed during any of the breeding season woodcock surveys. No evidence of woodcock breeding activity was recorded during any of the surveys undertaken. There were 17 separate observations of woodcock over the course of the survey period, all of which occurred during the winter survey season. Of these observations, 3 occurred in/within 500 m of the wind farm site. Further assessment is required in relation to woodcock.
Red Grouse	BoCCI Red-listed / Wildlife Acts	Local Importance (Higher Value)	Yes	There were 17 separate observations of red grouse over the course of the survey period. An estimated total of three pairs of red grouse were identified within the 1 km survey area to the west of the site during the 2022 breeding season. Further assessment is required in relation to red grouse
Golden Plover	Annex I EU Birds Directive/ BoCCI Red-listed/ Wildlife Acts/ SCI	<u>Wintering</u> County Importance <u>Breeding</u> National/ International importance	Yes	There were 10 observations of golden plover over the course of the winter survey periods. Two flocks considered to be of County Importance were recorded. Both of these flocks were observed outside of the 500 m buffer area. No other flocks of County importance were recorded within the vicinity of the site during the bird surveys undertaken. Golden plovers were heard calling on a number of occasions during the 2020 and 2021 breeding seasons; however, no observations were made, or flight paths recorded. An estimated total of two to three pairs were identified within the 1 km survey area to the west of the site during the 2022 breeding season. At least one of these was confirmed to have successfully bred. The closest of these pairs was located approx. 0.6 km from the nearest turbine location. Further assessment is required in relation to golden plover.
Ringed Plover	BoCCI Amber-listed/ Wildlife Acts/ SCI	<u>Wintering</u> Local Importance (Higher Value) <u>Breeding</u> Local Importance (Higher Value)	Yes	There was one observation of ringed plover over the course of the winter survey periods (outside the 500 m site buffer). No flight path was recorded. There were 8 records of ringed plover over the course of the breeding survey periods. Of these, one observation occurred in/within 500 m of the site. Ringed plover was not recorded during the moorland breeding bird survey undertaken in 2022, although evidence of breeding was recorded during the 2020 and 2021 breeding seasons. Further assessment is required in relation to ringed plover.

Species	Conservation Status ¹⁵	NRA Evaluation (NRA, 2009)	IEF (Yes/No)	Rationale for Inclusion/Exclusion
Snipe	BoCCI Red-listed/ Wildlife Acts	<u>Wintering</u> County importance <u>Breeding</u> Local Importance (Higher Value)	Yes	There were 18 observations of snipe over the course of the winter survey periods. Nine of these occurred in/within 500 m of the site. There were 33 observations of snipe during the breeding season survey periods, and snipe were heard calling/drumming/chipping on multiple occasions. During the moorland breeding bird survey undertaken in the 2022 breeding season, an estimated three pairs of snipe were identified within the 1 km survey area. The closest of these pairs was located approx. 0.8 km from the nearest turbine location. This breeding population estimate within the study area is taken as a minimum number of breeding pairs. Further assessment is required in relation to snipe.
Dunlin	Annex I EU Birds Directive/ BoCCI Red-listed /Wildlife Acts/ SCI	National/International importance	Yes	An estimated one pair of dunlin was found to occur within the moorland breeding bird survey area (which encompassed the area extending from the site boundary out to a 1 km distance). One observation occurred in/within 500 m of the site. The pair was located approximately 1.2 km from the nearest turbine location. Further assessment is required in relation to dunlin.
Goosander	BoCCI Amber-listed/ Wildlife Acts	<u>Wintering only</u> County importance	Yes	No goosander breeding season observations were recorded within the study area over the course of the entire bird survey period. No breeding population of goosander has been identified within the vicinity of the wind farm site. There were three observations of goosander within the vicinity of the wind farm site during the winter survey period. Of these observations, one occurred in/within 500 m buffer of the wind farm site. Further assessment is required in relation to goosander.
Passerines (Red-listed)	BoCCI Red-listed/ Wildlife Acts	Local Importance (Higher/Lower value)	Yes	Red-listed passerines recorded over the course of the bird surveys at the site comprised grey wagtail, meadow pipit, redwing and swift. Meadow pipit and grey wagtail were relatively much more abundant. Taking a precautionary approach, the populations of these species have been assigned a conservation importance rating of Local Importance (Higher/Lower value) on the basis of resident/regularly occurring populations assessed to be important at the local level. Further assessment is required in relation to red-listed passerines.
Peregrine	Annex I EU Birds Directive / BoCCI Green-listed/ Wildlife Acts	N/a	No	There were two observations of peregrine over the course of the survey period to date. Only one of these occurred in/within 500 m buffer of the wind farm site. The other occurred at Lough Nahelly, located approximately 18 km west of the wind farm, during winter hinterland surveys. There were no other observations of

Species	Conservation Status ¹⁵	NRA Evaluation (NRA, 2009)	IEF (Yes/No)	Rationale for Inclusion/Exclusion
				peregrine in the vicinity of the wind farm site over the course of the bird survey period. Results of surveys undertaken indicate that the site does not support a resident or regularly occurring population of peregrine.
Redshank	BoCCI Red-listed/ Wildlife Acts	N/a	No	There were no sightings of redshank in the vicinity of the wind farm site over the course of the bird survey period. Results indicate that the site does not support a resident or regularly occurring population of redshank.
Curlew	BoCCI Red-listed/Wildlife Acts/SCI	N/a	No	There were no sightings of curlew in the vicinity of the wind farm site over the course of the bird survey period. No flight paths were recorded. Results indicate that the site does not support a wintering or breeding population of curlew.
Whooper Swan	Annex I EU Birds Directive/ BoCCI Amber-listed/ Wildlife Acts	N/a	No	Three individuals were observed approx. 5 km north of the wind farm site during a driven hinterland survey in September 2022. There were no other sightings of whooper swan in the vicinity of the wind farm site over the course of the bird survey period. Results indicate that the site does not support a wintering population of whooper swan.
Light-bellied Brent Goose	BoCCI Amber-listed/ Wildlife Acts/ SCI	N/a	No	There were no sightings of Brent goose in the vicinity of the wind farm site over the course of the bird survey period. No flight paths were recorded. Results indicate that the site does not support a wintering population of Brent goose.
Greenland White-fronted Goose	Annex I EU Birds Directive/ BoCCI Amber-listed/ Wildlife Acts	N/a	No	There were no sightings of Greenland white-fronted goose in the vicinity of the wind farm site over the course of the bird survey period. No flight paths were recorded. Results indicate that the site does not support a wintering population of Greenland white-fronted goose.
Tufted Duck	BoCCI Amber-listed/ Wildlife Acts	N/a	No	There were no sightings of this species in the vicinity of the wind farm site over the course of the bird survey period. No flight paths were recorded. Results indicate that the site does not support a breeding or wintering population of tufted duck.
Wigeon	BoCCI Amber-listed/ Wildlife Acts	N/a	No	There were no sightings of this species in the vicinity of the wind farm site over the course of the bird survey period. No flight paths were recorded. Results indicate that the site does not support a breeding or wintering population of wigeon.
Great Northern Diver	Annex I EU Birds Directive/ BoCCI Amber-listed/ Wildlife Acts/ SCI	N/a	No	In September 2021, a great northern diver was observed in-flight outside the site boundary from VP4. This was the only flight path recorded for this species. There were no other sightings of this species in the vicinity of the wind farm site over the course of the bird survey period. Results indicate that the site does not support a population of great northern diver.

Species	Conservation Status ¹⁵	NRA Evaluation (NRA, 2009)	IEF (Yes/No)	Rationale for Inclusion/Exclusion
Bar-tailed Godwit	Annex I EU Birds Directive/ BoCCI Red-listed/ Wildlife Acts/ SCI	N/a	No	There were no sightings of this species in the vicinity of the wind farm site over the course of the winter bird survey period. No flight paths were recorded. Results indicate that the site does not support a population of bar-tailed godwit.
Little Egret	Annex I EU Birds Directive/ BoCCI Green-listed/ Wildlife Acts	N/a	No	There were no sightings of this species in the vicinity of the wind farm site over the course of the bird survey period. No flight paths were recorded. Results indicate that the site does not support a population of little egret.
Kingfisher	Annex I EU Birds Directive/ BoCCI Amber-listed/ Wildlife Acts	N/a	No	There were no sightings of this species in the vicinity of the wind farm site over the course of the bird survey period. Results indicate that the site does not support a population of kingfisher.

3.5.1 Sensitivity of Bird Species Selected as IEF

The determination of the sensitivity of bird species selected as IEF in the previous section follows the guidance set out in Percival (2003) for assigning sensitivity. The criteria are outlined in **Section 2.6.1** above. Consideration of the information contained in **Table 18** above indicates three Very High sensitivity species have been recorded, one High sensitivity species has been recorded, 6 Medium Sensitivity species have been recorded and 3 Low sensitivity species/groups have been recorded (see **Table 19** below).

Table 19. Sensitivity of bird species selected as IEFs

	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Species	Merlin (Annex I)	Hen Harrier (Annex I)	Kestrel (red list)	Buzzard (green list)
	Golden Plover (Annex I)		Woodcock (red list)	Sparrowhawk (green list)
	Dunlin (Annex I)		Red Grouse (red list)	Passerines (red list)
			Ringed Plover (amber-list)	
			Snipe (red list)	
			Goosander (amber-list)	

4. Likely Significant Effects

4.1 Do-Nothing Effect

Without the Proposed Development proceeding, it is expected that the existing main landuses on site, namely commercial forestry, will continue. Mature stands will be clear-felled in due course and the areas then replanted.

The diversity of birds would be expected to remain similar as at present. However, for periods the populations of some bird species would be expected to increase when substantial areas are clear-felled and replanted. Whilst open canopy forest exists, birds of prey such as hen harrier and kestrel could be expected to forage over the young trees.

4.2 Construction Phase Potential Effects

4.2.1 Habitat Loss

The permanent loss of habitat to facilitate the construction of the Proposed Development is approximately 117.13 ha. This comprises almost entirely conifer plantation (106.08 ha), including some recently felled woodland (11.04 ha)

While some of the bird species which are considered to comprise Important Ecological Features (IEFs) can utilise conifer plantation and especially the open canopy phase (see **Table 20**), none is dependent on this (non-native) habitat for breeding and/or wintering requirements. Of the species listed in **Table 20**, only sparrowhawk and meadow pipit were recorded breeding within the conifer plantation, with sparrowhawk likely using mature trees and meadow pipit the areas of open canopy plantation. The other listed species may hunt or forage within or

alongside the plantations. All the listed species would be expected to continue to utilise the remaining area of plantation within the site after the wind farm is constructed. Also, it is noted that conifer plantation is a widespread habitat in the local area and throughout north County Mayo.

Table 20. Bird species listed as Important Ecological Features which may utilise conifer plantation

Species	Use of Conifer Plantation
Merlin	May hunt over clear-fell & open canopy forest. Only one summer on-site record (May 2020) during study, with several winter records within 500 m of site boundary.
Hen Harrier	May forage over clear-fell and open canopy forest. Three winter records within 500 m of site during study. No breeding records.
Kestrel	May hunt within site through the year. Recorded during summer and winter.
Sparrowhawk	Considered to have bred within site in 2022.
Woodcock	Recorded within and around site during winter only. Often occurs along forest tracks.
Meadow Pipit	Breeds within open canopy forest and large gaps within planted areas.

On the basis that (i) habitat loss involves largely commercial conifer plantation, an alien habitat and one that is generally not favoured by the species listed above, and (ii) bird species associated with this habitat will still retain a presence on site, the effect on birds due to the loss of habitat to facilitate the Proposed Development is considered Not significant.

4.2.2 Disturbance to Birds

The construction phase for the Proposed Development is anticipated to last between 18 and 24 months. In this period, on-site activities, including tree felling, civil works and turbine erection works, may have potential to cause disturbance effects on birds of conservation importance in adjoining and nearby areas.

Scottish Natural Heritage (2016) write “Different bird species have different tolerance levels to disturbance. Even within species, disturbance distance can vary according to time of year or geographical location. Some sensitive species may be disturbed by activity as much as 750 m away.” SNH had published “*A review of disturbance distances in selected bird species*” prepared by Ruddock and Whitfield (2007). This review included 26 ‘priority’ species and was based largely on expert opinion. The 2007 guidance note was replaced in 2022 by “*Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species*” (NatureScot Research Report 1283) prepared by Goodship and Furness. The 2022 review included 65 bird species.

Of the bird species which are identified as Important Ecological Features (IEFs) at the Proposed Development site, disturbance from construction activities is considered unlikely to have a potential to cause a significant effect for the following species based largely on the low usage and/or frequency of occurrence at the site and also the perceived sensitivity to disturbance:

- Buzzard – only 6 observations over the course of the survey period and no evidence of local breeding. Sensitivity to disturbance listed as Low/Medium (NatureScot 2022)
- Woodcock – only recorded in winter. Largely crepuscular / nocturnal
- Ringed plover – while evidence of breeding was recorded during surveys, locations were more than 500 m from proposed work areas with no suitable nesting habitat, i.e., cutaway bog, within site boundary
- Goosander – only recorded flying across study area during winter surveys (3 observations)

- Meadow pipit – breeds widely within site where suitable habitat occurs. Passerine species are not perceived as being prone to disturbance by wind farm construction (SNH 2017) and indeed Pearce Higgins et al. (2012) found that densities of skylarks and stonechats increased on wind farms during construction

For the above-listed species, the significance of a disturbance effect is rated as Imperceptible to Not Significant.

Detailed consideration of potential for disturbance is given to the following species based largely on their perceived sensitivity to disturbance and/or high conservation status:

Hen Harrier

There was no hen harrier breeding activity recorded within the study area in any of the bird surveys. Breeding hen harriers were not recorded in County Mayo in the 2010 or 2015 National Hen Harrier Surveys (Ruddock et al. 2016).

Wintering hen harriers have a presence in the area, with a well-documented winter roost located in excess of 7 km from the Proposed Development site. There were three observations in the Proposed Development study area during the surveys, though no evidence of winter roosts. As there is suitable foraging habitat within the study area, it is considered that hen harriers pass through the area at times.

Hen harrier is considered in the NatureScot (2022) review of disturbance distances in birds. The species is rated as of 'medium sensitivity' to disturbance, with a buffer zone of 300-750 m suggested for both breeding birds and non-breeding birds.

While construction works at the site for the Proposed Development site will take place in an area where foraging hen harriers have been recorded in winter, the potential for disturbance is considered low as the birds are only occasional in the area (which is approximately 7.5 km from the known roost) – this effect is rated as Not Significant.

Sparrowhawk

The habitat in the study area, i.e., conifer plantation, is suitable for supporting breeding sparrowhawk. The species was recorded in the study area regularly through the year and breeding was considered to have taken place in 2022.

Sparrowhawk was not considered in the NatureScot (2022) review of disturbance distances in birds or in the review of 'safe working distances' for forestry workers to sensitive bird species by Currie and Elliot (1997). In the absence of such information, a buffer zone of 100-200 m is suggested for breeding birds (as for buzzard, a tree-nesting species, and kestrel, a tree and cliff/crag nesting species, in the NatureScot review).

At the site for the Proposed Development, construction works will take place in an area that supported a nesting pair of sparrowhawk at least in the 2022 season. It is considered that the construction of the wind farm would likely have a potential disturbance effect on breeding birds within a distance of possibly up to 200 m from the construction area – this is rated as an Adverse Significant Effect of Short-term duration. Pre-construction survey will be carried out in suitable breeding habitat within and around the site and, as required, mitigation will be undertaken to reduce the significance of this potential effect on breeding sparrowhawks (see **Section 5.2**).

It is considered unlikely that construction works would have effects on birds in the area of the site outside of the breeding season – significance of potential effect rated as Imperceptible or Not significant.

Merlin

The habitats in the study area, i.e., bog and conifer plantation, are suitable for supporting breeding merlin. While there was no evidence of merlin breeding in the study area, there was one on-site record in May 2020 and a

number of sightings in autumn and winter. As merlin is a particularly difficult species to census and the traditionally used methods may not provide a true indication of the abundance, densities or distribution of the species (Lusby et al. 2011), it is possible that merlin could breed locally.

Merlin is considered in the NatureScot (2022) review of disturbance distances in birds. The species is rated as of 'medium sensitivity' to disturbance, with a buffer zone of 300-500 m suggested for breeding birds. For disturbance by forestry operations, Currie & Elliot (1997) gave a distance range of 200 m to 400 m for merlin.

Should merlin breed in future years within or close to the Proposed Development site, it is considered that the construction of the wind farm would likely have a potential disturbance effect on breeding birds within a distance of possibly up to 500 m from the construction area – this is rated as an Adverse Significant Effect of Short-term duration. Due to the high conservation status of merlin, pre-construction survey will take place in all suitable breeding habitat which adjoins the site and as required, mitigation will be undertaken to reduce the significance of this potential effect on breeding birds (see **Section 5.5**).

It is considered unlikely that construction works would have effects on birds passing through the site in winter or during migration seasons as in these seasons the birds are highly mobile and tend to have large hunting ranges – significance of potential effect rated as Imperceptible or Not significant.

Kestrel

The habitats in the study area, i.e., bog and conifer plantation, are suitable for supporting breeding kestrel. Kestrel was recorded regularly during the surveys, with breeding expected to have occurred in the local area in the 2021 and 2022 seasons. Kestrel was also observed regularly outside of the breeding season.

Kestrel is considered in the NatureScot (2022) review of disturbance distances in birds. The species is rated as of 'low/medium sensitivity' to disturbance, with a buffer zone of 100-200 m suggested for breeding birds and 50 m for non-breeding birds.

At the site for the Proposed Development, construction works will take place in areas that could support a tree nesting pair of kestrel as well as within areas suitable for hunting. It is considered that the construction of the wind farm would likely have a potential disturbance effect on breeding birds within a distance of possibly up to 200 m from the construction area – this is rated as an Adverse Significant Effect of Short-term duration. Due to the high conservation status of kestrel, pre-construction survey will be carried out in all suitable breeding habitat within and around the site within a 200 m distance of the works area and, as required, mitigation will be undertaken to reduce the significance of this potential effect on breeding birds (see **Section 5.5**).

It is considered unlikely that construction works would have effects on birds in the area of the site outside of the breeding season – significance of potential effect rated as Imperceptible or Not significant.

Red grouse

Habitat suitable for supporting red grouse occurs to the west and southwest of the site of the Proposed Development. The species was heard regularly calling on the bog and during the 2022 moorland survey an estimated total of three pairs were identified within a 1 km distance to the west of the site boundary (bog to southwest and south of site, which is potentially suitable for red grouse, was not surveyed). The closest recorded pair was approximately 500 m from the nearest turbine. In May 2022, there were two observations of grouse in flight within approximately 200 m of the site boundary.

Red grouse is not considered in the NatureScot (2022) review of disturbance distances in birds. In a review of monitoring data from wind farms located on enclosed upland habitats in the UK, Pearce-Higgins et al. (2012) reported that densities of red grouse were significantly reduced at wind farms during construction but that the densities had recovered by the first-year post-construction. Owing to the high conservation status of red grouse and their sensitivity to disturbance, a precautionary buffer zone of 500 m is suggested. At the site for the Proposed

Development, construction works will take place within a closest distance of approximately 100 m from open bog which provides habitat suitable for red grouse. Forestry will remain in situ between the work area and the start of bog. In places, the adjoining bog rises above the site of the proposed wind farm.

From the above analysis, it is considered that the construction of the wind farm would likely have a potential disturbance effect on breeding red grouse (if such was present at time of construction) within a distance of possibly up to 500 m from the site boundary – this is rated as an Adverse Significant Effect of Short-term duration. Due to the high conservation status of red grouse, pre-construction survey will be carried out in all suitable breeding habitat which adjoins the site and as required, mitigation will be undertaken to reduce the significance of this potential effect on breeding birds (see **Section 5.5**).

Golden plover

The blanket bogs to the west and southwest of the site provide habitat suitable for breeding golden plover. During the 2022 moorland survey an estimated total of two to three pairs were identified within a 1 km distance to the west of the site boundary (bog to southwest and south of site, which is potentially suitable for breeding golden plover, was not surveyed). The closest recorded pair was approximately 590 m from the nearest turbine.

Birds on passage or in winter may also land on the bog habitat though there is no evidence of birds regularly using the bogs in winter or on passage.

Golden plover is considered in the NatureScot (2022) review of disturbance distances in birds. The species is rated as of 'medium sensitivity' to disturbance, with a buffer zone of 200-500 m suggested for both breeding and non-breeding birds.

At the site for the Proposed Development, construction works will take place within a closest distance of approximately 100 m from open bog which provides habitat potentially suitable for breeding golden plover. Forestry will remain in situ between the work area and the start of bog. In places, the adjoining bog rises above the site for the wind farm and the proposed works would be highly visible to the birds in such areas.

From the above analysis, it is considered that the construction of the wind farm is likely to have a potential disturbance effect on breeding golden plover within a distance of possibly up to 500 m from the construction area – this is rated as an Adverse Significant Effect of Short-term duration. Due to the high conservation status of golden plover, and particularly considering the evidence of recent decline in the breeding population on bogs within the Slieve Fyagh SAC (Birch 2018), pre-construction survey will be carried out in all suitable breeding habitat which adjoins the site and as required, mitigation will be undertaken to reduce the significance of this potential effect on breeding birds (see **Section 5.3**).

It is considered unlikely that construction works would have effects on birds landing on the bog in winter or during migration seasons as in these seasons the birds are highly mobile and tend to settle only for short periods in any one particular location – significance of potential effect rated as Imperceptible or Not significant.

Dunlin

The blanket bogs to the west and southwest of the site provide habitat suitable for breeding dunlin. During the 2022 moorland survey, an estimated one pair was identified within a 1 km distance to the west of the site boundary (bog to southwest and south of site, which is potentially suitable for breeding dunlin, was not surveyed). The closest recorded pair was approximately 1 km from the nearest turbine. Dunlin was not recorded during any of the other surveys for the project and the species would not be expected in the area during winter.

Dunlin is considered in the NatureScot (2022) review of disturbance distances in birds. The species is rated as of 'medium sensitivity' to disturbance, with a buffer zone of 100-200 m suggested for breeding birds.

At the site for the Proposed Development, construction works will take place within a closest distance of approximately 100 m from open bog which provides habitat potentially suitable for breeding dunlin. Forestry will remain in situ between the work area and the edge of the bog. In places, the adjoining bog rises above the site for the wind farm.

From the above analysis, it is considered that the construction of the wind farm would likely have a potential disturbance effect on breeding dunlin (if such is present at time of construction) within a distance of possibly up to 200 m from the construction area – this is rated as an Adverse Significant Effect of Short-term duration. Due to the high conservation status of dunlin, and particularly considering the evidence of a recent severe decline in the breeding population on bogs within the Slieve Fyagh SAC (Birch 2018), pre-construction survey will be carried out in all suitable breeding habitat which adjoins the site and as required, mitigation will be undertaken to reduce the significance of this potential effect on breeding birds (see **Section 5.5**).

Snipe

Habitat suitable for supporting snipe occurs to the west and southwest of the site for the proposed wind farm. The species was recorded regularly in the breeding season during the various surveys for the project, and during the 2022 moorland survey an estimated total of three pairs were identified within a 1 km distance to the west of the site boundary (bog to southwest and south of site, which is potentially suitable breeding habitat for snipe, was not surveyed). The closest recorded pair was approximately 870 m from the nearest turbine.

In winter, snipe is a widespread species in bog, heath and wet grassland habitats. The species was recorded in bog habitats adjoining the site for the proposed wind farm.

Snipe was not considered in the NatureScot (2022) review of disturbance distances in birds. However, Pearce-Higgins et al. (2012) identified snipe as one of the species showing a reduction (53%) in densities on wind farms during construction. Critically, the authors also found that snipe population densities did not recover after the construction period, with habitat within 400 m of turbines being used less than expected.

At the site for the Proposed Development, construction works will take place within a closest distance of approximately 100 m from open bog which provides habitat suitable for snipe. Forestry will remain in situ between the work area and the start of bog. In places, the adjoining bog rises above the site for the wind farm.

From the above analysis, it is considered that the construction of the wind farm is likely to have a potential disturbance effect on breeding snipe within a distance of possibly up to 400 m from the site boundary – this is rated as an Adverse Significant Effect of Short-term duration. Due to the high conservation status of snipe, pre-construction survey will be carried out in all suitable breeding habitat which adjoins the site and as required, mitigation will be undertaken to reduce the significance of this potential effect on breeding birds (see **Section 5.2**).

It is considered unlikely that construction works would have effects on birds in the area of the site outside of the breeding season – significance of potential effect rated as Imperceptible or Not significant.

4.2.3 Disturbance/Destruction of Active Nests

Disturbance to, or destruction of, active nests during construction activities could contravene Section 22 of the Wildlife Acts 1976 to 2021.

Best practice methods will be followed to minimise disturbance of active nests by the clearing of vegetation outside of the bird breeding seasons. However, should ground still need to be cleared during the restricted period, mitigation will be implemented so as to minimise the significance of the effect on nesting birds (see **Section 5.2**).

4.3 Operational Phase

The principal potential impacts on birds by the operation of a wind energy project are:

1. displacement,
2. barrier effects,
3. collision

Disturbance from secondary operations, such as road maintenance, are also considered. Potential disturbance as a result of the wind farm on birds in hinterland sites is also considered.

4.3.1 Displacement

Displacement of birds from otherwise suitable habitat as a result of the presence of wind turbines has been reported as a potential impact of wind turbines (Drewitt & Langston 2006, de Lucas et al. 2007, Pearce-Higgins et al. 2009). The displacement occurs as a result of behavioural responses that prevent or decrease the use of an area for activities such as nesting or foraging. However, the results of studies on potential displacement have varied widely and in an overall review of the literature Madders & Whitfield (2006) concluded that displacement effects of wind turbines on raptors are negligible for the most part. In a review of potential displacement effects on upland breeding bird densities at twelve wind farm sites in Britain, Pearce-Higgins et al. (2009) reported that seven of the twelve species studied exhibited significantly lower frequencies of occurrence close to the turbines.

Detailed consideration of potential for displacement is given for the following species (IEFs) which were recorded within the study area, and which mostly have a high conservation status:

Hen harrier

While hen harrier is not breeding in north Mayo, the species has a presence during winter in the local area, with a regular winter roost located c.7.5 km from the Proposed Development site). There were three observations in the Proposed Development study area during the surveys, though no evidence of winter roosts. From the baseline it can be concluded that hen harrier is an occasional winter visitor at the Proposed Development site.

In the review of upland raptors and wind farms, Madders and Whitfield (2006) tentatively rated foraging hen harriers as having a 'low-medium' sensitivity to displacement though all studies appear to have been in the breeding season. Pearce-Higgins et al. (2009) cited a predicted reduction in flight activity of 52.5% within 500 m of the turbine array for breeding birds.

As hen harrier is at most an occasional visitor to the site during winter, it is expected that birds would still pass through the area when the turbines are in operation and that the potential for disturbance is low – this effect is rated as Not Significant.

Sparrowhawk

The baseline surveys showed that sparrowhawk is regular at the Proposed Development site, with breeding considered to have taken place within the site in 2022.

There appears to be no data to show whether sparrowhawk is displaced from an area around turbines, though in the review of upland raptors and wind farms, for sharp-shinned hawk (*Accipiter striatus*) (same genus as sparrowhawk) Madders and Whitfield (2006) tentatively rated this North American hawk as having a 'low' sensitivity to displacement.

As sparrowhawk is a woodland species that nests in woodland and hunts largely along woodland margins and over scrub, it is expected that the species will not be displaced from suitable habitat in the vicinity of turbines at the Proposed Development site - significance of potential effect rated as Imperceptible or Not significant.

Merlin

While there was no evidence of merlin breeding in the study area, there was one on-site record in May 2020 and a number of sightings in autumn and winter. It is considered that it is possible that merlin could breed locally but otherwise is an occasional visitor to the Proposed Development site.

There appears to be no data to show whether merlin is displaced from an area around turbines, though in the review of upland raptors and wind farms, for prairie falcon (*Falco mexicanus*) (same genus as merlin) Madders and Whitfield (2006) tentatively rated this North American falcon as having a 'low' sensitivity to displacement.

As merlin is a species that nests in trees or on open bog and hunts close to ground level, it is expected that the species will not be displaced from suitable habitat in the vicinity of turbines at the Proposed Development site - significance of potential effect rated as Not significant.

Kestrel

Kestrel was recorded regularly during the surveys, with breeding expected to have occurred in the local area in the 2021 and 2022 seasons. Kestrel was also observed regularly outside of the breeding season.

In the review of upland raptors and wind farms, Madders and Whitfield (2006) rated kestrel as having a 'low' sensitivity to displacement. The related American kestrel (*Falco sparverius*) was also given a rating of 'low' sensitivity. Pearce-Higgins et al. (2009) found equivocal evidence for weak avoidance of turbines by kestrel.

For kestrel, the significance of a potential displacement effect is rated as Not significant.

Red grouse

Habitat suitable for supporting red grouse occurs to the west of the site for the Proposed Development and the species was recorded regularly during the various surveys. The closest distance of a turbine to the bog is 112 m, with a total of four turbines within a 200 m distance. Also, the bogs to the southwest of the site, which were not surveyed as part of the baseline studies, would be expected to potentially support breeding red grouse.

Pearce-Higgins et al. (2009) found no evidence of turbine avoidance by red grouse and, indeed, the occurrence of red grouse was found to be greater close to the tracks. Reasons for the association between grouse and wind farm tracks are likely to include (i) supplies of grit on tracks which the birds need to ingest to aid digestion, and (ii) good growth of heather which often may be observed along the drier bog strips alongside the tracks. The present author has also observed grouse dust bathing on a dry track within a wind farm.

From the available information, it is considered that for red grouse the potential displacement effect is Not significant, and the presence of the wind farm is likely to be a Neutral or even Positive effect of Moderate Significance in the Long-term.

Golden plover

The blanket bogs to the west of the site provide habitat suitable for breeding golden plover. Also, the bogs to the southwest of the site, which were not surveyed as part of the baseline studies, would be expected to potentially support breeding golden plover. Birds on passage or in winter may also land on the bog habitat though there is no evidence of birds regularly using the bogs in winter or on passage.

Pearce-Higgins et al. (2009) found that golden plover showed significant avoidance of turbines but that the avoidance was largely restricted to a distance of 200 m. However, in further review, Pearce-Higgins et al. (2012) found little evidence for consistent population declines in golden plover populations at wind farms sites. They

note that populations may become habituated to operational wind farms, which is supported by the lack of decline in golden plover abundance at an upland wind farm over a 3-year period of operation (Douglas et al. 2011).

At the Proposed Development site, the closest distance of a turbine to the bog is 112 m, with only four turbines within a 200 m distance of the bog. In the 2022 *moorland* survey, the closest recorded breeding pair of golden plover to the wind farm was approximately 590 m (from turbine Sh02).

From the above and taking into account the high conservation status of golden plover as well as the documented recent population decline in the Slieve Fyagh SAC (Birch 2018), the significance of a potential displacement effect on golden plover during the breeding season is rated as a Slight adverse effect.

It is considered unlikely that the presence of the wind farm would have adverse effects on golden plover landing on the local bog in winter or during migration seasons as in these seasons the birds are highly mobile and tend to settle only for short periods in any one particular location – significance of potential effect rated as Imperceptible or Not significant.

Dunlin

The blanket bogs to the west of the site provide habitat suitable for breeding dunlin. Also, the bogs to the southwest of the site, which were not surveyed as part of the baseline studies, would be expected to potentially support breeding dunlin. The species would not be expected in the area during winter.

Pearce-Higgins et al. (2012) found that waders most associated with short vegetation, such as dunlin, appear least detrimentally affected by wind farms.

At the Proposed Development site, the closest distance of a turbine to the bog is 112 m, with only four turbines within a 200 m distance of the bog. In the 2022 *moorland* survey, the closest recorded breeding pair of dunlin to a turbine was approximately 1 km. While the distribution of breeding dunlin during the surveys was well beyond the range where displacement could be expected, taking into account the high conservation status of dunlin as well as the documented recent severe population decline in the Slieve Fyagh SAC (Birch 2018), the significance of a potential displacement effect is rated as a Slight adverse effect.

Snipe

Habitat suitable for supporting snipe occurs to the west of the site for the Proposed Development. During the 2022 *moorland* survey, an estimated total of three pairs were identified within a 1 km distance to the west of the site boundary, with the closest recorded pair was approximately 870 m from the nearest turbine. Also, the bogs to the southwest of the site, which were not surveyed as part of the baseline studies, would be expected to potentially support breeding snipe. In winter, snipe is a widespread species in bog habitats adjoining the site for the proposed wind farm.

Pearce-Higgins et al. (2009, 2012) found that avoidance of suitable habitat by breeding snipe extended to 400 m from the turbines and that the predicted reduction in breeding density within 500 m of the turbine array was 47.5%.

At the Proposed Development site, the closest distance of a turbine to the bog is 112 m, with a total of four turbines within a 200 m distance of the bog. While all three breeding territories recorded in 2022 were beyond a 400 m distance of turbines, birds may breed closer in the years before the construction of the wind farm. Also, as noted, snipe may breed in the bog to the southwest of the wind farm which was not included in the 2022 survey.

From the above and taking into account the high conservation status of snipe, the significance of a potential displacement effect on snipe during the breeding season is rated as a Slight adverse effect.

It is considered unlikely that the presence of the wind farm would have adverse effects on snipe utilising the local bog outside of the breeding season, as snipe is a particularly widespread species during winter and may often occur in active agricultural lands - significance of potential effect rated as Imperceptible or Not significant.

4.3.2 Potential Barrier Effect due to Turbines

The potential impact of lines or groups of wind turbines creating a barrier effect to passing birds is mostly relevant to locations where migratory species pass regularly. Rees (2012) cites eight published studies of flight behaviour which reported changes in flightlines for swans or geese initially seen heading towards turbines, at distances ranging from a few hundred metres to 5 km (the larger distances were by birds on migration); 50-100% of individuals/ groups avoided entering the area between turbines, but in some cases the sample sizes were small.

As the Proposed Development site has not been identified as being along a migration route for birds, such as wetland species (swans, geese etc.) or birds of prey, the issue of a possible barrier effect does not arise.

4.3.3 Collision

Collision risk posed to bird species is one of the main environmental concerns associated with wind energy developments (Drewitt & Langston 2006, Band et al. 2007, Drewitt & Langston 2008). However, bird species differ widely in their susceptibility to collision mortality. Essentially, birds are at risk of collision only when their flight path overlaps with the rotor blade sweep area of a turbine. It follows that birds whose flight heights coincide with the height of the turbine rotor sweep are most at risk. It is generally considered that passerine species are less susceptible to collision with turbines (SNH 2017).

Collision Risk Modelling (CRM) is a method to estimate the number of birds likely to collide with turbines at the Site. This method uses vantage point data to calculate the risk of collision. In this case, the vantage point data collected over the two years 2019-2021 (two breeding seasons and two winter seasons) at the Site was used. Two stages are involved in the model:

Stage 1: Vantage point observations of birds flying within the study area are used to calculate the number of birds likely to fly through areas swept by the proposed turbine blades.

Stage 2: Calculation of the probability of a bird strike occurring.

Full details of the collision risk modelling method are given in the Collision Risk Assessment (CRA), prepared by MKO.

At the site, the key ornithological receptors recorded within the potential collision height during surveys were:

- Kestrel
- Merlin
- Snipe
- Sparrowhawk

For these species, a summary of the estimated number of collisions over the lifetime (35 years) of the wind farm is given in **Table 21** (full details are given in the CRA, prepared by MKO).

Table 21. Summary of estimated number of collisions for key ornithological receptors over the lifetime of the project

Species	Estimated Collisions over the Lifetime of Wind Farm	Estimated Collisions per Year	One Bird Collision
Kestrel	1.29 birds	0.037	27 years
Merlin	0.06 birds	0.002	555 years
Snipe	1.28 birds	0.037	27 years
Sparrowhawk	0.3 birds	0.009	117 years

Merlin

For merlin, the predicted collision rate is imperceptible to negligible. Merlin is a species that is not considered prone to collision with turbines due to its flight behaviour which is typically low to the ground and below the rotor sweep. There appears to be few recorded merlin casualties with turbines, with only one cited in Germany by Hotker et al. (2006) in their review of all bird casualties at wind farms in Europe up to July 2004.

On this basis and considering the recorded scarcity of the species during the various surveys at the Proposed Development site, the significance of collision risk is rated as an Imperceptible effect.

Sparrowhawk

For sparrowhawk, the estimated collision rate (0.009 birds per year) is negligible and such a loss would not be significant in the context of the local, county or national populations. However, while sparrowhawk typically hunts at ground or tree level (below the rotor sweep), the species could be expected to be more prone to collision when birds are displaying. Cullen and Williams (2010) reported two collisions of sparrowhawk in April 2010 at a wind farm in Co. Tipperary, and both birds had been in display mode prior to the collision.

Taking into account that sparrowhawk is expected to breed on site, the significance of collision risk is rated as a Long-term Slight Negative effect

Kestrel

For kestrel, the collision risk modelling has calculated a rate of 1.29 collisions over the lifetime of the project or 0.037 casualties per year. These rates are low or negligible in the context of the estimated national population of 13,500 birds (Lewis et al. 2019). However, it is noted that kestrel, as well as lesser kestrel (*Falco naumanni*) and American kestrel (*Falco sparverius*), is a genus that is prone to collision (see for instance Barrios & Redrigues 2004, Hotker et al. 2006, Hotker 2008, Lucas et al. 2008, Marques et al. 2014). This is expected to be due to the hovering behaviour of the species. While birds are hunting and focusing on ground prey, they may be unaware of the turbine position or may suddenly change their position due to a gust of wind. The hovering height level is often within the rotor sweep of the turbines. Of eight casualties recorded at a wind farm in Cadiz Province, Spain, all were juveniles.

Taking into account the high conservation status (Red list) of the species, the known susceptibility of the genus to collision, as well as the local breeding status, the significance of collision risk is rated as a Long-term Slight Negative effect.

Snipe

For snipe, the collision risk modelling has calculated a rate of 1.29 collisions over the lifetime of the project or 0.037 casualties per year. While these rates are negligible in terms of the national population of snipe, it is noted that vantage point surveys are not an effective method of recording flight activity for this species.

Taking into account the high conservation status (Red list) of the species, and the presence of both a wintering and breeding population in the vicinity of the Proposed Development site (though noting that the majority of the

site is conifer plantation and unsuitable habitat for snipe), the significance of collision risk is rated as a Long-term Slight Negative effect.

4.3.4 Potential Impacts on Birds from Maintenance Activities

On-site activities during the operational phase of the wind farm will include turbine servicing, the maintenance and periodic upgrading of access tracks and drains, and substation inspection and maintenance.

Maintenance works at the turbines and the wind farm substation, which typically involve small crews of 2-3 personnel working within the turbines or substation compound, would not be expected to have any impacts on local bird populations either within the site or in bog areas adjoining the site.

Maintenance of access tracks within the wind farm would be an occasional activity and would be relatively minor in terms of construction. It is considered that track maintenance works would not have any measurable effect on the breeding or foraging behaviour of birds within the site or in adjoining areas.

4.3.5 Potential Impacts on Birds in Hinterland Sites

Five sites of ornithological importance in the hinterland of the development site were surveyed for winter birds. These sites, which are listed in **Table 4, Section 2.4.2.5** of this report, were:

Lough Dahybaun	6.6 km to south-east of wind farm site
Carrowmore Lake	7.4 km west of wind farm site
Sruwaddacon Bay	10.2 km north-west of wind farm site
Traw Kirtaun/Barr na Tra Bay	13.8 km to west of wind farm site
Lough Nahelly	17.9 km west of wind farm site

Results of the various surveys are detailed in **Appendix 11**. While the surveys confirmed the presence of various bird species of conservation importance at these sites, the site for the Proposed Development does not have connectivity with any of these sites. Further, apart from some potential for open canopy conifer plantation to attract wintering hen harrier, the wind farm site does not have suitable habitats to support any of the bird species associated with the hinterland sites. While there were two winter records of hen harrier at the wind farm in February 2021 (one on-site and one at entrance to wind farm), which may be associated with the known roost, located approximately 7.5 km away, hen harrier is, at most, an occasional visitor to the wind farm site. It is also noted that none of the wetland bird species associated with the hinterland site were recorded flying over the site (even on an occasional basis), i.e., there are no flight corridors used by the bird species over the site for the Proposed Development.

Based on the above evidence, it is concluded that the operation of the wind farm project does not have potential to have significant effects on any of bird species associated with the identified hinterland sites of importance.

4.4 Decommissioning Phase

The wind turbines proposed as part of the Proposed Development are expected to have a lifespan of approximately 35 years. Following the end of their useful life, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the Proposed Development will be decommissioned. The onsite substation will remain in place as it will be under the ownership of the ESB and will form a permanent part of the national electricity grid. A description of the decommissioning process is presented in the Decommissioning Plan, included as Appendix 4-7 of the EIAR.

During the decommissioning works there is a risk of disturbance, and possible displacement, to sensitive breeding species within and adjoining the site, including red grouse and snipe. Such disturbance effects would be potentially of similar significance, but shorter duration, as described in **Section 4.2.2** (Disturbance to birds) and would depend on the distribution of species at the time. The same mitigation measures will be implemented as prescribed for during the construction phase (**see Section 3.5**) to ensure that disturbance to these species, as well as any other species which may have a high conservation status present at the time of decommissioning, is minimised.

4.5 Designated Sites for Birds

The desktop study (**Section 3.2** of this report) identified four Special Protection Areas within a 20 km radius of the Proposed Development. These are (and see **Table 12** of this report):

Owenduff/Nephin Complex SPA (code 004048)

Carrowmore Lake SPA (004052)

Blacksod/Broadhaven Bay SPA (code 004037)

Illanmaster SPA (code 004074)

Of these, it can be stated with certainty that the site for the wind farm, as well as the adjoining areas, do not have habitats which could support the breeding, feeding and/or roosting requirements of the Special Conservation Interests (see **Table 12**) of Carrowmore Lake SPA, Blacksod/Broadhaven Bay SPA and Illanmaster SPA. Also, the baseline bird surveys did not identify flight paths over the wind farm site by any of the SCIs for these three sites.

There is no hydrological connectivity between the site of the proposed wind farm and the Carrowmore Lake SPA and the Illanmaster SPA. While there is hydrological connectivity via the Owenmore River with the Blacksod/Broadhaven SPA, there is a distance of approximately 30 km of river channel between the two locations – on the basis of geographical separation, it is considered that there is no risk for significant effects on the water quality of the SPA as a result of the wind farm development.

The Owenduff/Nephin SPA is located within 100 m of the access road leading from the N59 to the wind farm and approximately 1.5 km from the southern boundary of the actual wind farm site. The SCIs of the SPA are merlin and golden plover.

The construction and decommissioning of the wind farm would be unlikely to have any disturbance effects on breeding merlin territories within the SPA as the main wind farm work area at the closest is approximately 1.5 km away from the northernmost boundary of the SPA, with the N59 and Owenmore River in between. While minor junction widening works are required at the N59 and local access road junction, these works would still be approximately 600 m northwest of the SPA at the closest point.

While construction traffic may pass within 100 m of the SPA, this is not expected to have any potential to cause disturbance to breeding birds within the SPA (as the N59 is an established road with substantial existing commercial traffic).

The operation of the wind farm is not considered likely to pose a significant collision risk to visiting merlin, which could conceivably be from the SPA population. On the basis of the few merlin observations recorded at the site of the Proposed Development, the significance of collision risk was rated as an Imperceptible effect.

The baseline survey data suggest that wind farm site has potential (albeit low) to support breeding and/or wintering merlin and potentially could be within the foraging range of merlin breeding within the SPA. Even with the works in progress, it is expected that merlin associated with the SPA would potentially still visit the area of the wind farm for foraging purposes, with probable avoidance of just the active works areas. During the

operational phase, it is expected that merlin associated with the SPA would still forage within the wind farm site as the species is not considered prone to significant displacement due to presence of turbines.

The construction and decommissioning of the wind farm would be unlikely to have any disturbance effects on breeding golden plover territories within the SPA as the work area at the closest is approximately 1.5 km away from the northernmost boundary of the SPA, with the N59 and Owenmore River in between. While minor junction widening works are required at the N59 and local access road junction, these works would still be approximately 600 m northwest of the SPA at the closest point.

While construction traffic may pass within 100 m of the SPA, this is also not expected to have any potential to cause disturbance to breeding birds within the SPA (as the N59 is an established road with substantial existing commercial traffic).

The operation of the wind farm is not considered likely to pose any collision risk to breeding golden plover within the SPA due to the distances apart.

The breeding golden plover population on the blanket bog to the west of the wind farm is expected to be a separate population from the birds within the Owenduff/Nephrin SPA, as golden plover is known to show a high degree of site fidelity between years and young birds will often take up territories near the natal site (Cramp & Simmons 1983).

It is concluded that the Proposed Development is not expected to have any significant effects on the SCIs of any European site.

4.6 Cumulative Effects

Table 13 summarises the wind farm projects within a 20 km radius of the subject site. Further details for the various projects are given in Section 2.5 of Chapter 2 of the EIAR. Seven projects have been identified, which are planned, under construction or operational. The site for the proposed Sheskin South Wind Farm adjoins the Oweninny Phase 2 wind farm project area to the east (25 turbines) and the ABO Sheskin site (8 turbines) to the north. In addition to wind farms, consideration has been given to a proposed Hydrogen Plant located north of Bellacorrick substation (Pl. Ref. 22/502).

The Oweninny Wind Farm comprises Phase 1, which has been operational since 2019, and Phase 2, which is presently under construction and will be operational in 2023. Phase 1 and Phase 2 are contiguous. A further phase (no. 3), to the east of Phase 1, is currently at planning stage. The Bellacorrick Wind Farm (first operational wind farm in Ireland) is within the Oweninny site. The total area of the three phases is approximately 5,000 ha and comprises regenerating cutaway bog along with some uncut blanket bog remnants. There is also some commercial conifer plantation on site.

The Oweninny Phase 1 and 2 sites support a range of bird species of conservation importance, including breeding teal, red grouse, golden plover, dunlin (possible), snipe, common sandpiper and common gull. Merlin is occasional on site and may breed. The Phase 3 area supports a winter hen harrier roost, with up to 6 birds recorded at times. However, hen harriers were rarely recorded foraging on site. Whooper swan is occasional during winter. The EIS for the Oweninny project (Phases 1 & 2) recommended mitigation to avoid or minimise disturbance to breeding birds during the Phase 1 and Phase 2 construction periods. With the various mitigation measures, it was considered that the Phase 1 and Phase 2 projects would not have any significant residual effects on breeding birds.

The Hydrogen Plant north of Bellacorrick substation comprises a single storey process building of 13.3m height on an application site of 6.51ha. The facility will include 16 no. Fin fan coolers of 6.9m height; hydrogen storage area with area of 4,650 m²; gas injection compound with area of 1,000 m²; 2 no gas agi buildings, each of 3 m

height; electrical substation with area of 2,407.6m²; 2 no substation buildings, each of 4m height, raw water and fire water storage tank with volume of 879.6 m³; pump house of 5m height; water abstraction chamber with volume of 2.9m³; resurfacing, repair and improvement of existing site entrance; replacement bridge; internal access roads and associated grid connection works within the I52925 public roadway. The development will include the provision of 12 no. Parking spaces, footpaths, landscaping, fencing and all other associated site development plant and equipment and other works including surface water and foul wastewater drainage infrastructure.

The residual construction, operational and decommissioning impacts of the Proposed Development are considered cumulatively with other plans and projects.

Following analyses of the detailed baseline surveys undertaken for the proposed Sheskin South project, and the identification of mitigation as required to minimise or avoid potential effects on bird species, it is concluded that there will be no significant residual effects on birds as a result of the proposed project and therefore it cannot contribute to any cumulative effect when considered in combination with other plans and projects.

5. Mitigation and Monitoring

This section describes measures which will be in place to mitigate potential or predicted adverse effects associated with the Proposed Development on avian receptors. Such effects have been addressed in two ways:

- Design of the Proposed Development
- Management of the development phases

5.1 Mitigation by Design

The Proposed Development has been deliberately designed to avoid open bog habitats within the site and specifically the area of unplanted blanket bog in the north-west sector. This bog is a continuum of the extensive bog to the west of the site and could be used at times by waders and red grouse associated with these open boglands.

5.2 Mitigation during Construction

Species identified as IEFs

The present study has identified potential significant disturbance effects on various breeding species which are listed as Important Ecological Features as a result of the construction works (see **Section 4.2.2**). These species are sparrowhawk, merlin, kestrel, red grouse, golden plover, dunlin and snipe. Best available evidence has been reviewed (see section 4.2.2) and it is suggested that these species could be disturbed by works, including tree felling, at the following distances:

Sparrowhawk	200 m
Merlin	500 m
Kestrel	200 m
Red Grouse	500 m
Golden Plover	500 m
Dunlin	200 m
Snipe	400 m

Should any of these species be recorded breeding within the given distances of the works area (as established through confirmatory surveys before and/or during construction – see **Sections 5.5 & 5.6**), a buffer zone (using above distances) shall be established around the expected location of the nest (location identified as far as is possible without causing disturbance to the bird) and all works will be restricted within the zone until it can be demonstrated by an ornithologist that the species has completed the breeding cycle in the identified area. Any restricted area that is required to be set up will be marked clearly using hazard tape fencing and all site staff will be alerted through toolbox talks.

The above mitigation, which will apply from March to August (inclusive), will ensure that the works will not have adverse effects on the identified IEFs.

Other bird species

A range of passerine bird species breed within the site, including meadow pipit (Red-listed). As noted, (**Section 4.2.3**), disturbance to, or destruction of, active nests during construction activities could contravene Section 22 of the Wildlife Acts 1976 to 2021.

Clearance of trees and ground vegetation will take place outside of the bird breeding season (1st March – 31st August) to minimise the possibility of disturbance and destruction to occupied bird nests during the construction phase.

However, it is possible that some ground may still need to be cleared of vegetation during the breeding season or that previously cleared ground will have developed colonising vegetation (such as brambles) which could attract nesting birds such as wren. Should these occurrences arise, the following protocol will be followed:

The area will be surveyed by an ornithologist up to 10 days before any clearance. Should an active nest be located, the area will be restricted from works by a distance where it is considered that the works would not cause disturbance or abandonment of the nest. Such distances, which will vary according to species and local topography, will be determined by the ornithologist. The restriction will be maintained until it is established that any young birds present have fledged.

Should an instance arise where the placement of a restriction would have significant implications for the time frame of the project, and where no alternative mitigation is available, the ornithologist will prepare a report (to include species, stage of breeding etc) on the implications of removal of the nest in the context of the Wildlife Acts.

5.3 Mitigation during Operation

Control of vegetation at turbine locations

Areas of forest around turbines which are cleared of trees will be managed to prevent establishment of scrub and rank vegetation which would encourage small mammals and birds and attract species such as kestrel to hunt near the turbines and increase risk of collision. This maintenance will be carried out on an annual basis by mowing or strimming. This approach has proved highly effective at several wind farms in central-eastern Spain where the number of collisions with lesser kestrel decreased by 75% to 100% after the ground was superficially tilled to a distance of 80 m from the turbine base (Pescador *et al.* 2019).

5.4 Mitigation during Decommissioning

As the decommissioning works will involve works similar to those involved at construction stage, these could result in similar effects on birds. Hence, the mitigation that will be undertaken during construction will also be applied during the decommissioning phase (taking into account changes that may have occurred locally during the operational life of the project).

5.5 Pre-construction / Construction Phase Monitoring for Sensitive Species

During the breeding season (March-August) bird monitoring surveys within the Proposed Development site will take place to a distance of 500 m from the development area. However, for the bogs to the west of site, the survey that was carried out in 2022 will be repeated, with transects up to 1,000 m from the edge of the forest. The purpose of the surveys is to confirm the locations of breeding territories prior to construction to ensure that mitigation is successfully implemented (see **Section 5.2**) to avoid disturbance effects on breeding activities as a result of the works.

It is noted that the wet bog to the southwest and south of the site had not been included in the 2022 survey for health and safety reasons –. The assumption has been made that sensitive breeding species may be present (as

habitat is certainly suitable to support same) and a restrictive zone of 500 m from the forest/bog edge will be implemented during the breeding season as a precautionary measure.

The survey for breeding birds on the bog (following Brown and Shepherd 1993) will take place in the April to July period (4 visits) in the season before works, including tree felling, commence. This schedule will provide guidance to the contractor on where restrictive zones are likely to be required.

Owing to the difficulties associated with survey for breeding merlin (as highlighted by Lusby *et al.* 2011), and the high conservation status of the species, particular focus will be placed on locating possible territories within a distance of up to 1 km of the works area. The survey, which will take place in the period April to July, prior to any works on site commencing including tree felling, will comprise a combination of traditional search methods (after Hardey *et al.* 2009) and vantage point watches focused on suitable habitat within 1 km maximum of the vantage point location (see Lusby *et al.* 2011). The merlin survey will be undertaken by field workers with experience of surveying birds of prey.

5.6 Construction Phase Monitoring for Breeding Birds On-site

Any ground clearance of habitat that could support breeding birds (during period March to August) will be walked to establish the presence of breeding birds (mainly passerines). This will be done by an ornithologist up to 10 days before the clearance works take place. If 10 days elapse without the clearing commencing, a further survey will take place. The focus will be on the area to be cleared but zones up to 100 m (approximately) around the area will also be included. Should a breeding territory be identified, the surveyor will attempt to establish the phase of building, e.g. nest building, incubating, feeding young, and will advise the contractor accordingly on measures to be followed (see Section 5.2).

5.7 Post-construction Monitoring for Birds

Post-construction bird monitoring is required to ensure no adverse effects on bird species as a result of the project. This extends to the site area and the bogs to the west and south-west of the site. The monitoring programme will comprise the following:

Flight activity surveys

Flight activity surveys will be undertaken using the Vantage Point method (Scottish Natural Heritage 2017). The purpose of the surveys is to determine if the presence of the turbines is causing species such as kestrel, merlin and hen harrier to avoid the site area. This will use the same Vantage Points as used for the baseline EIAR surveys (though VP no. 4 is not required as it is not relevant to the final site boundary) so that a valid comparison can be made between the two periods. The surveys will be undertaken monthly in Years 1, 2, 3, 5, 10 and 15 of the lifetime of the project (in accordance with Scottish Natural Heritage Guidance 2009).

Distribution and abundance surveys within site

Distribution and abundance surveys will be undertaken to monitor short-term and long-term effects on bird populations within the site. Survey methodology will be similar to methods employed for baseline EIAR surveys which will allow a comparison of data to be made for each monitoring year. However, transects may be extended to include sections alongside turbines. Surveys will be undertaken during summer and winter and will be in the same monitoring years as the vantage point surveys.

Distribution and abundance surveys on bog

The baseline transect survey that was carried out on the bog to west of site in 2022 (for EIAR), and which will be repeated at pre-construction stage, will be repeated again post-construction. This will provide long-term population data for the important breeding species associated with the blanket bog, including golden plover, snipe and dunlin. It is proposed that surveys will be carried out in the same years as the other bird monitoring surveys and will comprise three visits in the period April-July. Method will follow Brown and Shepherd (1993).

Collision searches

The objective of collision monitoring and corpse search is to establish whether bird fatalities are occurring as a result of collision with turbine blades. Carcass search was traditionally completed by human observers whose efficiency is influenced by several factors including carcass type, environmental conditions and observer competence. Numerous studies have been conducted demonstrating that dogs have a superior ability to detect bird and bat carcasses than humans, particularly with small carcasses or in dense vegetation (see for example Bernardino 2012, Reed 2011, Mathews 2013). A trained dog under the control of a handler will be used.

A standard plot size will be selected at each turbine location where search will occur. At the start of each survey, data recorded will include meteorological and ground cover information. The locations of any carcasses found will be recorded by GPS and will be photographed in-situ. The state of each carcass will be recorded on a corpse record card, using the following categories (after Johnson 2003):

- Intact - a carcass that is completely intact, is not badly decomposed, and shows no sign of being fed upon by a predator or scavenger
- Scavenged - an entire carcass which shows signs of being fed upon by a predator or scavenger, or a portion(s) of a carcass in one location such as wings, legs, skeletal remains or pieces of skin
- Feather Spot - ten or more feathers at one location indicating predation or scavenging. If only feathers are found, 10 or more total feathers or two or more primaries must be discovered to consider the observation a casualty.

Searcher efficiency and predation tests will be carried out at the commencement of the programme in order to calibrate the results to account for the search dog's ability to find bird corpses and to also account for scavenging of corpses by animals.

The collision searches will be carried out on a monthly basis in Years 1, 2, 3, & 5 of the operational phase of the wind farm.

6. Residual Impacts

With mitigation measures as prescribed in this report implemented in full, and specifically construction phase mitigation to minimise disturbance to breeding bird species of conservation importance, as well as measures to minimise risk of collision to species such as kestrel during the operation phase, it is considered that the significance of the predicted effects on birds as a result of the Proposed Development will range from Imperceptible to Slight significance.

At this site, there are no predicted significant effects on birds from loss of habitat.

The construction phase of the project may result in disturbance to breeding birds within a distance of up to 500 m of the works boundary. This could have significant adverse effects (albeit of short-term duration) on species of conservation importance such as red grouse, merlin, golden plover and snipe. With mitigation in place, comprising the use of work restrictive zones around identified breeding areas, the development is not expected to have any significant residual effects on these species.

During the operational phase of the project, birds may show some avoidance of suitable habitat as a result of the presence of turbines. For breeding golden plover, dunlin and snipe, the effect is rated as a Slight adverse effect. However, it is noted that there is evidence that populations of species such as golden plover may become habituated to operational wind farms (Douglas et al. 2011). During the operational phase of the project, birds will be at some risk of collision with turbines, with kestrel and snipe identified as the species at most risk (long-term slight negative effect). With mitigation in place, this risk will be minimised.

The baseline surveys did not identify any regular migration routes or local movements of wetland bird species through the site. The project is not expected to have any residual effect on migrating species or bird populations associated with sites in the hinterland.

The Proposed Development is not expected to have any residual effects on the Special Conservation Interests of any Special Protection Area (as detailed in the Natura Impact Statement).

7. Conclusion

The following is concluded with regard to the Proposed Development taking account of mitigation and monitoring outlined in **Section 5**:

- No significant effects are predicted on birds due to habitat loss during the construction, operational or decommissioning phases of the project.
- No significant effects are predicted on birds due to disturbance, displacement, and barrier effects during the construction or operational or decommissioning phases of the project.
- The Proposed Development will not result in significant collision effects on bird species.
- The Proposed Development will not result in significant cumulative impacts in combination with land management, other wind farms or projects, proposed, existing or permitted in the area.
- The Proposed Development will not result in any significant effects on any of the Important Ecological Features, either alone, or cumulatively, with other projects.

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Appendix 1

Personnel Profile

Team Role	Name and Qualifications
Consultant Senior Ornithologist	John Murphy (Consultant Senior Ornithologist, Dip.)
Management and Co-ordination of Surveys	Ciara Barry-Hannon (Ecologist, BSc. Wildlife Biology)
Field Surveyors	Shane Cully (Ornithologist)
	Paidi Cullinan (Ornithologist)
	Austin Cooney (Ornithologist)
	John Collins (Ecologist, BSc.)
	Luíse Ní Dhonnabháin (Zoologist, BSc.)
	Ciara Barry-Hannon (Ecologist, BSc. Wildlife Biology)
	Noreen Lynch (Ecologist, BSc. Wildlife Biology)
	Deirdre O' Brien (Ecologist, BSc. Wildlife Biology)
GIS Mapping & Data	Valerie Heffernan (Environmental Scientist, MSc. BSc.)

John Murphy

John Murphy is a consultant senior ornithologist formerly working with Malachy Walsh and Partners (MWP). He is very experienced having worked in the field of ornithology and ecology since 1982 and has extensive knowledge of the Irish landscape with regard to bird populations. He collaborates regularly with NPWS on different projects throughout the country. John is one of the country's foremost ornithologists and is a licensed bird ringer. He has always had an interest in wildlife photography and his work has been published in several magazines and books. As a 'Heritage in the Schools Specialist', he has travelled the country lecturing in schools and colleges, and to various clubs and organizations. He was a former Biodiversity Officer with Clare County Council. He worked with MWP on a wide variety of projects nationwide from 2010 until 2021. He spends as much time in the field as possible as a bird observer.

Project Role: Consultant senior ornithologist, overall bird survey design

Ciara Barry-Hannon

Ciara Barry-Hannon is an Ecologist who worked with MWP for three years on a part-time and full-time basis. She qualified with an Honours Degree in Wildlife Biology from Munster Technological University (MTU), formerly I.T. Tralee, in 2020. Over the last three years she has contributed to and helped to complete numerous reports for bird survey work and is experienced in data collation and field ecology survey techniques.

Project Role: Management and co-ordination of bird surveys and field surveyors

Shane Cully

Shane has an Honours Degree in Wildlife Biology and works with MWP as a ornithological field surveyor on a full-time basis. He has over 6 years general birding experience. He has extensive experience in Vantage Point Surveys, Transect surveys, Merlin/Golden Plover walkover surveys, Nightjar/Woodcock Surveys, Red Grouse Surveys and Hen Harrier Roost Surveys. He has previously been involved in the Corncrake Conservation Project

with Birdwatch Ireland where he undertook dedicated night-time surveys, on a nightly basis during peak season, and dealt directly with landowners with regards to participation in the Corncrake Grant scheme. He has also worked with Birdwatch Ireland on the Results Based Agri-Environment Payments Scheme (RBAPS) in the Shannon Callows. This work included surveying of breeding waders, monitoring of whinchat, and signing farmers/landowners up to the scheme.

Project Role: Field surveyor

[Paidí Cullinan](#)

Paidí works with MWP as an ornithological field surveyor on a full-time basis. He has more than 20 years of bird watching experience in Ireland and abroad and is the Vice Chairperson of the Clare branch of Birdwatch Ireland and the Ebird county recorder for Clare. Paidí has worked on a variety of projects in many locations around Ireland. He is proficient in iWebs, common bird census, Vantage Point surveys, Transect surveys, Hen Harrier roost watches, Point count surveys, hinterland surveys, Merlin, Golden plover and Red Grouse survey. He is a subscriber to British Birds, Dutch Birding & BirdGuides. He has field experience of bird ringing & bird sound recording.

Project Role: Field surveyor

[Austin Cooney](#)

Austin has more than 35 years of bird surveying experience both in Ireland and abroad and is an active member of the Clare branch of Birdwatch Ireland. Austin has worked on a variety of projects in many locations around Ireland. He is proficient in Vantage Point surveys, Transect Surveys, Point Count surveys, Hinterland surveys, Merlin surveys and Red grouse surveys. Austin has over 10 years IWeBS survey experience and is co-author of the book "Shannon Airport Lagoon – A Unique Irish Habitat".

Project Role: Field surveyor

[John Collins](#)

John has a Degree in Freshwater and Marine Biology in 2018. His final year project was focused on the diet of breeding Raven on Loop Head peninsula Co. Clare in which he gained extensive observational experience. In 2018 he carried out ornithological surveys of rice paddies in Spain which contributed to his knowledge of species identification. John has been a volunteer with a local group in West Co. Clare and has been involved in Hen Harrier winter roost and summer breeding site surveys.

Project Role: Field surveyor

[Luíse Ní Dhonnabháin](#)

Luíse is an experienced fieldworker that specialises in bird identification and surveying. She graduated from University College Dublin (UCD) in 2015 with a Zoology degree and since then has worked on various ornithological projects. She has previously worked for the Royal Society for the Prevention of Cruelty to Birds (RSPB) in Orkney, the Shetlands and along the east coast of Scotland where she carried out land and boat-based surveys of auks, kittiwakes, shags and cormorants, and upland surveys of skuas and gulls. She has also worked on Rockabill Island for six months as the island's Tern Warden. In addition to her many years of bird surveying experience, Luíse is skilled in collating and processing data, team-management, and writing reports.

Project Role: Field surveyor

Noreen Lynch

Noreen Lynch is an Ecologist (BSc.) who has been working with MWP for over two years. She has four years' experience working as a consultant ecologist in other engineering and environmental firms. She qualified with a degree in Wildlife Biology from Tralee IT in 2016. Over the last few years, she has worked on a wide range of large-scale infrastructure projects in the energy, flooding and transportation sectors. She is experienced in the collation of data and in field ecology survey techniques.

Project Role: Field Surveyor

Deirdre O'Brien

Deirdre O'Brien has been working periodically with MWP since 2018 and on a full-time basis since 2019. During that time, she has carried out field work which included invasive species survey's, bird surveys, freshwater macroinvertebrate sampling and identification, (sensu Q' value assessment), collection of water samples and assistance with freshwater pearl mussel survey. She has also gained experience in standard field survey methodologies including mammal surveying and habitat mapping. She has acquired experience in the completion of Appropriate Assessment (AA), Natura Impact Statement (NIS) and Ecological Impact Assessment (EcIA). She has been formally trained in Stage 1 and Stage 2 freshwater pearl mussel Surveying (Dr. Evelyn Moorkens). She has experience with general ecological report writing, has helped complete numerous reports for bird survey work and is experienced in the collation of data and in field ecology survey techniques.

Project Role: Contributing report author

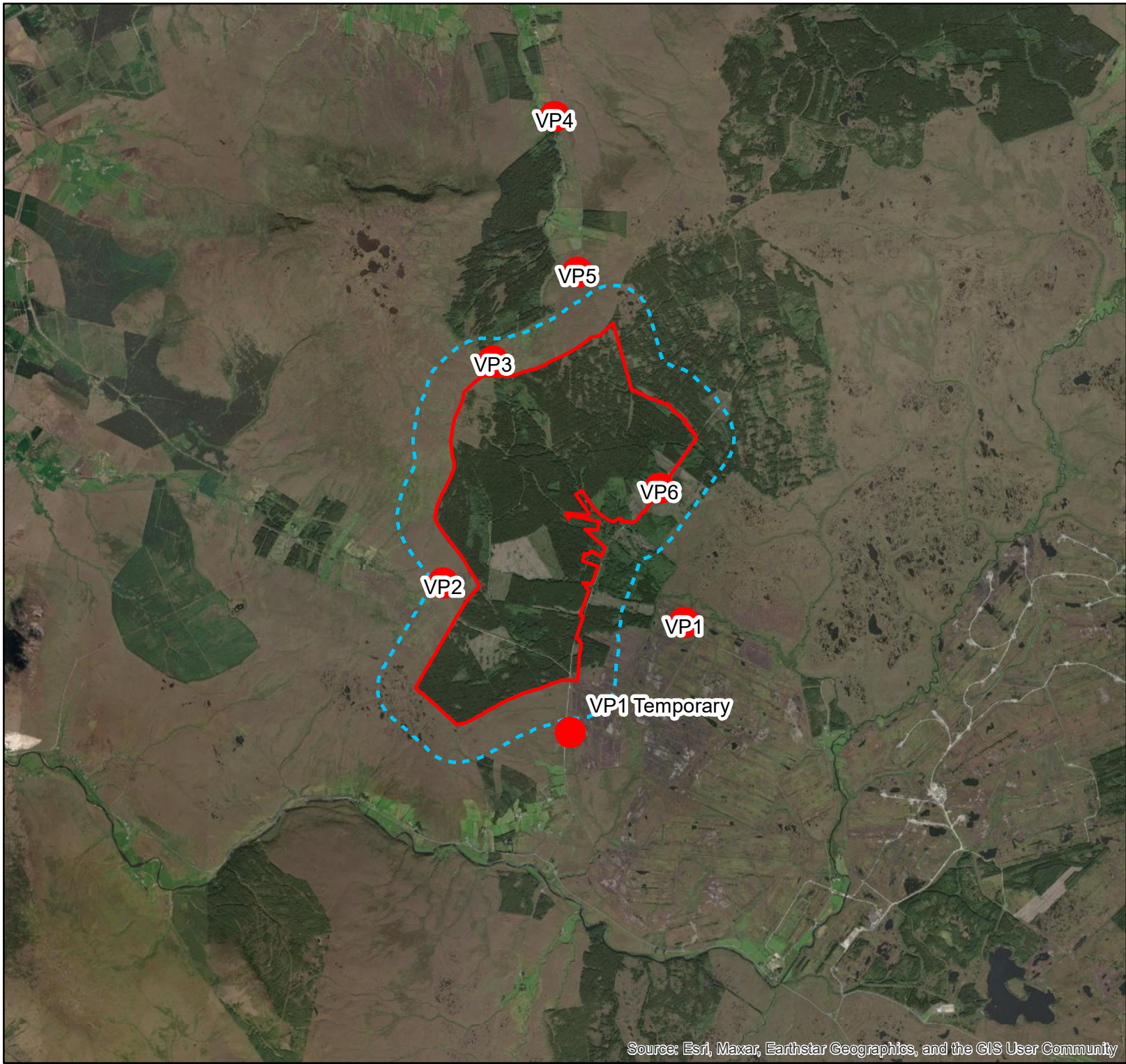
Valerie Heffernan

Valerie has worked as an environmental professional since graduating in 2015 and has been employed as an Environmental Scientist with MWP since 2018. She has considerable experience and has had input into a variety of projects including solar farms, marine and wind energy developments. She is experienced in GIS and planning and environmental report input.

Project Role: Responsible for viewshed analysis and flight path mapping

Appendix 2

Figures



Vantage Point



Flight Activity Survey Area
500m



Site Boundary

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title
Vantage Point Location

Drawing No:
21423-MWP

Drawn: VH

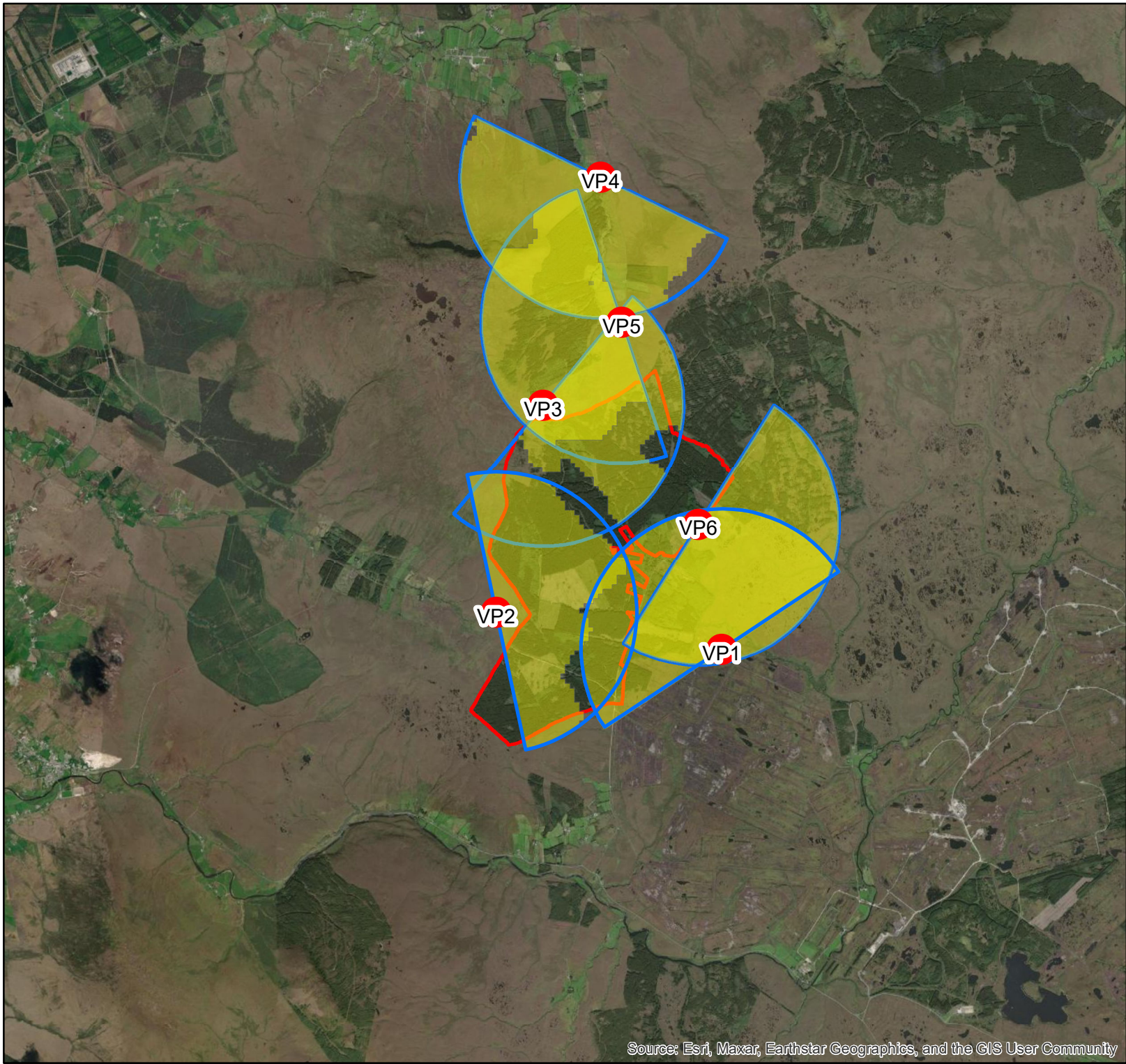
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Date: 07/12/2022

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MWP



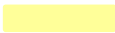
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Vantage Point



Viewshed Extent



Viewshed



Site Boundary

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables



Drawing Title:
Viewshed Analysis

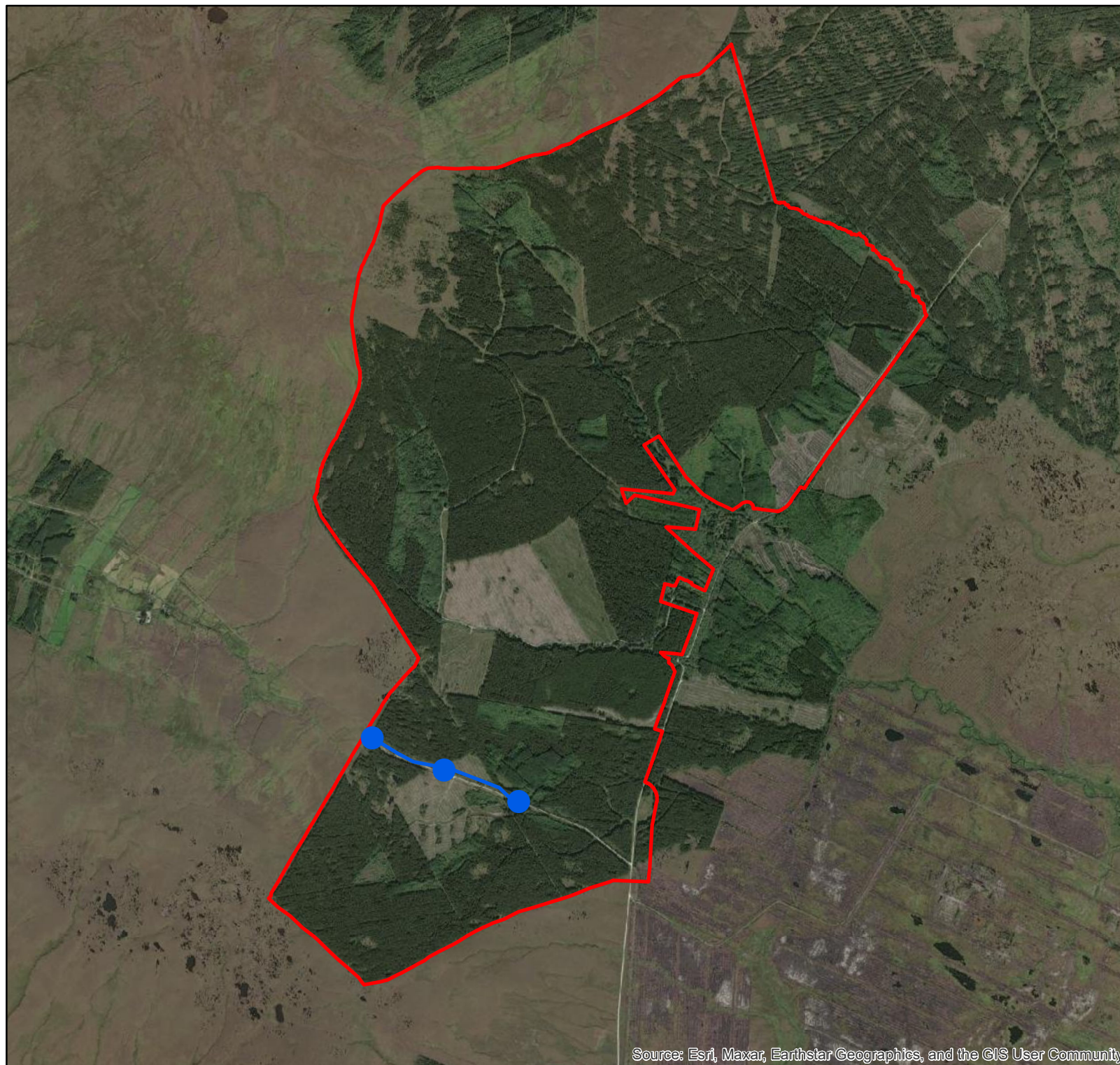
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Scale (A3): 1:75,000

MWP



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

-  Site Boundary
-  Point Count
-  Transect A

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables



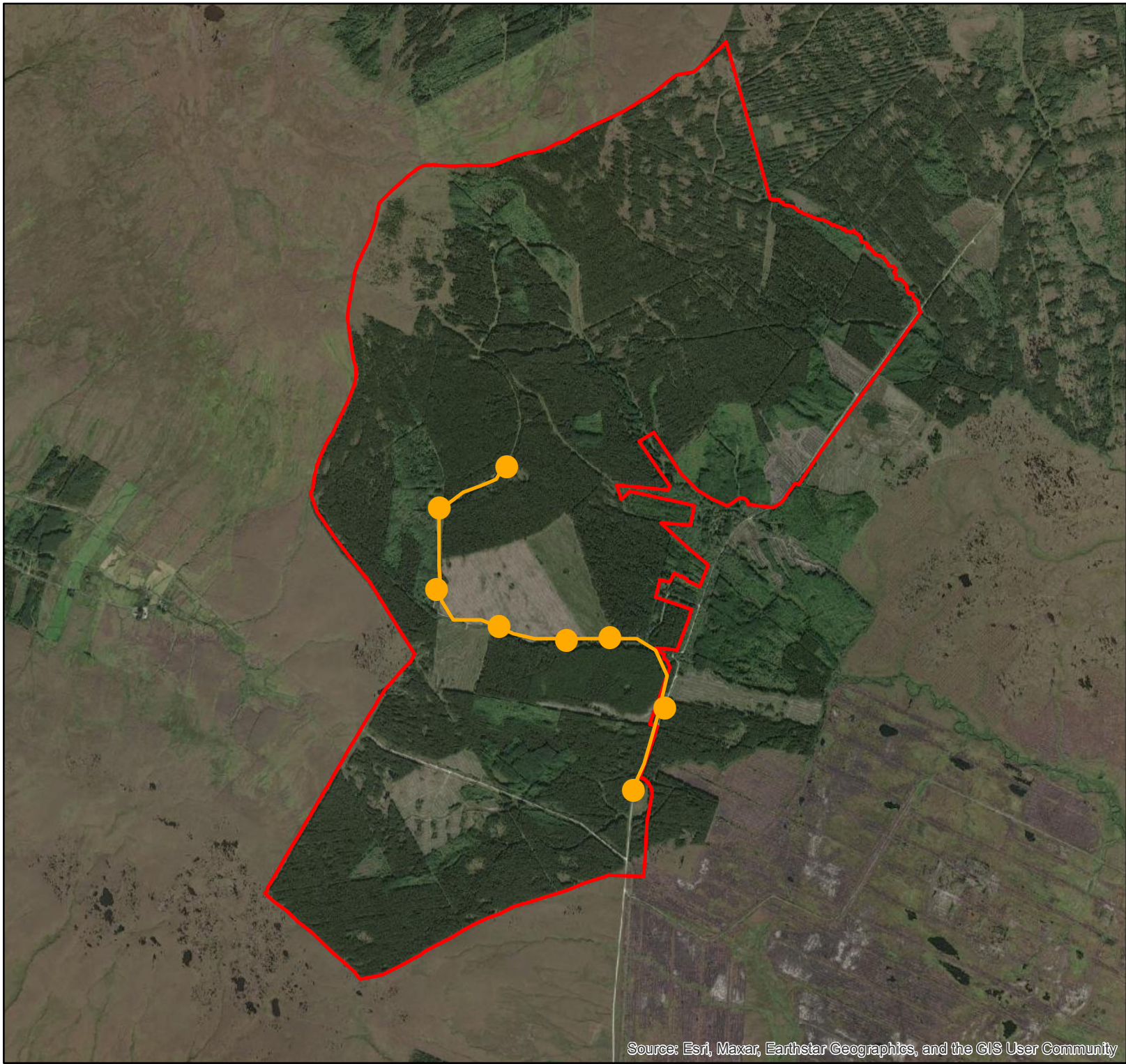
Drawing Title: Transect and Point
Count Surveys (2019 - 2022)

Drawing No:
21423-MWP Summer 2021




Drawn: VH Checked: HD

Date: 09/12/2022 Scale (A3): 1:42,538

MWP



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

-  Site Boundary
-  Point Count
-  Transect B

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables



Drawing Title: Transect and Point
Count Surveys (2019 - 2022)

Drawing No:
21423-MWP

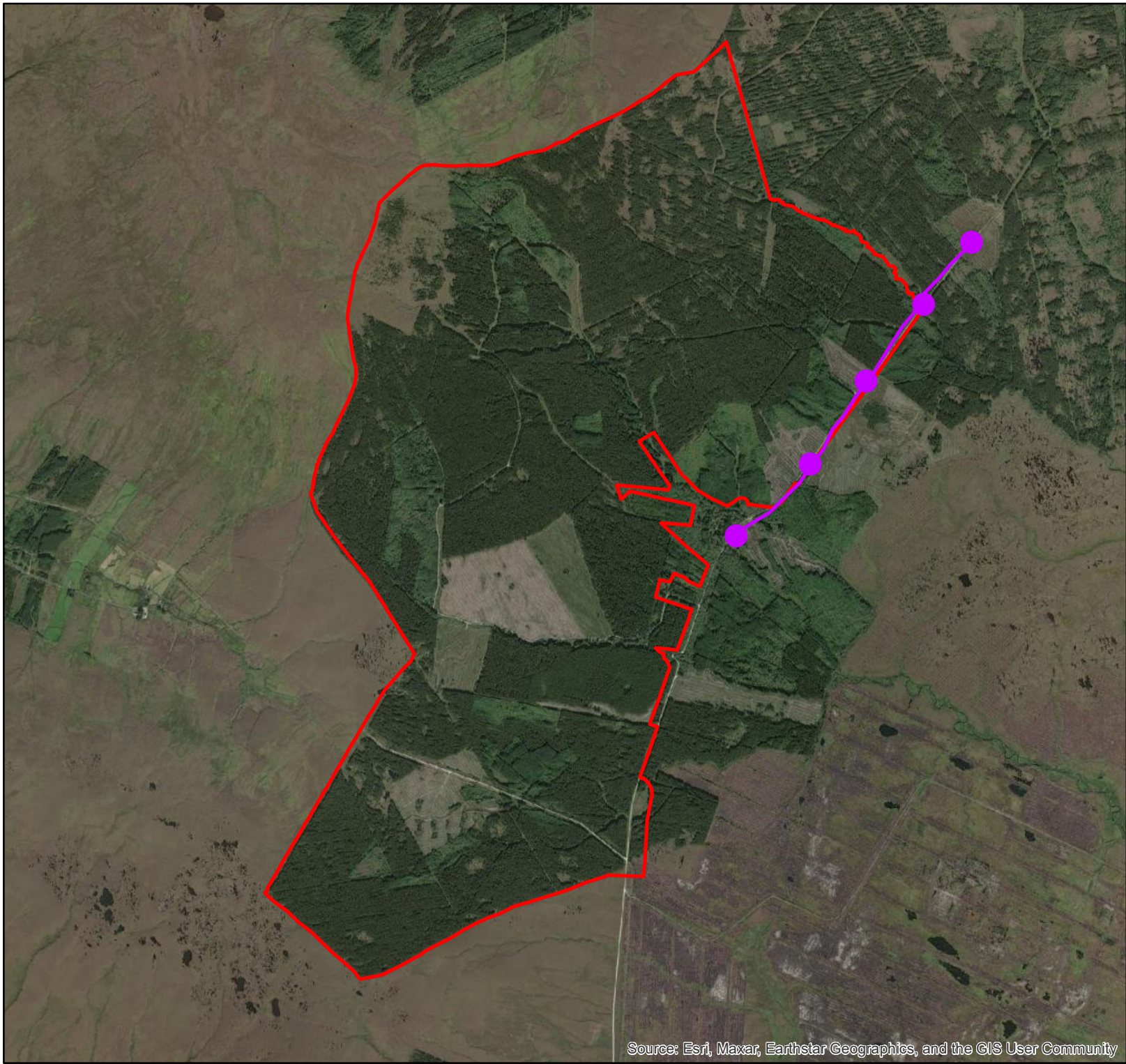
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Checked: HD




Date: 09/12/2022

Scale (A3): 1:42,538





Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

-  Site Boundary
-  Point Count
-  Transect C

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables



Drawing Title: Transect and Point
Count Surveys (2019 - 2022)

Drawing No:
21423-MWP

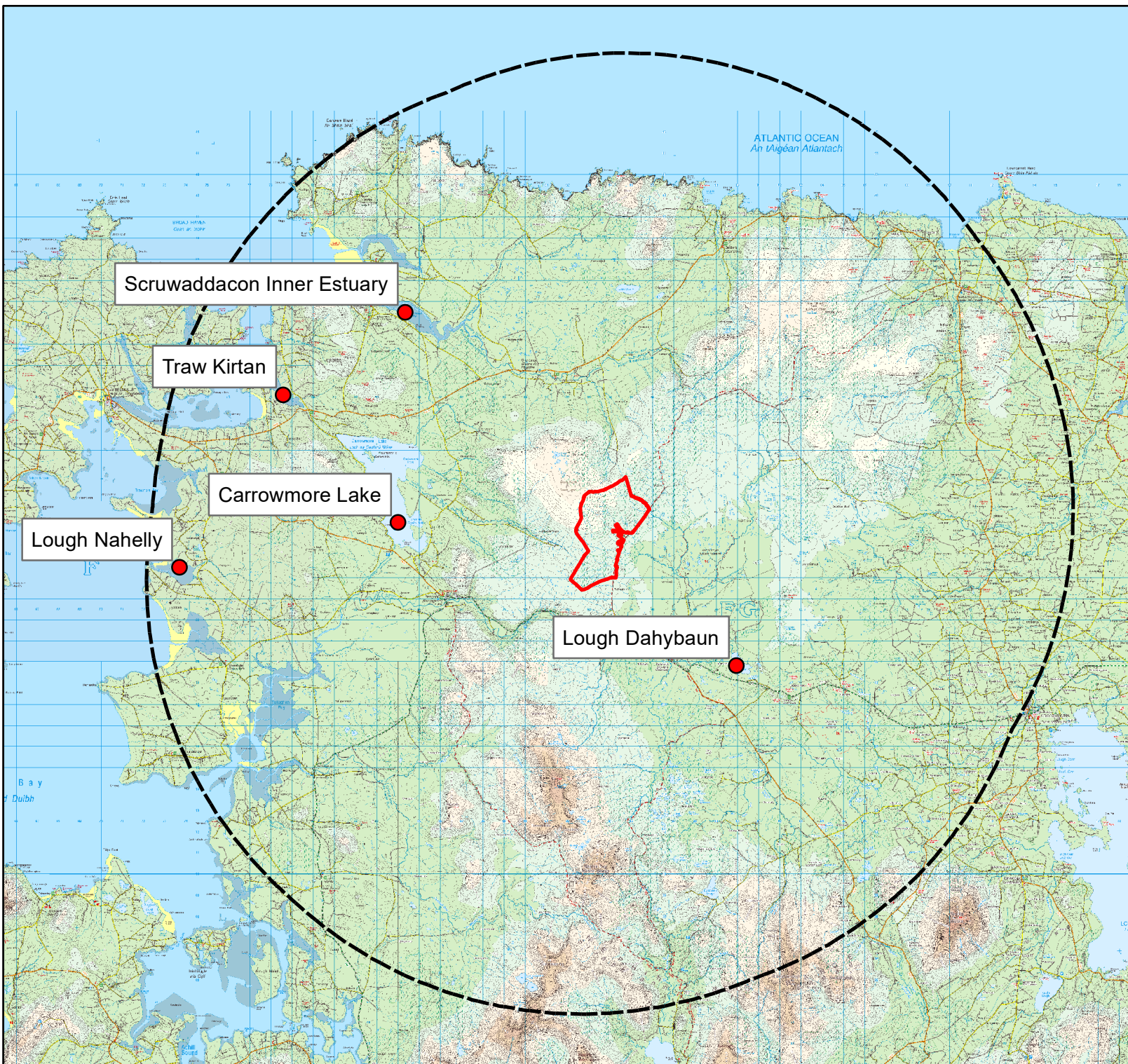
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Date: 09/12/2022

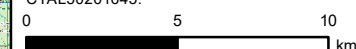
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- Winter Hinterland Survey locations
- Site Boundary
- ⋯ Site Buffer 20km

Map Reproduced From Ordnance Survey Ireland
By Permission Of The Government.
CYAL50261645.



Project Title: 21423 -
Sheskin South WF

Client: SSE Renewables

Drawing Title: Winter Hinterland Survey –
Winter 2019/20, Winter 2020/21, Winter
2021/22

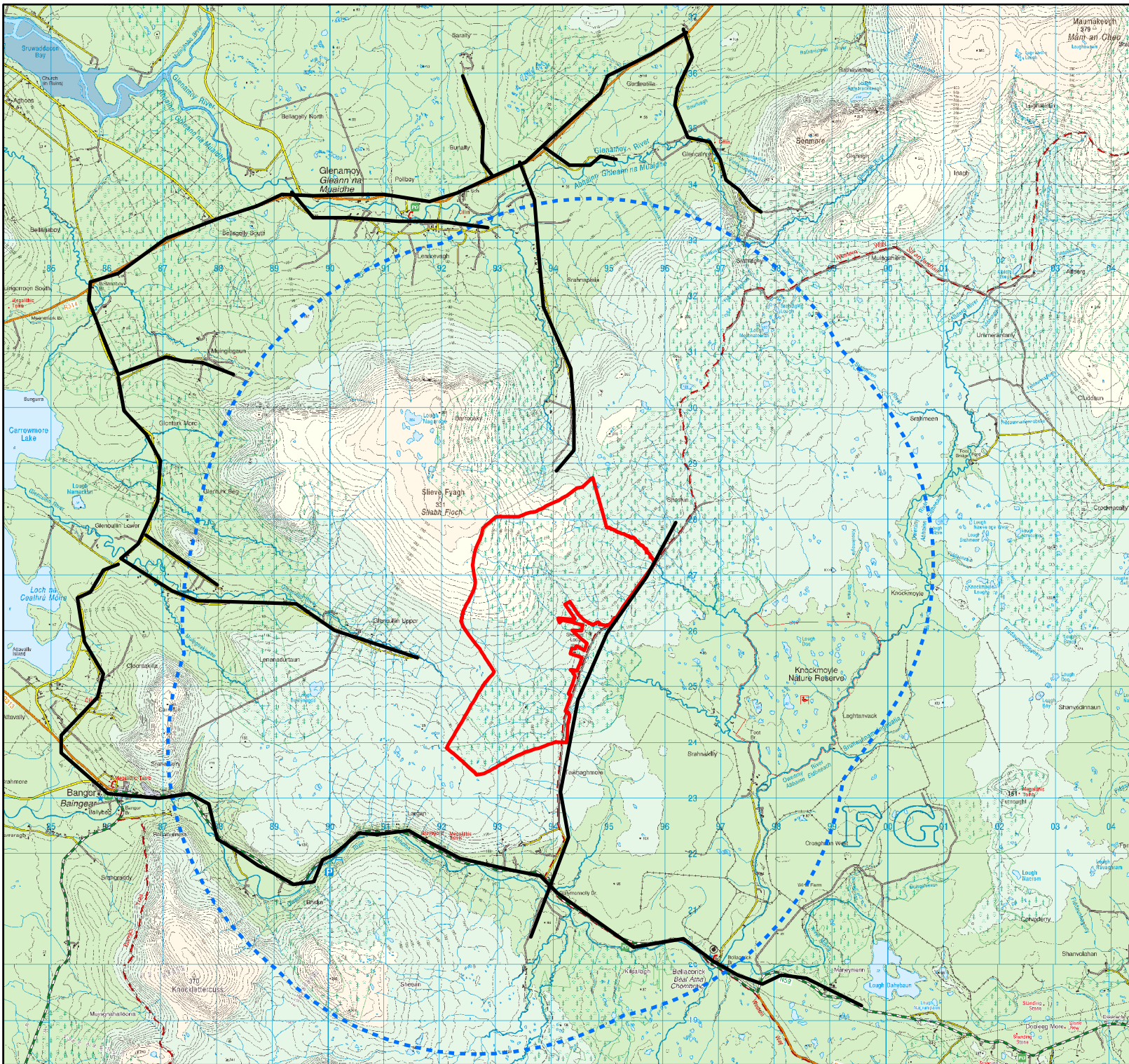
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Checked: HD

Date: 12/12/2022

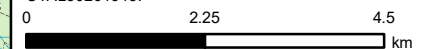
Scale (A4): 1:250,000

MWP



-  Hinterland Survey Track
-  Sheskin Buffer 5km
-  Site Boundary

Map Reproduced From Ordnance Survey Ireland
By Permission Of The Government.
CYAL50261645.



Project Title: 21423 -
Sheskin South WF - Breeding bird surveys

Client: SSE Renewables

Drawing Title:
Breeding Season Hinterland Survey
2021 and 2022

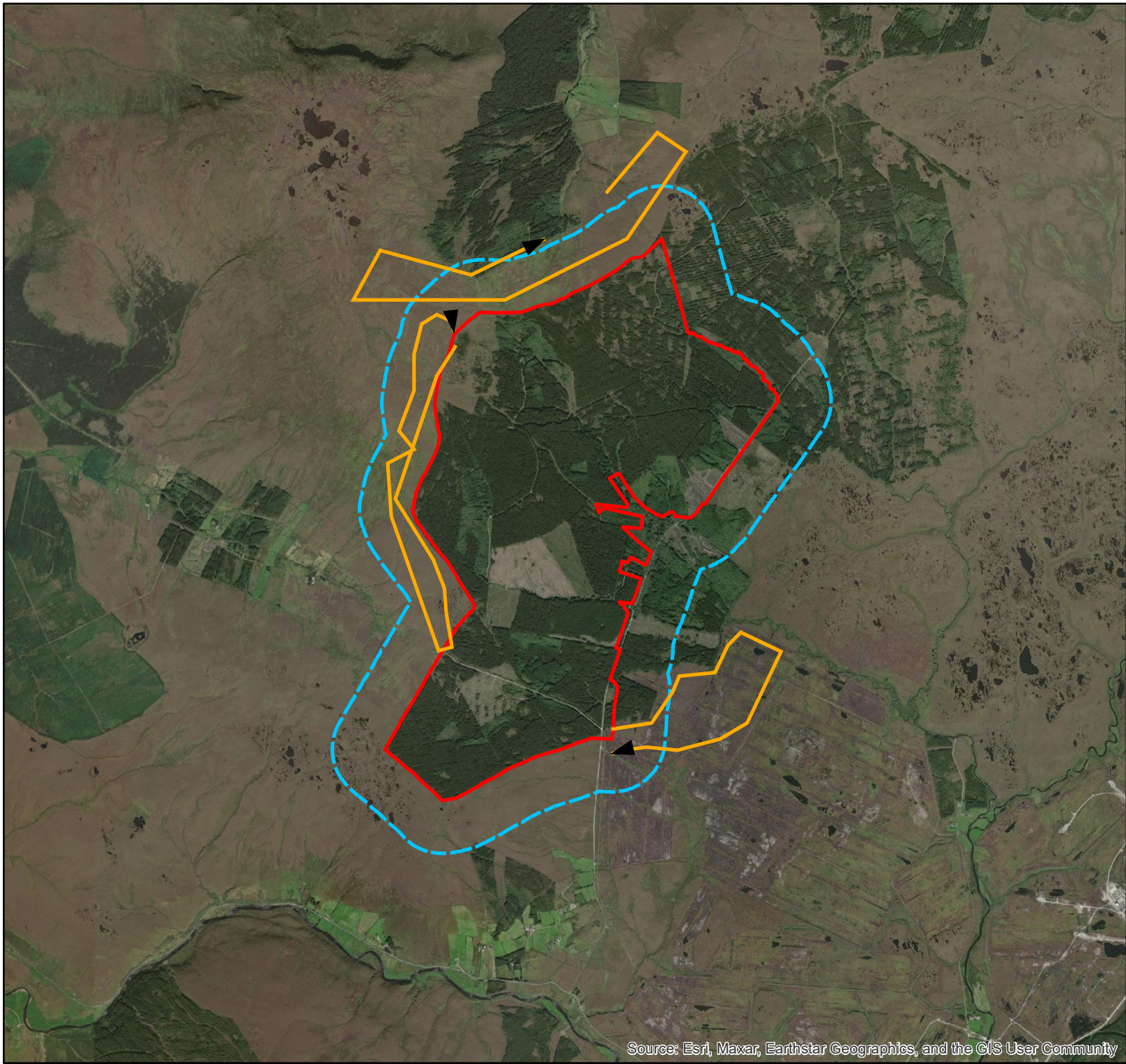
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Checked: HD




Date: 14/12/2022

Scale (A4): 1:95,000



MWP

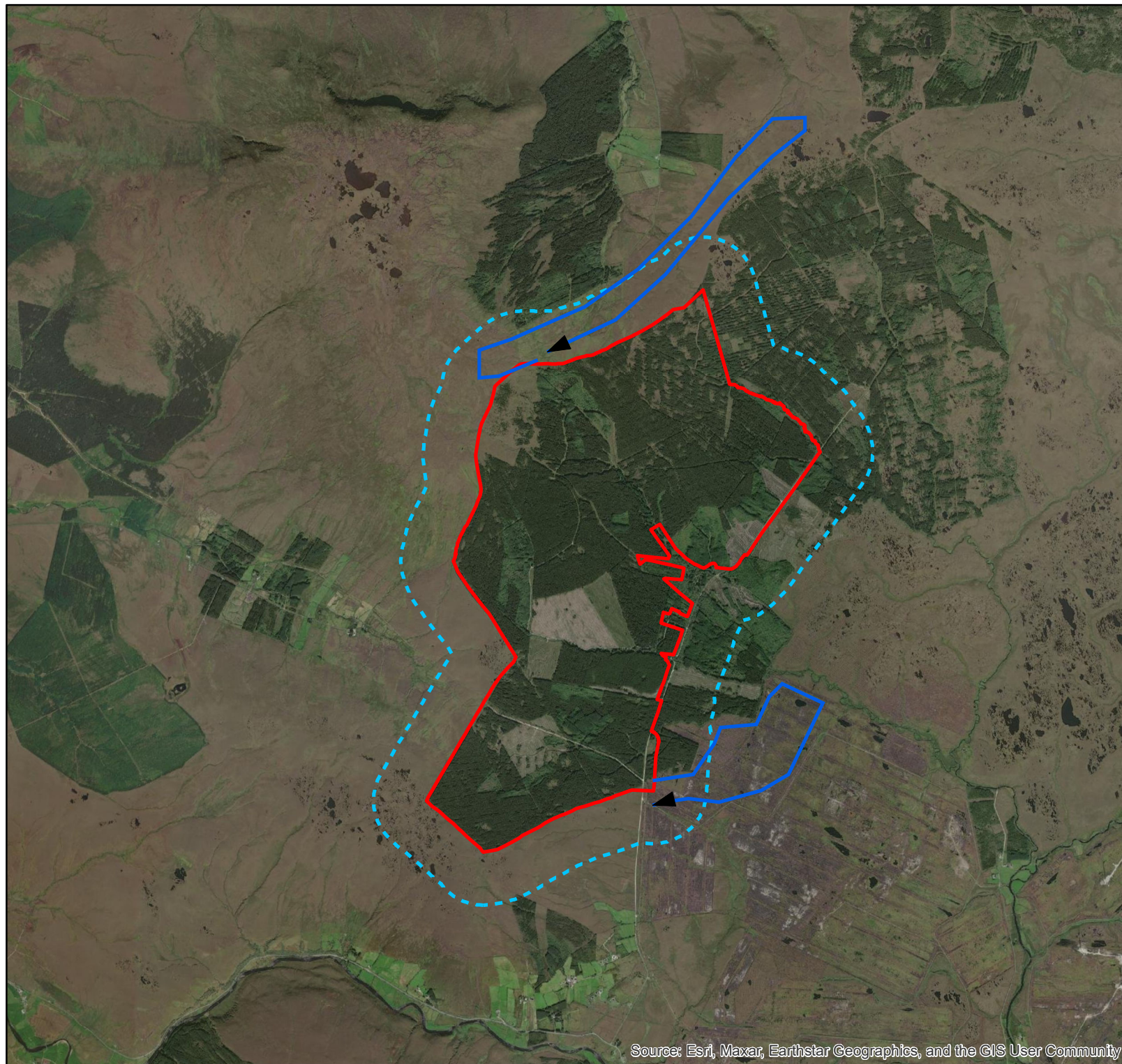


Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

-  Site Boundary
-  Survey Area 500m
-  Red grouse/Merlin/Golden Plover Winter Walkover Surveys

Winter 2019/20,
Winter 2020/21

Project Title: Sheskin South Wind Farm		
Client: SSE Renewables		
Drawing Title: Red Grouse, Merlin, Golden Plover red Walkover Winter 2019/20 and Winter 2020/21		
Drawn: VH		Checked: HD
Date: 12/12/2022		Scale (A3): 1:50,000
		



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

- Red Grouse /Merlin/Golden Plover Walkover Survey - Summer 2021
- Survey Area 500m
- Site Boundary

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title: Red Grouse /Merlin/
Golden Plover Walkover Survey -
Summer 2021

Drawn: VH

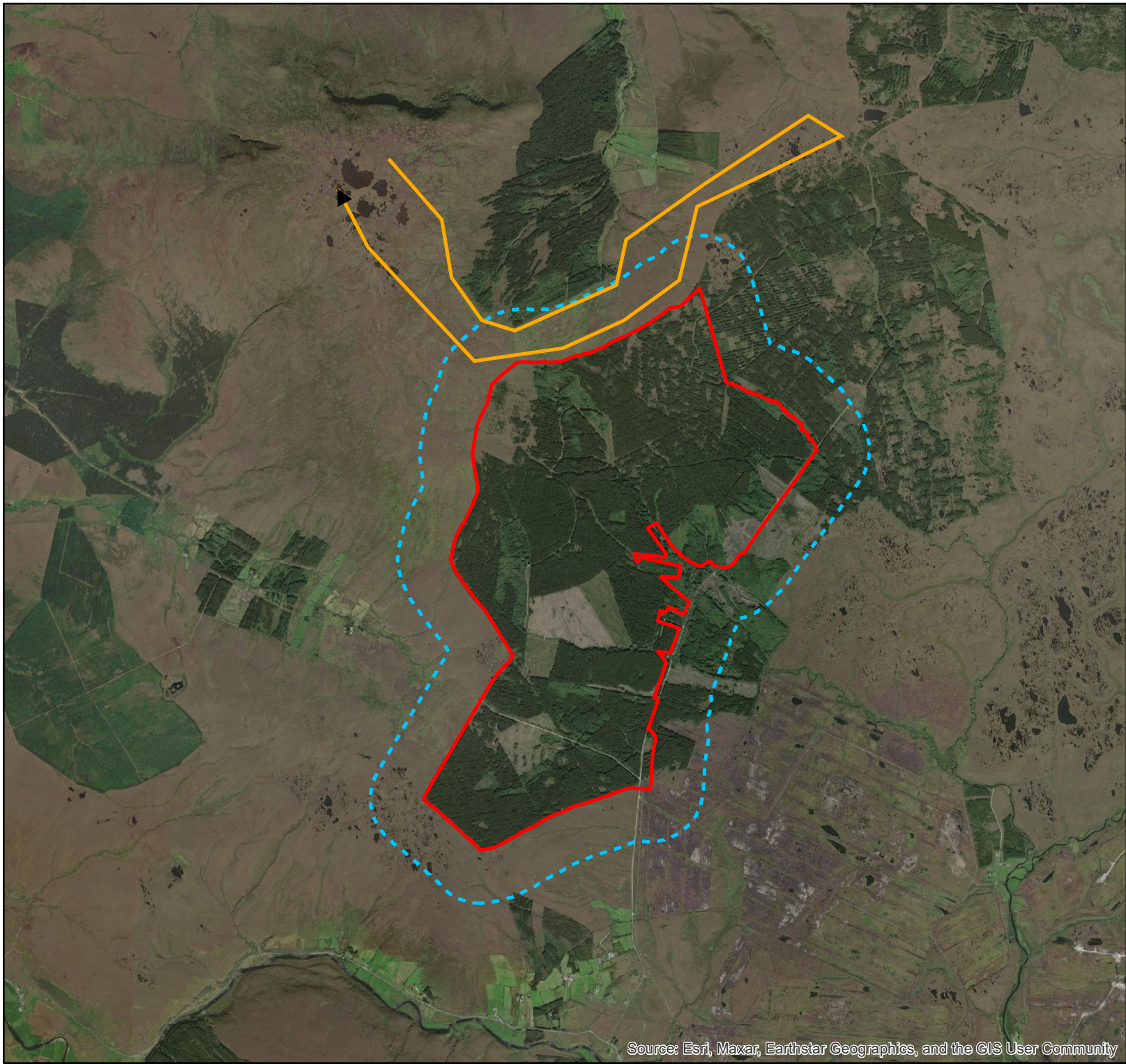
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Date: 07/12/2022

Scale (A3): 1:50,000



MWP



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

- Red Grouse/Merlin/Golden Plover Walkover Survey – Winter 2021/22
- Survey Area 500m
- Site Boundary

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title: Red Grouse /Merlin/
Golden Plover Walkover Survey -
Winter 2021/2022

Drawn: VH

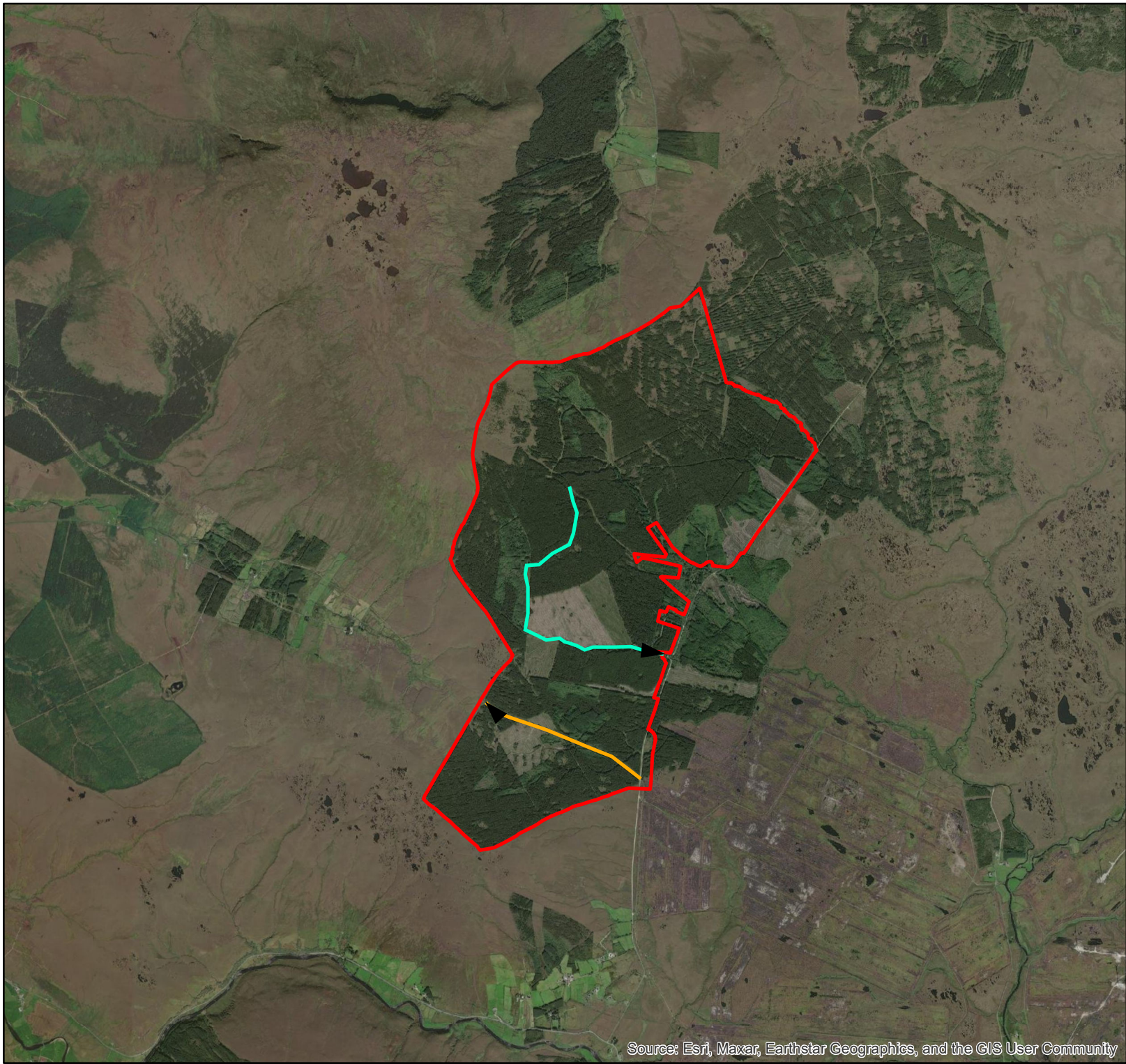
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Date: 07/12/2022

Scale (A3): 1:50,000



MWP



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

- Walkover A
- Walkover B
- Site Boundary

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title: Breeding Season Walkover
Survey Woodcock and Nightjar -
Summer 2020

Drawn: VH

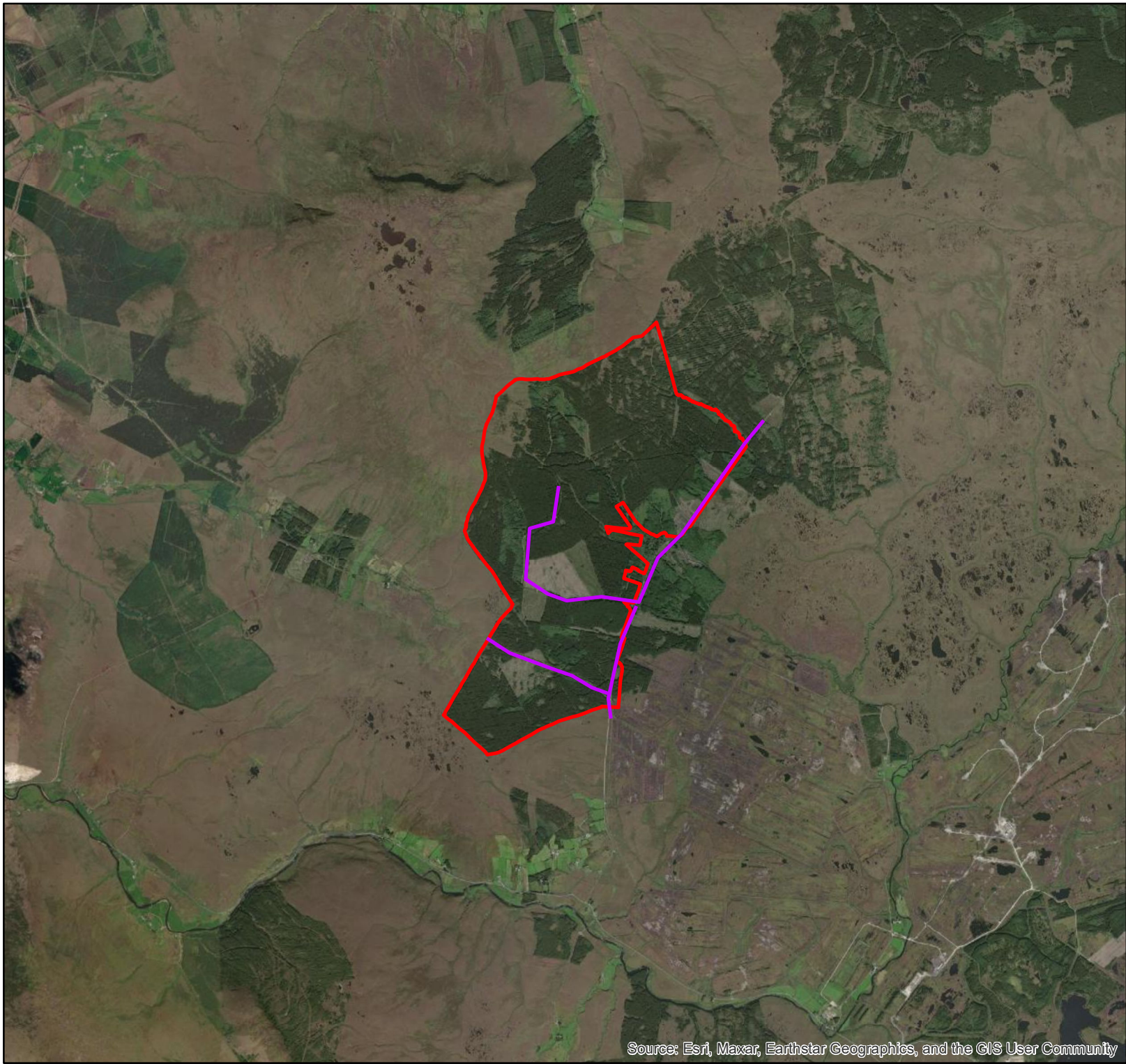
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Date: 07/12/2022



Scale (A3): 1:50,000



MWP



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

-  Walkover Survey Route
-  Site Boundary

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title: Breeding Season Walkover
Survey Woodcock and Nightjar - Summer
2021 and 2022

Drawn: VH

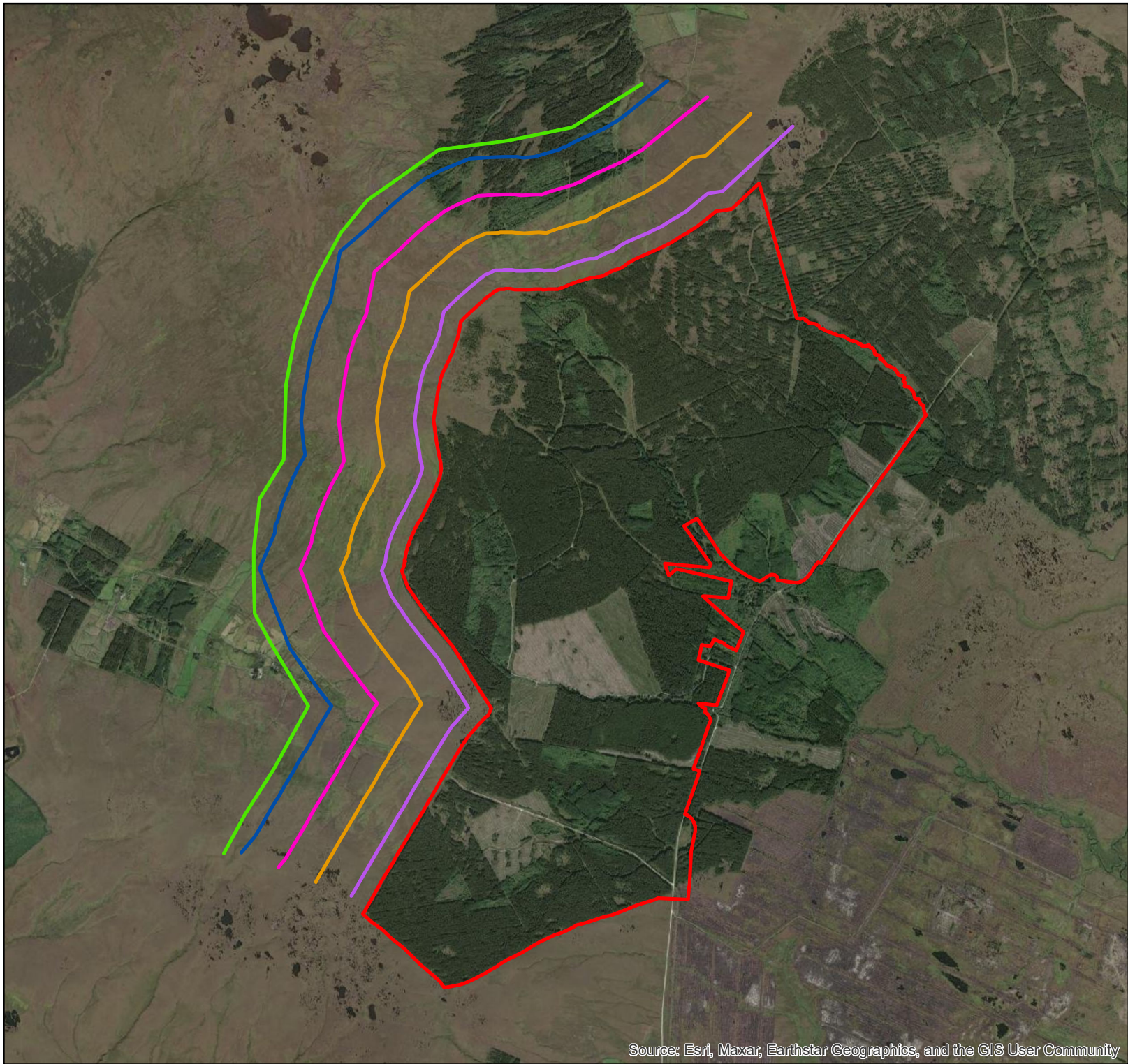
Checked: HD

Date: 08/12/2022

Scale (A3): 1:65,000



MWP



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Moorland Breeding Bird Survey 2022

- 125m Transect
- 375m Transect
- 625m Transect
- 875m Transect
- 1000m Survey Boundary
- Site Boundary

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables



Drawing Title: Moorland Breeding Bird Survey (2022)

Drawn: VH	Checked: HD
Date: 07/12/2022	Scale (A3): 1:35,000



Appendix 3

Vantage Point Survey Summary

Vantage Point Survey Summary

VP surveys were undertaken at the Proposed Development site on a monthly basis by-qualified personnel for the winter and breeding seasons encompassed in the 3-year period October 2019 to September 2022, inclusive. 36 survey hours were achieved at each VP location in each season during the overall survey period (except in the case of VP6 in October 2019, when only 34 VP hours were achieved). See table below which outlines survey hours completed at each VP location.

Survey Year/Season	Winter (Oct-Mar) [#]						Summer (Apr – Sept)						Total Hours
	VP1	VP2	VP3	VP4	VP5	VP6	VP1	VP2	VP3	VP4	VP5	VP6	
Year 1 (2019/2020)	36	36	36	36	36	34*	36	36	36	36	36	36	430
Year 2 (2020/2021)	36	36	36	36	36	36	36	36	36	36	36	36	432
Year 3 (2021/2022)	36	36	36	36	36	36	36	36	36	36	36	36	432
Total Hours	108	108	108	108	108	106	108	108	108	108	108	108	1,294

[#]March 2020 VPs completed in April 2020 due to Covid-19 travel restrictions; *only 34 hours completed at VP6 in October 2019

Vantage Point Survey Summary by Season and Month

Winter 2019/20

October 2019

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	30/10/2019	JM	12:30	15:30	3	A dry and sunny day, a bit duller in the afternoon, wind direction E, wind f3-6 temp 9°C and visibility ok.
1	30/10/2019	JC	09:00	12:00	3	Cloud cover 8/8, sunny spells, east wind f3-5, temp 7-10°C, visibility good.
2	30/10/2019	JM	09:00	12:00	3	A dry cold and sunny morning, wind direction E, wind f3-5, temp 9°C and visibility ok.
2	30/10/2019	JC	12:15	15:15	3	Cloud cover 8/8, sunny spells, wind direction E, wind f3-5, temp 7-10°C, visibility good.

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
3	01/11/2019	JM	09:00	15:00	6	A misty damp wet day, wind direction SW, calm slack winds, temp 12 °C and visibility bad.
4	29/10/2019	JM	15:05	18:05	3	A dry cold and sunny day, wind direction E, wind f2-5, temp 6-10°C and visibility good.
4	29/10/2019	JC	12:00	15:00	3	Cloud cover 6/8, dry day, wind direction E, wind f 3-4, temp 7-9°C and visibility good-moderate.
5	29/10/2019	JM	12:00	15:00	3	A dry cold and sunny morning, wind direction E, wind f2-5 temp 6-10°C and visibility good.
5	29/10/2019	JC	15:15	18:15	3	Cloud cover 6/8, light intermittent rain, wind direction E, wind f 3-4, temp 7-9°C and visibility good-moderate.
6	01/11/2019	JC	08:45	11:45	3	Cloud cover 8/8, continuous light rain and fog, wind direction SW, wind f 3-5, temp 6-8°C and visibility moderate-poor.
6	01/11/2019	JC	12:30	13:30	1	Cloud cover 8/8, continuous light rain, wind direction SW, wind f 3-5, temp 6-8°C and visibility moderate-poor.

November 2019

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	26/11/2019	JC	13:30	16:30	3	Cloud cover 8/8, continuous heavy rain, wind direction ENE, wind f5-6, temp 9 °C and visibility moderate-poor.
1	27/11/2019	JM	09:00	12:00	3	A cool dry morning, wind direction N, wind f2-3, temp 6-8°C and visibility good.
2	26/11/2019	JM	13:30	16:30	3	A dry morning but some heavy showers in the afternoon, wind direction E, wind f2-4, temp 9°C and visibility ok.
2	27/11/2019	JC	09:00	12:00	3	Cloud cover 7/8, wind direction NE, wind f4-6, temp 7-9°C, visibility moderate-poor
3	28/11/2019	JC	09:45	12:24	3	Cloud cover 6/8, intermittent rain, wind direction NE, wind f 3-5, temp 7-9°C and visibility good.
3	28/11/2019	JC	13:00	16:00	3	Cloud cover 6/8, intermittent rain, wind direction NE, wind f 3-5, temp 7-9°C and visibility good.

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
4	25/11/2019	JC	13:30	16:30	3	Cloud cover 8/8, continuous fog on mountain tops, wind direction S, wind f 1-2, temp 9°C and visibility good.
4	26/11/2019	JM	09:00	12:00	3	A dry morning with some showers later, wind direction E, wind f2-4, temp 9°C and visibility ok.
5	25/11/2019	JM	13:30	16:30	3	A damp overcast day, wind direction S, wind slack f2-3, temp 12°C and visibility ok.
5	26/11/2019	JC	09:00	12:00	3	Cloud cover 8/8, continuous light rain, wind direction E, wind f 2-3, temp 8-9°C and visibility moderate.
6	27/11/2019	JM	13:00	16:00	3	A dry cool day, wind direction N, wind f2-3, temp 6-8°C and visibility good.
6	28/11/2019	JM	10:00	13:00	3	A dry morning with some sunny spells, wind direction N, wind f1-2, temp 9°C and visibility good.

December 2019

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	19/12/2019	AC	09:30	12:30	3	Cloud cover 6/8 intermittent hazy sunshine, wind direction SE, wind f3-4, temp 7-8°C and visibility good.
1	19/12/2019	JM	13:00	16:00	3	A calm dry day with good sunny periods, wind direction SW, wind f1-4, temp 8-9°C and visibility ok.
2	12/12/2019	JM	13:00	16:00	3	A foggy misty day, wind calm and still, temp 5°C and visibility bad.
2	13/12/2019	JM	09:00	12:00	3	A damp wet very windy morning, wind direction W, wind f5-7, temp 6°C and visibility poor.
3	19/12/2019	AC	13:00	16:00	3	Cloud cover 6/8, intermittent sunshine, wind direction SE, wind f 3-4, temp 5-6°C and visibility good.
3	19/12/2019	JM	09:30	12:30	3	A calm dry morning with some sunshine, wind direction SW, wind f1-4, temp 8-9°C and visibility ok.
4	09/12/2019	JM	13:00	16:00	3	A fine dry morning and day, wind direction SW, wind f2-3, temp 8-10°C and visibility good.

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
4	10/12/2019	JM	09:00	12:00	3	A very wet and windy morning, wind direction W, wind f5-7, temp 7-11°C and visibility ok.
5	10/12/2019	JM	13:00	16:00	3	Wet morning, afternoon dry with sunny spells, wind direction W, wind f5-7, temp 7-11°C and visibility ok.
5	11/12/2019	JM	09:00	12:00	3	A dry cold day, wind direction NW, wind f2, temp 3°C and visibility good.
6	11/12/2019	JM	13:00	16:00	3	A dry cold day, wind direction W-NW, wind f2, temp 3°C and visibility good.
6	12/12/2019	JM	09:00	12:00	3	A misty damp overcast morning with low fog, wind calm and still, temp 5°C and visibility bad.

January 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	27/01/2020	JC	13:00	16:00	3	Cloud cover 8/8, intermittent heavy snow and hail, wind direction W, wind f 3-5, temp 0-5°C and visibility good-poor.
1	30/01/2020	JC	09:30	12:30	3	A damp wet windy morning with showers and sunny periods, wind direction WSW, wind f 5-6, temp 9-11°C and visibility poor fair.
2	27/01/2020	JM	13:00	16:00	3	A very cold damp wet day with heavy hail showers and the odd bright spell, wind direction SW, wind f1-3, temp 5-7°C and visibility good - poor.
2	30/01/2020	JC	09:30	12:30	3	Cloud cover 8/8, intermittent rain, wind direction W, wind f 5-6, temp 9-11°C and visibility poor.
3	29/01/2020	JM	14:00	17:00	3	A cold wet windy day with showers and some sunny periods, wind direction WSW, wind f 5-6, temp 7-8°C and visibility good.
3	29/01/2020	JC	10:00	13:00	3	Cloud cover 8/8, dry, wind direction SW, wind f 4-6, temp 7-9°C and visibility moderate-good.
4	27/01/2020	JM	13:30	16:30	3	A wintery afternoon with some heavy showers of sleet and rain, some sunshine, wind direction W, wind f3-5, temp 0-6°C and visibility ok.

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
4	28/01/2020	JC	09:30	12:30	3	Cloud cover 8/8, dry, wind direction SW, wind f 4-6, temp 7-9°C and visibility moderate-good.
5	28/01/2020	JM	09:30	12:30	3	A cold damp wet morning with sleet showers and the odd dry spell, wind direction W, wind f3-5, temp 0-6°C and visibility ok.
5	28/01/2020	JC	13:30	16:30	3	Cloud cover 8/8, dry, wind direction SW, wind f 4-6, temp 7-9°C and visibility moderate-good.
6	29/01/2020	JM	10:00	13:00	3	A cold wet morning with some showers and sunshine, wind direction SW, wind f5-6, temp 7-8°C and visibility good.
6	29/01/2020	JC	14:00	17:00	3	Cloud cover 8/8, dry, wind direction SW, wind f 4-6, temp 7-9°C and visibility moderate-good.

February 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	24/02/2020	JC	12:00	15:00	3	Cloud cover 6/8, intermittent rain and hail, wind f5-6, temp 6°C, visibility moderate-excellent.
1	24/02/2020	JC	15:15	18:15	3	Cloud cover 6/8, intermittent rain and hail, wind direction WNW, wind f5-6, temp 6°C, visibility moderate-excellent.
2	24/02/2020	AC	12:00	15:00	3	Cloud cover 6/8, intermittent sunshine, showers, wind direction W, wind f4-6, temp 7°C and visibility good.
2	24/02/2020	AC	15:15	18:15	3	Cloud cover 6/8, intermittent sunshine, showers, wind direction W, wind f4-5, temp 7-5°C and visibility good.
3	27/02/2020	JC	11:00	14:00	3	Cloud cover 5/8, intermittent hail, rain and snow showers, wind direction WNW, wind f3-5, temp 4-6°C, visibility good-excellent.
3	27/02/2020	JC	14:15	17:15	3	Cloud cover 5/8, intermittent hail, rain and snow showers, wind direction WNW, wind f3-5, temp 4-6°C, visibility good-excellent.
4	25/02/2020	JC	15:00	18:00	3	Cloud cover 7/8, heavy intermittent hail, rain and snow, wind direction WNW, wind f5-7, temp 3-4°C, visibility moderate-good.
4	25/02/2020	AC	10:30	13:30	3	Cloud cover 8/8, intermittent hazy sunshine, hail and snow showers, wind direction W, wind f4-5, temp 4-3°C and visibility good.

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
5	25/02/2020	AC	15:00	18:00	3	Cloud cover 8/8, intermittent hazy sunshine, hail and snow showers, wind direction W, wind f4-5, temp 4-3°C and visibility good.
5	25/02/2020	JC	10:30	13:30	3	Cloud cover 7/8, heavy intermittent hail, rain and snow, wind direction WNW, wind f5-7, temp 3-4°C, visibility moderate-good.
6	27/02/2020	AC	11:00	14:00	3	Cloud cover 6/8, intermittent hazy sunshine, hail showers, wind direction W, wind f3-4, temp 7-5°C and visibility good.
6	27/02/2020	AC	14:15	17:15	3	Cloud cover 6/8, intermittent hazy sunshine, hail showers, wind direction W, wind f3-4, temp 6-7°C and visibility good.

March 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	20/04/2020	JM	09:00	12:00	3	A fine day with a sunny morning, wind direction E, wind f3-5, temp 7-14°C and visibility good.
1	22/04/2020	JM	12:30	15:30	3	A fine day with sunny clear blue skies, wind direction E, wind f1-3, temp 10-12°C and visibility good.
2	20/04/2020	JM	12:30	15:30	3	A fine dry sunny day, wind direction E, wind f3-5, temp 7-14°C and visibility good.
2	22/04/2020	JM	09:00	12:00	3	A fine dry cool day with sunny clear skies, wind direction E, wind f1-3, temp 10-14°C and visibility good.
3	24/04/2020	JM	09:00	15:00	6	A dry day with good sunny spells, wind direction NE-E shifting to N, wind f1-2, temp 10-11°C and visibility good.
4	20/04/2020	AC	09:00	12:00	3	Cloud cover 4/8, sunshine, wind direction SE, wind f4-5, temp 9-14°C and visibility good.
4	22/04/2020	AC	12:30	15:30	3	Cloud cover 7/8, hazy sunshine, wind direction E-NE, wind f3-4, temp 14-16°C and visibility good.
5	20/04/2020	AC	12:30	15:30	3	Cloud cover 5/8, sunshine, wind direction SE, wind f4-5, temp 14-16°C and visibility good.
5	22/04/2020	AC	09:00	12:00	3	Cloud cover 6/8, hazy sunshine, wind direction E, wind f3-4, temp 9-14°C and visibility good.

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
6	24/04/2020	AC	09:05	12:05	3	Cloud cover 7/8, hazy sunshine, wind direction E, wind f2-3 and f3-4 after 11:00, temp 10-16°C and visibility good.
6	24/04/2020	AC	12:25	15:25	3	Cloud cover 7/8, hazy sunshine, wind direction NE, wind f3-4, temp 16-18°C and visibility good.

Breeding 2020

April 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	27/04/2020	JNM	12.15	15.15	3	A mainly dry day with good sunny spells and some showers, Wind direction north, wind F1-3, temp 10oC, visibility good
1	29/04/2020	JNM	12.15	15.15	3	A very wet day, Wind direction Southwest, wind F3-4, temp 7oC, visibility poor
2	27/04/2020	JNM	12.15	15.15	3	A mainly dry day with some sunny spells and some showers, wind force 1-3, temp 10oC-12oC, visibility good
2	29/04/2020	JNM	9.00	12.00	3	A very wet morning and day, wind direction southwest, wind F3-4, temp 7oC, visibility poor
3	1/05/2020	AC	9.05	12.05	3	Cloud cover 8/8, Rain showers, intermittent sunshine, wind direction northwest, temp 8oC-9oC, visibility good
3	1/05/2020	AC	12.20	15.20	3	Cloud cover 7/8 , intermittent sunshine ,wind direction northwest, wind F3-4, temp 9-10oC, visibility good
4	27/04/2020	AC	9.00	12.00	3	Cloud cover 8/8, intermittent sunshine, wind direction north, wind F3-4, temp 10-12oC, visibility good
4	29/04/2020	AC	12.25	15.25	3	Cloud cover 8/8, continued to rain up to 14.00, wind direction southeast, wind F4-5 and F1-2 at 14.00
5	27/04/2020	AC	12.30	15.30	3	Cloud cover 8/8, intermittent sunshine, wind direction north, wind F3-4, temp 12oC-13oC, visibility good
5	29/04/2020	AC	8.55	11.55	3	Cloud cover 8/8, continuous heavy rain, wind direction southeast, wind F4-5, temp 7-8oC, visibility moderate-poor

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
6	01/05/2020	JNM	9.00	15.00	6	A mixed morning of sunshine and showers, some heavy showers with sleet, wind direction north, wind F2-5, temp 6oC, visibility ok

May 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	13/05/2020	AC	8.30	11.30	3	Cloud cover 7/8, Rain showers, intermittent sunshine, wind direction northeast, wind F4-5, temp 7-9oC, visibility good
1	18/05/2020	AC	12.20	15.20	3	Cloud cover 8/8, rain showers, wind direction south, wind F4-5, temp 14oC-15oC, visibility good
2	13/05/2020	AC	12.00	15.00	3	Cloud cover 7/8, intermittent sunshine, wind direction northeast, wind F4-5, temp 9-10oC, visibility good
2	15/05/2020	AC	8.30	11.30	3	Cloud cover 7/8, intermittent sunshine, wind direction northwest, wind F3-4, temp 8-11oC, visibility good
3	15/05/2020	JNM	08.30	11.30	3	A dry morning with some sunshine and light showers, wind direction east-northeast, wind F2-3, temp 8-11oC, visibility good
3	18/05/2020	JNM	12.30	15.30	3	A damp wet day with some misty rain, wind direction southwest, wind F2-3, temp 12-14oC, visibility ok
4	13/05/2020	JNM	8.30	11.30	3	A bright morning with the odd shower, wind direction north-northeast, wind F2-4, temp 8oC-12oC, visibility good
4	15/05/2020	JNM	11.50	14.50	3	A dry day with some sunshine and light showers, wind direction east-northeast, wind F2-3, temp 8oC-11oC, visibility good
5	13/05/2020	JNM	11.45	14.45	3	A bright day with the odd shower, wind direction north-northeast, wind F2-4, temp 8oC-12oC, visibility good
5	18/05/2020	JNM	9.00	12.00	3	A damp wet morning with misty rain, wind direction southwest, wind F2-3, temp 12oC-14oC, visibility ok
6	18/05/2020	AC	12.00	15.00	3	Cloud cover 7/8, light rain showers, intermittent sunshine, wind direction northwest, wind F3-4, temp 11oC-13oC, visibility good
6	15/05/2020	AC	8.40	11.40	3	Cloud cover 8/8, continuous rain, wind direction southwest, wind F3-4, temp 12oC-13oC, visibility moderate

June 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	3/06/2020	JNM	8.45	11.45	3	A dry cool morning with sunny periods and the odd light shower, wind direction north-northeast, wind F4-6, temp cool 14oC, visibility good
1	5/06/2020	JNM	12.15	15.15	3	A bright sunny day with the odd scattered shower, wind direction north-northwest, wind F 3-4, temp cool 11oC-12oC, visibility good
2	3/06/2020	JNM	12.00	15.00	3	A dry day with some sunny periods and the odd light shower, wind direction north-northeast, wind F4-6, temp 13oC, visibility good
2	9/06/2020	JNM	9.00	12.00	3	A mainly dry morning with the odd light shower with mist later, wind direction south-southwest, wind F1-3 mid-morning, temp 10-12oC, visibility good-fair
3	5/06/2020	AC	8.50	11.50	3	Cloud cover 8/8, rain showers, intermittent sunshine, wind direction northwest, wind F4-5, temp 11oC-12oC, visibility good
3	9/06/2020	AC	12.30	15.30	3	Cloud cover 8/8 with rain showers, wind direction south-southwest, wind F3-4, temp 11oC-12oC, visibility moderate to poor in showers
4	03/06/2020	AC	12.25	15.25	3	Cloud cover 8/8, wind direction northeast, wind F4-5, temp 13oC, visibility good
4	9/06/2020	AC	8.50	11.50	3	Cloud cover 8/8, rain, mist from 10.30, wind direction south-southwest, wind F3-4, temp 11oC-12oC, visibility good to poor from 10.30
5	3/06/2020	AC	8.50	11.50	3	Cloud cover 8/8, intermittent sunshine, wind direction north, wind F4-5, temp 11oC-13oC, visibility good
5	5/06/2020	AC	12.25	15.25	3	Cloud cover 8/8, heavy rain showers, intermittent sunshine, wind direction northwest, wind F4-6, temp 12oC-13oC, visibility good-poor in showers
6	5/06/2020	JNM	8.45	11.45	3	A bright sunny morning with the odd light shower, wind direction north-northwest, wind F3-4, temp 11-12oC, visibility good
6	9/06/2020	JNM	12.45	15.45	3	A mainly dry day with the odd shower, wind direction south-southwest, wind F1-3, temp 10oC-12oC, visibility good

July 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	01/07/2020	AC	8.40	11.40	3	Cloud cover 8/8, misty and heavy rain, wind direction west, wind F2-3, temp 12oC-13oC, visibility poor
1	15/07/2020	JNM	12.30	15.30	3	A misty wet day, wind direction northwest, wind F1-4, temp 15oC-16oC, visibility ok
2	02/07/2020	AC	8.30	11.30	3	Cloud cover 8/8, wind direction north-northwest, wind F2-3, temp 11oC-13oC, visibility good
2	02/07/2020	AC	12.00	15.00	3	Cloud cover 7/8, intermittent hazy sunshine, wind direction northwest, wind F3-4, west F3-4 from 13.20, temp 14oC-16oC, visibility good
3	10/07/2020	JNM	9.00	12.00	3	A dry sunny day, wind direction north-northwest, wind F1-5, temp 15oC, visibility good
3	13/07/2020	JNM	12.30	15.30	3	Misty damp wet day, wind direction west-northwest, wind F1-4, temp 14oC, visibility poor-ok
4	08/07/2020	JNM	9.00	12.00	3	A dry morning with low cloud cover, wind direction south, wind F2-4, temp 15oC, visibility good
4	10/07/2020	JNM	12.30	15.30	3	A fine dry day with some sunny spells, wind direction north-northwest, wind F1-5, temp 15oC, visibility good
5	08/07/2020	JNM	12.30	15.30	3	Low cloud cover but remaining dry for the day, light showers, wind direction south, wind F2-4, temp 15oC, visibility good
5	13/07/2020	JNM	9.00	12.00	3	A misty damp drizzly morning, the odd sunny period, wind direction west-northwest, wind F1-4, temp 14oC, visibility poor-ok
6	01/07/2020	AC	12.15	15.15	3	Cloud cover 8/8, misty and rain, wind direction northwest, wind F2-3, temp 13oC-14oC, visibility poor
6	15/07/2020	JNM	9.00	12.00	3	A misty wet morning, wind direction northwest, wind F1-4, temp 12oC-14oC, visibility ok

August 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	14/08/2020	PC	9.00	12.00	3	Dry, sunny and cloudy morning, wind direction northeast, wind F2-3, temp 16oC, visibility ok
1	14/08/2020	JNM	12.30	15.30	3	A dry warm sunny day, temp 17oC-20oc, visibility good
2	14/08/2020	JNM	9.00	12.00	3	A dry warm sunny day, wind direction north-northwest, wind F1-3, temp 17oC-20oC, visibility good
2	14/08/2020	PC	12.30	15.30	3	Dry and sunny, wind direction northeast, wind F 2-3 and wind direction north F4 in evening, temp 24oC, visibility ok
3	19/08/2020	PC	9.30	12.30	3	Dry, dull and overcast morning, wind direction northeast, wind F2-3, temp 15oC, visibility ok
3	19/08/2020	PC	13.00	16.00	3	Dull, wind picked up in evening, light showers in evening, wind direction northeast, wind F3-4, temp 15oC, visibility ok
4	19/08/2020	JNM	12.45	15.45	3	A dull day with low cloud cover, wind direction north-northeast, wind F1-3, temp 16oC, visibility ok
4	20/08/2020	PC	8.30	11.30	3	Wet and windy, showers all day, wind direction south, wind F4-5, temp 14oC, visibility ok
5	19/08/2020	JNM	9.30	12.30	3	A dull morning with low cloud cover, wind direction north-northeast, wind F1-3, temp 16oC, visibility ok
5	20/08/2020	PC	12.30	15.30	3	Dull, wet and windy, sporadic showers, wind direction south, wind F3-4, temp 16oC, visibility ok
6	17/08/2020	JNM	9.30	15.30	6	A dull day with low cloud cover and light showers of rain, wind direction east, wind F1-2, temp 17oC, visibility ok

September 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	08/09/2020	JNM	12.30	15.30	3	A damp drizzly wet warm day, wind direction west-southwest, wind F 4-5, temp 17oC-18oC, visibility ok
1	14/09/2020	JNM	9.00	12.00	3	A dry day with some sunny periods, wind direction south-southeast, wind F1-3, temp 15oC, visibility good
2	08/09/2020	JNM	9.00	12.00	3	A damp drizzly wet warm morning, wind direction west-southwest, wind F4-5, temp 17oC-18oC, visibility poor to ok
2	11/09/2020	JNM	12.30	15.30	3	A wet damp day, wind direction west-southwest, wind F2-5, temp 11oC-13oC, visibility ok
3	14/09/2020	PC	12.45	15.45	3	Dry dull and cloudy, slack winds, wind direction southwest, wind F1-2, temp 17oC, visibility ok
3	16/09/2020	PC	9.00	12.00	3	Dry and dull, low cloud cover, slack winds, wind direction southeast, wind F1, visibility poor
4	11/09/2020	PC	12.30	15.30	3	Sunny and cloudy, sporadic showers, wind direction southwest, wind F3-4, F4-5 in evening, temp 14oC, visibility ok
4	14/09/2020	PC	9.15	12.15	3	Dry, dull and cloudy, slack winds, couple of showers mid-day, wind direction southwest, wind F1, temp 15oC, visibility ok
5	11/09/2020	PC	9.00	12.00	3	Dull morning with sporadic showers, cloudy, wind direction southwest, wind F2-3, temp 12oC, visibility ok
5	16/09/2020	PC	12.30	15.30	3	Dry, dull and low cloud cover, slack winds, wind direction southeast, wind F1, temp 21oC, visibility ok
6	11/09/2020	JNM	9.00	12.00	3	A very wet damp morning, wind direction west-southwest, wind F2-5, temp 11oC-15oC, visibility ok
6	14/09/2020	JNM	12.30	15.30	3	A dry day with some sunny periods, wind direction south-southeast, wind F1-3, temp 15oC, visibility good

Winter 2020/21

October 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	12/10/2020	AC	8.45	11.45	3	Cloud cover 7/8, intermittent sunshine and rain showers, wind direction northwest, wind F3-5, temp 10oC-12oC, visibility good, periodic showers
1	14/10/2020	AC	12.25	15.25	3	Cloud cover 6/8, 8/8 intermittent sunshine from 14.15, rain showers, wind direction east, wind F3-4, temp 12oC-14oC, visibility good
2	12/10/2020	AC	12.30	15.30	3	Cloud cover 7/8, intermittent sunshine, heavy rain showers, wind direction northwest, wind F4-5, temp 12oC-11oC, visibility good some periodic showers
2	14/10/2020	AC	8.45	11.45	3	Cloud cover 7/8 - 5/8, sunshine, wind direction northeast, wind F2-3 and east wind F3-4 from 10.15, temp 7oC-11oC, visibility good
3	14/10/2020	PC	8.30	11.30	3	Dry, sunny and very little cloud cover, wind direction north, wind F2-3, temp 12oC, visibility good
3	20/10/2020	PC	12.15	15.15	3	Constant rain, dull, low cloud cover and mist, wind direction east-southeast, wind F1-2, temp 12oC, visibility poor
4	12/10/2020	PC	8.45	11.45	3	Dry, sunny with some cloud cover, morning dull with odd showers, wind direction west-west, wind F2-3, temp 10oC, visibility ok
4	14/10/2020	PC	12.00	15.00	3	Dry, sunny, very little cloud cover, Wind direction northwest, wind F1-2, temp 15oC, visibility good
5	12/10/2020	PC	12.15	15.15	3	Dull, cloudy, with odd spells of rain and sunshine, wind direction northwest, wind F3-4, temp 14oC, visibility ok
5	20/10/2020	PC	8.45	11.45	3	Dull, low cloud cover and mist, sporadic showers all day, wind direction east, wind F1-2, temp 10oC, visibility ok
6	20/10/2020	AC	9.30	12.30	3	Cloud cover 8/8, continuous rain, wind direction east, wind F3-4, temp 11oC-12oC, visibility moderate to poor
6	20/10/2020	AC	13.00	16.00	3	Cloud cover 8/8, continuous rain, Wind direction east-northeast, wind F4-5, temp 12oC-13oC, visibility moderate to poor

November 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	16/11/2020	AC	8.45	11.45	3	Cloud cover 8/8, rain showers, wind direction west-southwest, wind F3-4, temp 8oC-9oC, visibility moderate
1	16/11/2020	AC	12.15	15.15	3	Cloud cover 8/8, rain showers, continuous rain from 14.00, wind direction south, wind F4-5, wind direction southwest, wind F 4-5 from 14.00, temp 9oC-12oC, visibility poor
2	18/11/2020	AC	8.45	11.45	3	Cloud cover 7/8 – 8/8, rain showers, intermittent sunshine, wind direction southwest, wind F4-5, gusts F6, temp 7oC-8oC, visibility good
2	18/11/2020	PC	12.00	15.00	3	Cloudy with fairly consistent light showers, wind direction southwest, wind F5-6, temp 6oC, visibility ok
3	12/11/2020	PC	8.40	11.40	3	Dull, cloudy and overcast, occasional light shower, wind direction south, wind F4-6, temp 10oC, visibility ok
3	16/11/2020	PC	12.00	15.00	3	Dull, cloudy and overcast, rain and mist later in the day, wind direction southwest, wind F4-5, temp 8oC, visibility ok
4	11/11/2020	PC	12.00	15.00	3	Short dry spell at start of watch followed by consistent heavy rain, dull and cloudy, wind direction south, wind F4-6, temp 12oC, visibility ok
4	12/11/2020	PC	12.10	15.10	3	Dull. Cloudy and overcast, constant showers of rain, wind direction south, wind F5-7, temp 10oC, visibility ok
5	11/11/2020	PC	8.30	11.30	3	Constant heavy showers, dull and cloudy, wind direction south, wind F3-4, temp 11oC, visibility poor
5	16/11/2020	PC	8.30	11.30	3	Dull, cloudy and overcast, some mist and rain mid-morning, wind direction southwest, wind F3-4, temp 8oC, visibility ok
6	11/11/2020	AC	8.40	11.40	3	Cloud cover 8/8, continuous rain from 10.20, wind direction south, wind F4-5, temp 12oC-11oC, visibility poor to moderate
6	11/11/2020	AC	12.10	15.10	3	Cloud cover 8/8, continuous rain, wind direction south, wind F4-5, wind direction west, wind F3-4 from 13.00, temp 10oC-9oC, visibility poor

December 2020

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	02/12/2020	AC	8.45	11.45	3	Cloud cover 8/8 – 7/8, rain showers, intermittent sunshine, wind direction west, wind F3-4, temp 5oC-7oC, visibility good
1	09/12/2020	AC	12.20	15.20	3	Cloud cover 8/8, continuous rain, heavy at times, wind direction southeast, wind F3-4, temp 6oC, visibility moderate to poor
2	04/12/2020	AC	12.15	15.15	3	Cloud cover 7/8 – 8/8, rain and hail showers, intermittent sunshine, wind direction north, wind F5-7, gusts 8, temp 4-5oC, visibility good, poor in showers
2	09/12/2020	AC	8.50	11.50	3	Cloud cover 8/8, continuous rain, wind direction south, wind F3-4, temp 5oC, visibility moderate to poor
3	04/12/2020	PC	12.00	15.00	3	Very windy with bright sunny spells and occasional rain, wind direction north, wind F6-7, temp 6oC, visibility ok
3	09/12/2020	PC	9.00	12.00	3	Wet, windy, dull, cloudy and foggy, wind direction southeast, wind F4-5, temp 5oC, visibility poor
4	02/12/2020	PC	12.15	15.15	3	Dull, cloudy with long dry spells interrupted by light showers of rain, wind direction southwest, wind F3-5, temp 8oC, visibility good
4	04/12/2020	PC	8.30	11.30	3	Dull, windy, constant rain and hailstorm, some sunny spells, wind direction north, wind F4-5, temp 4oC, visibility poor
5	02/12/2020	PC	8.45	11.45	3	Fairly consistent light showers with odd dry spell, cloudy, wind direction northwest, wind F2-3, temp 5oC, visibility ok
5	09/12/2020	PC	12.30	15.30	3	Wet, windy, dull, cloudy and foggy, wind direction southeast, wind F2-3, temp 6oC, visibility poor
6	02/12/2020	AC	12.15	15.15	3	Hail and rain showers, cloud cover 7/8 – 8/8, intermittent sunshine, wind direction west, wind F4-5, temp 6oC, visibility good
6	04/12/2020	AC	8.40	11.40	3	Hail and rain showers, cloud cover 8/8 – 7/8, intermittent sunshine, wind direction north, wind F 4-5, temp 3-4oC, visibility good, poor in showers

January 2021

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	13/01/2021	AC	12.30	15.30	3	Cloud cover 8/8 , continuous rain and mist, wind direction southwest. Wind F 4-5, temp 10oC, visibility poor
1	18/01/2021	AC	8.50	11.50	3	Cloud cover 8/8, continuous rain and mist from 10.00, wind direction south, wind F1-2, temp 2-6oC, visibility good to poor at 10.00
2	11/01/2021	AC	12.20	15.20	3	Cloud cover 8/8, rain and mist, wind direction southwest, wind F4-5, gusting 6-7, temp 9oC-8oC, visibility poor
2	13/01/2021	AC	8.55	11.55	3	Cloud cover 8/8, continuous rain and mist, wind direction southwest, wind F4-5, temp 9-10oC, visibility poor
3	13/01/2021	PC	12.30	15.30	3	Consistent light rain, fog and mist, wind direction southwest, wind F3-5, temp 10oC, visibility poor
3	18/01/2021	PC	9.00	12.00	3	Dry, dull and cloudy with some light rain and mist after 10am, wind direction southeast, wind F2, temp 4oC, visibility ok
4	11/01/2021	PC	8.40	11.40	3	Cloudy, wet, misty and windy, wind direction west-southwest, wind F5-7, temp 9oC, visibility poor
4	18/01/2021	PC	12.30	15.30	3	Dull and cloudy, mist and light rain and foggy in evening, wind direction southeast, wind F2, temp 6oC, visibility poor
5	11/01/2021	PC	12.10	15.10	3	Wet, windy, dull, misty and cloudy, wind direction west, wind F5-6, temp 9oC, visibility poor
5	13/01/2021	PC	9.00	12.00	3	Wet, windy, dull with fog and mist, wind direction southwest, wind F4-5, temp 10oC, visibility very poor
6	11/01/2021	AC	8.50	11.50	3	Cloud cover 8/8, continuous rain and mist, wind direction southwest, wind F4-5, temp 7oC-9oC, visibility poor
6	18/01/2021	AC	12.20	15.20	3	Cloud cover 8/8, continuous rain and mist at 14.00, wind direction south, wind F1-2, temp 7oC-6oC, visibility poor to moderate

February 2021

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	08/02/2021	AC	12.30	15.30	3	Cloud cover 8/8, intermittent sunshine, high chill facto 7oC, wind direction east, wind F4-5, temp 2oC, visibility good
1	09/02/2021	AC	9.00	12.00	3	Cloud cover 6/8, chill factor 7oC, intermittent sunshine, wind direction east, wind F4-5, temp -1oC-1oC, visibility good
2	08/02/2021	AC	9.00	12.00	3	Cloud cover 8/8, very cold, intermittent sunshine from 10.50, wind direction east, wind F4-5, temp 0-2oC, visibility good
2	17/02/2021	AC	12.15	15.15	3	Cloud cover 7/8 – 8/8, rain and hail showers, intermittent sunshine, wind direction southwest, wind F5-7, temp 6-7oC, visibility good-moderate in showers
3	08/02/2021	PC	9.00	12.00	3	Dry, cloudy but very cold, wind direction east, wind F4, temp 1oC, visibility good
3	09/02/2021	PC	12.30	15.30	3	Dry, sunny and cool, wind direction east, wind F3-4, temp 6oC, visibility good
4	08/02/2021	PC	12.30	15.30	3	Dry, cloudy and very cold, wind direction east, wind F4-5, temp 4oC, visibility good
4	17/02/2021	PC	8.45	11.45	3	Dry, sunny with some cloud cover, sporadic showers of rain, wind direction west, wind F3-4, temp 6oC, visibility good
5	09/02/2021	PC	9.00	12.00	3	Dry, sunny and cool, wind direction east, wind F3, temp 0oC, visibility good
5	17/02/2021	PC	12.15	15.15	3	Mostly dry and sunny with some spells of heavy rain, wind direction west, wind F4-5, temp 8oC, visibility good
6	09/02/2021	AC	12.30	15.30	3	Cloud cover 6/8, chill factor -3oC and sunshine, wind direction east, wind F4-5, temp 2oC, visibility good
6	17/02/2021	AC	8.45	11.45	3	Cloud cover 8/8, hail showers, hazy intermittent sunshine, wind direction southwest, wind F5-6, temp 5oC-6oC, visibility good-moderate in showers

March 2021

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	15/03/2021	AC	8.30	11.30	3	Cloud cover 8/8, mist and rain, wind direction west, wind F3-4, temp 9oC-11oC, visibility moderate to poor in mist
1	19/03/2021	AC	13.00	16.00	3	Cloud cover 2/8, intermittent sunshine, wind direction north, wind F 4-5, temp 11oC-9oC, visibility good
2	15/03/2021	AC	12.00	15.00	3	Cloud cover 8/8, continuous mist and rain, wind direction west, wind F3-4, temp 11oC-12oC, visibility poor
2	16/03/2021	AC	8.30	11.30	3	Cloud cover 2/8, sunshine, wind direction northwest, wind F 3-4, wind direction north, wind F3-4 from 10.00, temp 7oC-11oC, visibility good
3	16/03/2021	PC	8.30	11.30	3	Dry and sunny, wind direction southwest, wind F1-2, temp 10oC, visibility good
3	19/03/2021	PC	13.00	16.00	3	Dry, foggy and dull, wind direction northeast, wind F2-3, temp 13oC, visibility ok
4	15/03/2021	PC	12.00	15.00	3	Dull, cloudy, foggy and some light drizzle, wind direction southwest, wind F2, temp 11oC, visibility poor
4	19/03/2021	PC	9.30	12.30	3	Dry, dull and cloudy, wind direction northeast, wind F2-3, temp 8oC, visibility ok
5	15/03/2021	PC	8.30	11.30	3	Dry, dull, cloudy and foggy, wind direction southwest, wind F2, temp 10oC, visibility poor
5	16/03/2021	PC	12.00	15.00	3	Dry and sunny, wind direction northeast, wind F1-2, temp 15oC, visibility good
6	16/03/2021	AC	12.00	15.00	3	Cloud cover 2/8, continuous sunshine, wind direction north, wind F3-4, temp 11oC-12oC, visibility good
6	19/03/2021	AC	9.15	12.15	3	Cloud cover 5/8, misty, continuous hazy sunshine, wind direction northeast, wind F3-4, temp 8oC-9oC, visibility poor at times

Breeding 2021**April 2021**

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	08/04/21	AC	14.00	17.00	3	Cloud cover 8/8 with rain showers, wind direction west, wind F4-6, temp 7oC-8oC, and visibility good but poor in showers.
1	12/04/21	AC	17.00	20.00	3	Cloud cover 8/8 with intermittent sunshine, hail and rain showers, and wind direction west, wind F4-5, temp 8oC-6oC, and visibility good.
2	12/04/21	AC	13.30	16.30	3	Cloud cover 8/8 with intermittent sunshine, hail and rain showers, and wind direction west, wind F4-5, temp 8oC-9oC, and visibility good.
2	13/04/21	AC	17.00	20.00	3	Cloud cover 7/8 – 6/8 with intermittent sunshine, wind direction north, wind F3-4 and F2-3 from 19.00, temp 10oC – 8oC, and visibility good.
3	12/04/21	PC	17.00	20.00	3	Cloudy and dull with consistent showers of rain, wind direction west, wind F2-3, temp 12oC, and visibility good.
3	13/04/21	PC	13.30	16.30	3	Cloudy with consistent light rain and spells of sunshine, wind direction northwest, wind F1, temp 9oC, and visibility good.
4	08/04/21	PC	14.00	17.00	3	Dull and cloudy with consistent light rain, wind direction southwest, wind F5-6, temp 9oC, and visibility good.
4	13/04/21	PC	17.00	20.00	3	Dry and sunny with 70% cloud cover, wind direction north, wind F1-2, temp 15oC, and visibility good.
5	08/04/21	PC	17.30	20.30	3	Dull and wet with 100% cloud cover, sporadic rain showers at times, wind direction southwest, wind F4-6, temp 11oC, and visibility ok.
5	12/04/21	PC	13.30	16.30	3	Dry, cloudy and sunny with the odd light shower of rain, wind direction north-northwest, wind F1, temp 9oC, and visibility good.
6	08/04/21	AC	17.30	20.30	3	Cloud cover 8/8 with rain showers, wind direction west, wind F4-5 and from 18.45 wind direction changed to northwest, wind F3-4, temp 8Oc – 6oC, and visibility moderate to poor.
6	13/04/21	AC	13.30	16.30	3	Cloud cover 8/8 – 7/8 with intermittent sunshine and rain showers, wind direction northwest, wind F3-4, and from 16.00 wind direction changed to north, wind F3-4, temp 11Oc – 10oC, and visibility good.

May 2021

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	10/05/21	AC	07.00	10.00	3	Intermittent sunshine with rain showers, cloud cover 8/8, wind direction south, wind F3-4, temp 9oC – 11oC, and visibility good.
1	12/05/21	AC	12.20	15.20	3	Cloud cover 4/8 – 6/8, hazy sunshine, wind direction east, wind F2-3 and northeast f3-4, temp 13oC – 14oC, and visibility good.
2	12/05/21	AC	07.00	10.00	3	Cloud cover 2/8 with continuous sunshine, wind direction east, wind F2-3, temp 4oC – 11oC, and visibility good.
2	17/05/21	AC	10.30	13.30	3	Rain showers with intermittent sunshine, cloud cover 8/8, wind direction west, wind F3-4, temp 11oC – 12oC, and visibility good.
3	12/05/21	PC	10.00	13.00	3	Dry, sunny and cloudy, wind direction west, and wind F1-3, temp 12oC, and visibility good.
3	19/05/21	PC	06.30	09.30	3	Dry and sunny, wind direction southwest, wind F1-2, temp 4oC, and visibility good.
4	10/05/21	PC	06.45	09.45	3	Dry and sunny with 60% cloud cover, wind direction south, wind F1-2, temp 9oC, and visibility good.
4	19/05/21	PC	10.00	13.00	3	Dull with 90% cloud cover and light rain, wind direction southwest, wind F2-3, temp 12oC, and visibility good.
5	10/05/21	PC	10.15	13.15	3	Mostly dry with sporadic rain and 100% cloud cover, wind direction south, wind F2-4, temp 10oC, and visibility good.
5	17/05/21	PC	06.30	09.30	3	In the morning dry and sunny but light rain from 09.00 to 09.30, wind direction west, wind F1-2, temp 7oC, and visibility good.
6	10/05/21	AC	10.30	13.30	3	Cloud cover 8/8 with intermittent sunshine and rain showers, wind direction south, wind F4-5 and from 12.30 wind direction southwest F4-5, temp 12oC – 13oC, and visibility good.
6	17/05/21	AC	07.00	10.00	3	Cloud cover 6/8 – 8/8, rain showers with continuous rain from 09.00, wind direction west, wind F2-3, temp 8oC – 11oC, and visibility good.

June 2021

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	23/06/21	AC	15.30	18.30	3	Cloud cover 5/8 with intermittent sunshine, wind direction west, wind F3-4, temp 18oC – 17oC, and visibility good.
1	28/06/21	AC	10.35	13.35	3	Cloud cover 8/8 – 6/8, sunshine from 12.00, wind direction north, wind F3-4, temp 13oC – 17oC, and visibility good.
2	02/06/21	AC	15.50	18.50	3	Cloud cover 8/8 with light rain showers, continuous rain from 19.25, wind direction north, wind F2-3 and north-northeast, wind F3-4, temp 13oC – 12oC, and visibility moderate to poor.
2	04/06/21	AC	19.30	22.30	3	Cloud cover 8/8 with continuous rain from 20.00, wind direction south, wind F3-4, temp 13oC -11oC, and visibility good but poor from 20.00.
3	04/06/21	PC	07.30	10.30	3	Dull and wet with 100% cloud cover, consistent light rain and mist, wind direction south, wind F1-2, temp 15oC, and visibility ok.
3	23/06/21	PC	16.00	19.00	3	Dry and sunny, wind direction northwest, wind F3-4 and f4-5 from 18.00 – 19.00 temp 19oC, and visibility good.
4	02/06/21	PC	07.30	10.30	3	Cloud cover 100%, dull and misty with sporadic rain showers, wind direction northeast, wind F1, temp 15oC, and visibility ok.
4	04/06/21	PC	16.00	19.00	3	Dry and dull with 90% cloud cover and light rain from 18.15 to 19.00, wind direction south-southeast, wind F3-5, temp 15oC, and visibility good.
5	02/06/21	PC	16.00	19.00	3	100% cloud cover, dull with some light rain and mist, wind direction northeast, wind F2, temp 12oC, and visibility ok.
5	23/06/21	PC	19.30	22.30	3	Dry and sunny, wind direction northwest, wind F1-2, temp 17oC, and visibility good.
6	02/06/21	AC	19.30	22.20	3	Cloud cover 8/8 with light rain showers, wind direction north-northeast, wind F1-2, temp 12oC – 11oC, and visibility moderate.
6	04/06/21	AC	16.00	19.00	3	Cloud cover 8/8 with rain showers, wind direction south, wind F3-4, temp 13oC, and visibility good.

July 2021

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	02/07/21	AC	07.00	10.00	3	Cloud cover 8/8 with continuous mist, wind direction south, wind F1-2, temp 11oC – 13oC, and visibility moderate.
1	02/07/21	AC	10.30	13.30	3	Cloud cover 8/8, wind direction southeast, wind F1-2, temp 14oC – 17oC, and visibility good.
2	05/07/21	AC	10.30	13.30	3	Cloud cover 8/8 with rain showers, wind direction west, wind F3-4, temp 14oC, and visibility good but poor in showers.
2	07/07/21	AC	07.00	10.00	3	Cloud cover 8/8 with continuous mist, wind direction northwest, wind F3-4, temp 12oC – 13oC, and visibility poor to moderate.
3	05/07/21	PC	07.00	10.00	3	Wet and misty with some cloud, wind direction west, wind F2-3, temp 13oC, and visibility ok.
3	07/07/21	PC	10.30	13.30	3	Dry, dull and overcast with some light showers from 12.45, wind direction northwest, wind F1-2, temp 17oC, and visibility good.
4	02/07/21	PC	07.00	10.00	3	100% cloud cover, dull and overcast with drizzle and some fog, wind direction southeast, wind F1-2, temp 12oC, and visibility ok.
4	05/07/21	PC	10.30	13.30	3	100% cloud cover, dull and overcast with consistent light rain all day, wind direction west, wind F2-3, temp 13oC, and visibility ok.
5	02/07/21	PC	10.30	13.30	3	100% cloud cover, overcast and dull with slack south-easterly winds, wind F1, temp 13oC, and visibility good.
5	07/07/21	PC	07.00	10.00	3	100% cloud cover, mist and fog with continuous light rain, wind direction northwest, wind F2-3, temp 13oC, and visibility very poor to poor from 09.25.
6	05/07/21	AC	07.00	10.00	3	Cloud cover 8/8 with rain showers, wind direction west-southwest, wind F2-3, temp 12oC – 14oC, and visibility good.
6	07/07/21	AC	10.30	13.30	3	Cloud cover 8/8, mist and light rain showers, wind direction northwest, wind F3-4, temp 14oC – 16oC, and visibility good to moderate.

August 2021

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	11/08/21	AC	12.00	15.00	3	Cloud cover 7/8 with intermittent sunshine, wind direction southwest, wind F4-5, temp 16oC, and visibility good.
1	11/08/21	AC	15.30	18.30	3	Cloud cover 6/8 with intermittent sunshine, wind direction southwest, wind F4-5 and gusting F6 at times, temp 16oC – 15oC, and visibility good.
2	06/08/21	AC	14.50	17.50	3	Cloud cover 8/8 with continuous rain and heavy showers, wind direction northwest, wind F4-5, temp 16oC – 15oC, and visibility good but poor in rain showers.
2	09/08/21	AC	16.45	19.45	3	Cloud cover 8/8 with intermittent sunshine, wind direction northwest, wind F3-5, temp 17oC – 15oC, and visibility good.
3	04/08/21	PC	15.00	18.00	3	Dull, dry and overcast, wind direction southwest, wind F1-2, temp 20oC, and visibility very good.
3	10/08/21	PC	15.00	18.00	3	Dull, overcast and dry, wind direction southwest, wind F2-3, temp 20oC, and visibility good.
4	06/08/21	PC	18.15	21.15	3	Overcast, dull and misty with consistent rain, wind direction northwest, wind F2-3, temp 12oC, and visibility poor.
4	10/08/21	PC	11.30	14.30	3	Dry, dull and overcast, wind direction southwest, wind F1-2, temp 17oC, and visibility good.
5	04/08/21	PC	18.30	21.30	3	Dry, dull and overcast with mist and light rain from 19.15, wind direction southwest, wind F1-3, temp 16oC, and visibility good.
5	06/08/21	PC	14.45	17.45	3	Dull, misty and overcast with consistent rain, wind direction northwest, wind F2-3, temp 17oC, and visibility ok.
6	06/08/21	AC	18.20	21.20	3	Cloud cover 8/8 with continuous heavy rain showers, wind direction northwest, wind F4-5, temp 15oC, and visibility moderate to poor in rain showers.
6	09/08/21	AC	13.15	16.15	3	Cloud cover 5/8 with intermittent sunshine, wind direction north, wind F3-4, temp 18oC – 17oC, and visibility good.

September 2021

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	07/09/21	AC	10.15	13.15	3	Cloud cover 8/8 – 6/8, fog from 11.30 and hazy sunshine from 11.45, wind direction southeast, wind F2-3, temp 17oC-19oC, and visibility moderate to good from 12.00.
1	07/09/21	AC	13.45	16.45	3	Cloud cover 2/8-4/8 with continuous sunshine, wind direction southeast, wind F2-3, from 15.50 wind direction south, wind F2-3, temp 21oC-23oC, and visibility good.
2	01/09/21	AC	14.00	17.00	3	Cloud cover 5/8 with intermittent sunshine, wind direction east, wind F2-4, temp 17oC, and visibility good.
2	03/09/21	AC	10.30	13.30	3	Cloud cover 8/8, wind direction southeast, wind F2-3, temp 14oC-17oC, and visibility good.
3	02/09/21	PC	08.30	11.30	3	Dry, overcast and sunny, wind direction southeast, wind F1-2, temp 14oC, and visibility good.
3	03/09/21	PC	11.30	14.30	3	Dry, bright and overcast, wind direction southeast, wind F1, temp 16oC, and visibility good.
4	03/09/21	PC	08.00	11.00	3	Dry, dull and overcast, wind direction southeast, wind F2, temp 14oC, and visibility good.
4	06/09/21	PC	12.00	15.00	3	Overcast with light rain mist and fog, wind direction south, wind F2-4, temp 17oC, and visibility good.
5	02/09/21	PC	12.00	15.00	3	Dry, dull and overcast, wind direction southeast, wind F1, temp 18oC, and visibility good.
5	06/09/21	PC	08.30	11.30	3	100% cloud cover, dull with light rain, wind direction south, wind F2-3, temp 16oC, and visibility ok.
6	01/09/21	AC	10.30	13.30	3	Cloud cover 8/8, wind direction east, wind F2-4, temp 14oC – 17oC, and visibility good.
6	03/09/21	AC	14.00	17.00	3	Cloud cover 8/8, wind direction southeast, wind F2-3, from 15.15, wind F1-2, temp 17oC-16oC, and visibility good.

Winter 2021/22

October 2021

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	06.10.21	PC	08.15	11.15	3	A dull, wet, misty, cloudy morning with heavy rain all day and Southerly winds F2-3. Temperature 9°C with moderate visibility.
1	06.10.21	PC	11.45	14.45	3	A dull, wet, misty, cloudy day with heavy rain all day and Southerly winds F2-3. Temperature 13°C with poor visibility.
2	04.10.21	SC	12.30	15.30	3	A mostly cloudy day, 7/8, with some sunny spells and heavy prolonged showers. Winds South/South-westerly F3-4, temperature 13°C and visibility good to moderate.
2	06.10.21	PC	11.45	14.45	3	A dull day with full cloud cover, heavy rain, and Southerly winds F3-5. Temperature 15°C with poor visibility.
3	06.10.21	SC	13.00	14.00	3	A cloudy day with very heavy rain, fog and mist from 15.00 and strong South/South-east to South/South-west winds F3-7. Temperature 11-12°C with poor visibility.
3	07.10.21	SC	08.00	11.00	3	A very cloudy day with heavy rain and South to South/South-westerly winds F3-6. Mist and fog clearing from 10.00 to 11.00. Temperature 16°C with very poor to moderate visibility.
4	07.10.21	SC	12.00	15.00	3	A bright to overcast day with cloud cover 7/8 to 8/8 and heavy persistent rain. Winds South/South-westerly to Southerly F4-6, temperature 17-16°C with poor to good visibility.
4	04.10.21	PC	08.30	11.30	3	A dry, dull day with light sporadic rain and Westerly winds F2-3. Temperature 8°C with good visibility.
5	06.10.21	SC	09.30	12.30	3	A very cloudy day ,8/8, with heavy rain and a strong South/South-easterly winds F3-6. Temperature 11°C with poor visibility.
5	04.10.21	PC	12.00	15.00	3	A dull, overcast day with light sporadic rain turning heavy after 14.00. Temperature 11°C with good visibility.
6	04.10.21	SC	16.00	19.00	3	A mostly cloudy day with continuous light rain and South-westerly winds F1-2. Temperature 12-10°C with good to poor visibility.
6	07.10.21	PC	08.15	11.15	3	A dull, wet, 100% cloudy day with Southerly winds F3-4. Temperature 16°C with poor visibility.

November 2021

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	25.11.21	SC	08.50	11.50	3	A mostly cloudy morning, 7/8, at the start giving way to prolonged sunny spells. Winds North-North-westerly F1-3, temperature 6-7°C with good visibility.
1	25.11.21	SC	12.20	15.20	3	A mostly cloudy but bright day with the odd misty shower and North-west to West/North-westerly winds F1-4. Temperature 7°C with good visibility.
2	24.11.21	SC	09.00	12.00	3	A cloudy but bright morning with the occasional, prolonged, heavy squall and North-westerly winds F1-3. Temperature 7°C with good visibility.
2	24.11.21	SC	13.30	16.30	3	A cloudy day with some sunshine and prolonged, heavy squalls. Winds North/ North-westerly to Northerly F4-5. Temperature 7°C with good visibility.
3	24.11.21	PC	11.30	14.30	3	A dull, overcast day with sporadic light rain and South-westerly winds F2-3. Temperature 8°C with good visibility.
3	22.11.21	PC	10.00	13.00	3	A dry, sunny day with some cloud and a little fog. Winds Northerly F1, temperature 6°C and visibility good.
4	19.11.21	PC	07.50	10.50	3	A very cloudy morning with mist, fog and consistent light rain. Winds South-westerly F4-5, temperature 12°C and visibility moderate to poor.
4	22.11.21	PC	13.30	16.30	3	A dry sunny afternoon with 40% cloud cover and a Northerly breeze F1. Temperature 7°C with good visibility.
5	19.11.21	PC	11.10	14.10	3	A dull, misty day with 100% cloud cover, consistent light rain and a South-westerly winds F4-5. Temperature 16°C with poor visibility.
5	24.11.21	PC	08.00	11.00	3	A cloudy morning with heavy rain and some hail from 09.00. Winds South-westerly F2-4, temperature 5°C and visibility good.
6	22.11.21	SC	11.00	14.00	3	A day of intermittent sunshine and cloud with a slight North-North-westerly breeze F0-1. Temperature 9°C and good visibility.
6	22.11.21	SC	14.30	17.30	3	A dry day with intermittent sunshine and cloud and a slight North-North-westerly to Northerly breeze F0-1. Temperature 9-7°C and good visibility.

December 2021

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	20.12.21	PC	08.30	11.30	3	A dry, dull morning with heavy fog and a light Easterly winds F1-2. Temperature 3°C with very poor visibility.
1	20.12.21	PC	12.00	15.00	3	A dry, dull day with 100% cloud cover, fog and an Easterly wind F2. Temperature 9°C with poor visibility.
2	10.12.21	PC	11.45	14.45	3	A dull, very cloudy day with consistent light rain and South-westerly winds F3-4. Temperature 5°C with moderate visibility.
2	14.12.21	PC	08.20	11.20	3	A dull, dry, cloudy morning with strong South-westerly winds F4-6. Temperature 8°C with moderate visibility.
3	15.12.21	SC	13.30	16.30	3	Heavy low cloud with continuous rain and mist and strong South/South-westerly to Southerly winds F3-6. Temperature 11°C with poor visibility.
3	16.12.21	SC	08.35	11.35	3	An overcast, windy morning with occasional sunshine and South/South-westerly winds F4-6. Temperature 10-11°C with good visibility.
4	14.12.21	SC	13.30	16.30	3	A very cloudy day with continuous heavy, misty rain and strong South/South-westerly winds F4-7. Temperature 10°C with poor visibility.
4	15.12.21	SC	10.00	13.00	3	A very cloudy morning with heavy persistent rain and strong South/South-westerly winds F3-6. Temperature 10°C with poor visibility.
5	16.12.21	SC	12.00	15.05	3	A cloudy but bright afternoon with some sunshine and South-South-westerly winds F2-4. Temperature 11°C with good visibility.
5	17.12.21	SC	07.45	10.45	3	A sunny but hazy morning with some cloud and South-easterly winds F2-3. Temperature 4-6°C with moderate visibility.
6	10.12.21	PC	08.15	11.15	3	A dry, sunny morning with some sporadic light rain and North-westerly winds F2-3. Temperature 2°C with good visibility.
6	14.12.21	PC	11.50	14.50	3	Dull and cloudy to start to the with some light rain, mist, and fog later in the VP. Winds South-westerly F3-5, temperature 9°C with moderate to poor visibility.

January 2022

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	31.01.22	SC	11.30	14.30	3	Mostly overcast, Cloud 4/5. Winds F2-4 West northwest. Temperature 8°C with good to moderate visibility.
1	20.12.21	SC	15.00	18.00	3	Overcast with strong winds and some rain. Cloud 8/8. Winds F4-6 Westerly. Temperature 8°C with good to moderate visibility.
2	26.01.22	SC	09.00	12.00	3	A misty foggy, rainy day with strong winds. Cloud cover 8/8. South winds F4-7. Temperature 8-10°C with poor visibility.
2	18.01.22	SC	14.30	17.30	3	An overcast day with heavy showers. Cloud cover 8/8. South-westerly winds F3-6. Temperature 9°C with moderate visibility.
3	18.01.22	PC	11.45	14.45	3	Dull, cloudy with light rain. Southerly winds F7-8. Temperature 8°C with moderate visibility.
3	19.01.22	PC	11.00	14.00	3	Dry and sunny. Cloud 6/8. North-westerly winds F4-5. Temperature 7°C with good visibility.
4	18.01.22	PC	08.15	11.15	3	Dull, cloudy with light rain and mist. Southerly winds F4-6. Temperature 7°C with moderate visibility.
4	19.01.22	PC	14.30	17.30	3	Dull and sporadic rain showers. Cloud cover 5/8. North-westerly winds F4-5. Temperature 10°C with good visibility.
5	01.02.22	PC	09.15	12.15	3	A wet, windy and misty morning. Westerly winds F6-7. Temperature 10°C with poor visibility.
5	01.02.22	PC	12.45	15.45	3	A wet, windy and misty afternoon with consistent drizzle. Westerly winds F6-7. Temperature 16°C with poor visibility.
6	18.01.22	SC	11.00	14.00	3	A mostly cloudy day with persistent light rain. Some heavy showers, clearing at 13.30. Cloud cover 8/8. South-southeast winds F3-4. Temperature 7-8°C with moderate visibility.
6	19.01.22	SC	14.35	17.35	3	Dusk watch. Overcast evening with some light rain. Cloud cover 8/8. Winds North-westerly F3-5. Temperature 7°C with good visibility.

February 2022

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	17.02.22	PC	08.20	11.20	3	A dull, cloudy and wet. Cloud cover 8/8. South westerly winds F3-4. Temperature 2°C with very moderate visibility.
1	17.02.22	PC	11.50	14.50	3	Mostly dull, cloudy and heavy rain late in VP survey. Cloud cover 7/8. South westerly winds F2-3. Temperature 8°C with very good to moderated visibility.
2	10.02.22	PC	11.30	14.30	3	A very windy day with sporadic rain (0.1 mm) and hail stones. Cloud cover 3/8. North-westerly winds F6-7. Temperature 7°C with good visibility.
2	11.02.22	PC	08.00	11.00	3	A windy morning with intermittent showers (0.2mm). South winds F4-6. Temperature 5°C with good visibility.
3	16.02.22	SC	07.10	10.10	3	Overcast with strong winds and continuous heavy rain. South-westerly winds F4-9. Temperature 9-12°C with moderate to poor visibility.
3	23.02.22	SC	15.40	18.40	3	Intermittent sunshine and cloud with some heavy wintery squalls. Cloud cover 5/8/. Westerly winds F5-7. Temperature 3°C with good visibility.
4	23.02.22	SC	08.30	11.30	3	An overcast dull morning with heavy prolonged showers and severe gusts. West-south-westerly winds F6-9. Temperature 7-5°C with good-poor visibility.
4	16.02.22	SC	10.00	13.00	3	Storm Dudley, mostly sunny with occasional heavy squall and very strong winds. Cloud cover 7/8 - 2/8. Winds F7-10. Temperature 11°C with good visibility.
5	17.02.22	SC	08.30	11.30	3	Overcast with persistent wintery rain, sleet. Cleared and brightened up from 10.00 but cold. Cloud cover 8/8. Westerly winds F3-4. Temperature 5°C with good visibility.
5	23.02.22	SC	12.00	15.00	3	Some sunny spells with prolonged heavy rain showers and strong winds. Cloud cover 8/8 – 7/8. West-south-west winds F5-8. Temperature 7-5°C with good/poor visibility.
6	10.02.22	PC	08.00	11.00	3	Constant light rain (0.3 mm) with some hail stones. Cloud cover 4/8. North-westerly winds F4. Temperature 5°C with good visibility.
6	10.02.22	PC	11.30	14.30	3	Constant light rain (0.2 mm). Cloud cover 7/8. South winds F6-7. Temperature 7°C with good to moderate visibility.

March 2022

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	23.03.22	SC	09.45	12.45	3	Mostly cloudy but sunny and bright. Cloud cover 7/8. South-south-east winds F3-4. Temperature 13-14°C with good visibility.
1	23.03.22	SC	13.15	16.15	3	A warm sunny afternoon. Cloud cover 4/8. South-south-west wind F3-4. Temperature 15-14°C with good visibility.
2	15.03.22	SC	09.30	12.30	3	Continuous rain, heavy at times with strong winds. Cloud cover 8/8. South-south-westerly winds F4-7. Temperature 6°C with moderate/poor visibility.
2	15.03.22	SC	13.00	16.00	3	Continuous heavy rain with strong winds. South-south-westerly – North-westerly winds F4-7. Temperature 7-6°C with moderate visibility.
3	11.03.22	PC	11.20	14.20	3	Wet (1.0mm) , windy, misty and dull. Cloud cover 8/8. South-easterly winds F3-4. Temperature 8°C with moderate visibility.
3	14.03.22	PC	12.30	15.30	3	Bright, sunny, windy and dry. Cloud cover 2/8. South-westerly winds F4-5. Temperature 9°C with good visibility.
4	08.03.22	PC	11.30	14.30	3	Heavy rain (0.2mm), dull and very windy. Cloud cover 8/8. South-easterly winds F7-9. Temperature 9°C with moderate visibility.
4	11.03.22	PC	07.50	10.50	3	Wet (3.0 mm), windy, misty and dull. Cloud cover 8/8. South-easterly winds F4-5. Temperature 6°C with moderate visibility.
5	08.03.22	PC	08.00	11.00	3	Dull, raining (0.1 mm) and very winy. Cloud cover 8/8. South-easterly winds F7-9. Temperature 4°C with moderate visibility.
5	14.03.22 Dusk watch	PC	16.00	19.00	3	Dusk watch. Dry, bright, sunny and windy. Cloud cover 2/8. South-westerly winds F3-4. Temperature 9°C with good visibility.
6	21.03.22	SC	08.15	11.15	3	Sunshine and blue skies turning into intermittent sunshine and clouds. Cloud cover 3/8 – 6/8. South-easterly winds F3-4. Temperature 13-14°C with good visibility.
6	21.03.22	SC	14.30	17.30	3	Sunshine. Cloud cover 4/8. Winds South-south-easterly F3-5, temperature 14°C with good visibility.

Breeding 2022**April 2022**

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	19.04.22	PC	15.00	18.00	3	Dry, sunny. North westerly winds F1-2. Cloud cover 4/8. Temperature 11°C with good visibility.
1	22.04.22	PC	12.30	15.30	3	Dry, sunny and windy. North easterly winds F3-5. Cloud cover 2/8. Temperature 14°C with good visibility.
2	19.04.22	PC	11.30	14.30	3	Cloudy and sunny. North westerly winds F2-4. Rain 0.1 mm. Cloud cover 5/8. Temperature 10°C with good visibility.
2	22.04.22	PC	16.00	19.00	3	Dry, sunny and windy. North easterly winds F4-6. Cloud cover 4/8. Temperature 14°C with good visibility.
3	21.04.22	SC	15.00	18.00	3	A warm, windy and sunny day. Cloud cover 6/8. Easterly wind F 4-5. Temperature 17°C with good visibility.
3	20.04.22	SC	18.30	21.30	3	Dusk watch. An overcast evening with continuous light rain. South/South-easterly winds F3-5. Cloud cover 8/8. Temperature 10-8°C with very poor to moderate visibility.
4	19.04.22	SC	15.25	18.25	3	Intermittent sunshine and cloudy. Cloud cover 5/8. Winds north-westerly F3. Temperature 12-10°C with good visibility.
4	21.04.22	SC	18.40	21.40	3	Sunshine, warm and windy. Cloud cover 2/8. Winds easterly F 3-6. Temperature 16-12°C with good visibility.
5	20.04.22	SC	15.00	18.00	3	An overcast mild afternoon with light rain from 17.19 to 18.00. Cloud cover 8/8. Winds southerly F 2-4. Temperature 12°C with good visibility.
5	19.04.22	SC	18.30	21.30	3	Intermittent sunshine and cloudy with a cold northerly breeze. Later on, sky cleared, and it was a calm still evening. Cloud cover 5/8 to 0/8. Winds north westerly F 2-1. Temperature 10-6°C with good visibility.
6	12.04.22	PC	12.30	15.30	3	Dry, and cloudy. North westerly winds F1. Cloud cover 5/8. Temperature 13°C with good visibility.
6	12.04.22	PC	16.00	19.00	3	A dull, cloudy day with light rain 0.2 mm. Cloud cover 7/8. North westerly winds F1. Temperature 10°C with poor visibility.

May 2022

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	20.05.22	SC	07.00	10.00	3	Heavy persistent rain until 09.00 then cloudy. Cloud cover 8/8. Winds south-westerly F4-5. Temperature 11-12°C with poor to good visibility.
1	26.05.22	SC	09.30	12.30	3	A mostly cloudy windy day with some mist and some bright spells. Westerly winds F4-6. Temperature 12°C with good visibility.
2	20.05.22	SC	10.30	13.30	3	Mostly cloudy but with some sunny spells and strong winds. Cloud cover 7/8. South-westerly to west-south-west winds F4-6. Temperature 13°C with good visibility.
2	26.05.22	SC	13.00	16.00	3	Intermittent sunshine and cloud to overcast with strong winds. Cloud cover 6/8 to 8/8. Winds westerly F4-6. Temperature 12-11°C with good visibility.
3	18.05.22	SC	12.30	15.30	3	An overcast day with very strong winds until 14.20 with very heavy driving rain until the end of the VP survey. Cloud cover 8/8. South-southeast winds F5-7. Temperature 15-13°C with good to poor visibility.
3	19.05.22	SC	07.30	10.30	3	An overcast dull morning with very strong winds and prolonged showers. Cloud cover 8/8. Winds southerly F4-7. Temperature 11-12°C and visibility good to moderate.
4	17.05.22	SC	10.00	13.00	3	A sunny windy day. Cloud cover 7/8 to 8/8. Winds South F4-6. Temperature 15-14°C and visibility good.
4	18.05.22	SC	08.00	11.00	3	A sunny morning with strong winds. Cloud cover 4/8. Southerly wind F5-7. Temperature 12-14°C with good visibility.
5	17.05.22	SC	13.30	16.30	3	An overcast mild day. Cloud cover 8/8. South winds F4-6. Temperature 15-13°C with good visibility.
5	19.05.22	SC	11.15	14.15	3	An overcast afternoon with strong winds. Cloud cover 7/8. Winds South-south-westerly F4-7. Temperature 13-14°C and visibility good.
6	16.05.22	SC	16.00	19.00	3	A nice sunny evening. Cloud cover 5/8. South-south-westerly wind F3-4. Temperature 17°C and good visibility.
6	31.05.22	SC	06.00	09.00	3	An overcast breezy morning. North westerly winds F2-3. Temperature 9-11°C and good visibility.

June 2022

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	30.06.22	SC	13.00	16.00	3	An overcast mild day until 14.00. Then heavy dense misty rain until 16.00. Cloud cover 8/8. West-south-west to west-north-west wind F3-4. Temperature 9°C with good to poor visibility.
1	30.06.22	SC	16.30	19.30	3	An overcast dull evening to start. Misty rain from 18.00 and brightened up with some sunny spells. Cloud cover 8/8 to 7/8. Westerly winds F3-4. Temperature 14°C with moderate to poor visibility.
2	28.06.22	SC	15.15	18.15	3	A mostly cloudy day with some sunshine and showers with strong winds. Cloud cover 6/8 to 7/8. South-westerly winds F4-6. Temperature 14°C with good visibility.
2	27.06.22	SC	18.30	21.30	3	An overcast evening with continuous heavy driving rain. Cloud cover 8/8. South winds F4-7. Temperature 11-12°C with moderate to poor visibility.
3	24.06.22	SC	11.30	14.30	3	Heavy rain for the duration of the VP survey. Cloud cover 8/8. West-south-westerly winds F2-4. Temperature 14°C with moderate to poor visibility.
3	23.06.22	SC	15.45	18.45	3	An overcast, warm day with intermittent sunshine and cloud. Cloud cover 8/8 to 5/8. South-westerly winds F3-4. Temperature 17°C with good visibility.
4	21.06.22	SC	15.30	18.30	3	A warm overcast day. Cloud cover 8/8. North winds F2-3. Temperature 16-15°C with good visibility.
4	23.06.22	SC	19.15	22.15	3	A warm sunny evening. Cloud cover 6/8. South westerly winds F2-3. Temperature 15-14°C with good visibility.
5	23.06.22	SC	12.15	15.15	3	Mostly cloudy with some sunshine. Cloud cover 7/8 to 6/8. South westerly winds F3-4. Temperature 17-18°C with good visibility.
5	21.06.22	SC	19.00	22.00	3	An overcast warm evening. Cloud cover 8/8. North winds F2-3. Temperature 14-13°C with good visibility.
6	28.06.22	SC	11.45	14.45	3	Mostly cloudy with occasional sunny spells and prolonged heavy showers. Cloud cover 7/8. South-south-south-westerly winds F4-5. Temperature 14-15°C with good to moderate visibility.
6	27.06.22	SC	15.00	18.00	3	An overcast day with continuous rain progressively getting heavier. Cloud cover 8/8. South winds F4-7. Temperature 11°C with moderate visibility.

July 2022

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	27.07.22	SC	09.00	12.00	3	Overcast, calm and warm. Cloud cover 8/8. South-south-east winds F1-2 Temperature 15-16°C with good visibility.
1	26.07.22	SC	15.15	18.15	3	Calm and warm. Cloud 8/8. Winds F3-2 West-north-westerly. Temperature 16°C with good visibility.
2	26.07.22	SC	11.45	14.45	3	An overcast day but bright with some sunny spells. Cloud cover 8/8 – 7/8. North-westerly winds F2. Temperature 16°C with good visibility.
2	25.07.22	SC	18.30	21.30	3	An overcast day but bright with some light misty showers. Cloud cover 8/8. North-north-westerly winds F3-4. Temperature 14-13°C with good visibility.
3	28.07.22	PC	10.00	13.00	3	Dry and sunny. Cloud cover 2/8. South-easterly winds F1. Temperature 15°C with good visibility.
3	29.07.22	SC	09.00	12.00	3	Overcast, dull and hazy morning. Cloud 8/8. South-south easterly winds F2-5. Temperature 16-17°C with moderate visibility.
4	25.07.22	PC	07.30	10.30	3	Dull and dry apart from one shower (0.1 mm). Cloud 8/8. North-westerly winds F2-3. Temperature 13°C with good visibility.
4	28.07.22	PC	13.30	16.30	3	Dry and sunny. Cloud cover 2/8. South-easterly winds F1. Temperature 16°C with good visibility.
5	25.07.22	PC	11.00	14.00	3	Dull and dry apart from one shower (0.1 mm). Cloud 8/8. North-westerly winds F3-4. Temperature 16°C with good visibility.
5	27.07.22	SC	1240	15.40	3	An overcast warm calm day. Cloud cover 8/8. Winds south south-west winds F1-2. Temperature 16°C with good to visibility.
6	25.07.22	SC	15.00	18.00	3	An overcast warm afternoon with misty rain. Cloud cover 8/8. Winds north north-west winds F4-3. Temperature 14.15°C with good to moderate visibility.
6	26.07.22	SC	08.00	11.00	3	Intermittent sunshine and cloud to overcast with misty showers. Cloud cover 5/8 -8/8. Winds west-north-westerly to north west F1-2. Temperature 14-15°C with good to moderate visibility.

August 2022

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	31.08.22	SC	13.15	16.15	3	Warm day with intermittent sunshine and cloud. Cloud cover 5/8. Winds F1-3 ENE. Temp 19C with good visibility.
1	31.08.22	SC	16.45	19.45	3	Warm sunny evening. Cloud 5/8 – 2/8. Winds F1-3 NE-NNE. Temp 18-16C. Visibility good.
2	25.08.22	SC	13.00	16.00	3	Overcast afternoon with continuous moderate rain. Cloud 8/8. Wind F2-4 S-SSE. Temp 13C. Visibility moderate.
2	26.08.22	SC	09.20	12.20	3	Warm sunny morning. Wind F2-3 WNW. Cloud 3/8 – 4/8. Temp 14-15C. Visibility good.
3	17.08.22	PC	09.30	12.30	3	Dry sunny. Cloud 2/8. Wind F1 NW. Temp 15C. Visibility good
3	18.08.22	PC	13.00	16.00	3	Wet windy day. Cloud 8/8. Wind F 3-4 SW. Temp 16C. Visibility poor.
4	18.08.22	PC	09.30	12.30	3	Wet windy day with some mist. Cloud 8/8. Wind SW F3-4. Temp 16C. Visibility poor.
4	15.08.22	PC	13.30	16.30	3	Dull windy day. Cloud 8/8. Wind N F3-4. Temp 15C. Visibility good.
5	15.08.22	PC	10.00	13.00	3	Wet windy and dull. Some fog. Cloud 8/8. Wind N F4-5. Temp 14C. Visibility poor.
5	17.08.22	PC	13.00	16.00	3	Dry sunny day. Cloud 2/8. Wind NW F1. Temp 20C. Visibility good.
6	25.08.22	SC	09.20	12.20	3	Overcast dull damp day, brightening slowly. Rain from 11.34 – 12.20. Cloud 8/8. Wind F3-4 Sw. temp 15C. Visibility good.
6	26.08.22	SC	13.00	16.00	3	Warm sunny afternoon. Cloud 4/8. Wind F2 WNW-W. Temp 16C. Visibility good.

September 2022

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
1	28.09.22	PC	09.20	12.20	3	Wet dull windy day. Cloud 6/8. Wind N F3. Temp 11C. Visibility good
1	28.09.22	PC	12.50	15.50	3	Wet dull windy day. Cloud 6/8. Temp 10C. Visibility good
2	12.09.22	PC	08.00	11.00	3	Dry dull day. Cloud 6/8. Wind SW F2-3. Temp 17C. Visibility good
2	19.09.22	PC	13.30	16.30	3	Dry and dull. Cloud 7/8. Wind SW F1-2. Temp 16C. Visibility good.
3	13.09.22	SC	13.10	16.10	3	Bright sunny day. Cloud 3/9. Wind N F3. Temp 16C. Visibility good.
3	27.09.22	SC	11.00	14.00	3	Heavy continuous rain for duration of VP. Cloud 8/8. Wind NW-NNW F3-4. Temp 10C. Visibility very poor
4	13.09.22	SC	09.10	12.10	3	Overcast to start giving way to intermittent sunshine and cloud. Cloud 8/8 – 6/8. Wind NNE F2-3. Temp 14-16C. Visibility good.
4	14.09.22	SC	14.05	17.05	3	Overcast, cool, balmy day. Cloud 8/8. Wind NNW F3-4. Temp 15C. Visibility good
5	14.09.22	SC	10.05	13.05	3	Overcast cool balmy day. Cloud 8/8/ Wind NW F4. Temp 14C. Visibility good
5	26.09.22	SC	17.00	20.00	3	Overcast with some mist and strong winds. Cloud 8/8. Wind NW F4-6. Temp 12C. Visibility moderate.
6	19.09.22	PC	10.00	13.00	3	Dry sunny. Cloud 6/8. Wind SW F1-2. Temp 15C. Visibility good
6	28.09.22	PC	08.00	11.00	3	Dry sunny. Cloud 6/8. Wind SW F1-2. Temp 11C. Visibility good

Appendix 4

Target and Secondary Species Observations

Hen Harrier

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non- flight	0- 20m	20- 50m	50- 100m	100- 180m	>180m
Hen Harrier winter 2020/2021															
09.02.21	6	Female	Adult	1	2 nd rotation forestry	1	14.46	Hunting	5	-	10	-	-	-	-
Hen Harrier breeding 2022															
18.05.22	4	Female	Adult	1	Bog	1	10.48	Flying/Hunting	1-10	-	70	-	-	-	-
20.05.22	-	Female	Adult	3	Bog, Forestry	1	13.58	Flying	0.5-15	-	14	-	-	-	-
*Incidental	-							Perched	-	420	-	-	-	-	-
17.08.22	5	Unknown	Unknown	2	1st Rotation Forest, Improved Grassland, Bog	1	14.46	Flying	25-35	-	-	47	-	-	-

Merlin

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Merlin winter 2019/2020															
30.10.19	1	Male	Adult	1	Bog, grassland moorland and rough grassland	1	11:35	Flying and hunting	60-70	-	10	15	-	-	
					Bog, grassland moorland, rough grassland and 2 nd rotation forestry				50-20						
27.11.19	1	Male	Adult	2	Bog and scrub	1	09:52	Flying and hunting	2-4	-	120	-	-	-	
28.11.19 *incidental	-	Male	Adult	/	Bush	1	10:00	Perched	-	NA	-	-	-	-	
Merlin breeding 2020															
01.05.20	6	Male	Adult	1	Clear fell, 2 nd rotation forestry	1	12.40	Flying/Hunting	1-	-	60	-	-	-	

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non- flight	0- 20m	20- 50m	50- 100m	100- 180m	>180m
Merlin winter 2020/2021															
12.10.20	1	Female	Adult	1	Bog	1	09.25	Hunting	5	-	12	-	-	-	-
14.10.20	1	Female	Adult	2	Bog	1	13.11	Flying	5	-	3	-	-	-	-
Merlin winter 2021/2022															
25.11.21	1	Female	Adult	1	Bog	1	09.53	Flying/Perched	3-30	660	-	3	-	-	-

Kestrel

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Kestrel winter 2019/2020															
12.12.19	6	Female	Juvenile	1	1 st rotation, 2 nd rotation forestry and clearfell	1	10:48	Hunting and flying	20-40m	-	180	-	-	-	
Kestrel breeding 2020															
03.06.20	4	Female	Adult	1	Forest	1	13.17	Flying	12	-	3	-	-	-	
14.08.20	2	Unknown	Unknown	2	Bog, scrub,1st rotation forestry	1	14.28	Flying/Hunting	40 60	-	40	15	-	-	
11.09.20	4	Female	Adult	3	Scrub, improved grassland	1	12.31	Flying/perching/ hunting	10	-	60	-	-	-	
Kestrel breeding 2021															
12.04.21	3	Unknown	Adult	1	Bog, grassland moorland, 1 st rotation forestry	1	17.51	Flying	40	-	-	90	-	-	-
23.06.21	1	Female	Adult	2	Bog	1	17.20	Flying	25	-	-	40	-	-	-
07.07.21	2	Female	Adult	3	Bog	1	07.10	Flying	25-30	-	-	6	-	-	-

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
06.08.21	4	Unknown	Unknown	4	Bog, rough grassland, improved grassland	1	18.15	Flying, hovering	10	-	16	-	-	-	-
10.08.21	3	Unknown	Unknown	5	Bog, grassland moorland	1	15.13	Hovering, flying	10	-	45	-	-	-	-
11.08.21	1	Female	Adult	6	Bog	1	13.56	Hunting	90	-	-	-	8	-	-
02.09.21	3	Unknown	Unknown	7 9 8	Bog, grassland moorland	1	10.48	Flying	2	-	20	-	-	-	-
03.09.21	4	Unknown	Unknown	10	Bog	1	10:00	Flying	15	-	6	-	-	-	-
06.09.21	5	Female	Adult	11	Improved grassland	1	08.42	Hunting, flying	5	-	10	-	-	-	-
07.09.21	1	Female	Adult	12	Bog	1	12.30	Hunting	90-100	-	-	-	10	-	-
Kestrel winter 2021/2022															
07.10.21	4	Unknown	Unknown	1	River/1 st Rotation Forest /Scrub	1	12.23	Flying	20-30	-	-	7	-	-	-
25.11.21	1	Unknown	Unknown	2	Bog	1	13.21	Flying/Hunting	100 50-20 20-0	-	2	2	28	-	-
31.01.22	1	Female	Adult	3	Bog	1	15.50	Flying	60-50 50-20 20-<1	-	6	4	8	-	-
Kestrel breeding 2022															
22.04.22	2	Unknown	Unknown	1	Bog	1	16.20	Flying/Hunting	18	-	28	-	-	-	-
22.04.22	2	Unknown	Unknown	2	Bog	1	16.31	Flying/Hunting	10-15	-	28	-	-	-	-
25.07.22	6	Unknown	Juvenile	3	2 nd Rotation Forest	1	15.25	Flying	15-16	-	5	-	-	-	-
25.07.22	6	Unknown	Juvenile	4	2 nd Rotation Forest/Thicket	1	16.50	Flying/Perched/On ground/Hunting	12 0 0-20	317 10	136	-	-	-	-

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
									20-50			136			
25.07.22	5	Unknown	Unknown	5	Bog	1	17.09	Flying/Hunting	15	-	7	-	-	-	-
26.07.22	6	Unknown	Unknown	6	2 nd Rotation Forest	3	08.45	Flying/Perched	15-20	154	26	-	-	-	-
26.07.22	6	Unknown	Unknown	7	2 nd Rotation Forest	1	10.29	Flying	5-8	-	3	-	-	-	-
26.07.22	6	Female	Unknown	8	2 nd Rotation Forest	1	10.41	Flying	12-13	-	12	-	-	-	-
26.07.22	2	Unknown	Juvenile	9	Bog	1	13.28	Flying/Hunting/On ground	0 0-20 20-50 50-80	6 74		80	80	-	-
27.07.22	5	Unknown	Unknown	10	Bog	2	13.40	Flying/Being Mobbed/Hunting	10-20 20-50 50-100 100-180 180-200	-	65	108	122	122	122
27.07.22	5	Unknown	Unknown	11	1 st Rotation Forest/River/Improved Grassland	1	13.44	Flying	120	-	-	-	-	15	-
29.07.22	3	Unknown	Juvenile	12	1 st Rotation Forest/Rough Grassland	1	10.05	Flying/Mobbing/ Perched	15 2-20	10 170		-	-	-	-
29.07.22	3	Male	Adult	13	1 st Rotation Forest/Grassland Moorland/Bog/Rough Grassland	1	10.05	Flying/Mobbing/ Hunting	2-20 20-50 50-100 100-150	-	180	140	140	140	-
17.08.22	3	Unknown	Unknown	14	Bog/Rough Grassland	1	09.36	Flying/Hunting	8	-	18	-	-	-	-
17.08.22	5	Unknown	Unknown	15	Improved Grassland	1	14.46	Flying	5	-	12	-	-	-	-
26.08.22	2	Unknown	Unknown	16	Bog/Rough Grassland/River	1	11.21	Flying	1-20 20-50 50-100	-	20	40	20	40	-

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
									100-150						
31.08.22	1	Unknown	Unknown	17	1 st Rotation Forest/Clear fell	1	15.42	Flying/Hunting	<1-20 20-45	-	38	35	-	-	-
14.09.22	4	Unknown	Juvenile	18	1 st Rotation Forest	1	15.00	Flying	12-13	-	16	-	-	-	-
14.09.22	4	Unknown	Juvenile	19	1 st Rotation Forest/River	1	15.05	Flying/Hunting/Perched/On Ground	1-2 0 0-12	914 6	40	-	-	-	-
14.09.22	4	Unknown	Juvenile	20	1 st Rotation Forest/River	1	16.41	Flying/Hunting/Perched	1-11 0-20	270	93	-	-	-	-
14.09.22	4	Unknown	Juvenile	21	1 st Rotation Forest/Bog/River/Scrub	1	17.01	Flying/Hunting	20-50 50-80	-	-	134	134	-	-
19.09.22	2	Unknown	Unknown	23	Bog	1	13.54	Flying/hunting	40-50	-	-	312	-	-	-
26.09.22	5	Male	Juvenile	22	1 st Rotation Forest/Rough Grassland/Improved Grassland	1	18.16	Flying/On Ground/Perched	0 3 0-20	3 12	229	-	-	-	-
28.09.22	1a	Unknown	Unknown	24	Bog	1	11.49	Flying/hunting	10-12	-	41	-	-	-	-
28.09.22	1a	Unknown	Unknown	25	Bog	1	14.07	Flying/hunting	15	-	13	-	-	-	-

Buzzard

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Buzzard breeding 2021															
04.08.21	3	Unknown	Unknown	1	1 st rotation forestry	1	14.58	Perched, flying	16	-	7	-	-	-	-
02.09.21	5	Unknown	Unknown	2	Improved grassland	1	14.51	Flying, hovering, perched	5	-	8	-	-	-	-
03.09.21 *Incidental	/	Unknown	Unknown	3	Pole	1	14.30	Perched	/	-	-	-	-	-	-

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category						
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m	
Buzzard winter 2021/2022																
22.11.21	4	Unknown	Unknown	1	1 st Rotation Forest /Scrub/Improved Grassland	1	15.07	Perched/Flying/On Ground/Hunting	0 5 0 4	80 18	15 12	-	-	-	-	
14.12.21	4	Unknown	Juvenile	2	Improved grassland	1	15.37	On Ground/Flying	0 0-10	960	10	-	-	-	-	
Buzzard breeding 2022																
26.07.22	1	Unknown	Adult	1	Bog/Scrub/Cutover bog/Clear fell	1	16.00	Flying	100-180 180-200	-	-	-	-	106	107	
26.08.22	2	Unknown	Adult	2	1st Rotation Forest/Bog/Clear Fell	1	10.25	Flying	8-9 8-15	-	499 107	-	-	-	-	
26.08.22	2	Unknown	Adult	3	1st Rotation Forest/ Clear Fell	1	12.20	Flying/Perched	0-15 0	3420	12	-	-	-	-	
26.09.22	5	Unknown	Adult	4	Improved Grassland/1st Rotation Forest/Bog	1	18.54	Flying/Circling	20-30	-	-	255	-	-	-	

Sparrowhawk

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Sparrowhawk breeding 2019															
29.10.19	4	Female	Adult	1	Rough grassland and thicket	1	12:35	Flying	60	-	-	20	-	-	
29.10.19	5	Male	Juvenile	2	Rough grassland and improved grassland	1	14:02	Flying	25-30	-	50	-	-	-	
29.10.19	5	Female	Adult	3	Heather moorland	1	15:53	Flying	1	-	59	-	-	-	
12.12.19	2	Female	Adult	4	Bog, 1 st rotation and 2 nd rotation forestry	1	15:09	Flying	40	-	60	-	-	-	

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
27.04.20	2	Male	Adult	5	Bog, 1 st rotation and 2 nd rotation forestry	1	10:36	Hunting and flying	2-3	-	119	-	-	-	-
Sparrowhawk breeding 2020															
14.08.20	2	Male	Adult	1	Bog, 1 st rotation forestry, scrub	1	12.30	Flying/Hunting	2	-	20	-	-	-	-
20.08.20	5	Unknown	Unknown	2	Rough grassland, 1 st rotation forestry	1	12.20	Flying/Hunting	2	-	5	-	-	-	-
Sparrowhawk winter 2020/2021															
14.10.20	2	Male	Adult	1	Bog	1	09.10	Flying	2	-	3	-	-	-	-
Sparrowhawk breeding 2021															
13.04.21	3	Male	Adult	1	Bog	1	13.32	Flying	0.5	-	20	-	-	-	-
10.05.21	4	Male	Adult	2	Scrub, 1 st rotation forestry, grassland moorland	1	07.07	Flying, hunting	10	-	15	-	-	-	-
									18	-	8	-	-	-	-
02.07.21	4	Unknown	Juvenile	3	Improved grassland	1	-	Flying, hunting	1	-	12	-	-	-	-
07.07.21	5	Male	Adult	4	Improved grassland, rough grassland	1	09.03	Hunting Perched Flying	2	-	1 120 12	-	-	-	-
10.08.21	4	Female	Adult	5	Improved grassland, scrub	1	14.28	Flying	2	-	10	-	-	-	-
03.09.21	4	Unknown	Juvenile	6	Bog, scrub, 1 st rotation forestry	1	09.00	Flying, hunting	3	-	7	-	-	-	-
03.09.21	6	Female	Adult	7	2 nd rotation forestry	1	16.11	Flying	40	-	-	4	-	-	-
06.09.21	4	Unknown	Juvenile	8	Bog, improved grassland	1	12.03	Flying, hunting	3-4	-	11	-	-	-	-
Sparrowhawk winter 2021/2022															
24.11.21 *Incidental	3	Female	Juvenile	1	Bog	1	14.41	Flying/Hunting	0.5	-	10	-	-	-	-

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
10.12.21	6	Female	Adult	2	1 st and 2 nd Rotation Forest/ Clear Fell	1	10.31	Hunting/Flying/Circling	15-18 12	-	71 5	-	-	-	-
16.12.21	5	Female	Adult	3	1 st Rotation Forest /Rough Grassland	1	13.28	Flying/Perched	1-3 2	50	30	-	-	-	-
Sparrowhawk breeding 2022															
26.05.22	2	Female	Adult	1	1 st Rotation Forest / Clear Fell	1	13.28	Flying	30-20 20-15	-	5	34	-	-	-
17.05.22	5	Female	Adult	2	1 st Rotation Forest/ Improved Grassland/ Rough grassland/ River	1	15.15	Flying/Circling	5-20 20-50 50-100	-	44	78	35	-	-
26.07.22	2	Unknown	Juvenile	3	1 st Rotation Forest	1	13.06	Flying	17-15	-	6	-	-	-	-
27.07.22	5	Unknown	Unknown	4	Bog	1	13.40	Flying/Mobbing	100-180 180-200	-	-	-	-	60	60
29.07.22	3	Male	Adult	5	1 st Rotation Forest/Rough grassland	1	10.05	Flying/Being mobbed/Perched	2-20 18	20	160	-	-	-	-
17.08.22	5	Unknown	Juvenile	6	Improved Grassland/1st Rotation Forestry	2	15.09	Flying/Hunting	10-20 20-35	-	270	270	-	-	-
18.08.22	4	Female	Adult	7	Scrub/Bog/Improved grassland	1	12.26	Flying/Hunting	1-4	-	8	-	-	-	-
13.09.22	4	Unknown	Unknown	8	Bog	2	09.58	Flying/Circling/Soaring	300-350	-	-	-	-	-	120

Peregrine

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category						
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m	
Peregrine breeding 2022																
21.04.22	3	Male	Adult	1	1 st Rotation Forest /Bog	1	17.16	Soaring/Flying/Circling	250-180 180-100	-	-	-	-	70	209	

Woodcock

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Woodcock winter 2019/2020															
29.10.19 *incidental	5	Unknown	Unknown	1	Rough grassland and improved grassland	1	12:00	Flying	4	-	2	-	-	-	
19.12.19	1	Unknown	Unknown	2	Bog	1	10:50	Flying	1	-	4	-	-	-	
Woodcock winter 2021/2022															
10.12.21 *Incidental	6	Unknown	Unknown	-	Forestry track	2	-	Flying	-	-	-	-	-	-	
17.12.21 *Incidental	5	Unknown	Unknown	1	1 st Rotation Forestry	1	07.40	Flying	0-5	-	5	-	-	-	
17.12.21 *Incidental	5	Unknown	Unknown	2	Rough grassland	1	07.43	Flying	0-5	-	8	-	-	-	
11.02.22 *Incidental	6	Unknown	Unknown	-	Flushed from ditch on way to VP	1	11.07	Flying	-	-	-	-	-	-	
16.02.22	3	Unknown	Unknown	3	Rough grassland/ Bog	1	07.17	Flying	2	-	3	-	-	-	
23.02.22 *Incidental	3	Unknown	Unknown	4	Bog/Stream	1	16.13	Flying	0-3	-	7		-	-	

Golden Plover

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Golden Plover winter 2019/2020															
29.10.19	4	Unknown	Unknown	1	Grassland moorland	30	13:51	Flying and Circling	5-20		120		-	-	-
								On the ground	0						
29.10.19	4	Unknown	Unknown	2	Log	30	15:05	Perched	0	10,800 (3hours)	-	-	-	-	-
Golden Plover breeding 2021															
12.05.21	2	Unknown	Unknown	-	Bog	-	-	Heard calling	-	-	-	-	-	-	-
17.05.21	2	Unknown	Unknown	-	Bog	1	-	Heard calling	-	-	-	-	-	-	-
23.06.21	3	Unknown	Unknown	-	Bog, scrub	1	16:56	Heard calling	-	120	-	-	-	-	-
23.06.21	3	Unknown	Unknown	-	Bog, scrub	1	17.22	Heard calling & flying	-	25	-	-	-	-	-

Snipe

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Snipe winter 2020/2021															
14.10.20	3	Unknown	Unknown	1	Bog, rough grassland	1	09.25	Flying	1	-	5	-	-	-	-
09.02.21	3	Unknown	Unknown	2	Grassland moorland, Bog	1	12.30	Flying	3	-	10	-	-	-	-
16.03.21	3	Unknown	Unknown	3	Grassland moorland, rough grassland	1	09.46	Flying	1	-	5	-	-	-	-

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category						
										Non- flight	0- 20m	20- 50m	50- 100m	100- 180m	>180m	
Snipe breeding 2021																
13.04.21	3	Unknown	Unknown	1	Bog	1	13.28	Flying	6	-	10	-	-	-	-	
10.05.21	1	Unknown	Unknown	-	Bog	1	-	Heard calling	-	-	-	-	-	-	-	
17.05.21	5	Unknown	Unknown	-	Bog, grassland moorland	1	07.48	Heard chipping	-	-	-	-	-	-	-	
17.05.21	3	Unknown	Unknown	2	Bog, grassland moorland	1	10.00	Flying	1	-	8	-	-	-	-	
17.05.21	3	Unknown	Unknown	3	Bog	1	10.06	Heard calling	-	-	-	-	-	-	-	
17.05.21	3	Unknown	Unknown	4	Bog	1	10.30	Heard chipping	-	-	-	-	-	-	-	
19.05.21	3	Unknown	Unknown	5	Bog, heather moorland	1	06.08	Flying, displaying	25	-	-	12	-	-	-	
04.06.21	3	Unknown	Unknown	7	Bog	1	08.18	Heard chipping	-	-	-	-	-	-	-	
							10.30	Drumming								
04.06.21	3	Unknown	Unknown	6	Bog, rough grassland	1	10.30	Flying	1	-	5	-	-	-	-	
02.07.21	1	Unknown	Unknown	8	Bog	1	10.39	Circling	70-100	-	-	-	120	-	-	
02.07.21	1	Unknown	Unknown	9 10	Bog	2	11.52	Flying	1-2	-	24	-	-	-	-	
07.07.21	3	Unknown	Unknown	11	Bog, rough grassland	1	11.07	Drumming, chipping/not seen Displaying	22-25	-	-	130	-	-	-	
							11.10									
Snipe winter 2021/2022																
06.10.21 *Incidental	3	Unknown	Unknown	1	Bog	1	12.55	Flying/On Ground	0-1	-	3	-	-	-	-	
15.12.21	3	Unknown	Unknown	2	Rough grassland/ Bog	1	14.46	Flying	0-1	-	46	-	-	-	-	
18.01.22 *Incidental	3	Unknown	Unknown	-	Flushed on way to VP3	1	-	Flying	-	-	-	-	-	-	-	

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
19.01.22	3	Unknown	Unknown	3	Rough grassland/ Bog	1	13.28	Flying	3	-	8	-	-	-	-
11.02.22	2	Unknown	Unknown	4	Bog	1	10.12	Flying	2	-	7	-	-	-	-
16.02.22	3	Unknown	Unknown	5	1 st Rotation Forest/ Bog /Rough Grassland	1	07.26	Flying	3-0	-	7	-	-	-	-
11.03.22 *Incidental	3	Unknown	Unknown	6	Bog drain	1	11.12	Flying	-	-	-	-	-	-	-
Snipe breeding 2022															
19.04.22	5	Unknown	Unknown	-	-	1	21.28	Heard Chipping	-	-	-	-	-	-	-
20.04.22	3	Unknown	Unknown	1	Rough grassland/ Bog	1	19.14	Flying	0-<1	-	9	-	-	-	-
20.04.22	3	Unknown	Unknown	-	-	1	21.13	Heard Chipping	-	-	-	-	-	-	-
20.04.22	3	Unknown	Unknown	2	1 st Rotation Forest/ Bog /Rough Grassland	1	21.21	Flying/Displaying	100-120	-	-	-	-	26	-
20.04.22 *Incidental	3	Unknown	Unknown	-	Bog	1	21.35	Drumming	-	-	-	-	-	-	-
21.04.22	4	Unknown	Unknown	3	Improved Grassland /Scrub/Bog/1 st Rotation Forest	3	20.26	Flying	180-200	-	-	-	-	-	147
21.04.22	4	Unknown	Unknown	4	1 st Rotation Forest/ Bog	5	20.26	Flying	200	-	-	-	-	-	20
21.04.22	4	Unknown	Unknown	-	-	1	21.24	Heard calling	-	-	-	-	-	-	-
22.04.22	2	Unknown	Unknown	-	-	1	16.01	Heard chipping	-	-	-	-	-	-	-
18.05.22	3	Unknown	Unknown	-	-	1	13.19	Heard chipping	-	-	-	-	-	-	-
19.05.22	3	Unknown	Unknown	5	1 st Rotation Forest/ Bog /Rough Grassland/Grassland moorland	4	08.11	Flying/Displaying/ Circling	0-20 20-50 50-100 100-180 180-200	-	110	110	110	110	130

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
19.05.22	3	Unknown	Unknown	6	Bog /Rough Grassland/Grassland moorland	2	10.03	Flying/Displaying	0-15	-	27	-	-	-	-
23.06.22	3	Unknown	Unknown	-	-	1	17.38	Heard chipping	-	-	-	-	-	-	-
24.06.22	3	Unknown	Unknown	7	Bog /Grassland moorland	1	12.32	Displaying	120-100 100-50 50-20 20-0	-	1	1	2	180	-
28.06.22	2	Unknown	Unknown	-	-	1	17.48	Heard chipping	-	-	-	-	-	-	-
30.06.22	1	Unknown	Unknown	-	-	1	17.38	Heard chipping	-	-	-	-	-	-	-
27.07.22	1	Unknown	Unknown	8	1 st Rotation Forest/ Bog /Cutover bog/Scrub/Clear fell	2	11.13	Flying	160-180 180-300	-	-	-	-	60	60
13.09.22	3	Unknown	Unknown	9	Grassland Moorland	1	13.50	Flying/Circling	0-2	-	12	-	-	-	-
28.09.22	1a	Unknown	Unknown	10	Bog	1	11.15	Flying	0.5	-	13	-	-	-	-
28.09.22	1a	Unknown	Unknown	11	Bog	1	14.14	Flying	0.5	-	2	-	-	-	-

Red Grouse

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category						
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m	
Red Grouse winter 2021/2022																
17.10.21 *Incidental	3	Unknown	Unknown	1	Bog	2	07.55	Flying	0-2	-	3	-	-	-	-	
17.12.21	5	Unknown	Unknown	-	-	1	08.07	Heard calling	-	-	-	-	-	-	-	
Red Grouse breeding 2022																

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
20.04.22	3	Male	Unknown	-	-	1	21.13 21.28	Heard singing	-	-	-	-	-	-	-
21.04.22	4	Male	Adult	-	-	1	21.31 21.36	Heard calling & singing	-	-	-	-	-	-	-
18.05.22	3	Unknown	Unknown	1	Bog	2	13.29	Flying	0-<1	-	4	-	-	-	-
26.05.22	2	Unknown	Unknown	2	Bog	2	13.57	Flying	<1	-	44	-	-	-	-
30.06.22	1	Male	Adult	-	-	1	18.27	Heard singing	-	-	-	-	-	-	-

Common Gull

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category						
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m	
Common Gull winter 2021/2022																
06.10.21	1	Unknown	Juvenile	1	Bog	1	10.33	Flying	6 5	-	15 8	-	-	-	-	-

Great Black-backed Gull

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Great Black-backed Gull winter 2019/2020															
25.02.20	4	Unknown	Adult	1	Rough grassland	1	11:51	Flying	25	-	35	-	-	-	
22.04.20	4	Unknown	Adult	2	Rough grassland	1	13:41	Soaring	200	-	-	-	-	90	
24.04.20	6	Unknown	Adult	3	Shrub and Forest	2	11:59	Soaring	200	-	-	-	-	120	

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Great Black-backed Gull breeding 2020															
01.05.20	3	Unknown	Adult	1	Rough grassland	1	11.41	Flying	150	-	-	-	135	-	
15.05.20	2	Unknown	Adult	2	Bog	1	09.26	Flying	40	-	60	-	-	-	
15.05.20	2	Unknown	Adult	3	Bog, forest	2	10.59	Flying	100	-	-	30	-	-	
								Flying	100	-		60	-		
05.06.20	3	Unknown	Adult	4	Grassland moorland	3	09.38	Flying/circling	80	-	-	180	-	-	
05.06.20	5	Unknown	Adult	5	Rough grassland	1	14.45	Flying	80	-	-	60	-	-	
Great Black-backed Gull winter 2020/2021															
04.12.20	4	Unknown	Adult	1	1 st rotation forestry, scrub, improved grassland	1	10.42	Flying	10	-	50	-	-	-	-
11.01.21	4	Unknown	Adult	2	Improved grassland, scrub	1	10.03	Flying	8	-	10	-	-	-	-
18.01.21	1	Unknown	Adult	3	Bog	1	09.47	Flying	80	-	-	-	26	-	-
17.02.21	5	Unknown	Adult	4	1 st rotation forestry	2	14.06	Flying/Circling	80	-	-	-	30	-	-
19.03.21	4	Unknown	Adult	5	Improved grassland, forest, scrub, rough grassland, 1 st rotation forestry, riverbank	5	10.30	On ground/perched/Flying	15	150	20	-	-	-	-
Great Black-backed Gull breeding 2021															
08.04.21	4	Unknown	Adult	1	Bog, scrub, rough grassland	1	14.19	Flying	18	-	25	-	-	-	-
08.04.21	4	Unknown	Adult	2	Rough grassland, scrub, 1 st rotation forestry, improved grassland	1	16.48	Flying	40	-	-	30	-	-	-
08.04.21	6	Unknown	Unknown	3	Forestry	2	19.24	Flying	40	-	-	5	-	-	-
12.05.21	2	Unknown	Adult	4	Bog	1	09.51	Flying	80	-	-	-	20	-	-

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Great Black-backed Gull winter 2021/2022															
15.12.21	4	Unknown	Adult	1	Scrub/Improved Grassland	1	10.26	Flying	20-30	-	-	56	-	-	-
26.01.22	2	Unknown	Adult	2	Scrub/Bog/1 st Rotation Forestry/ Rough Grassland	1	10.18	Flying	4-20 20-25	-	36	36	-	-	-
26.01.22	2	Unknown	2 nd calendar year	3	Scrub/Bog/1 st Rotation Forestry/ Rough Grassland	1	11.43	Flying	20-30	-	-	65	-	-	-
31.01.22	1	Unknown	Unknown	4	Scrub/Bog/Pond/1 st Rotation Forestry	1	11.59	Flying	1-20 20-50 50-60	-	80	80	80	-	-
16.02.22	4	Unknown	Adult x2 Calendar year x2	5	Bog/ Improved Grassland/ Rough Grassland	4	11.04	On Ground/ Flying	0 0-20 20-50 50-100 100-150	28	77	105	105	105	-
16.02.22	4	Unknown	Adult x2 2 nd Calendar year x2	6	Bog/ Improved Grassland/ Rough Grassland	4	11.21	On Ground/ Flying/Soaring	0 0.20 20-50 50-100	20	140	160	160	-	-
16.02.22	4	Unknown	Adult	7	Bog/ Improved Grassland/ Rough Grassland	2	12.06	Flying/Soaring	50-80	-	-	-	30	-	-
16.02.22	4	Unknown	2 nd Calendar year	8	Bog/ Improved Grassland/ Rough Grassland/1 st Rotation Forestry	2	12.06	On Ground/ Flying	0 0-20 20-50 50-100 100-150	20	93	113	113	21	-
16.02.22	4	Unknown	Adult	9	Bog/ Improved Grassland/ Rough Grassland	1	12.30	Flying/Soaring	40-50 50-100 100-120	-	-	20	20	20	-
11.03.22	4	Unknown	Adult	10	Rough Grassland/1 st Rotation Forestry/Heather moorland	1	08.32	Flying	50	-	-	-	21	-	-

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Great Black-backed Gull breeding 2022															
26.05.22	2	Unknown	Adult	1	Scrub/Bog/1 st Rotation Forestry/Improved Grassland/Rough Grassland/River	1	14.18	Flying	<1-20 20-30	-	124	32	-	-	-
26.05.22	2	Unknown	Adult	2	Bog/1 st Rotation Forestry/ Clear fell/Pond	1	14.59	Flying	1-20 20-30	-	36	24	-	-	-
28.06.22	2	Unknown	Adult	3	1 st Rotation Forestry	1	17.12	Flying	22-40	-	-	44	-	-	-
30.06.22	1	Unknown	Adult	4	Scrub/Bog/ Cutover bog/1 st Rotation Forestry	1	15.50	Flying	2-15	-	65	-	-	-	-

Lesser Black-backed Gull

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non- flight	0- 20m	20- 50m	50- 100m	100- 180m	>180m
Lesser Black-backed Gull breeding 2020															
11.09.20	4	Unknown	2 nd year calendar	1	1 st rotation forestry, scrub, improved grassland	1	12.33	Flying	15-20	-	15	-	-	-	
Lesser Black-backed Gull winter 2020/2021															
12.10.20	4	Unknown	Adult/Juvenile	1	1 st rotation forestry, scrub, rough grassland	2	10.51	Flying	70	-	-	90		-	
Lesser Black-backed Gull breeding 2021															
08.04.21	5	Unknown	Adult	1	1 st rotation forestry, rough grassland, improved grassland	1	06.44	Flying	50	-	-	15	-	-	
08.04.21	5	Unknown	Adults	2	Grassland moorland, improved grassland	2	07.29	Flying	20	-	30	-	-	-	
08.04.21	4	Unknown	Adult	3	Bog, 1 st rotation forestry	1	14.29	Flying	60	-	-	-	10	-	
12.04.21	5	Unknown	Adults	4	Bog, improved grassland	2	15.51	Flying, circling	40	-	-	60	-	-	

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Non-flight	Time (sec) spent in Height Category				
											0-20m	20-50m	50-100m	100-180m	>180m
									80	-	-	-	120	-	
10.05.21	5	Unknown	Adults	5	Bog, 1 st rotation forestry, improved grassland	7	10.31	Flying	50	-	-	52	-	-	
10.05.21	5	Unknown	Unknown	6	2 nd rotation forestry, scrub, improved & rough grassland	1	12.05	Flying	25	-	-	24	-	-	
07.07.21	2	Unknown	Unknown	7	Bog	3	08.41	Flying	100	-	-	-	12	-	
07.07.21	3	Unknown	Unknown	8	Improved & rough grassland	2	10.55	Flying	35	-	-	16	-	-	
07.07.21	3	Unknown	Adult	9	Bog, grassland moorland	1	11.52	Flying	20	-	22	-	-	-	
									10	-	8	-	-	-	
Lesser Black-backed Gull winter 2021/2022															
08.03.22	4	Unknown	Unknown	1	Bog/Rough Grassland/1 st Rotation Forestry	1	13.10	Flying	35	-	-	98	-	-	
Lesser Black-backed Gull breeding 2022															
22.04.22	1	Unknown	Adult	1	Bog/Scrub	1	13.22	Flying	10-20	-	52	-	-	-	
22.04.22	2	Unknown	Adult	2	Bog	1	16.07	Flying	25	-	-	33	-	-	
22.04.22	2	Unknown	2 nd Calendar year	3	Bog/1 st Rotation Forestry	1	17.51	Flying	18	-	47	-	-	-	
22.04.22	2	Unknown	Adult	4	Bog/1 st Rotation Forestry	1	17.57	Flying	30	-	-	38	-	-	
17.05.22	4	Unknown	Adult	5	River/Improved Grassland/Bog /Scrub/1 st Rotation Forestry	1	12.26	Flying	6-20 20-25	-	47	-	46	-	-
18.05.22	4	Unknown	Adult	6	River/Rough Grassland/ Improved Grassland/1 st Rotation Forestry	2	09.43	Flying	18-20	-	40	-	-	-	
20.05.22	1	Unknown	2 nd Calendar year	7	Bog/Clear fell/Scrub/1 st Rotation Forestry	1	07.25	Flying	15-20 20-50 50-100 100-180	-	71	34	42	25	

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Non-flight	Time (sec) spent in Height Category				
											0-20m	20-50m	50-100m	100-180m	>180m
25.07.22	2	Unknown	Adult	8	Bog/1 st Rotation Forestry/Scrub	1	10.30	Flying	45	-	14	-	-	-	

Black-headed Gull

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Black Headed Gull winter 2021/2022															
23.02.22	4	Unknown	Adult	1	1 st Rotation Forestry/River/ Improved grassland/ Rough grassland/ Bog	1	10.14	Flying	5-20 20-40	-	28	73	-	-	-

Herring Gull

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Herring Gull winter 2021/2022															
04.10.21	4	Unknown	Juvenile & 2 nd Calendar Year	1	Improved grassland/Scrub	2	08.30	Flying/On Ground	0 6	30	34	-	-	-	-
Herring Gull breeding 2022															
21.06.22	4	Unknown	Adult	1	River	1	16.02	Flying	15-5	-	52	-	-	-	-
23.06.22	5	Unknown	Adult	2	Improved grassland/Bog/1 st Rotation Forestry	1	14.46	Flying/Perched	1 <1-20 20-50	128	86	86	-	-	-
25.07.22	5	Unknown	Adult	3	Improved Grassland	1	11.36	Flying/Perched	12	-	11	-	-	-	-
25.07.22	5	Unknown	Adult	4	Improved Grassland	1	13.03	Perched	-	3420	-	-	-	-	-

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
27.07.22	5	Unknown	Adult	5	Improved Grassland/Scrub	1	15.36	Perched/Flying	10 12-15	20	58	-	-	-	-
28.07.22	4	Unknown	Adult	6	Bog/Improved Grassland/Rough Grassland	1	13.36	Flying	10-15	-	67	-	-	-	-

Cormorant

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Cormorant winter 2019/2020															
19.12.19	1	Unknown	Juvenile	1	Bog	1	15:05	Flying	25	-	70	-	-	-	
19.12.19	1	Unknown	Adult	2	Bog	1	15:13	Flying	0-50	-	70	-	-	-	
Cormorant winter 2020/2021															
16.11.20	1	Unknown	Juvenile	1	Bog	1	09.35	Flying	50	-	-	12	-	-	-
19.12.20	2	Unknown	Adult	2	Bog, forest	1	10.41	Flying	80	-	-	-	22	-	-
Cormorant winter 2021/2022															
25.11.21	1	Unknown	Adult	1	Bog/1 st Rotation Forest/Pond	1	12.48	Flying	12-20 20-50	-	58	20	-	-	-
25.11.21	1	Unknown	Adult	2	Bog/1 st Rotation Forest/Pond	1	14.01	Flying	20-0	-	49	-	-	-	-
31.01.22	1	Unknown	Adult	3	Bog/Scrub	1	11.59	Flying	0-20	-	21	-	-	-	-
31.01.22	1	Unknown	Adult	4	Bog/Scrub/Pond	1	14.00	Flying	<1-5	-	101	-	-	-	-
31.01.22	1	Unknown	Adult	5	Bog/Scrub/ Pond	1	14.15	Flying	15-20 20-40	-	78	28	-	-	-

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
31.01.22	1	Unknown	Adult	6	Bog/Scrub/ Pond	1	15.52	Flying	4-12	-	72	-	-	-	-
17.02.22	1	Unknown	2 nd calendar year	7	Bog	1	10.27	Flying	10	-	36	-	-	-	-
17.02.22	1	Unknown	Adult	8	Bog/Pond	1	14.26	Flying	6	-	43	-	-	-	-

Gannet

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Gannet winter 2021/2022															
04.10.21	5	Unknown	Juvenile	1	Bog	1	14.20	On Ground	0	2400	-	-	-	-	-

Grey Heron

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Grey Heron winter 2019/2020															
29.10.19	5	Unknown	Adult	1	1 st rotation and 2 nd rotation forestry	1	14:18	Flying	40-80	-	20	20	-	-	
Grey Heron breeding 2020															
15.05.20	2	Unknown	Adult	1	Bog, Forest	1	09.29	Flying	60	-	-	40 10	-	-	
15.05.20	2	Unknown	Adult	2	Bog	1	10.53	Flying	80	-	-	80	-	-	
18.05.20	6	Unknown	Adult	3	Clean fell	1	10.58	Flying	15	-	20	-	-	-	
Grey Heron winter 2020/2021															
20.10.20	6	Unknown	Adult	1	Forest	1	15.22	Flying	60	-	-	-	60	-	-
08.02.21	1	Unknown	Adult	2	Bog	1	14.06	Flying	40	-	-	20	-	-	-

Grey Heron breeding 2021															
12.04.21	1	Unknown	Unknown	1	Bog	1	18.02	Flying	40	-	-	90	-	-	-
10.05.21	6	Unknown	Adult	2	2 nd rotation forestry	1	12.37	Flying	20	-	22	-	-	-	-
04.06.21	6	Unknown	Adult	3	Bog	1	16.52	Flying	30	-	-	50	-	-	-
04.06.21	4	Unknown	Unknown	4	1 st rotation forestry	1	5.38	Perched, flying	45	-	1hr 38min	-	-	-	-
23.06.21	1	Unknown	Unknown	5	Bog	1	15.44	Flying	80	-	-	-	36	-	-
05.07.21 *Incidental	-	-	-	-	-	-	-	Perched	-	-	-	-	-	-	-
03.09.21 *Incidental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grey Heron winter 2021/2022															
07.10.21 *Incidental	3	Unknown	Unknown	1	River	1	11.05	Flying/On Ground	0-2	-	2	-	-	-	-
25.11.21	1	Unknown	Unknown	2	Bog	1	09.52	Flying	0-10	-	15	-	-	-	-
25.11.21	1	Unknown	Unknown	3	Bog	1	15.18	Flying	10-0	-	48	-	-	-	-
31.01.22	1	Unknown	Adult	4	Pond/Bog	1	17.14	Flying	<1 0	-	27 1173	-	-	-	-
15.03.22	2	Unknown	Adult	5	Clear fell/2 nd Rotation Forestry	1	11.23	Flying	0-5	-	33	-	-	-	-
15.03.22	2	Unknown	Adult	6	Clear fell/2 nd Rotation Forestry	1	14.47	Flying	0-10	-	44	-	-	-	-
15.03.22	2	Unknown	Adult	7	Bog/Scrub	1	15.11	Flying	0-20 20-30	-	110	62	-	-	-
23.03.22	1	Unknown	Adult	8	Bog	1	14.11	Flying	1-10	-	89	-	-	-	-
Grey Heron breeding 2022															
16.05.22	6	Unknown	Adult	1	Thicket/2 nd Rotation Forestry	1	17.16	Flying/On Ground	5	-	21	-	-	-	-
24.06.22	3	Unknown	Adult & Juvenile	2	River/1 st Rotation Forest/Improved Grassland	2	14.40	Flying	0-20	-	120	-	-	-	-
28.09.22	1a	Unknown	Adult	3	Bog	1	09.55	Flying	2	-	12	-	-	-	-

Goosander

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Goosander winter 2019/2020															
26.11.19	4	Male	Unknown	1	River	3	10:03	Flying	30-40	-	-	59	-	-	-
26.11.19	5	Unknown	Unknown	2	Stream	3	11:04	Flying	1-4	-	5	-	-	-	-
28.11.19	2	Unknown	Unknown	3	Bog and stream	1	09:45	Flying	5-10	-	6	-	-	-	-

Greylag Goose

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Greylag Goose winter 2019/2020															
28.11.19	2	Unknown	Unknown	1	Bog and thicket	1	15:55	Flying	100-180	-	-	-	-	30	-

Pink-footed Goose

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Pink-footed goose winter 2020/21															
12.10.20	5	Unknown	Adult	1	Rough grassland, improved grassland, scrub	1	13.45	On ground, Flying	5-6	300	40	-	-	-	-

Great Northern Diver

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Great Northern Diver breeding 2021															
03.09.21	4	Unknown	Unknown	1	Bog, improved grassland	1	08.20	Flying	18	-	40	-	-	-	-

Ringed Plover

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Ringed Plover breeding 2020															
20.04.20	1	-	-	-	-	2	-	Heard calling	-	-	-	-	-	-	
22.04.20	1	-	-	-	-	1	-	Heard calling	-	-	-	-	-	-	
27.04.20	1	Male	Unknown	1	Pond	1	15.14	On ground	0	-	-	-	-	-	
18.05.20	1	Unknown	Adult	2	Bog, pond	1	15.31	Foraging	0	10	-	-	-	-	
Ringed Plover breeding 2021															
10.05.21	1	Unknown	Unknown	-	Bog	1	-	Heard calling	-	-	-	-	-	-	
12.05.21	1	Unknown	Unknown	-	Bog	1	-	Heard calling	-	-	-	-	-	-	
26.06.21	1	Unknown	Unknown	-	Bog	1	-	Heard calling	-	-	-	-	-	-	
Ringed Plover breeding 2022															
30.06.22	1	Unknown	Unknown	1	Cutover bog/ Scrub	2	17.36	Flying	1-12	-	40	-	-	-	
30.06.22	1	Unknown	Unknown	2	Cutover bog	1	17.42	Flying/On Ground	0 <1	232	8	-	-	-	

Jack Snipe

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Jack Snipe winter 2021/2022															
13.01.22 *Incidental	4	Unknown	Unknown	1	On the ground/Bog	1	17.35	Flying	0-20	-	65	-	-	-	-
13.01.22 *Incidental	4	Unknown	Unknown	2	On the ground/Bog	1	17.39	Flying	0-20	-	8	-	-	-	-

Mallard

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category						
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m	
Mallard winter 2019/2020																
27.02.20	6	Unknown	Adult	1	Bog	2	12:52	Flying	12-15	-	6	-	-	-	-	
Mallard breeding 2020																
24.04.20	6	Unknown	Adult	2	Bog	2	12:45	Flying	15	-	20	-	-	-	-	
13.05.20	1	Male	Adult	1	Bog	1	10.40	Flying	5	-	3	-	-	-	-	
Mallard winter 2020/2021																
15.03.21	1	Male	Adult	1	Bog	1	10.04	Flying	30	-	-	12	-	-	-	
Mallard breeding 2021																
08.04.21	6	Female	Adult	1	1 st rotation forestry	1	18.20	Flying	3-6	-	7	-	-	-	-	
10.05.21	4	Female	Adult	2	Scrub, improved grassland	1	07.10	Flying	3	-	6	-	-	-	-	
10.05.21	1	Male	Adult	3	Bog	1	08.16	Flying	30	-	-	8	-	-	-	
12.05.21	2	Male	Adult	4	Bog	1	08.38	Flying	10 80	- -	10 -	10 -	- 6	- -	- -	
11.08.21	1	Unknown	Unknown	5	Bog	4	13.11	Flying	80	-	-	-	15	-	-	

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
					Pond	4		In Pond	0						
11.08.21	1	Female	Adults	6	Bog	2	16.37	Flying	15	-	12	-	-	-	-
09.09.21	1	Unknown	Unknown	-	-	1	-	Heard calling	-	-	-	-	-	-	-
Mallard winter 2021/22															
06.10.21	1	Female	Adult	1	Bog	1	09.05	Flying	3	-	22	-	-	-	-
06.10.21	1	Male/Female	Adult	2	Bog	2	09.53	Flying	10	-	18	-	-	-	-
06.10.21	1	Unknown	Unknown	3	Bog	4	10.11	Flying	6-7	-	90	-	-	-	-
06.10.21	1	Unknown	Unknown	4	Bog	1	11.08	Flying	10	-	15	-	-	-	-
06.10.21	1	Unknown	Unknown	5	Bog/Pond	1	13.04	Flying	1	-	8	-	-	-	-
25.11.21	1	Male	Adult	6	Bog/Pond	1	09.41	Flying	10-0	-	50	-	-	-	-
18.01.22 *Incidental	2	Unknown	Unknown	7	Clear fell/1 st rotation forestry	4	17.36	Calling/Flying	15-20	-	5	-	-	-	-
31.01.22	1	Male & Female	Adult	8	Bog/Pond	2	13.23	Flying	12-0	-	49	-	-	-	-
Mallard breeding 2022															
19.04.22	2	Female	Adult	1	Bog/1 st rotation forestry	1	13.48	Flying	2	-	14	-	-	-	-
17.05.22	4	Male	Adult	2	River/Improved Grassland/Scrub/1 st rotation forestry	1	11.48	Flying	20-40	-	86	-	-	-	-
28.09.22	1a	Male, female	Adult	3	Bog	2	10.11	Flying	3	-	8	-	-	-	-
28.09.22	1a	Male, female/juvenile	Adult	4	Pond	3	12.51	Swimming	-	10,800	-	-	-	-	-

Teal

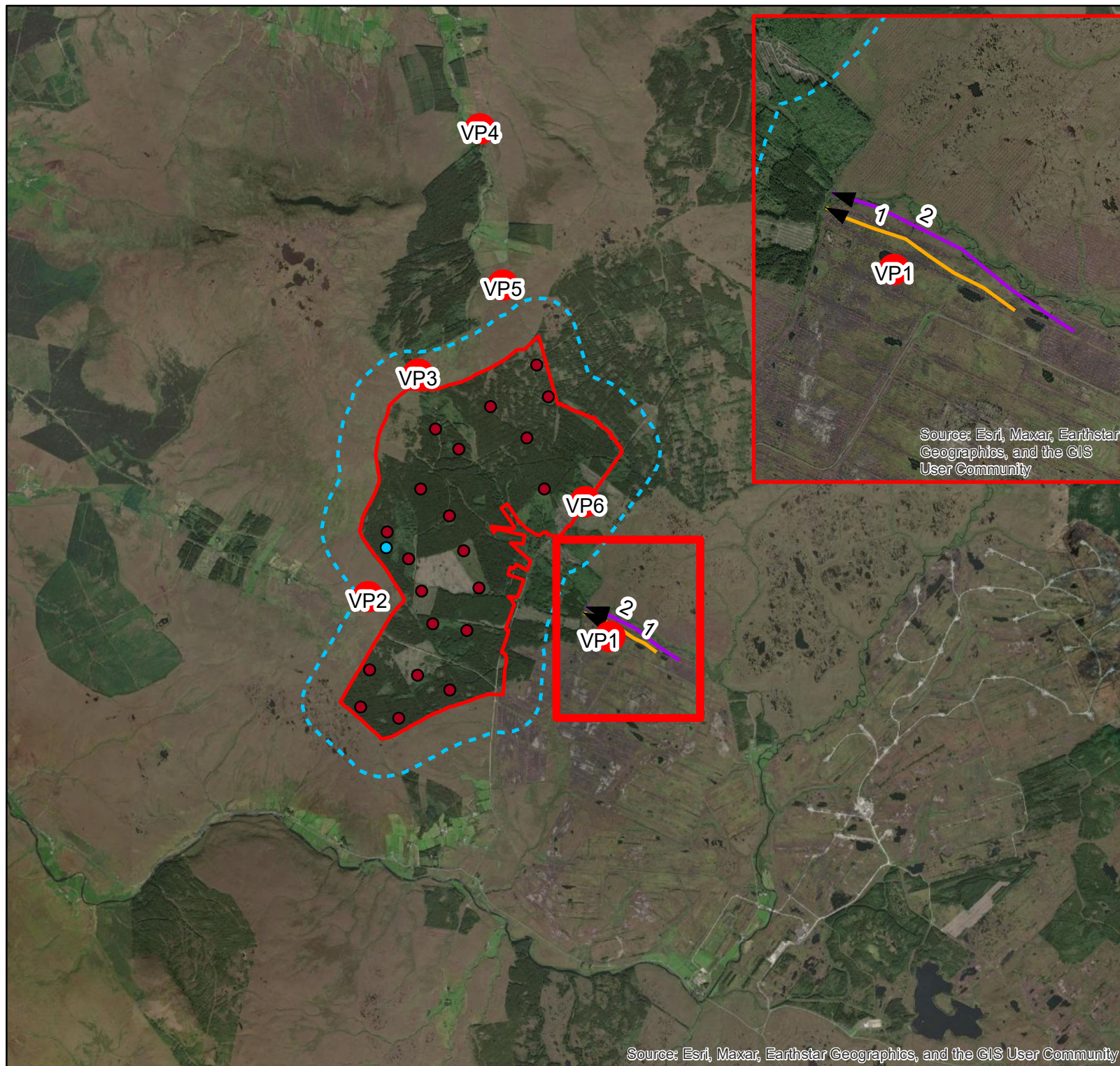
Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non- flight	0- 20m	20- 50m	50- 100m	100- 180m	>180m
Teal breeding 2021															
02.07.21	1	Unknown	Unknown	-	Pond	1	-	On Pond	-	-	-	-	-	-	-
Teal winter 2021/2022															
06.10.21	1	Unknown	Unknown	1	Bog/Pond	4	14.01	Flying	3	-	10	-	-	-	-
31.01.22	1	Unknown	Unknown	-	-	1	12.00	Heard	-	-	-	-	-	-	-
31.01.22	1	Unknown	Unknown	-	-	1	15.52	Heard	-	-	-	-	-	-	-
17.02.22	1	Unknown	Unknown	-	-	1	-	Heard	-	-	-	-	-	-	-
Teal breeding 2022															
20.05.22 <i>*Incidental</i>	2	Male	Unknown	1	Pond	3	10.30	Loafing on Pond	0	-	-	-	-	-	-
26.05.22 <i>*Incidental</i>	1	Unknown	Unknown	2	Pond	2	16.03	Loafing on Pond	0	-	-	-	-	-	-
28.09.22	1a	Male	Unknown	3	Bog	1	10.40	Flying	1	-	7	-	-	-	-
28.09.22	1a	Female/?	Adult/juvenile	4	Bog/pond	8	13.01	Flying/on pond	1	-	5	-	-	-	-

Common Sandpiper

Date	VP	Sex	Age	Map Ref No.	Habitat	No. of Birds	Time of Obs.	Activity	Flight Height (m)	Time (sec) spent in Height Category					
										Non-flight	0-20m	20-50m	50-100m	100-180m	>180m
Common Sandpiper breeding 2022															
21.06.22	4	Unknown	Unknown	1	River/ Improved Grassland	2	16.10	Heard Calling/On Ground	0	8400	-	-	-	-	-
23.06.22	4	Unknown	Unknown	-	River	1	20.21	Heard Calling	-	-	-	-	-	-	-

Appendix 5

Flight Paths



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Cormorant Flight Path

- 1, 19/12/2019
- 2, 19/12/2019

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables






Drawing Title:
Bird Surveys Winter 2019/2020
Map 1-1 Cormorant

Drawn: VH Checked: HD

Date: 07/12/2022 Scale (A4): 1:70,000

MWP




-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Golden Plover Perched

 1, 29/10/2019

Golden Plover Flight Path

 2, 29/10/2019

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2019/2020
Map 2-1 Golden Plover

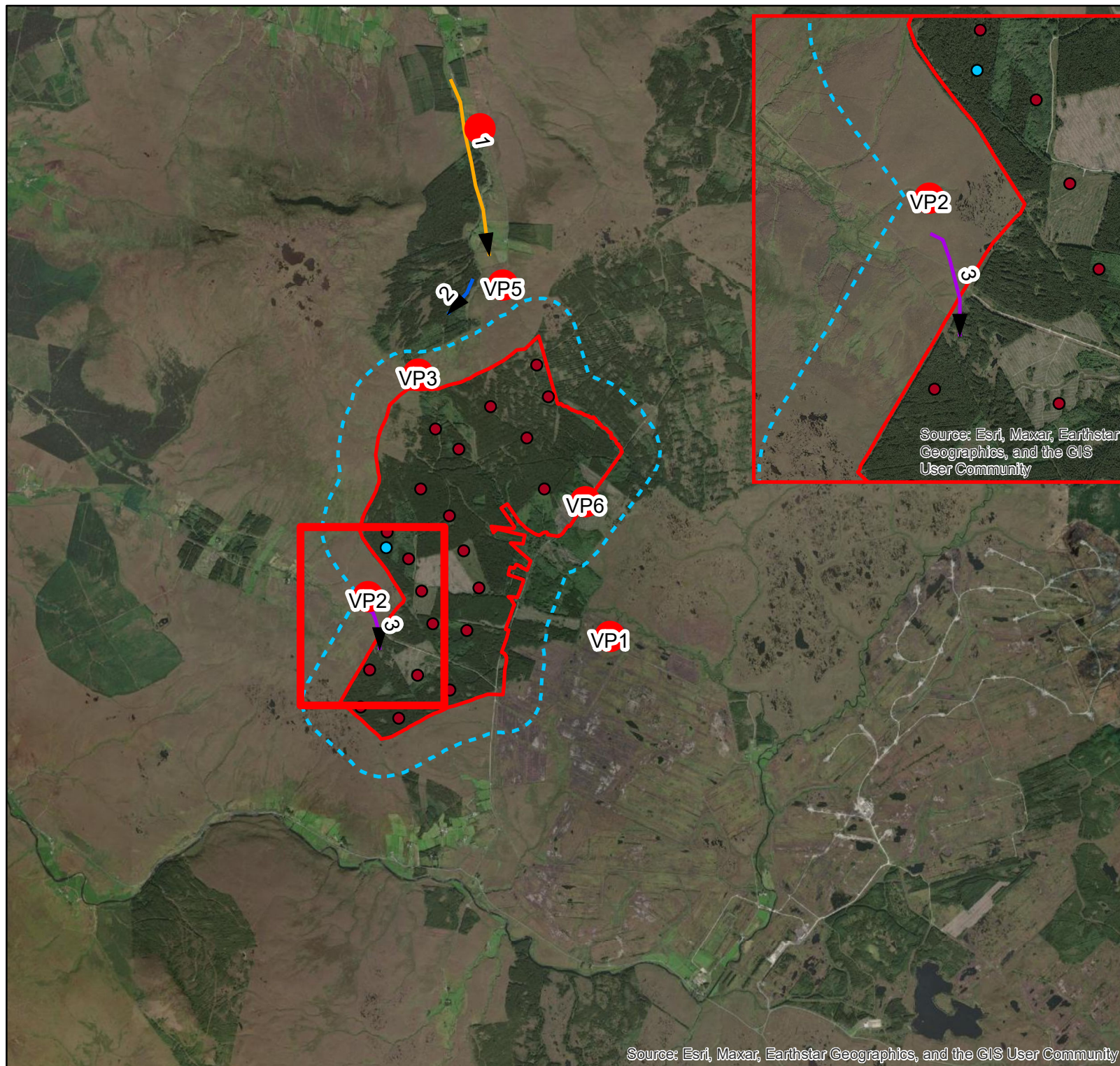
Drawn: VH

Checked: HD

Date: 07/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Goosander Flight Path

- 1, 26/11/2019
- 2, 26/11/2019
- 3, 28/11/2019

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

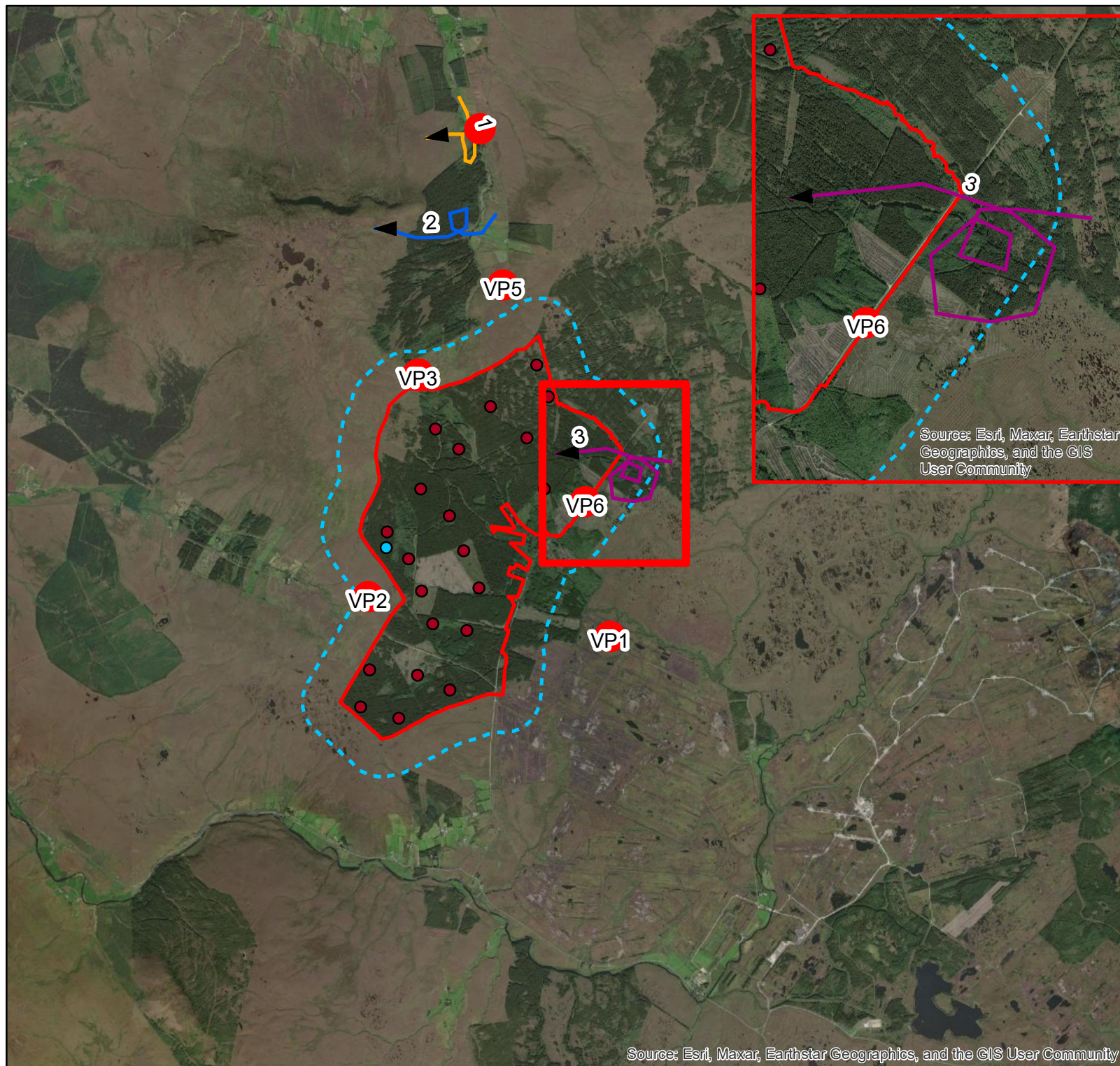
Drawing Title:
Bird Surveys Winter 2019/2020
Map 3-1 Goosander

Drawn: VH Checked: HD

Date: 07/12/2022 Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Great Black Back Gull Flight Path

- ➔ 1, 25/02/2020
- ➔ 2, 22/04/2020
- ➔ 3, 24/04/2020

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2019/2020
Map 4-1 Great Black Backed Gull

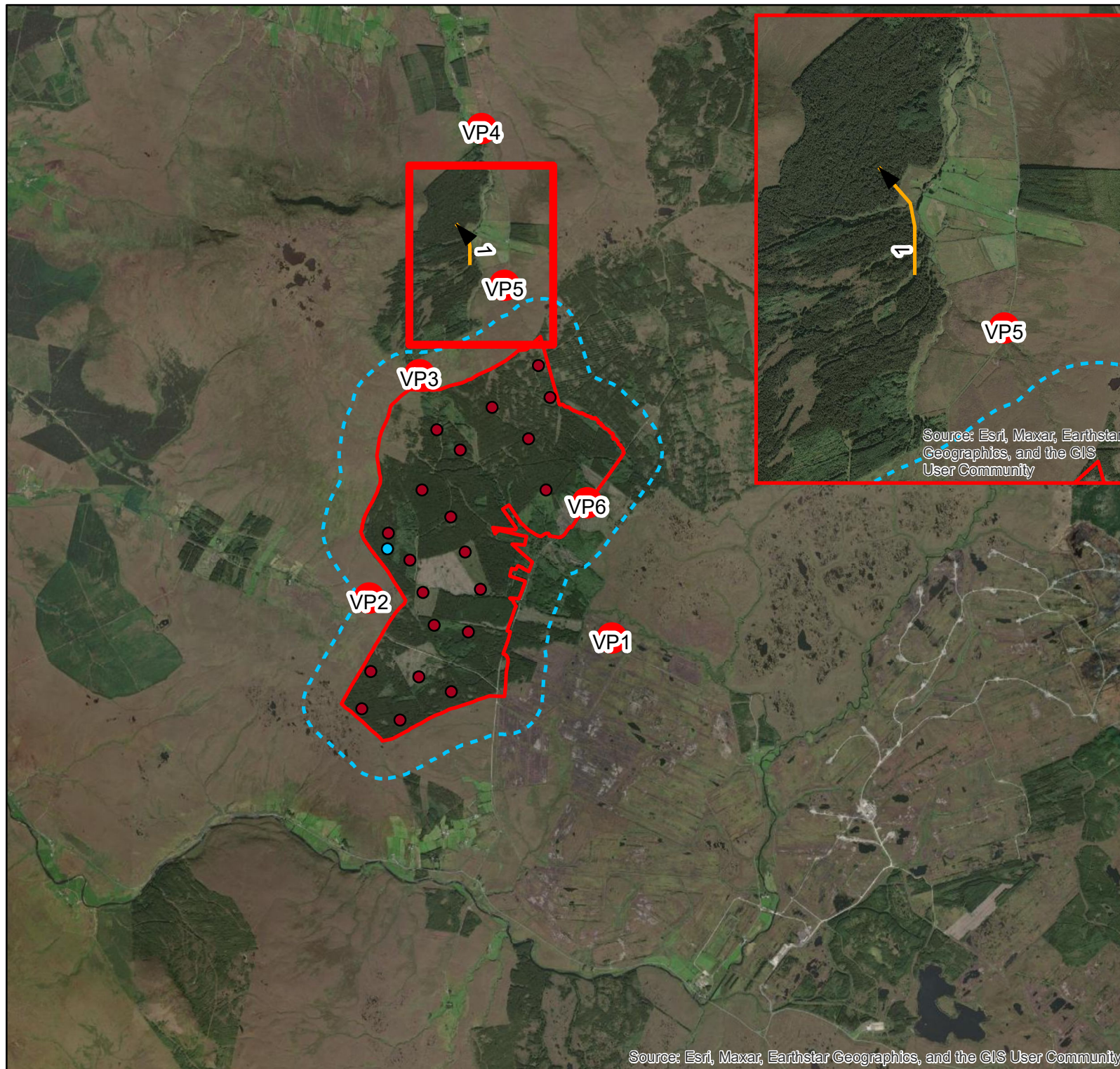
Drawn: VH

Checked: HD

Date: 07/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Grey Heron Fligh Path

➔ 1, 29/11/2019

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2019/2020
Map 5-1 Grey Heron

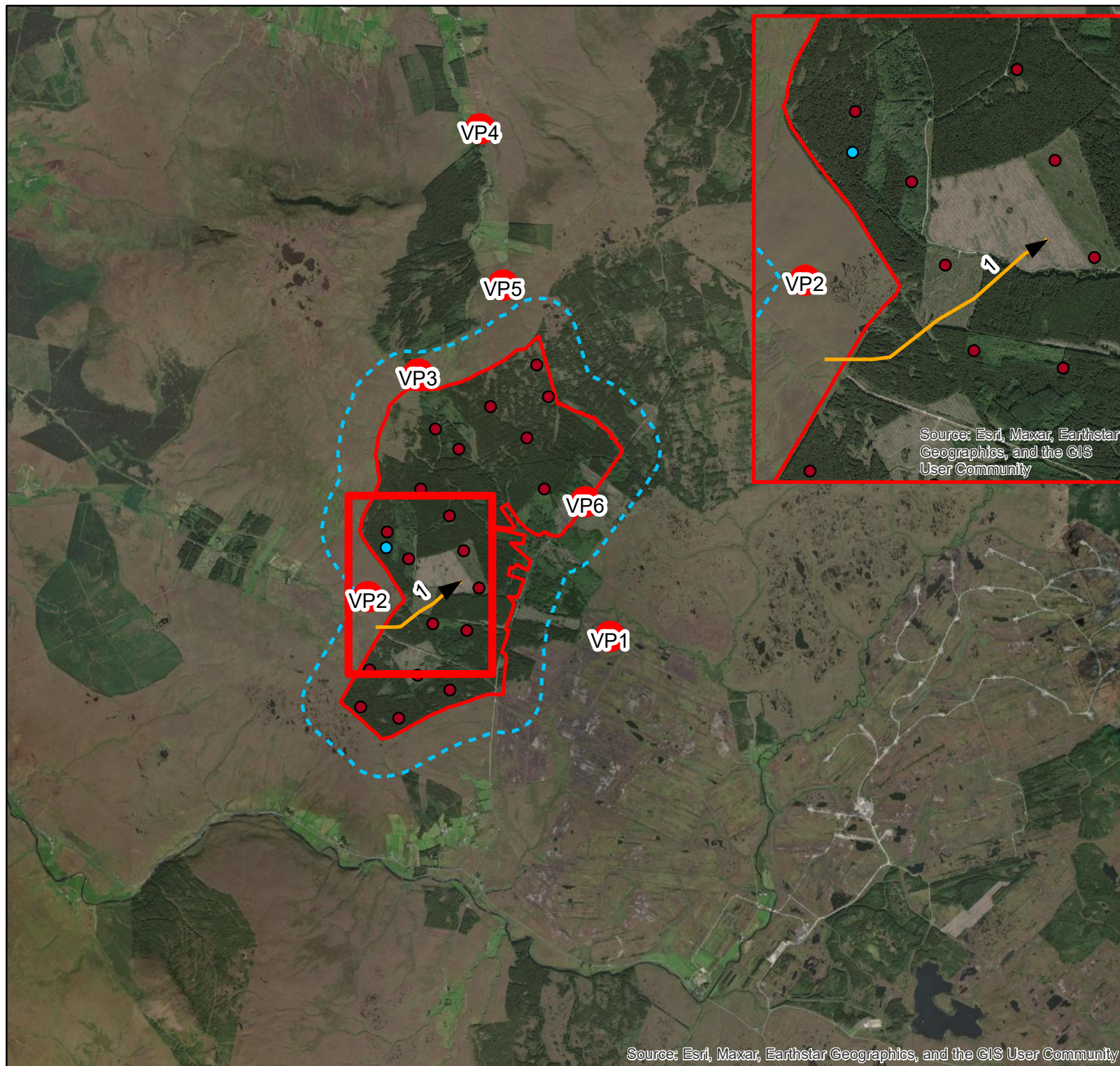
Drawn: VH

Checked: HD

Date: 07/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Greylag Goose Flight Path

➔ 1, 28/11/2019

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2019/2020
Map 6-1 Greylag Goose

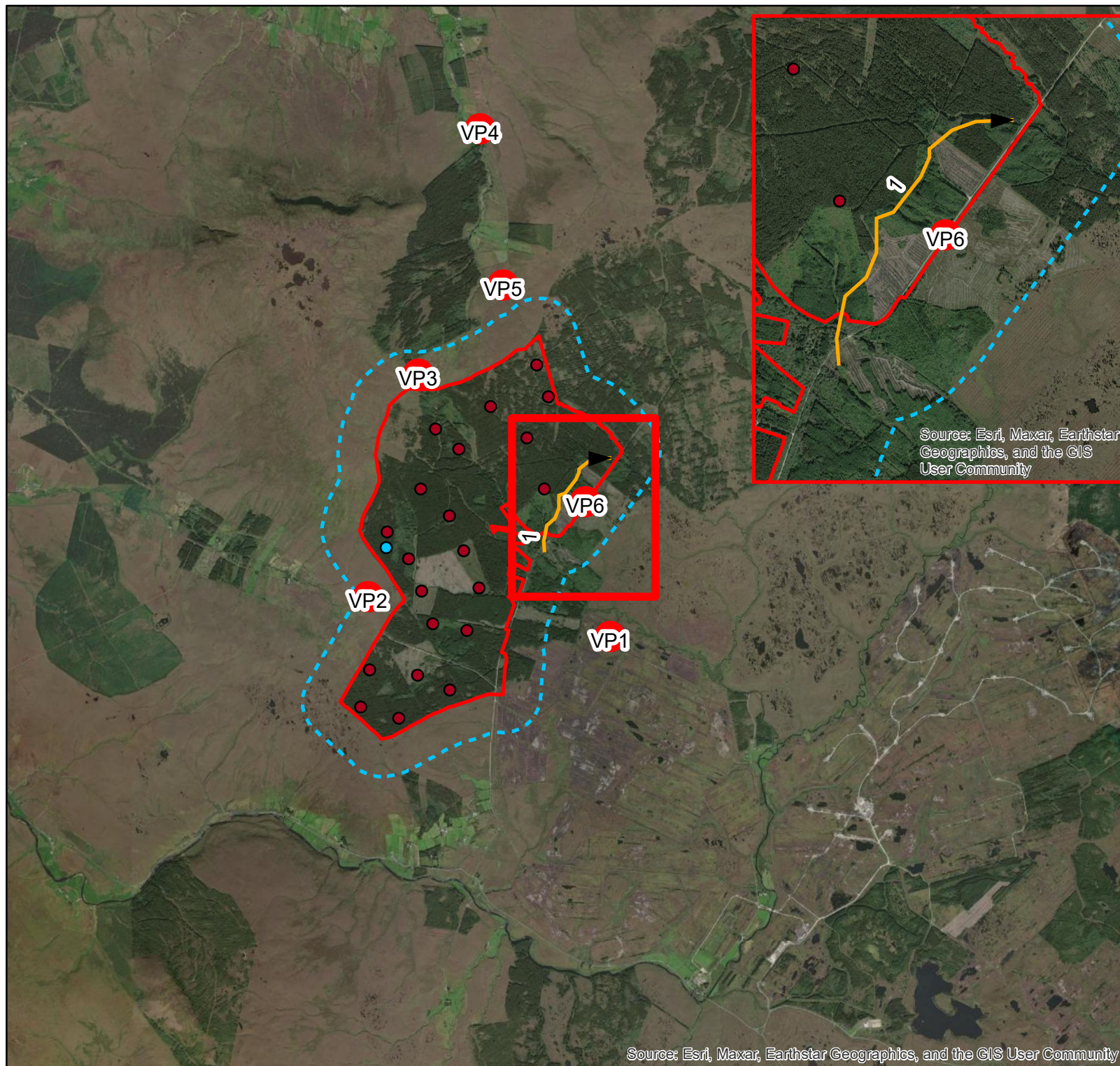
Drawn: VH

Checked: HD

Date: 07/12/2022

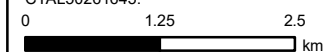
Scale (A4): 1:70,000

MWP



- Site Boundary
 - Vantage Point
 - Met Mast Location
 - Turbine Location
 - Flight Activity Survey Area 500m
- Kestrel Flight Path**
- 1, 12/12/2019

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CYAL50261645.



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2019/2020
Map 7-1 Kestrel

Drawn: VH	Checked: HD
Date: 07/12/2022	Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Mallard Flight Path

- 1, 27/02/2020
- 2, 24/04/2020

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2019/2020
Map 8-1 Mallard

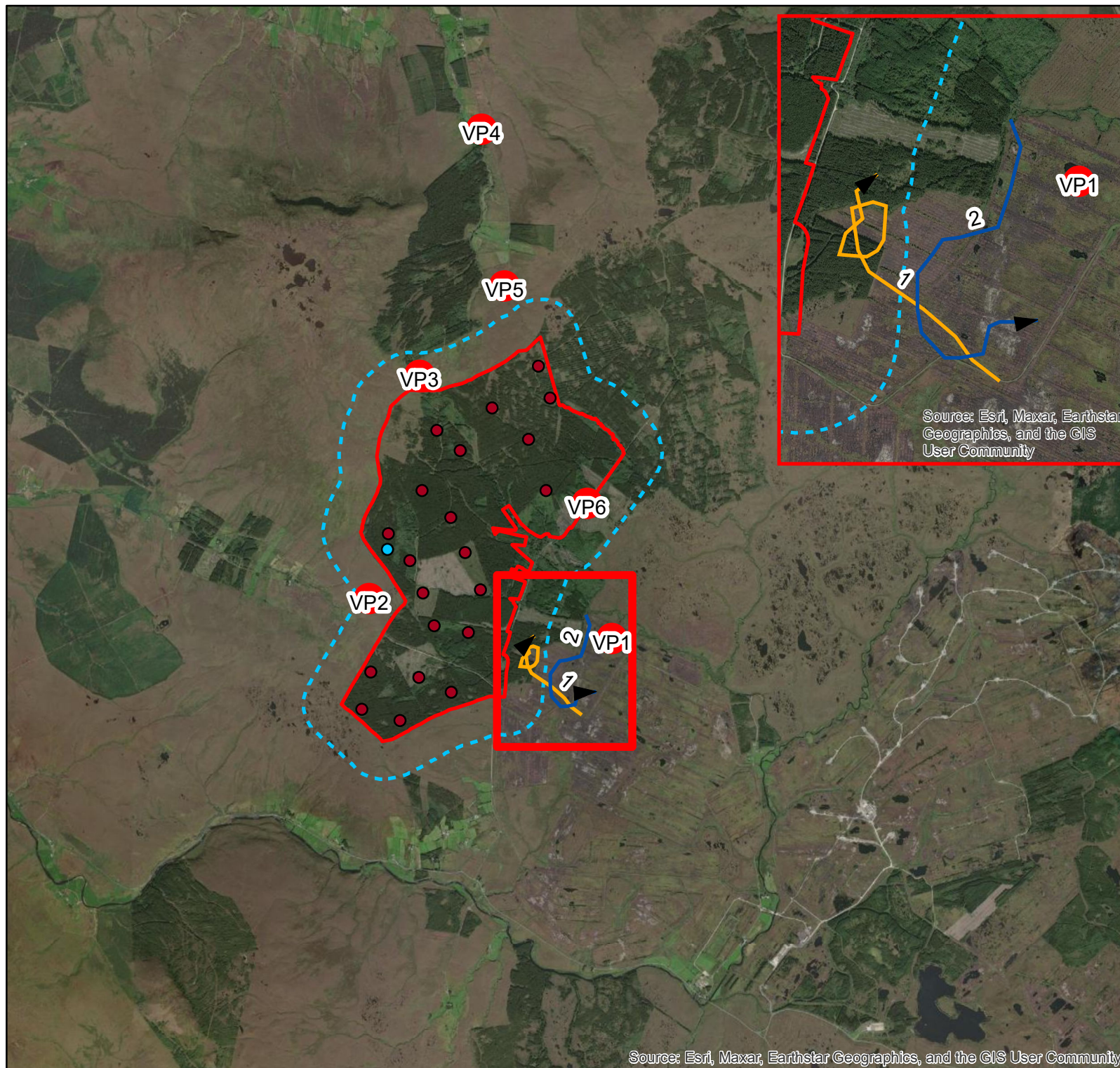
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Date: 07/12/2022

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MWP

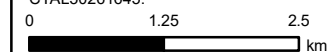


- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Merlin Flight Path

- 1, 30/10/2019
- 2, 27/11/2019

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CYAL50261645.



Project Title:
Sheskin South Wind Farm

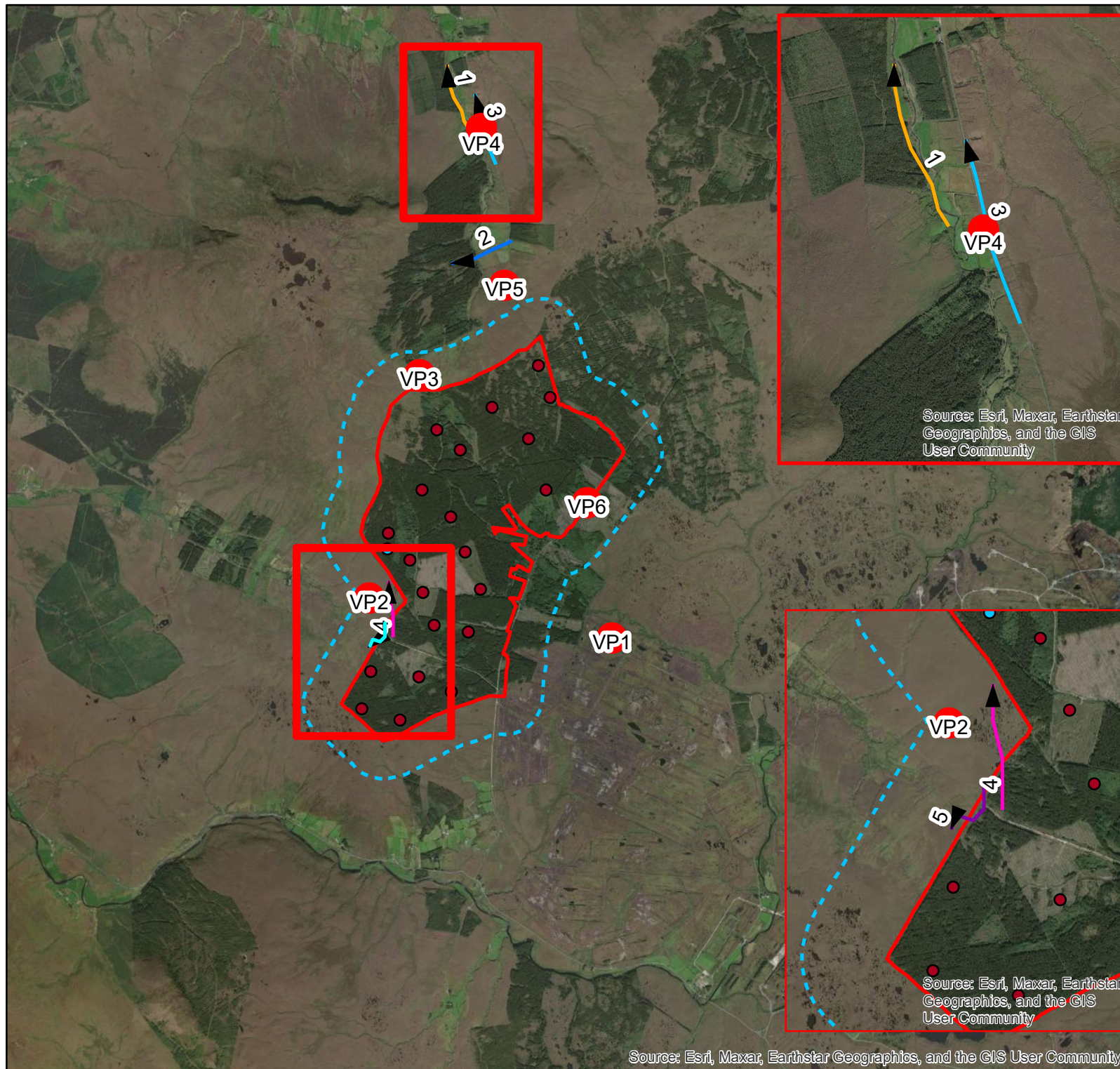
Client: SSE Renewables






Drawing Title:
Bird Surveys Winter 2019/2020
Map 9-1 Merlin

Drawn: VH Checked: HD






Date: 07/12/2022 Scale (A4): 1:70,000

MWP



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Sparrowhawk Fligh Path

-  1, 29/10/2019
-  2, 29/10/2019
-  3, 29/10/2019
-  4, 12/12/2019
-  5, 27/04/2020

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2019/2020
Map 10-1 Sparrowhawk

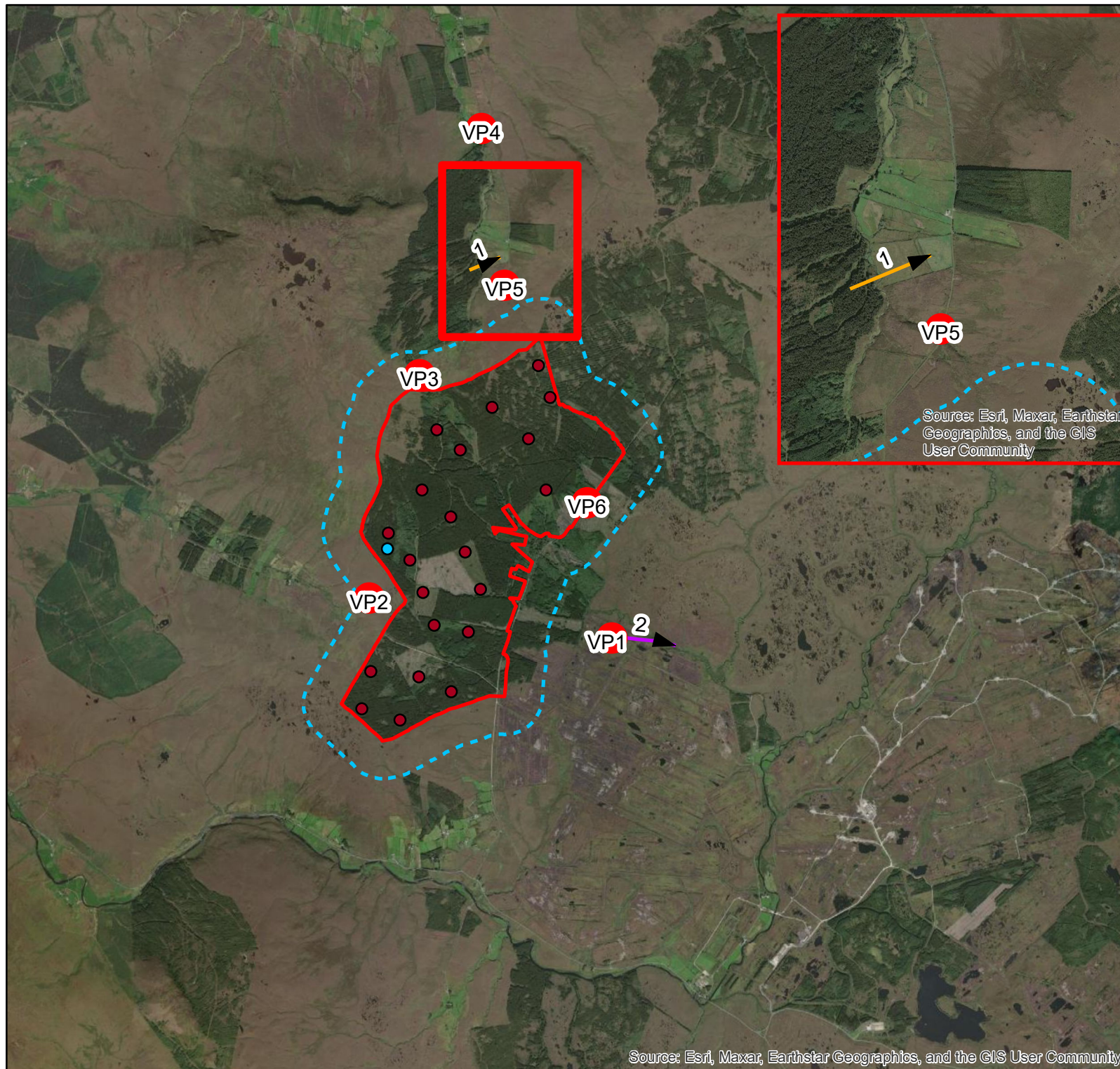
Drawn: VH

Checked: HD

Date: 07/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Woodcock Flight Path

- ➔ 1, 29/10/2019 (*incidental*)
- ➔ 2, 19/12/2019

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2019/2020
Map 11-1 Woodcock

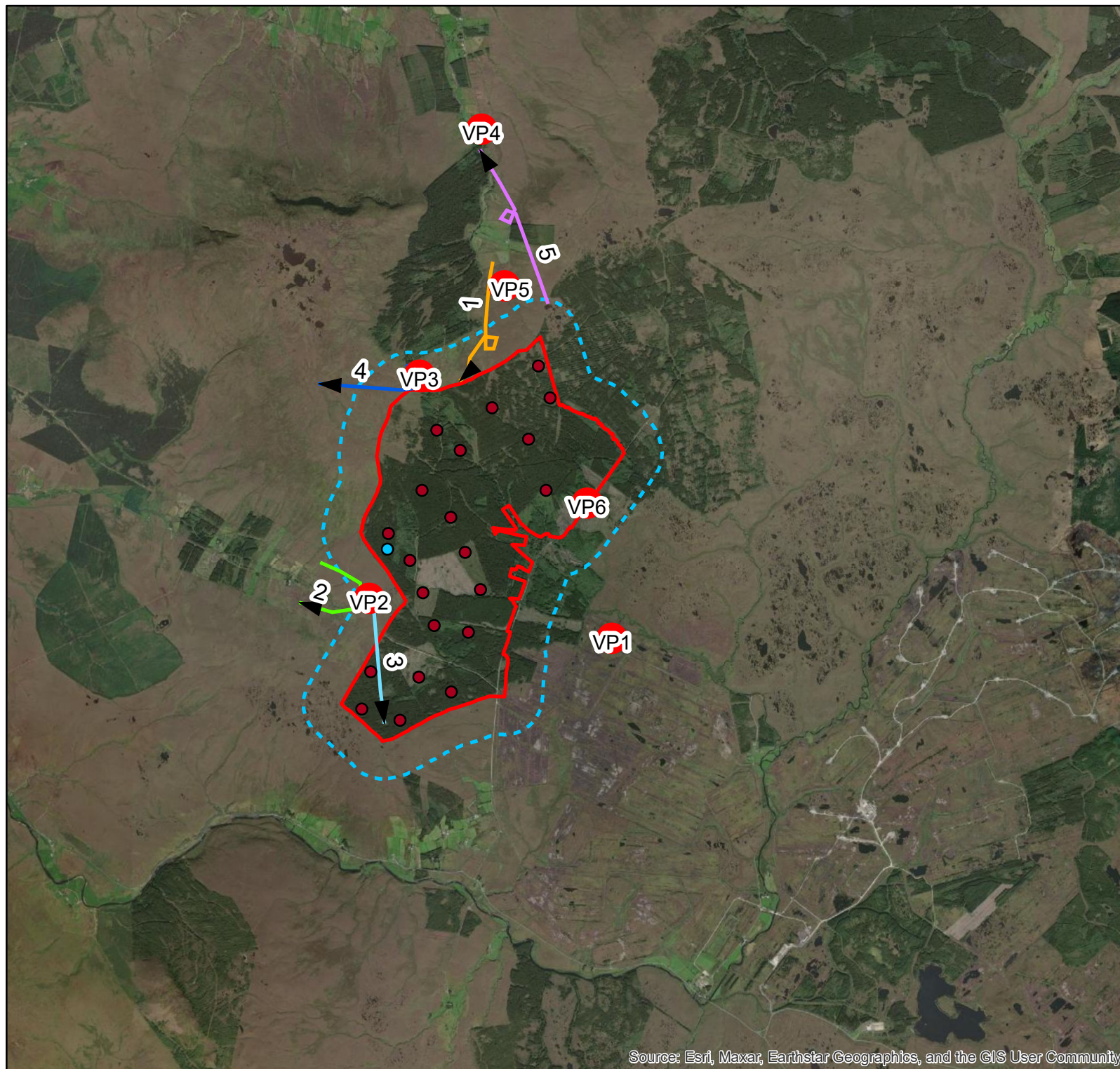
Drawn: VH

Checked: HD






Date: 07/12/2022

Scale (A4): 1:70,000

MWP



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Great Black Back Gull Flight Path

-  1, 01/05/20
-  2, 15/05/20
-  3, 15/05/20
-  4, 05/06/20
-  5, 05/06/20

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2020
Map 1-1 Great Black Backed Gull

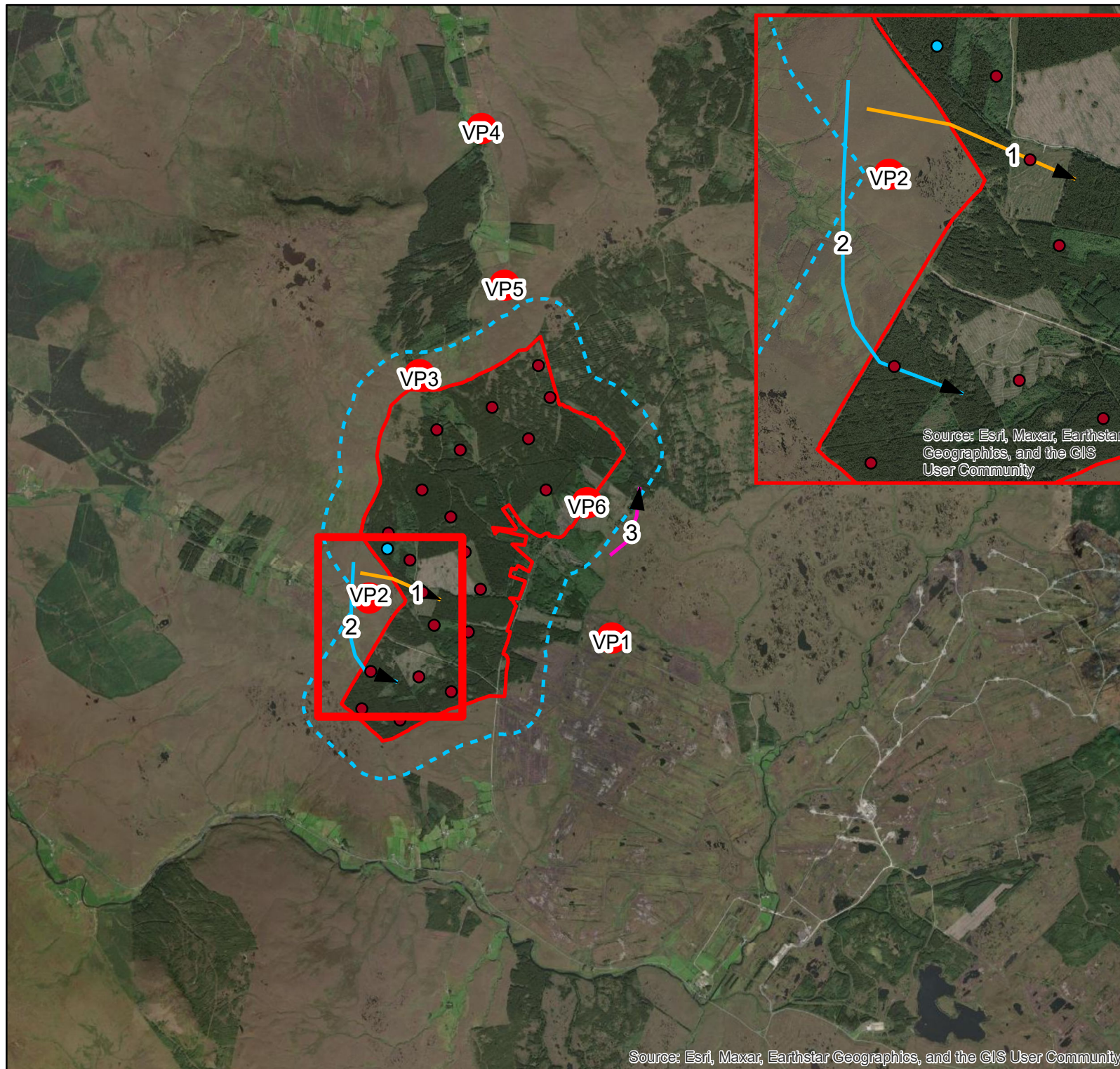
Drawn: VH

Checked: HD

Date: 06/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Grey Heron Flight Path

- 1, 15/05/20
- 2, 15/05/20
- 3, 18/05/20

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By Permission Of The Government.
CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2020
Map 2-1 Grey Heron

Drawn: VH	Checked: HD
Date: 06/12/2022	Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Kestrel Flight Path

- 1, 03/06/20
- 2, 14/08/20
- 3, 11/09/20

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By Permission Of The Government.
CYAL50261645.

0 1.25 2.5
km



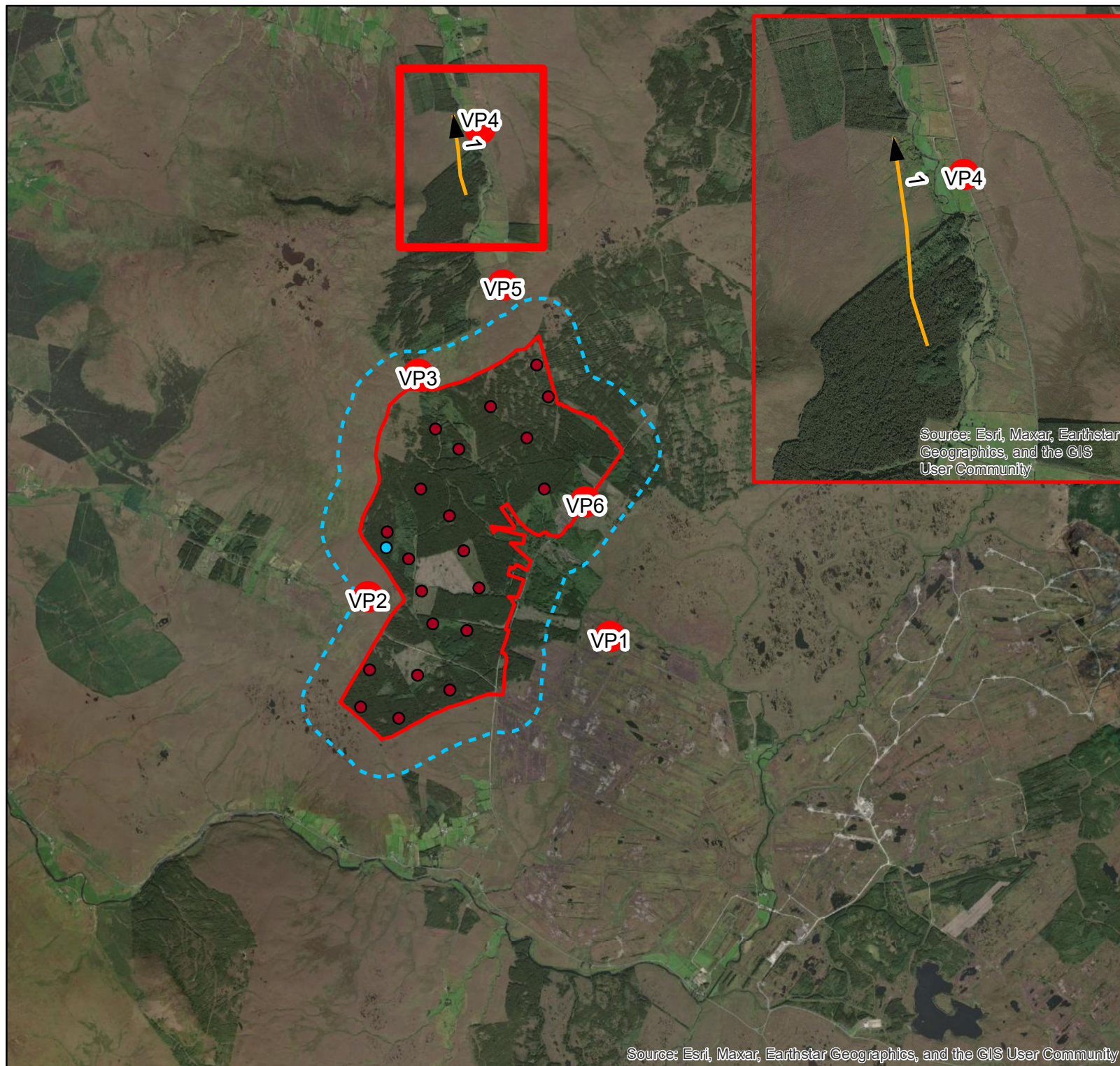
Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2020
Map 3-1 Kestrel

Drawn: VH	Checked: HD
Date: 06/12/2022	Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Lesser Black Backed Gull

➔ 1, 11/09/20

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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By Permission Of The Government.
CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 4-1 Lesser Black Backed Gull

Drawn: VH

Checked: HD






Date: 06/12/2022

Scale (A4): 1:70,000


MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Mallard Flight Path

 1, 13/05/20

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2020
Map 5-1 Mallard

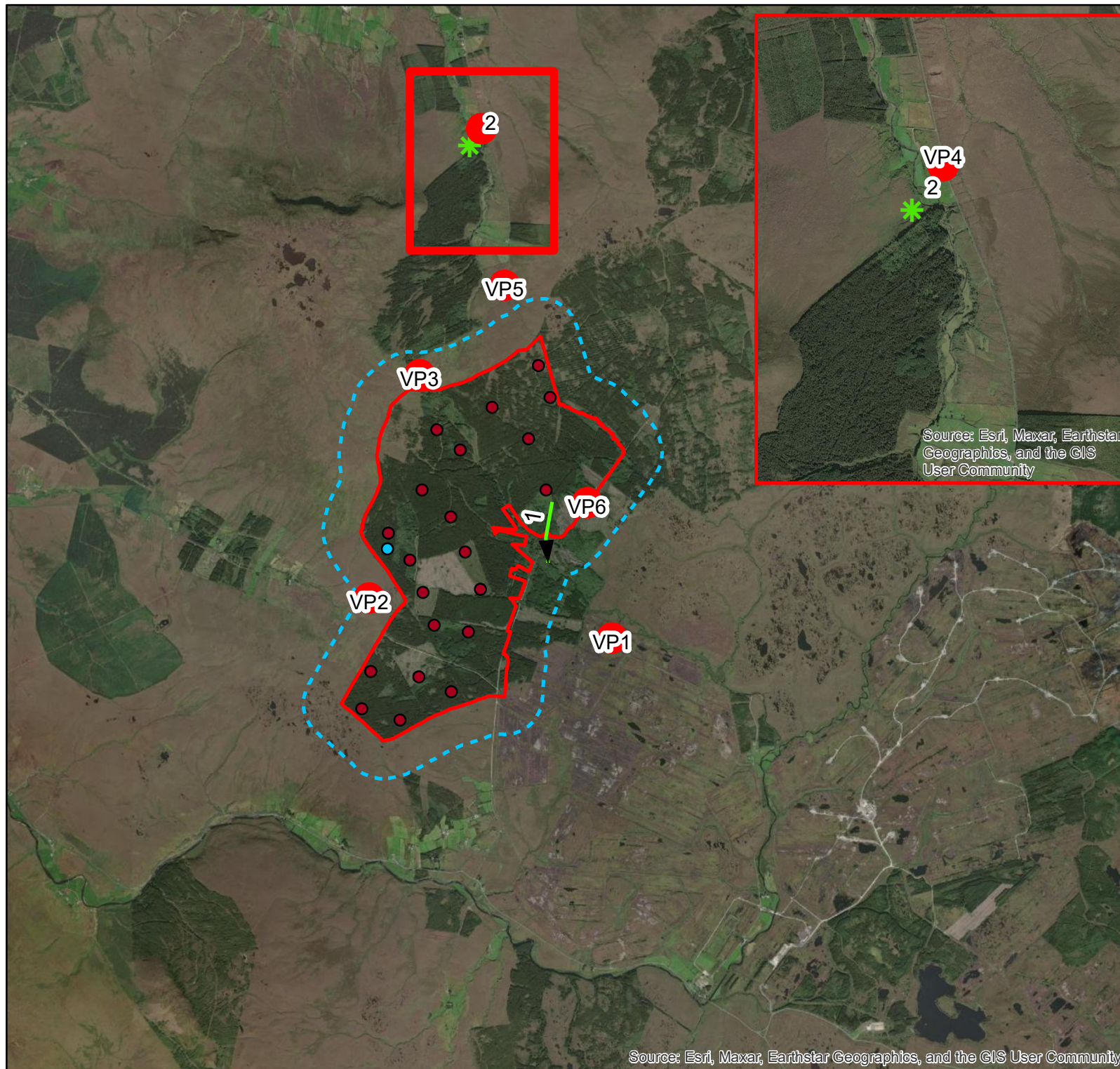
Drawn: VH






Checked: HD

Date: 06/12/2022


Scale (A4): 1:70,000

MWP




-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Merlin Flight Path

 1, 01/05/20

Merlin Perched

 2, 11/09/20

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CYAL50261645.

0 1.25 2.5
km



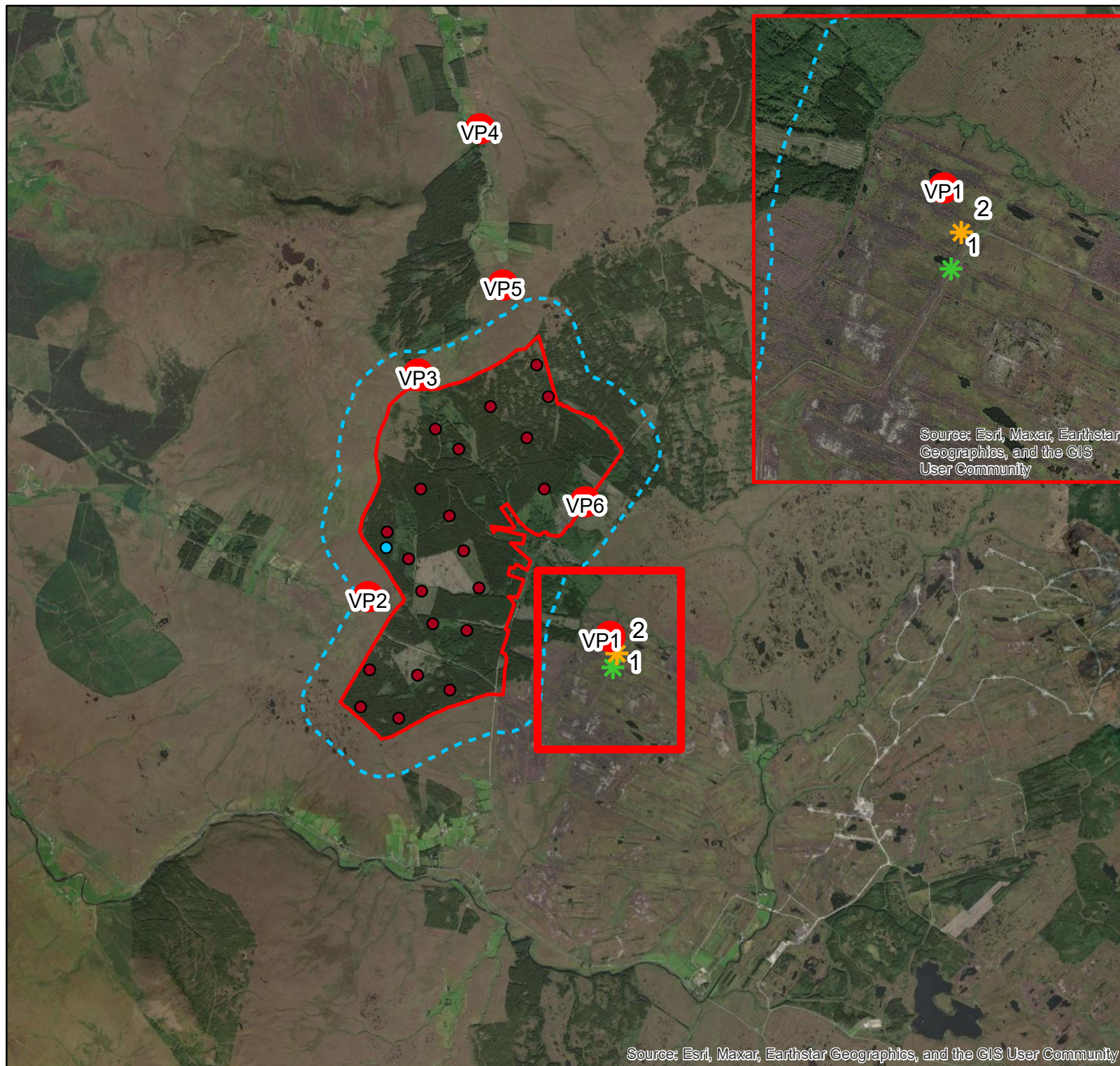
Project Title:
Sheskin South Wind Farm






Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2020
Map 6-1 Merlin



Drawn: VH	Checked: HD
Date: 06/12/2022	Scale (A4): 1:70,000

MWP



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Ringed Plover

-  1, 27/04/20
-  2, 18/05/20

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2020
Map 7-1 Ringed Plover

Drawn: VH

Checked: HD

Date: 06/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Snipe

1, 27/04/20

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CYAL50261645.

0 1.25 2.5
km



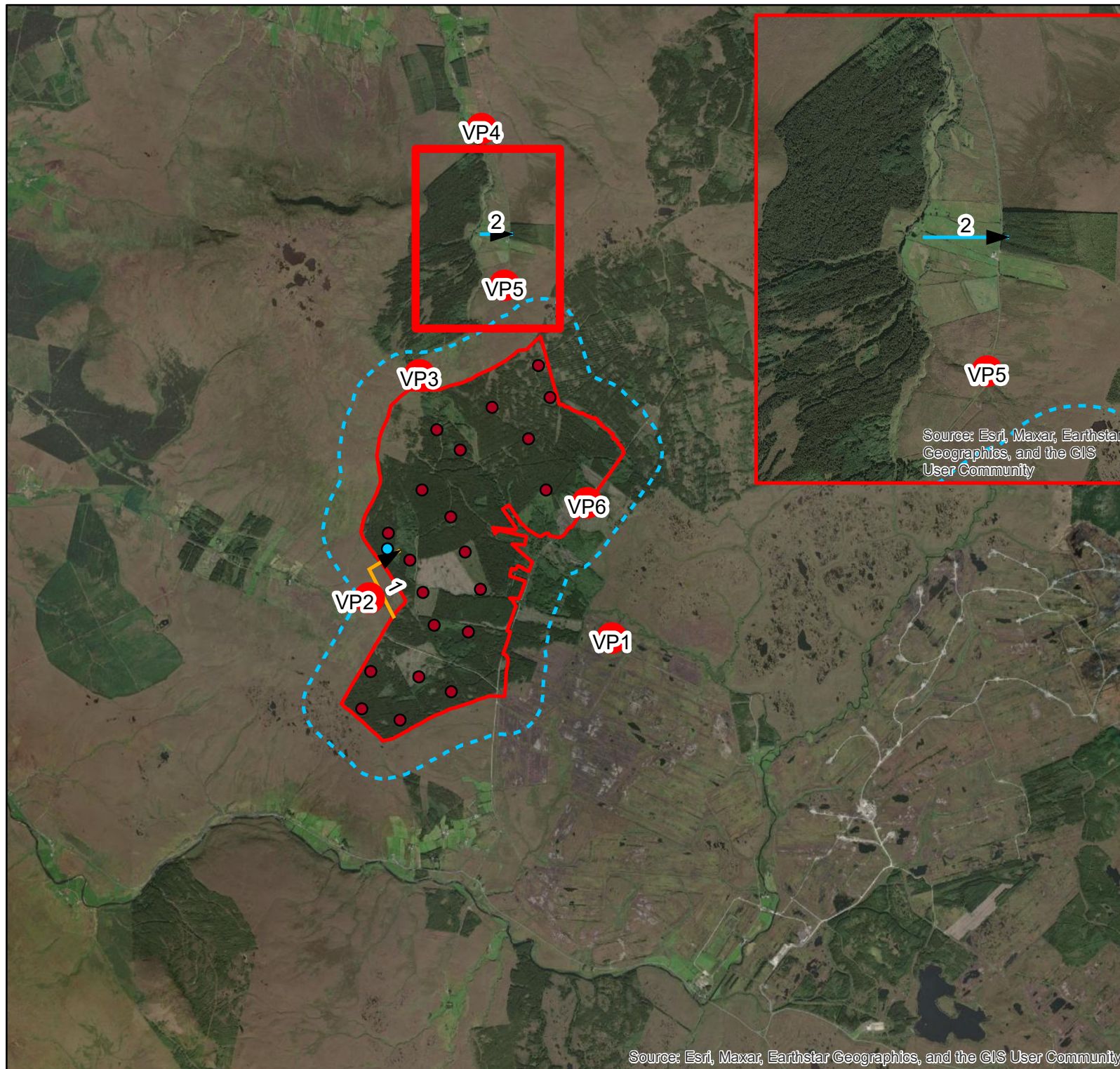
Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2020
Map 8-1 Snipe

Drawn: VH	Checked: HD
Date: 06/12/2022	Scale (A4): 1:70,000

MWP

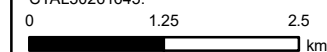


- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Sparrowhawk Flight Path

- 1, 14/08/20
- 2, 20/08/20

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CYAL50261645.



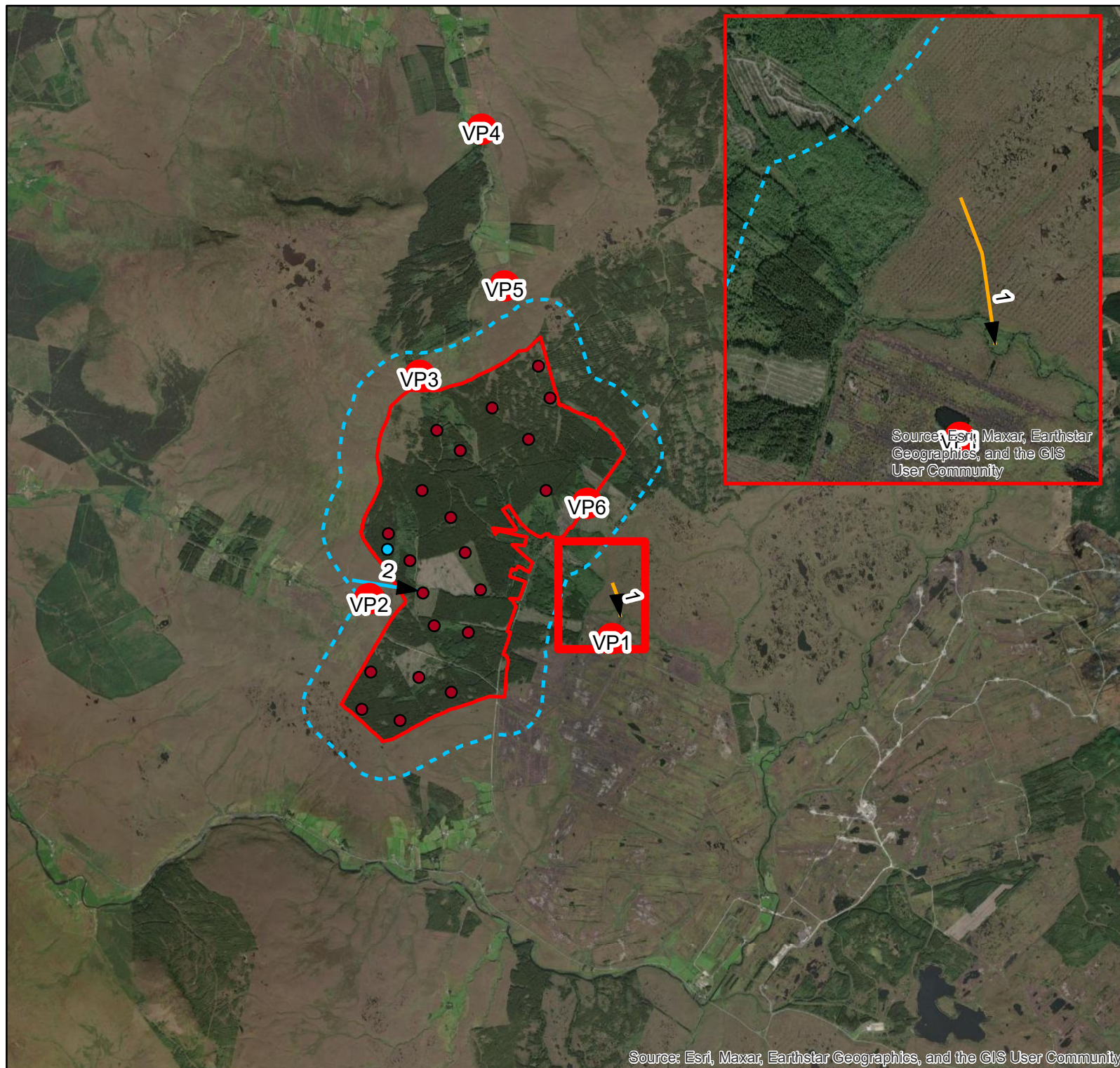
Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2020
Map 9-1 Sparrowhawk

Drawn: VH	Checked: HD
Date: 06/12/2022	Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Cormorant Flight Path

- ➔ 1, 16/11/2020
- ➔ 2, 09/12/2020

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

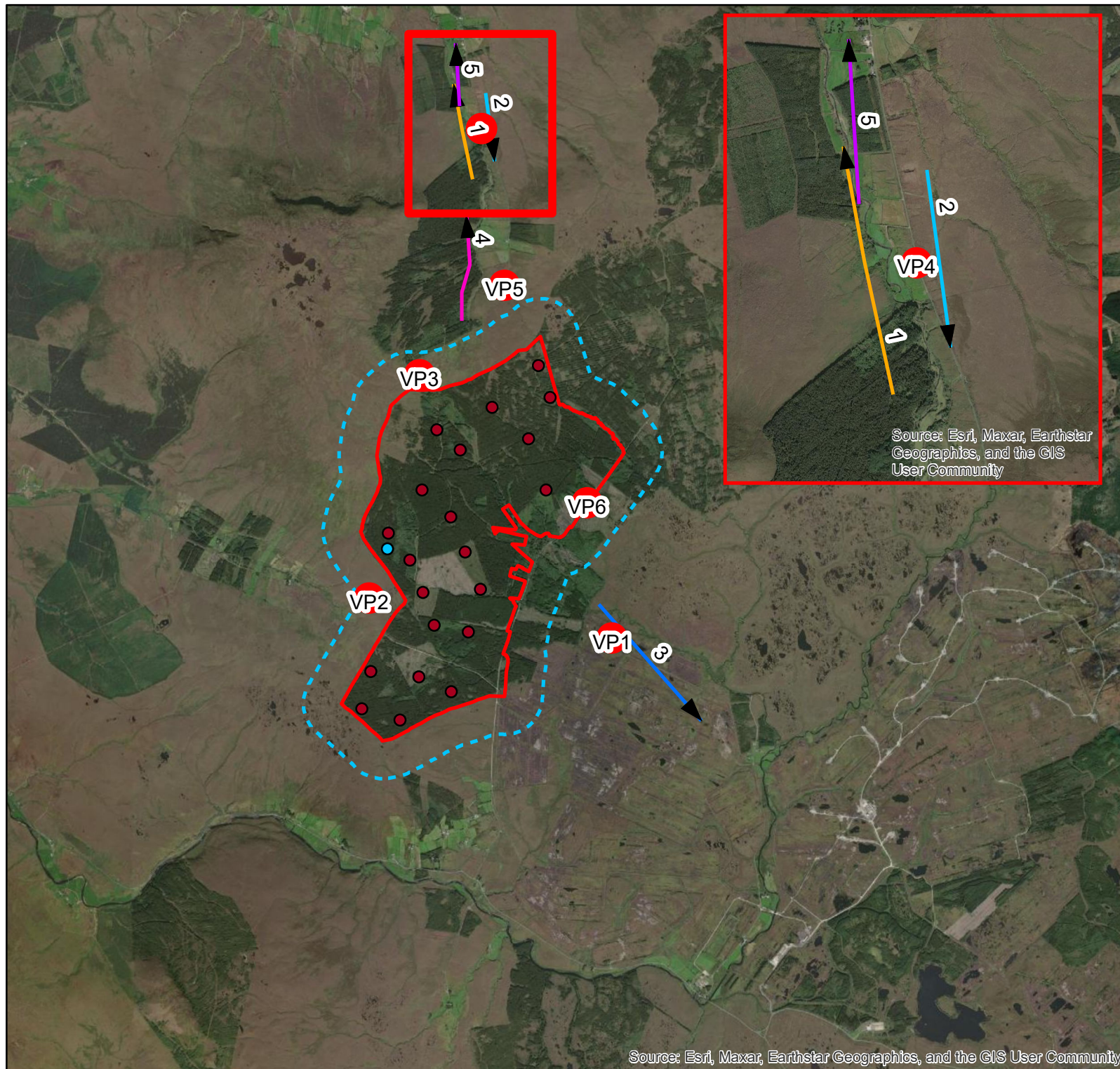
Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 1-1 Cormorant

Drawn: VH Checked: HD

Date: 05/12/2022 Scale (A4): 1:70,000

MWP

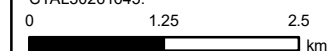


- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Great Black Backed Gull Flight Path

- 1, 04/12/20
- 2, 11/01/21
- 3, 18/01/21
- 4, 17/02/21
- 5, 19/03/21

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CYAL50261645.



Project Title:
Sheskin South Wind Farm

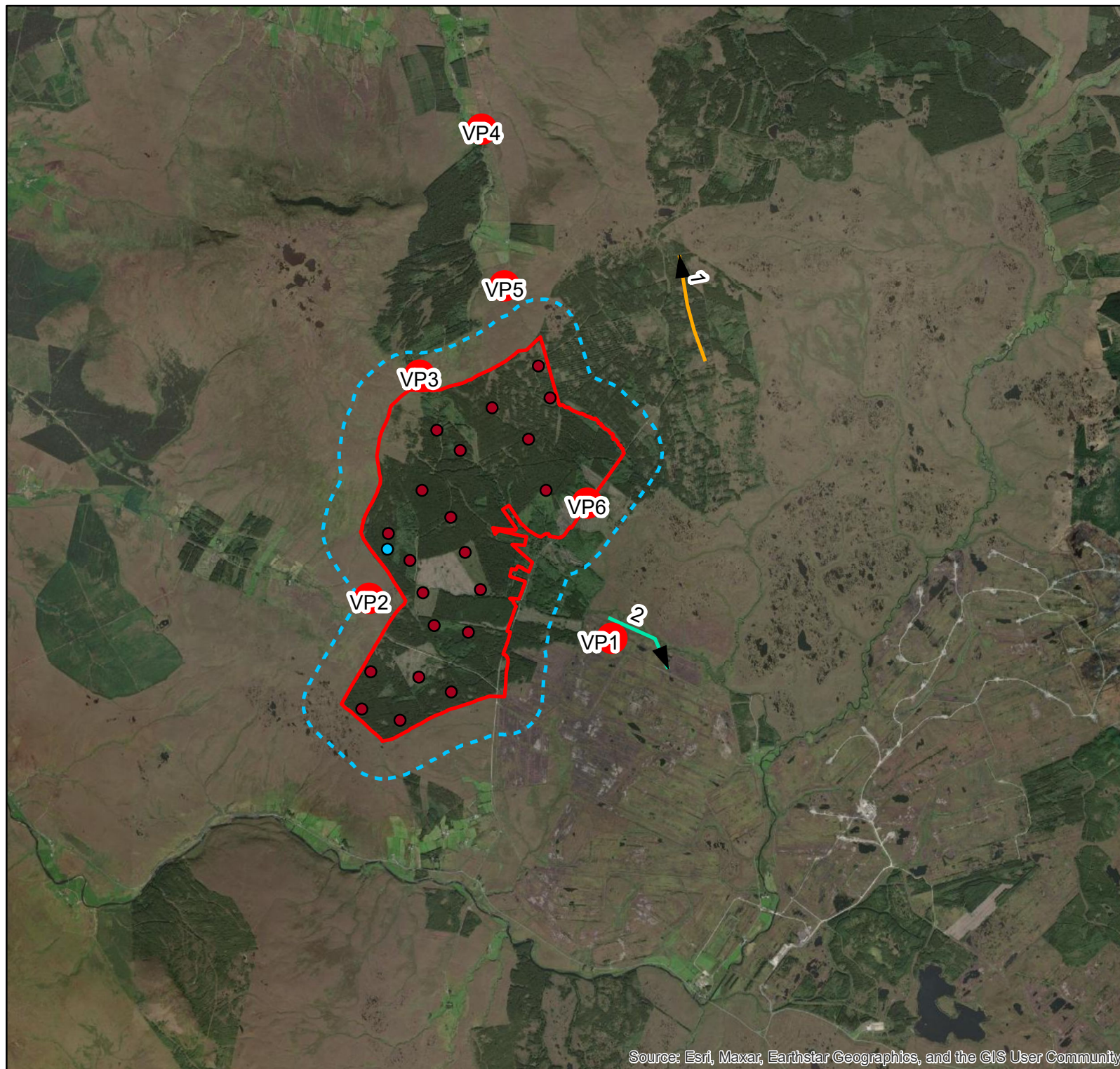
Client: SSE Renewables






Drawing Title:
Bird Surveys Winter 2020/2021
Map 2-1 Great Black Backed Gull

Drawn: VH	Checked: HD
Date: 05/12/2022	Scale (A4): 1:70,000



MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Grey Heron Flight Path

-  1, 20/10/20
-  2, 08/02/21

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 3-1 Grey Heron

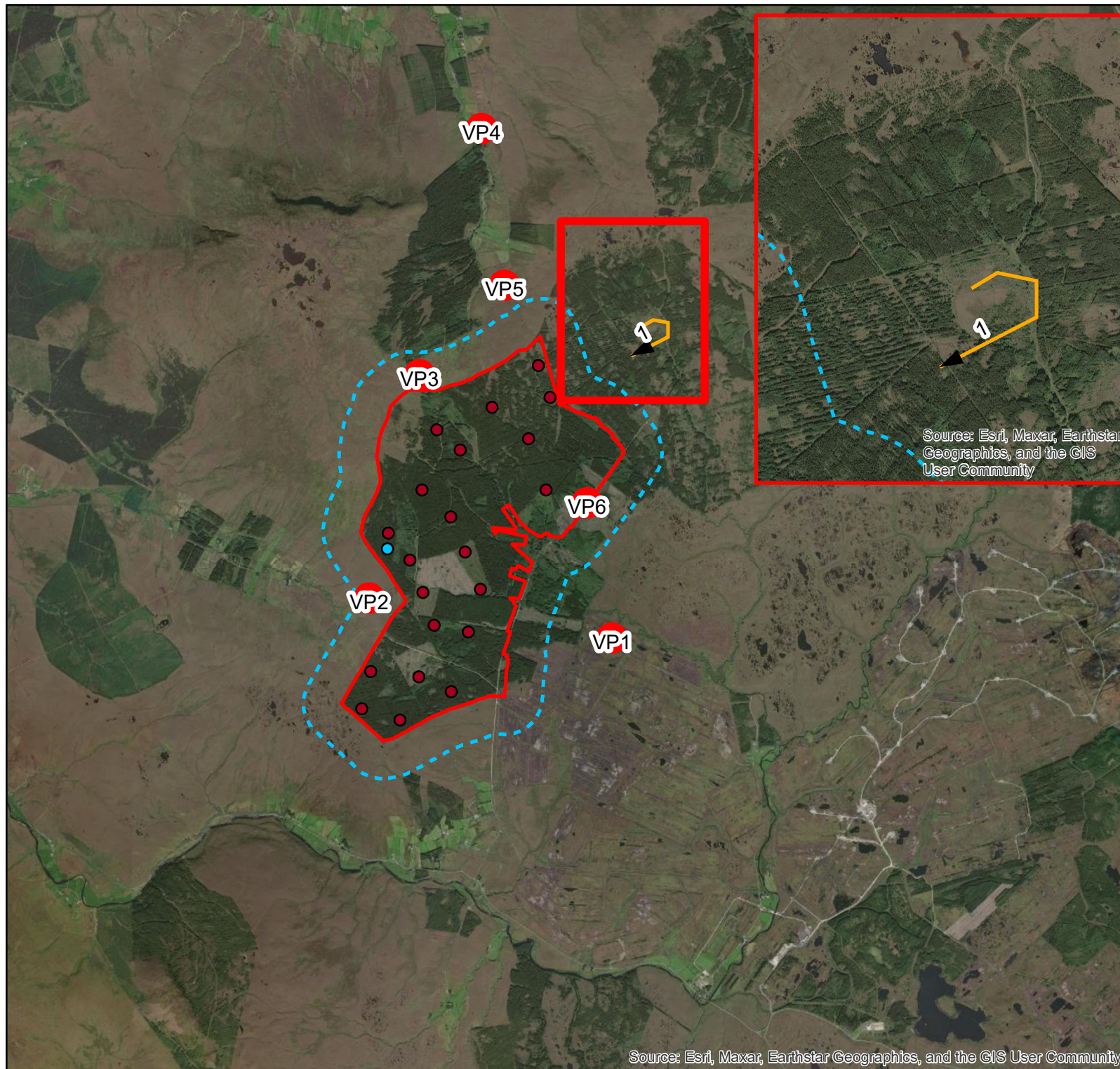
Drawn: VH






Checked: HD

Date: 06/12/2022


Scale (A4): 1:70,000

MWP



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Hen Harrier Flight Path

 1, 09/02/21

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By Permission Of The Government.
CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 4-1 Hen Harrier

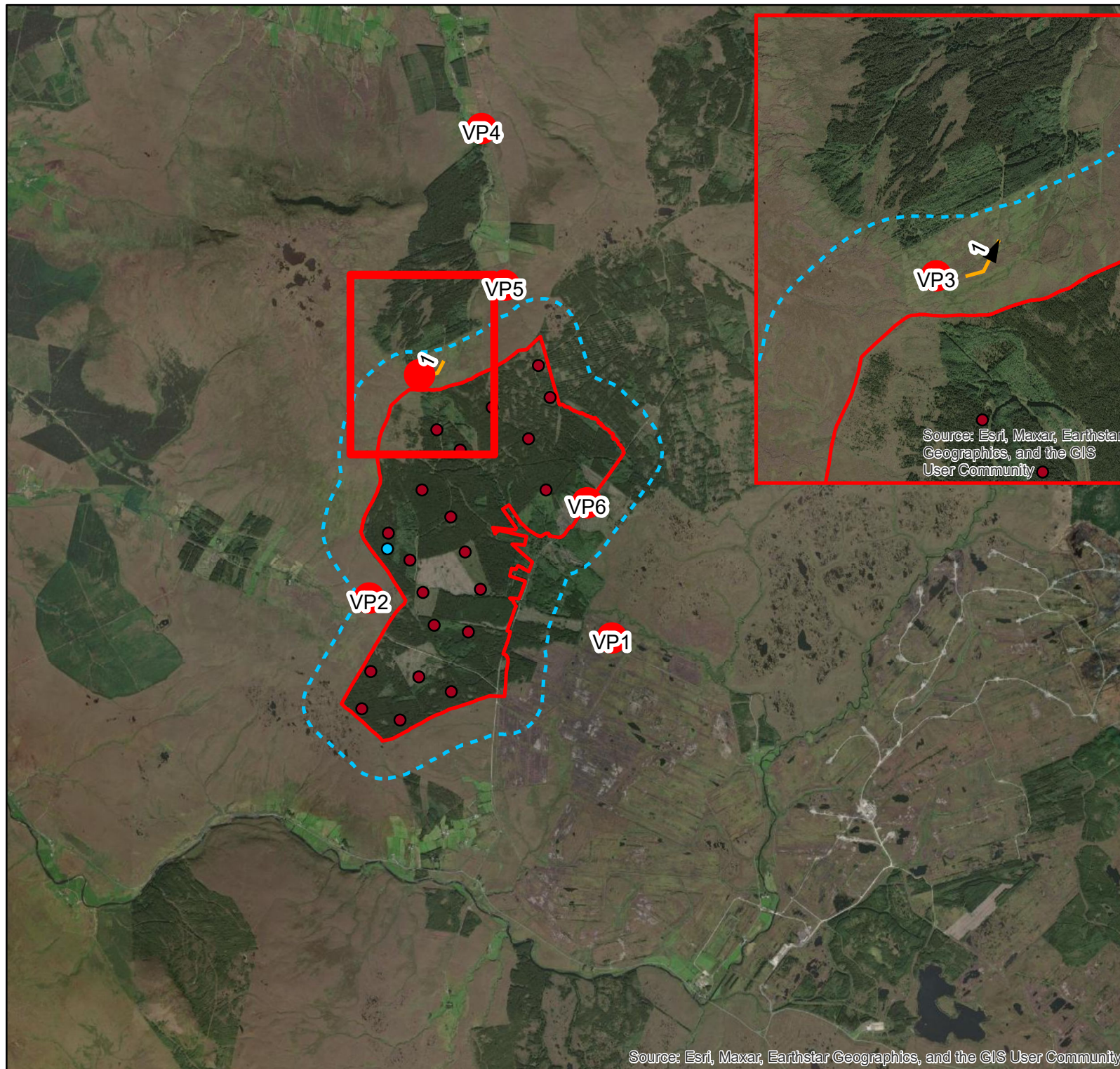
Drawn: VH






Checked: HD

Date: 06/12/2022


Scale (A4): 1:70,000

MWP



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Jack Snipe

 1, 09/02/21

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 5-1 Jack Snipe

Drawn: VH	Checked: HD
Date: 06/12/2022	Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Lesser Black Backed Gull Flight Path

➔ 1, 12/10/20

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 6-1 Lesser Black Backed Gull

Drawn: VH

Checked: HD

Date: 06/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Mallard Flight Path

1, 15/03/21

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 7-1 Mallard

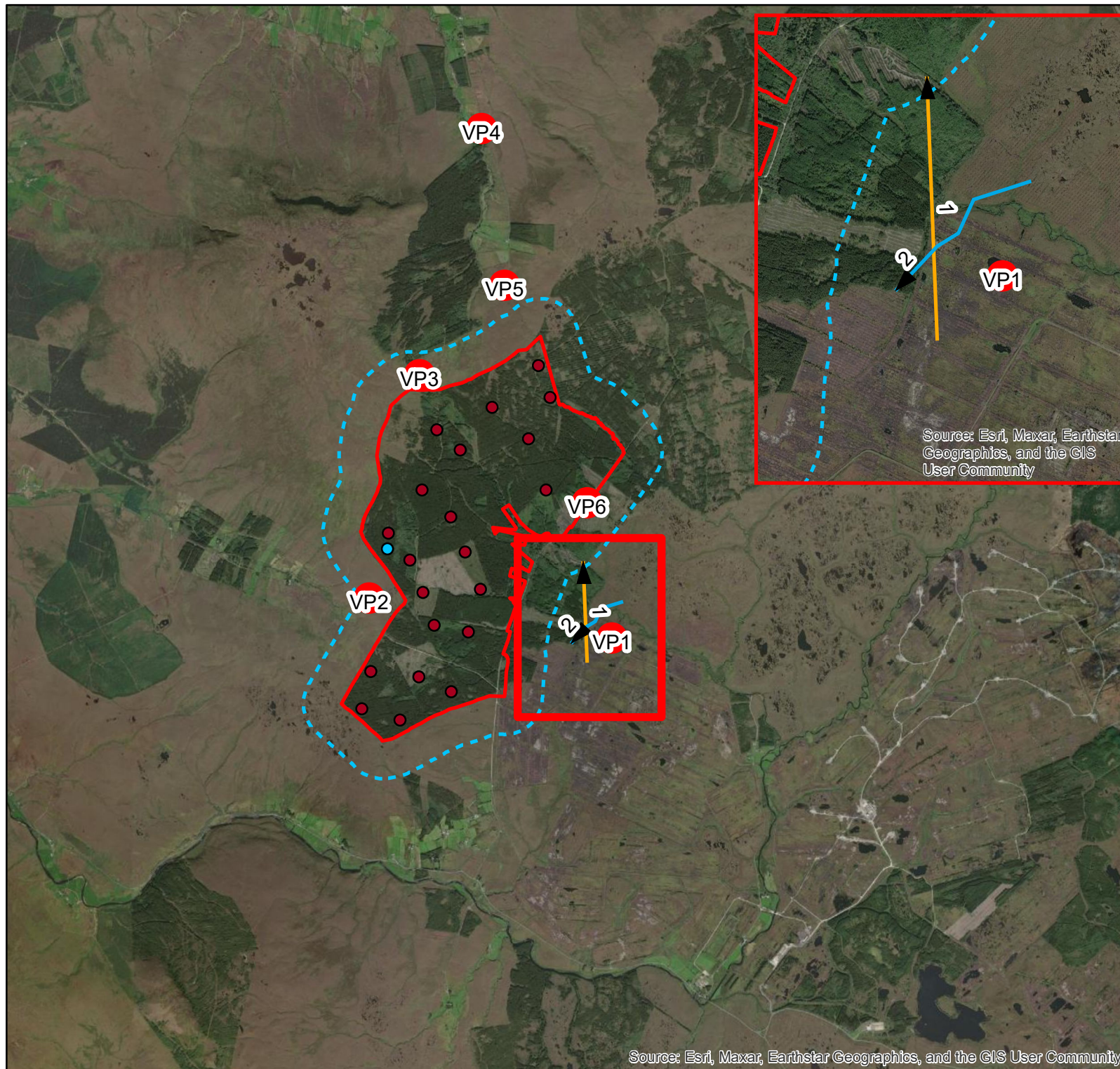
Drawn: VH

Checked: HD

Date: 06/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Merlin Flight Path

→ 1, 12/10/20

→ 2, 14/10/20

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 8-1 Merlin

Drawn: VH

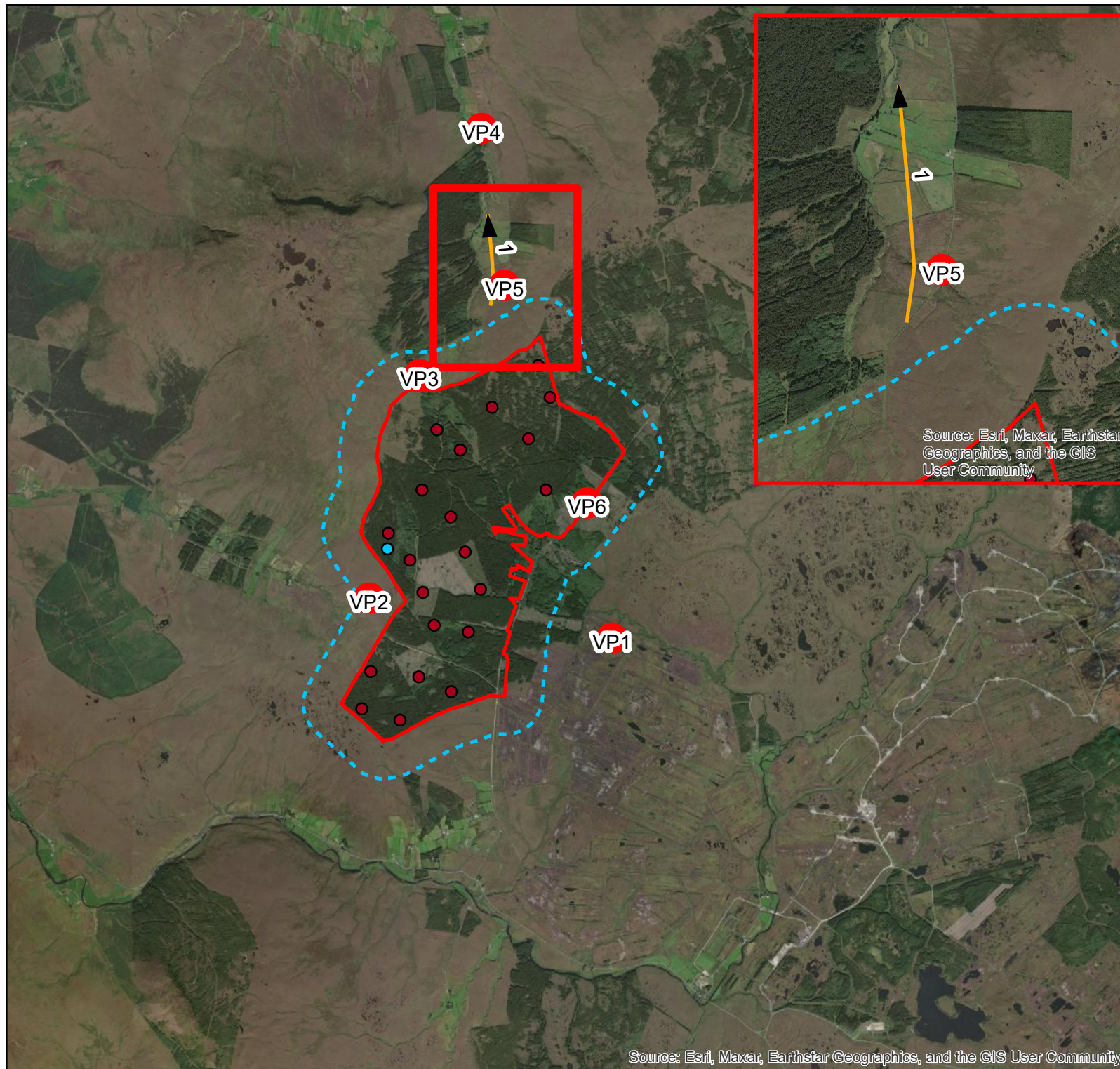
Checked: HD

Date: 06/12/2022

Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Pink Footed Goose Flight Path

→ 1, 12/10/20

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 9-1 Pink Footed Goose

Drawn: VH

Checked: HD

Date: 06/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Red Grouse Calling

✱ 1, 09/02/21

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

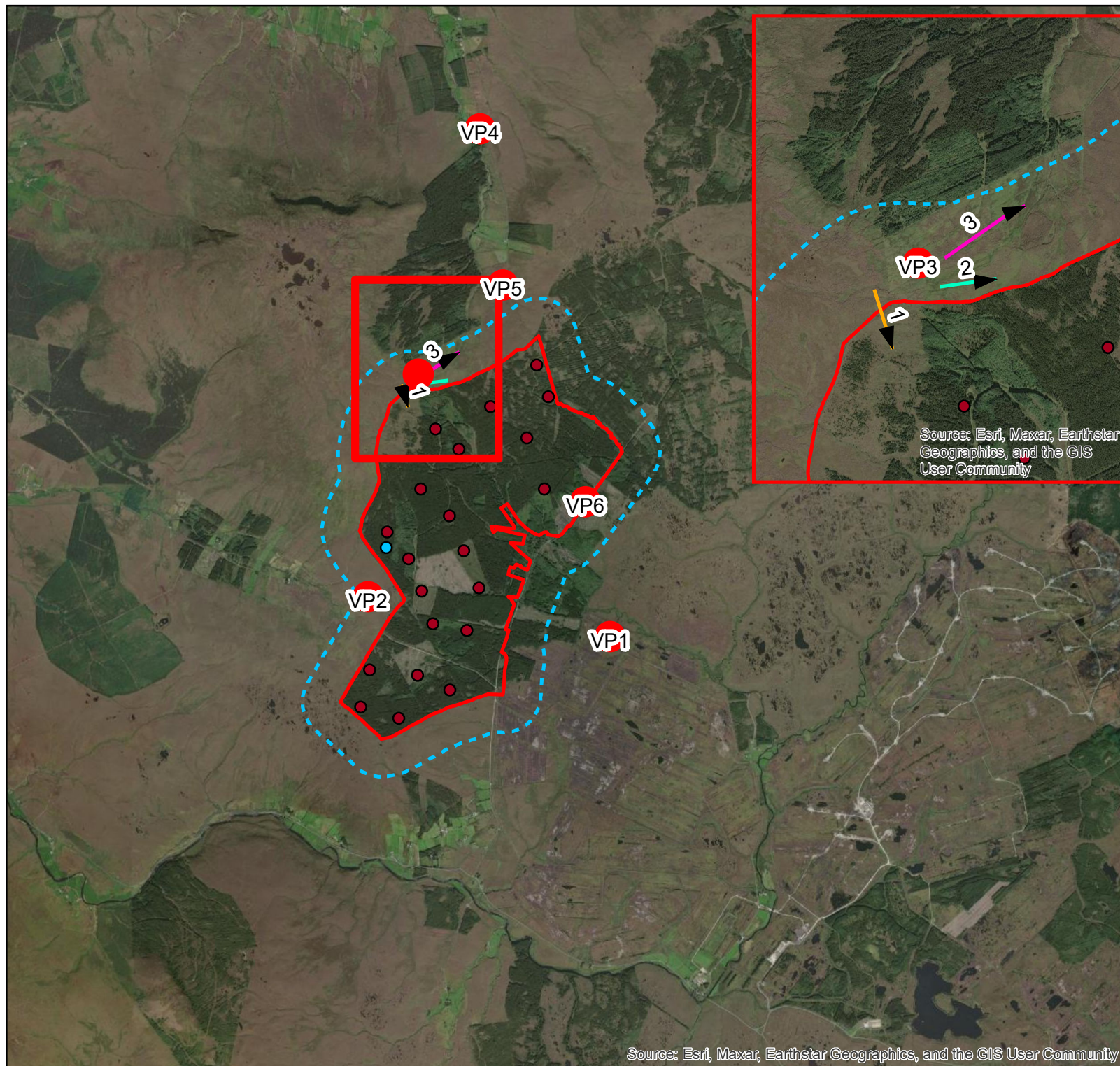
Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 10-1 Red Grouse Calling

Drawn: VH	Checked: HD
Date: 06/12/2022	Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

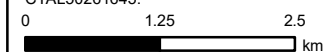


- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Snipe Flight Path

- 1, 14/10/20
- 2, 09/02/21
- 3, 16/03/21

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CYAL50261645.



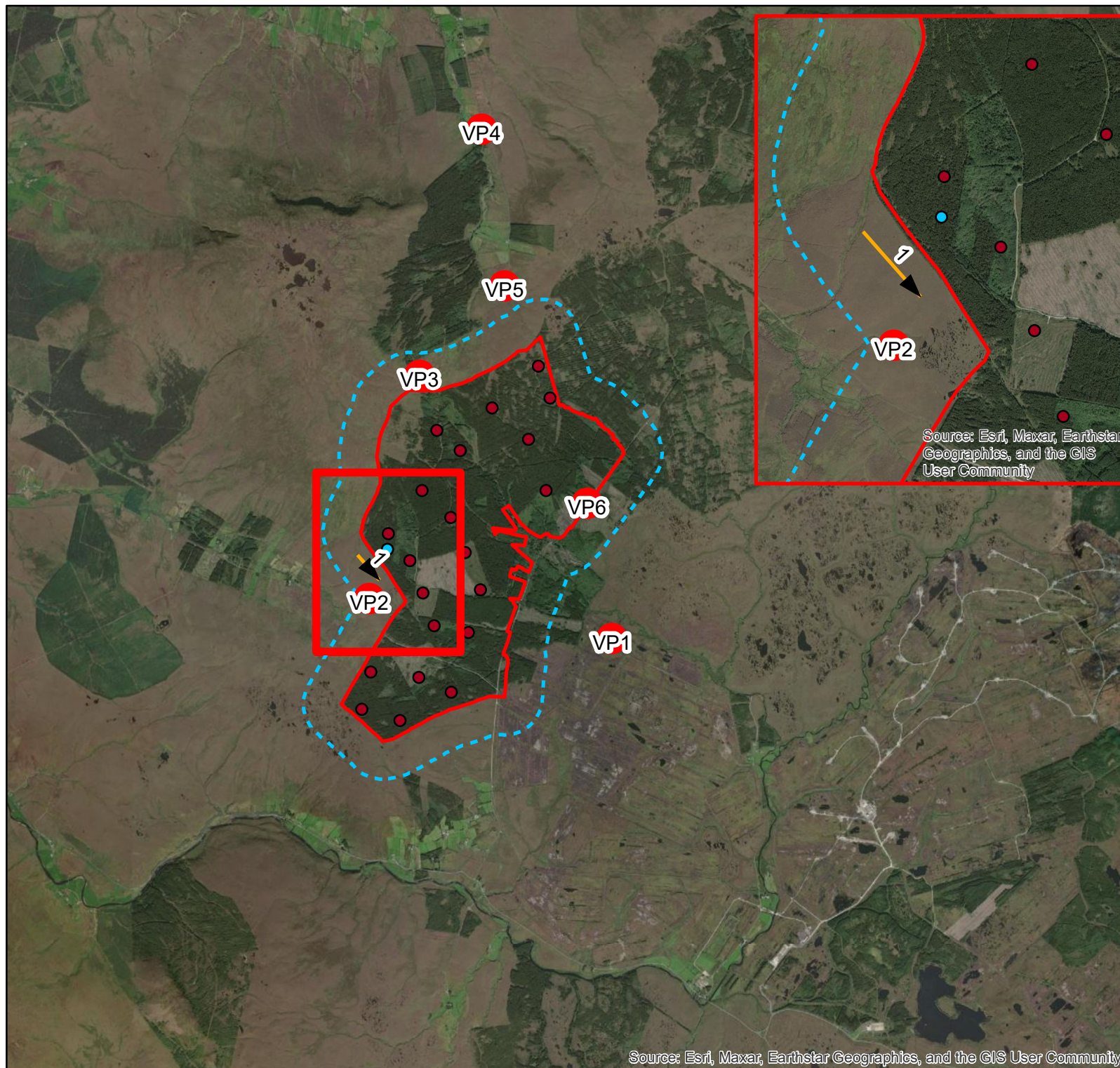
Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 11-1 Snipe

Drawn: VH	Checked: HD
Date: 06/12/2022	Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Sparrowhawk Flight Path

➔ 1, 14/10/20

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CYAL50261645.

0 1.25 2.5
km



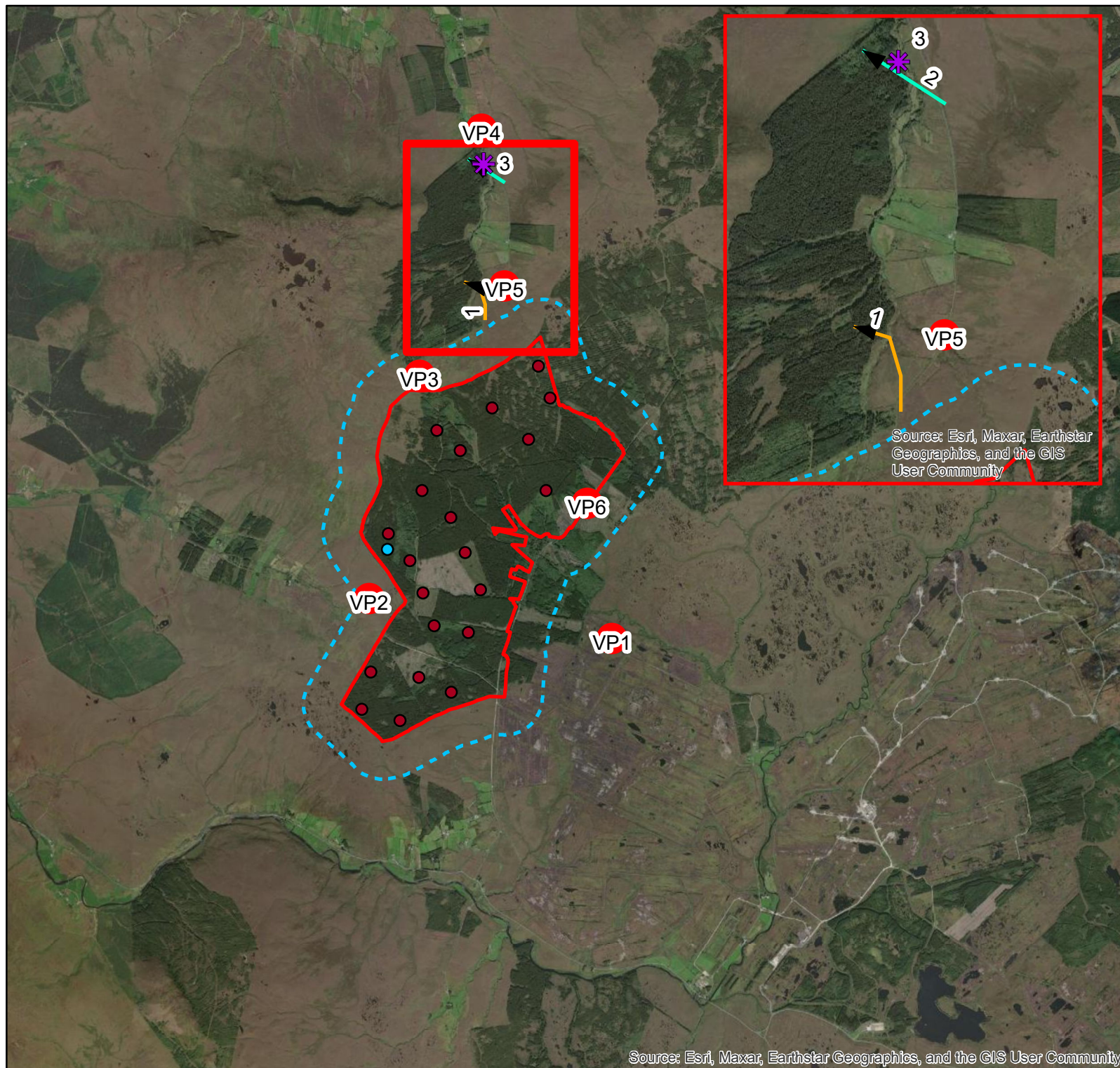
Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2020/2021
Map 12-1 Sparrowhawk

Drawn: VH	Checked: HD
Date: 06/12/2022	Scale (A4): 1:70,000

MWP



Site Boundary

Vantage Point

Met Mast Location

Turbine Location

Flight Activity Survey Area 500m

Buzzard Flight Path

1, 04/08/2021

2, 02/09/2021

Buzzard Perched

3, 03/09/2021 (*incidental*)

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CYAL50261645.

01.252.5

km

N

Project Title:

Sheskin South Wind Farm

Client:

SSE Renewables

Drawing Title:

Bird Surveys Summer 2021

Map 1-1 Buzzard

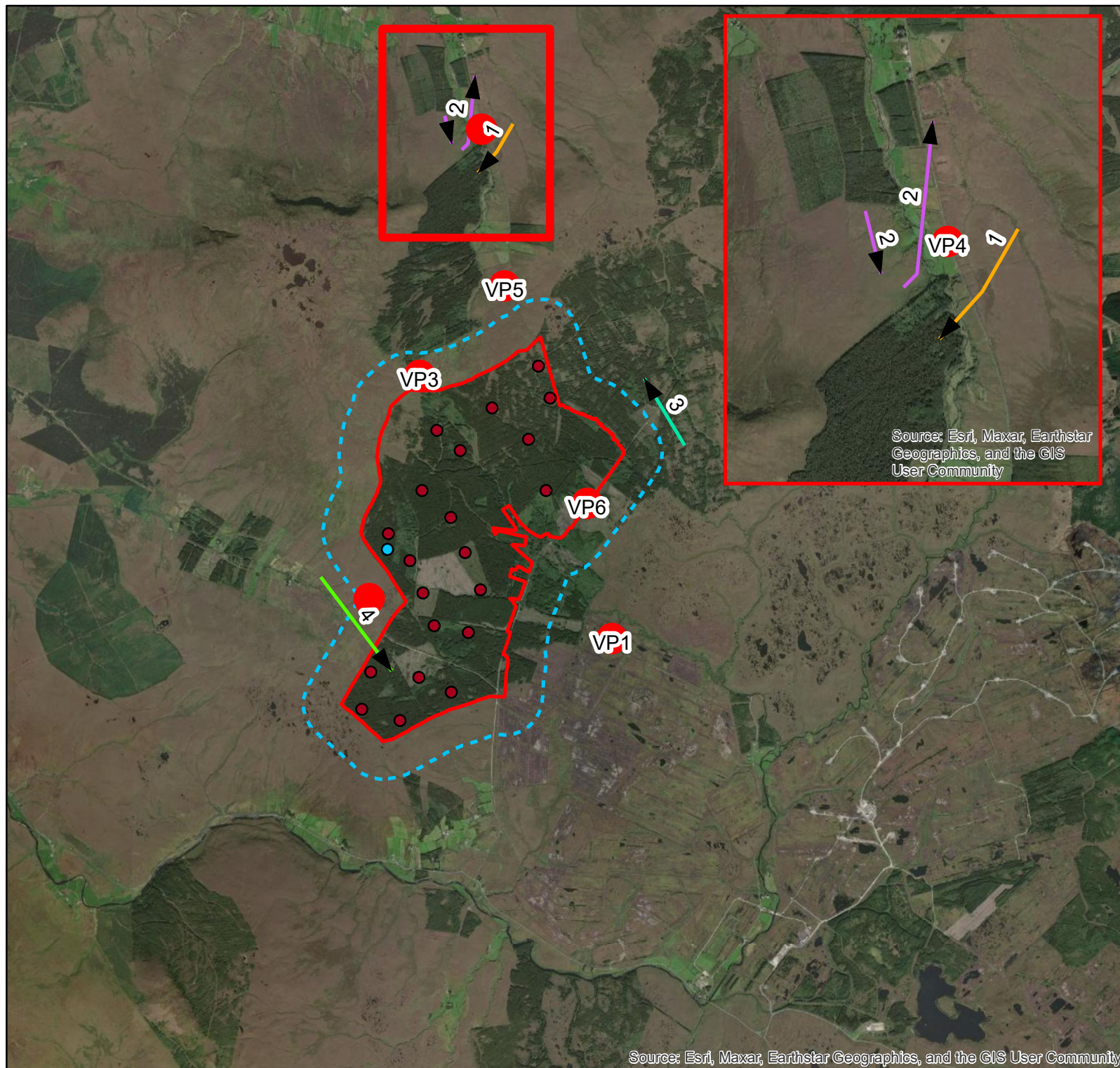
Drawn: VH

Checked: HD

Date: 05/12/2022

Scale (A4): 1:70,000





- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Great Black Backed Gull Flight Path

- ➔ 1, 08/04/2021
- ➔ 2, 08/04/2021
- ➔ 3, 08/04/2021
- ➔ 4, 12/05/2021

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 2-1 Great Black Backed Gull

Drawn: VH	Checked: HD
Date: 05/12/2022	Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Great Northern Diver Flight Path

➔ 1, 03/09/2021

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

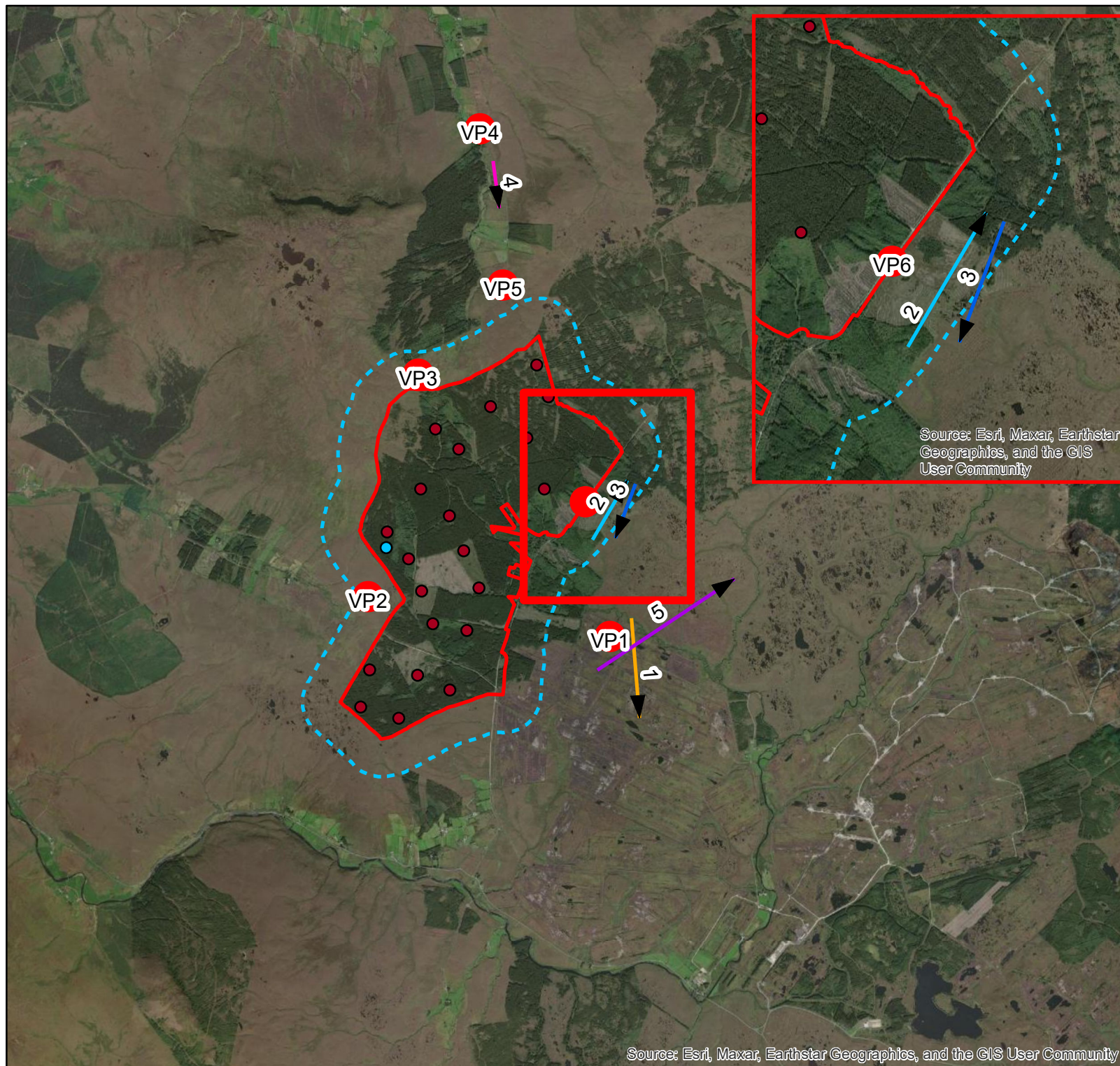
Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 3-1 Great Northern Diver

Drawn: VH Checked: HD

Date: 05/12/2022 Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Grey Heron Flight Path

- ➔ 1, 12/04/2021
- ➔ 2, 10/05/2021
- ➔ 3, 04/06/2021
- ➔ 4, 04/06/2021
- ➔ 5, 23/06/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 4-1 Grey Heron

Drawn: VH

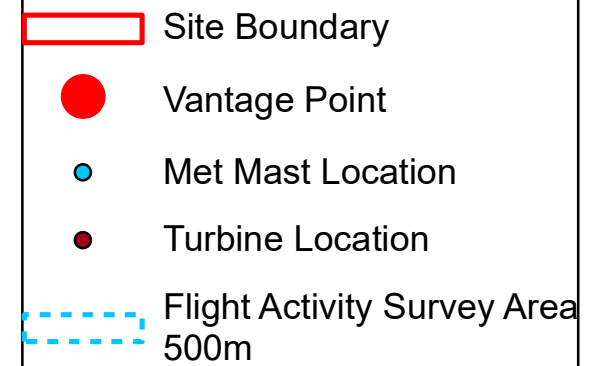
Checked: HD

Date: 05/12/2022

Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Grey Heron Perched

* 4, 04/06/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 4-2 Grey Heron

Drawn: VH

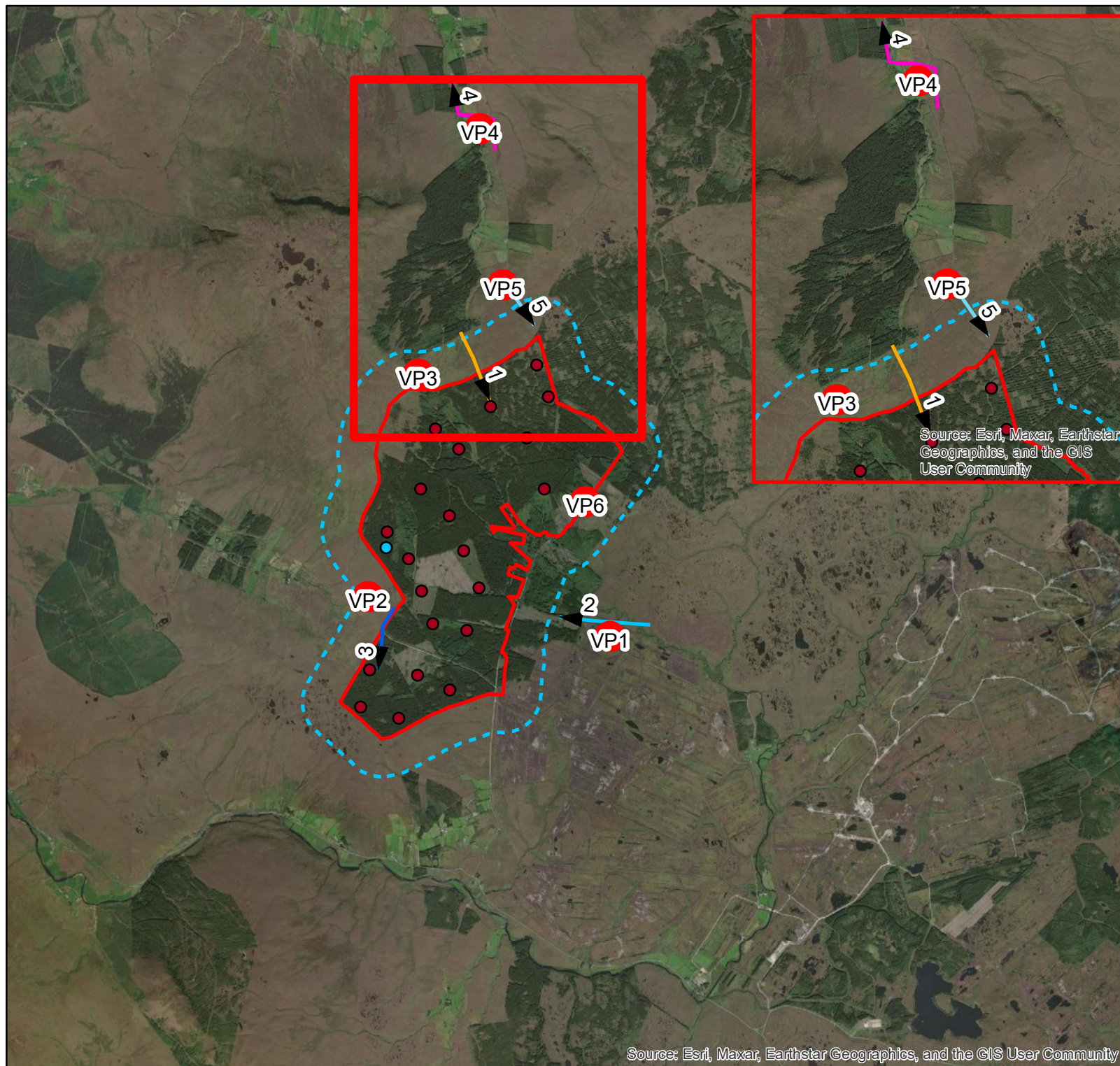
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Date: 14/12/2022

Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Kestrel Flight Path

- ➔ 1, 12/04/2021
- ➔ 2, 23/06/2021
- ➔ 3, 07/07/2021
- ➔ 4, 06/08/2021
- ➔ 5, 10/08/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 5-1 Kestrel

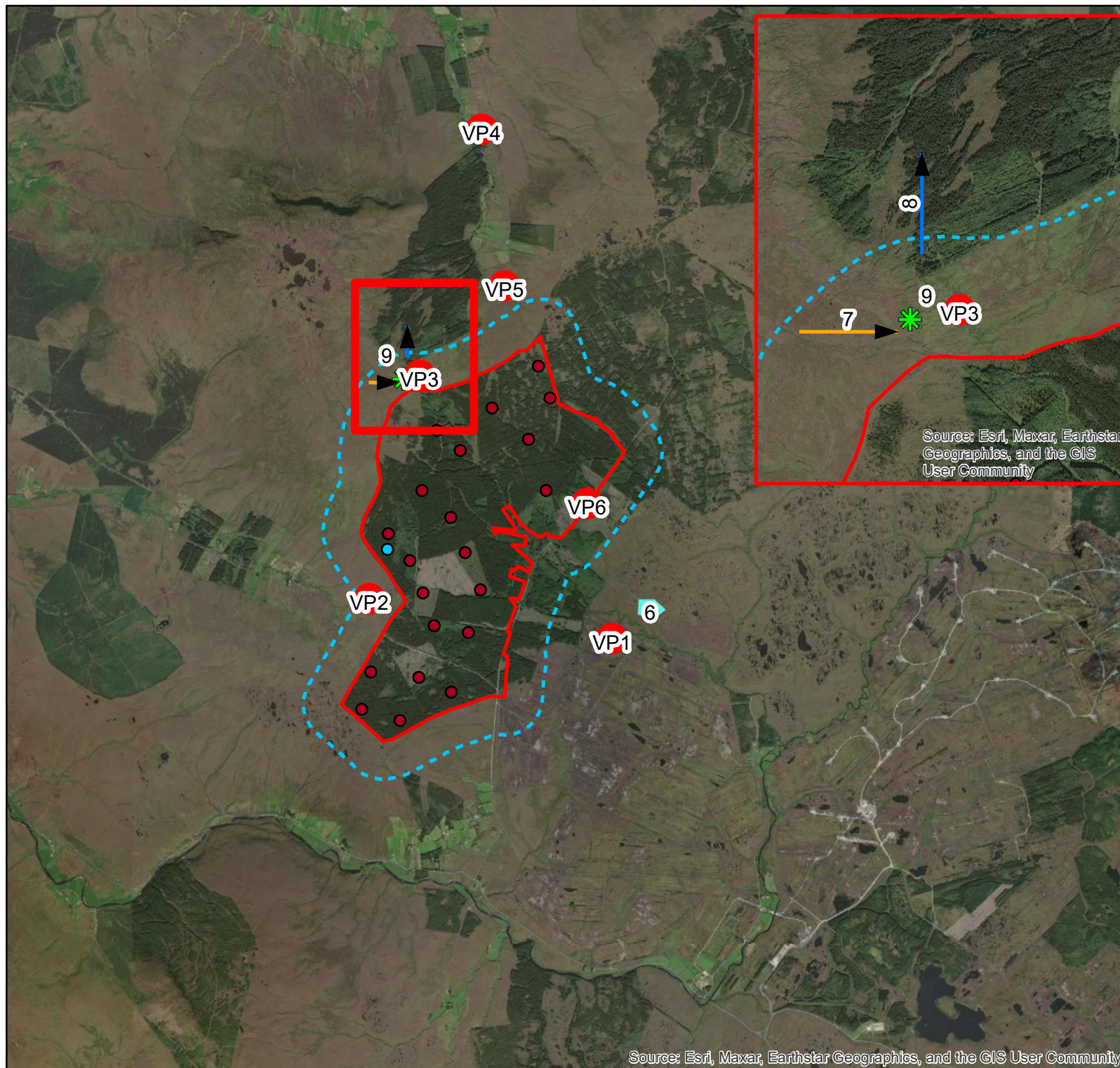
Drawn: VH

Checked: HD

Date: 05/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Kestrel Activity

6, 11/08/2021

Kestrel Flight Path

➡ 7, 02/09/2021

➡ 8, 02/09/2021

Kestrel Perched

✱ 9, 02/09/2021

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CYAL50261645.

0 1.25 2.5
km



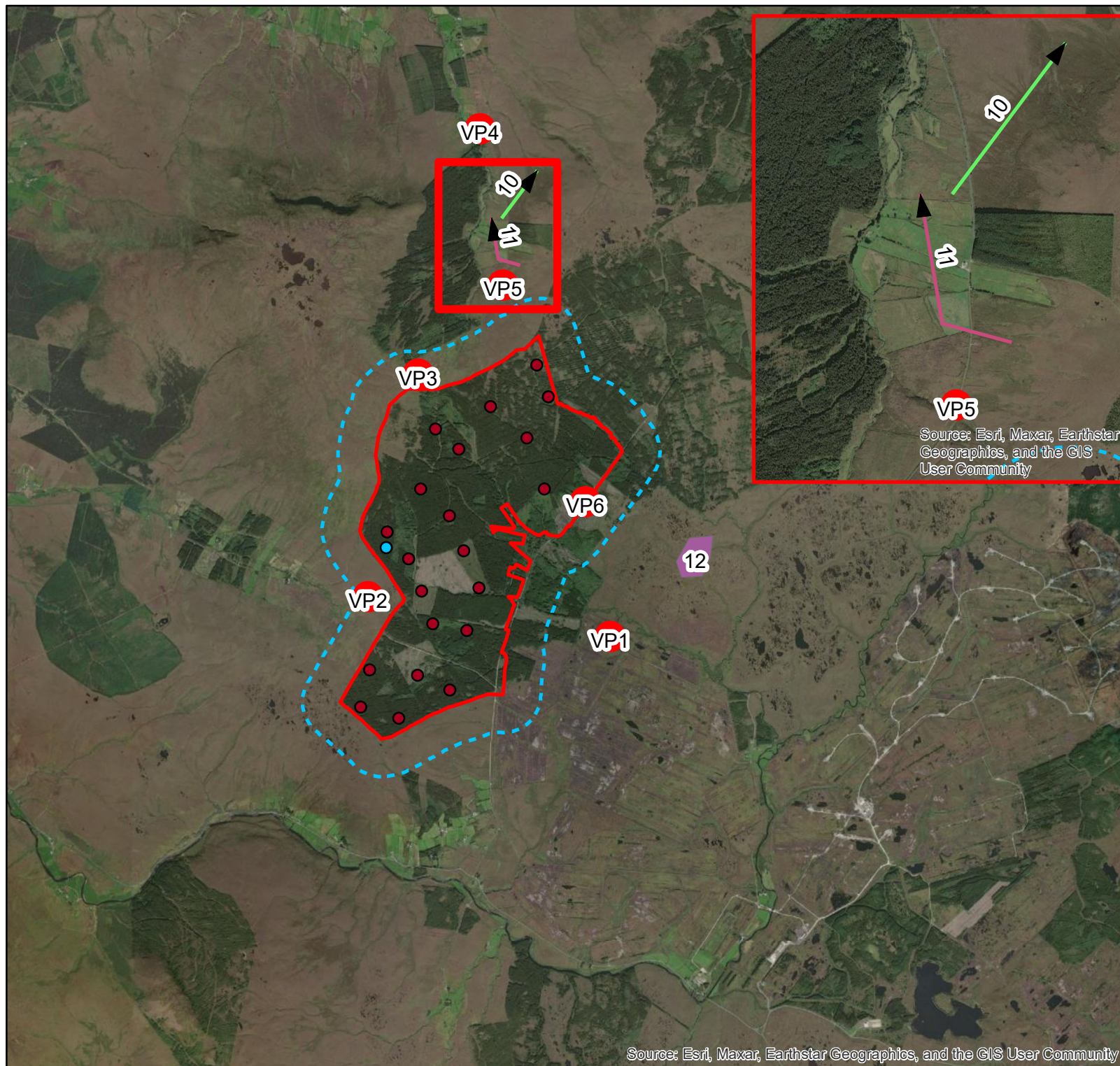
Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 5-2 Kestrel

Drawn: VH	Checked: HD
Date: 05/12/2022	Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Kestrel Flight Path

- ➔ 10, 03/09/2021
- ➔ 11, 06/09/2021

Kestrel Activity

- 12, 07/09/2021

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

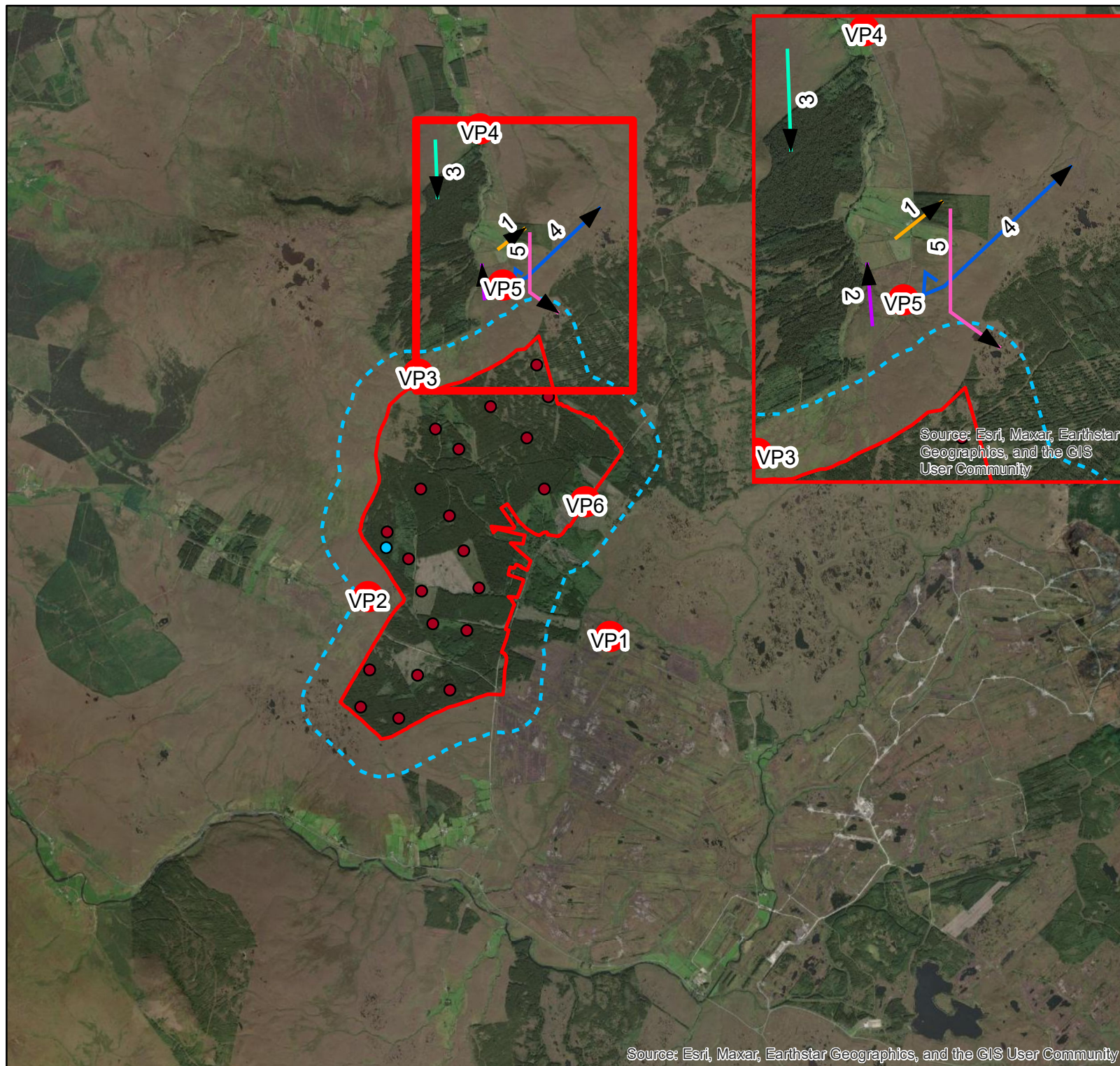
Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 5-3 Kestrel

Drawn: VH Checked: HD

Date: 05/12/2022 Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Lesser Black Backed Gull Flight Path

- ➔ 1, 08/04/2021
- ➔ 2, 08/04/2021
- ➔ 3, 08/04/2021
- ➔ 4, 12/04/2021
- ➔ 5, 10/05/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 6-1 Lesser Black Backed Gull

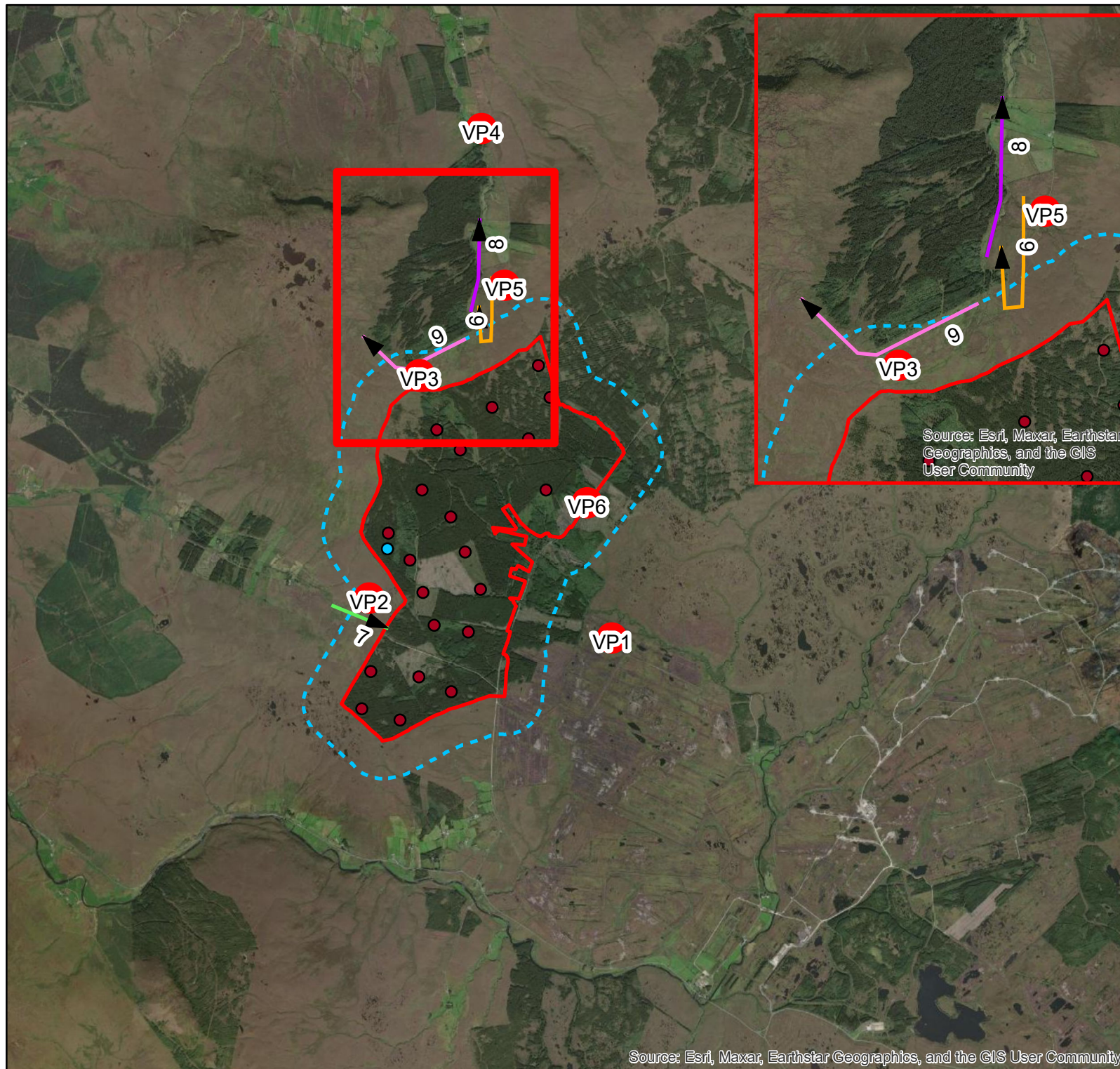
Drawn: VH

Checked: HD

Date: 05/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Lesser Black Backed Gull Flight Path

- 6, 10/05/2021
- 7, 07/07/2021
- 8, 07/07/2021
- 9, 07/07/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 6-2 Lesser Black Backed Gull

Drawn: VH

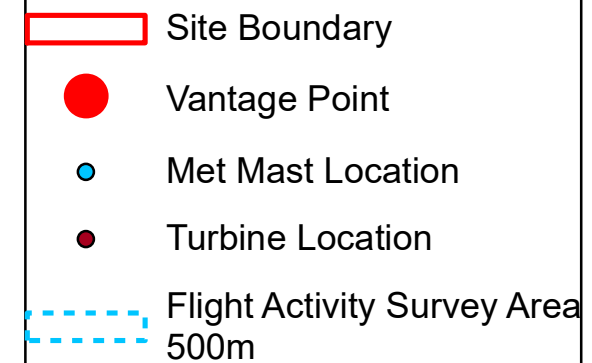
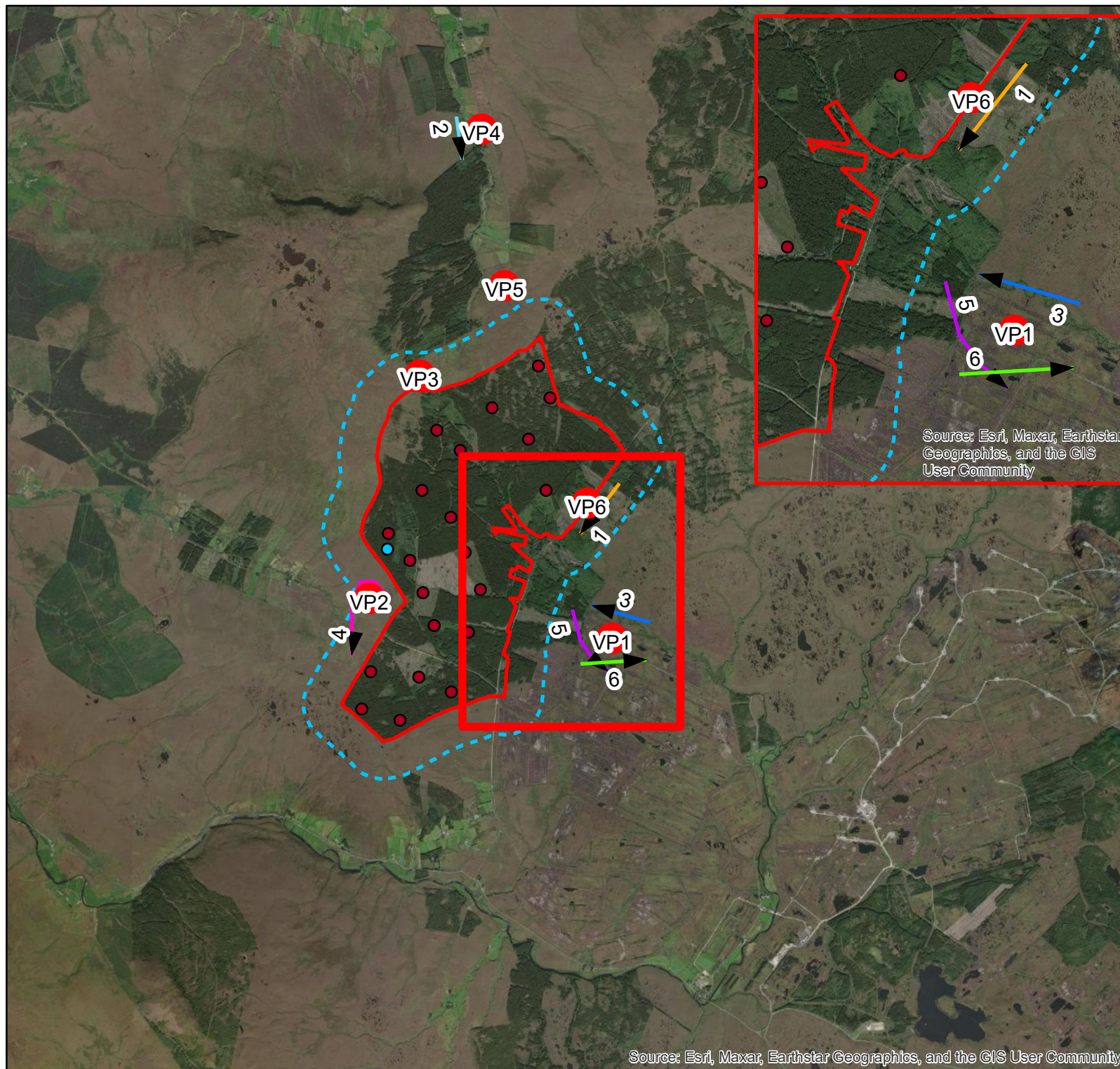
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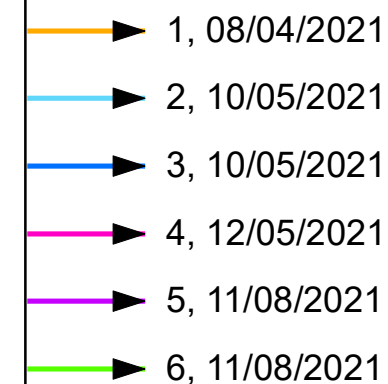
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MWP

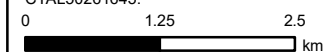
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Mallard Flight Path



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CYAL50261645.



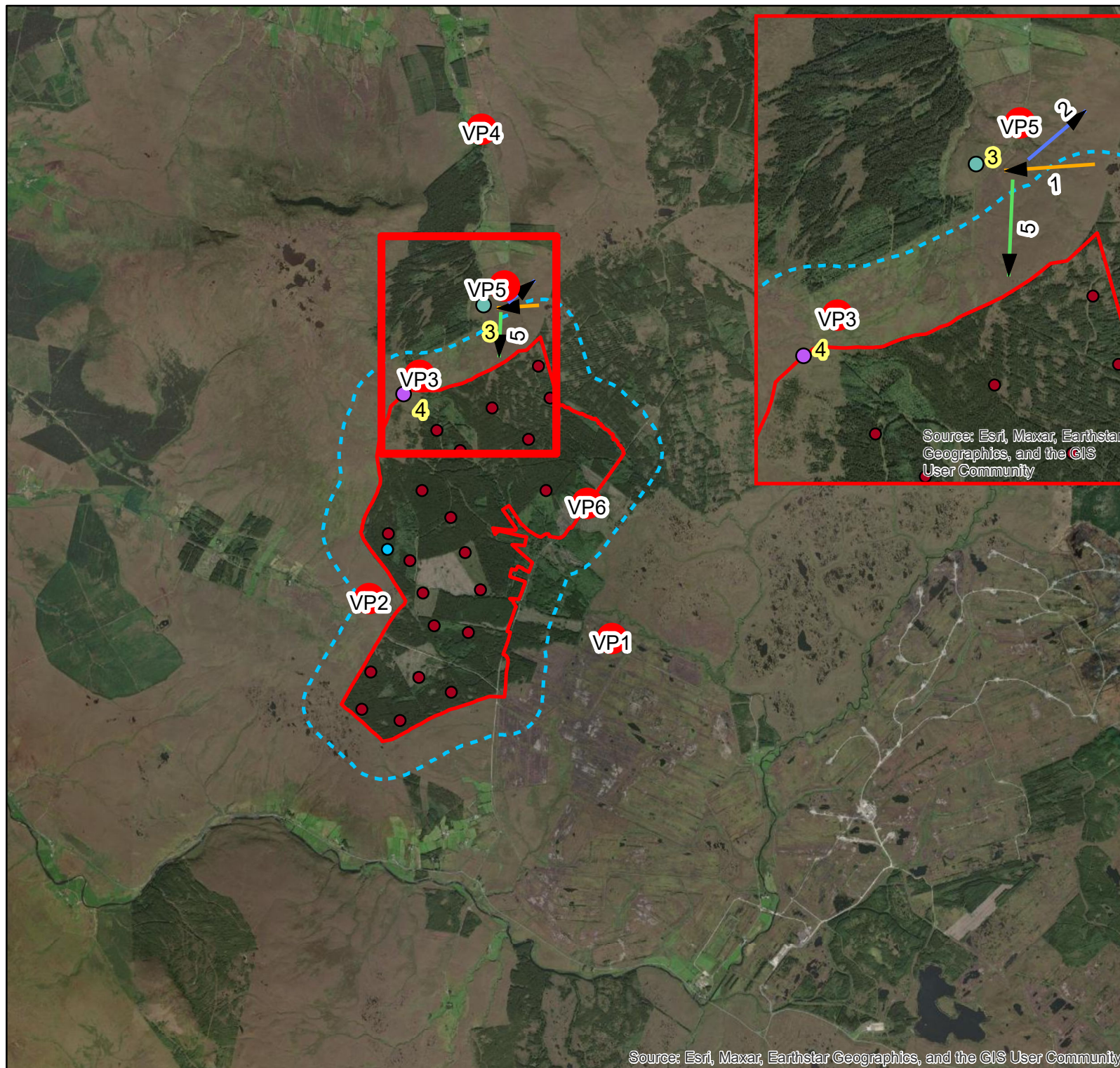
Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 7-1 Mallard

Drawn: VH	Checked: HD
Date: 05/12/2022	Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Snipe Flight Path

- ➔ 1, 13/04/2021
- ➔ 2, 17/05/2021
- ➔ 5, 19/05/2021

Snipe Calling

- 3, 17/05/2021
- 4, 17/05/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

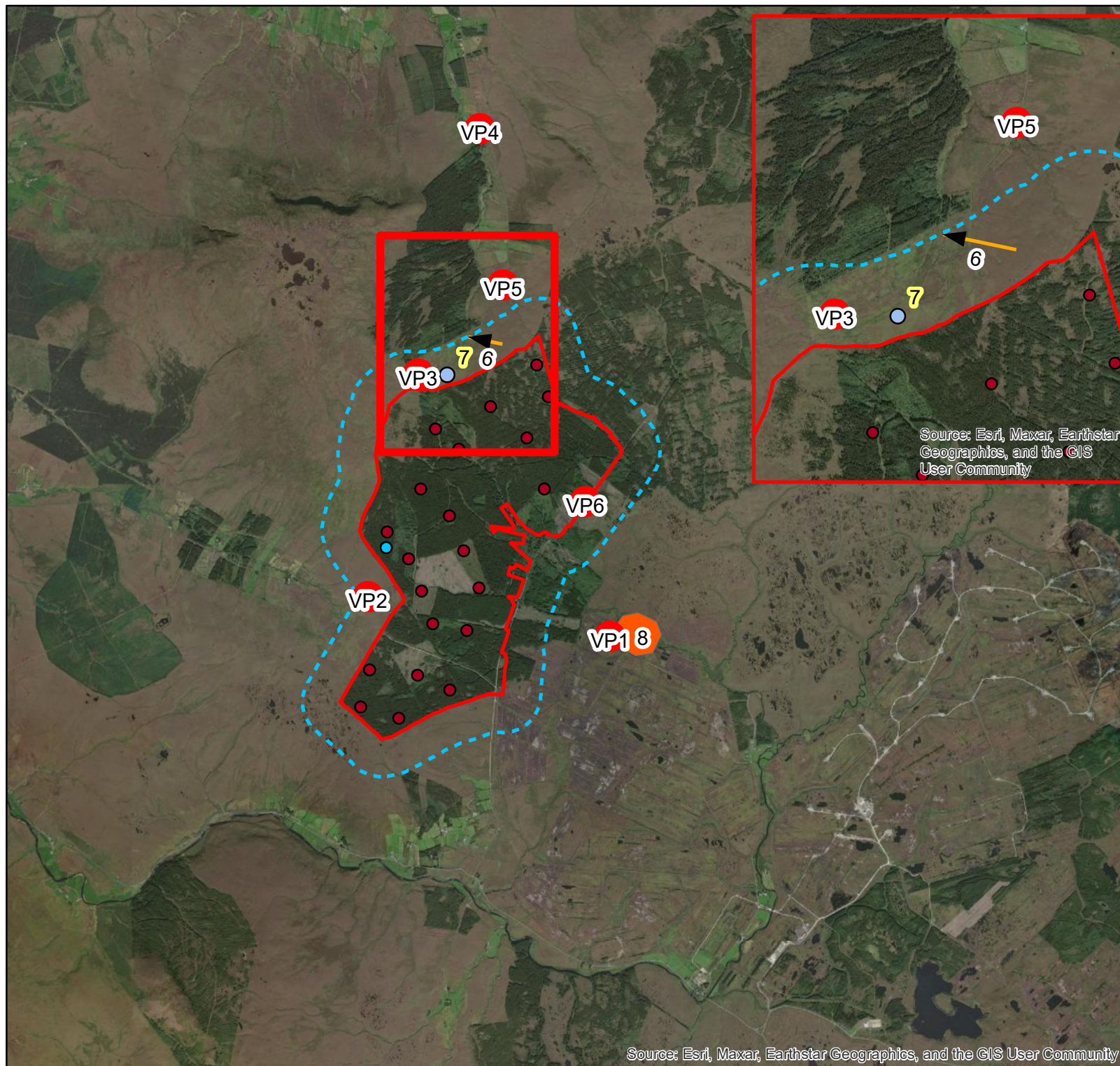
Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 8-1 Snipe

Drawn: VH	Checked: HD
Date: 05/12/2022	Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Snipe Flight Path

→ 6, 04/06/2021

Snipe Calling

● 7, 04/06/2021

Snipe Activity

8, 02/07/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 8-2 Snipe

Drawn: VH






Checked: HD

Date: 05/12/2022



Scale (A4): 1:70,000

MWP




-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area
500m

Snipe Flight Path

-  9, 02/07/2021
-  10, 02/07/2021

Snipe Activity

-  11, 07/07/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 8-3 Snipe

Drawn: VH

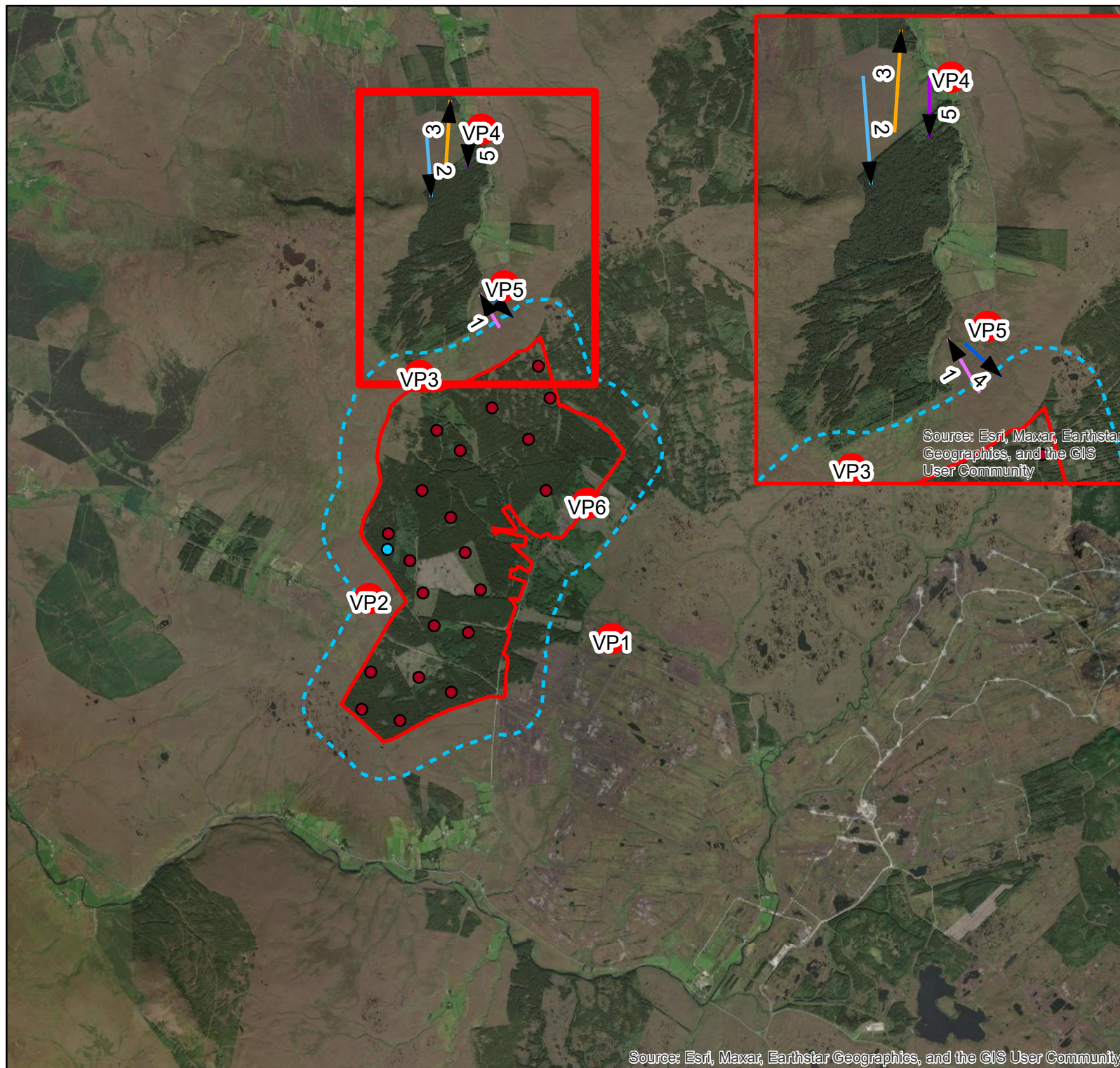
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Date: 05/12/2022

Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Sparrowhawk Flight Path

- 1, 13/04/2021
- 2, 10/05/2021
- 3, 02/07/2021
- 4, 07/07/2021
- 5, 10/08/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

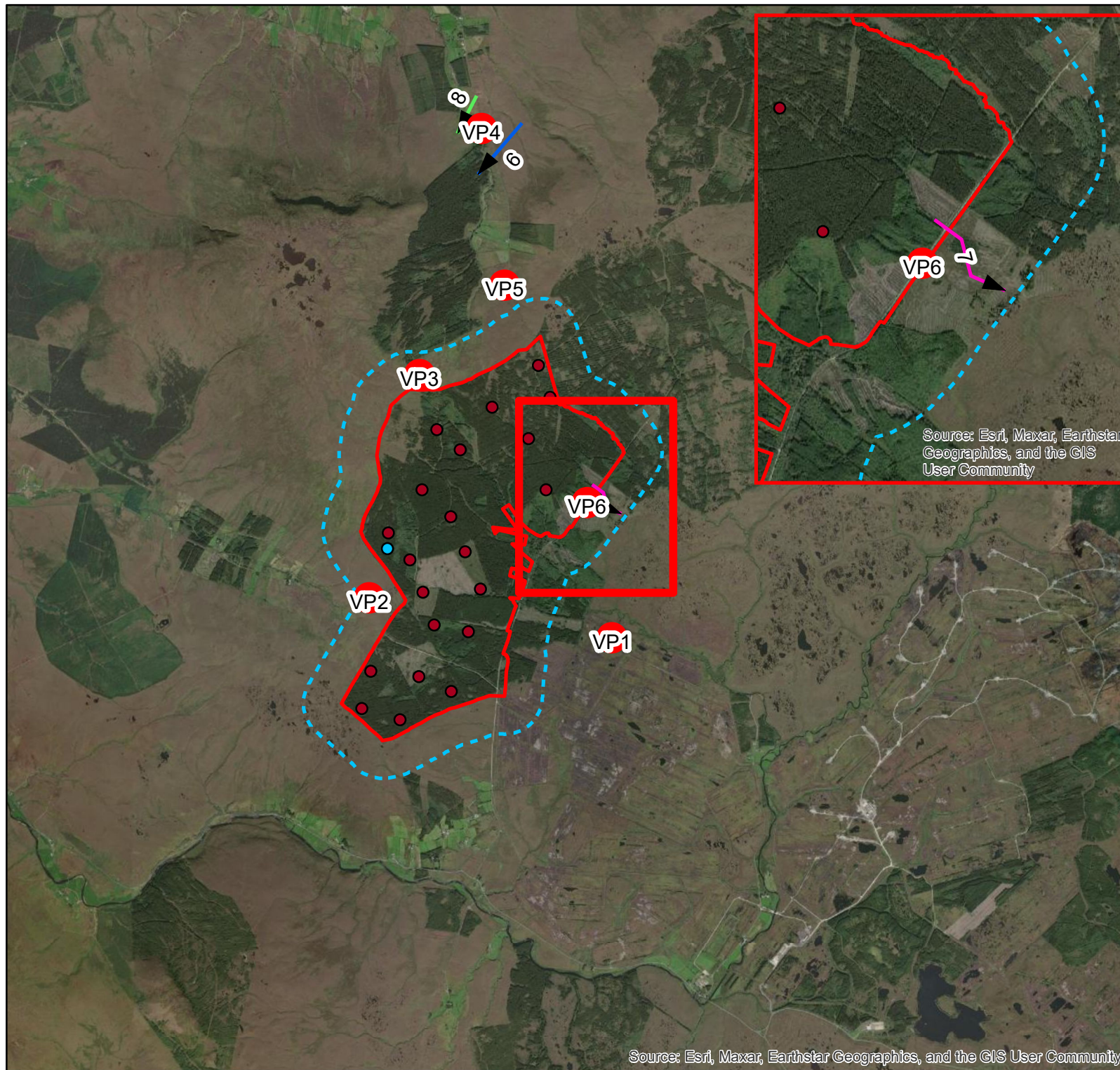
Drawing Title:
Bird Surveys Summer 2021
Map 9-1 Sparrowhawk

Drawn: VH Checked: HD

Date: 05/12/2022 Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Vantage Point

Met Mast Location

Turbine Location

Flight Activity Survey Area
500m

Sparrowhawk Flight Path

6, 03/09/2021

7, 03/09/2021

8, 06/09/2021

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01.252.5
km

N

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2021
Map 9-2 Sparrowhawk

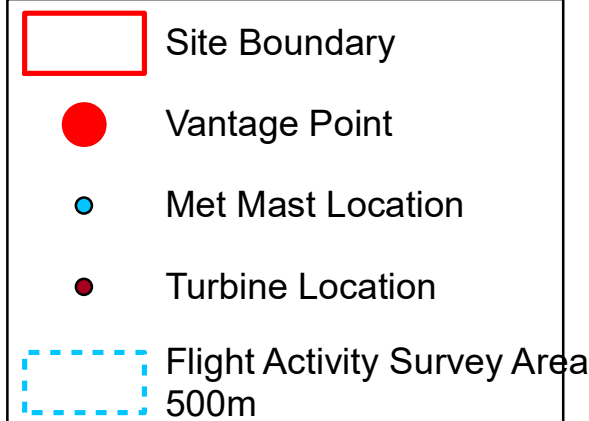
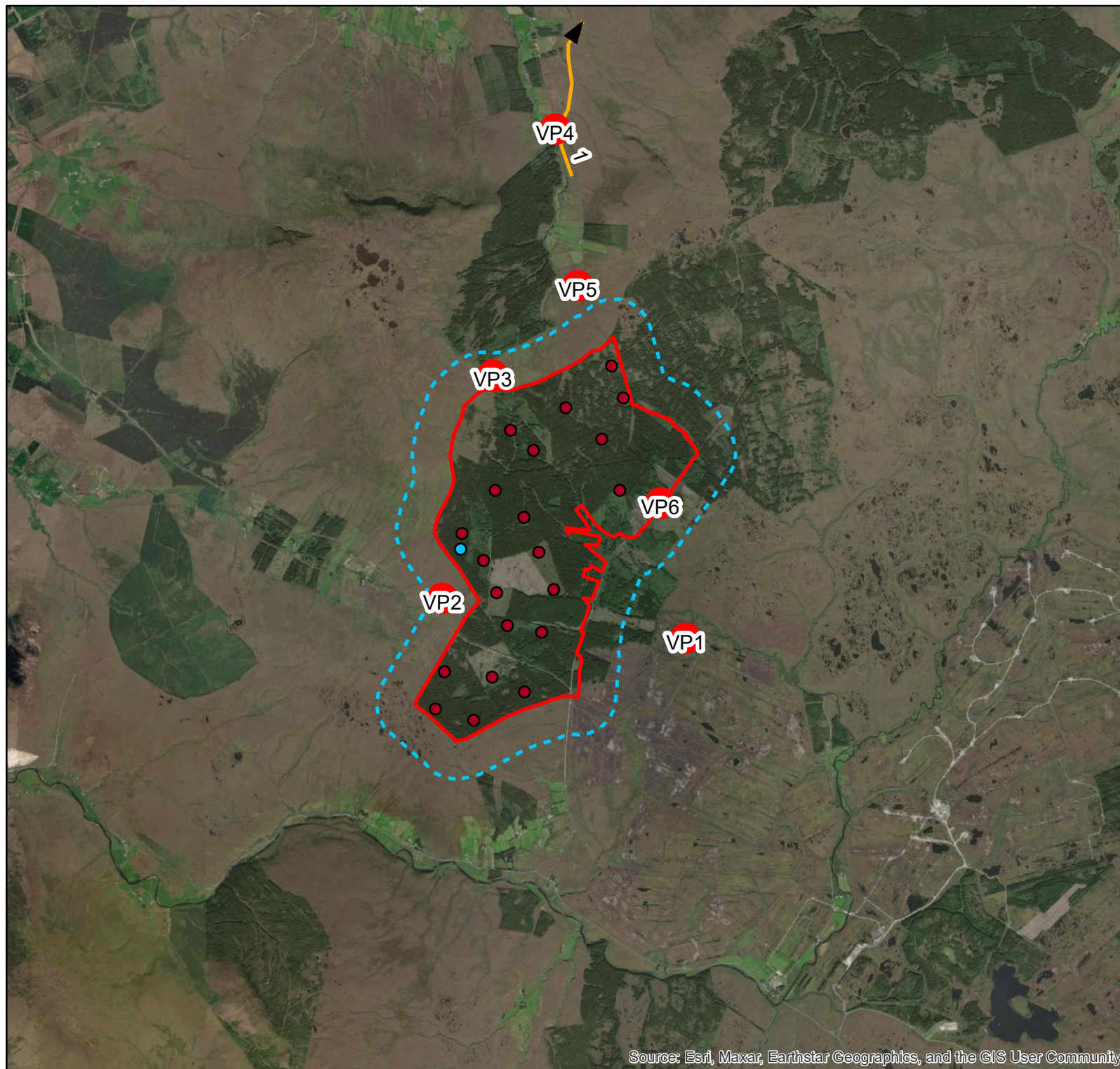
Drawn: VH

Checked: HD


Date: 05/12/2022

Scale (A4): 1:70,000

MWP



Black Headed Gull Flight Path

 1, 23/02/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 1-1 Black Headed Gull

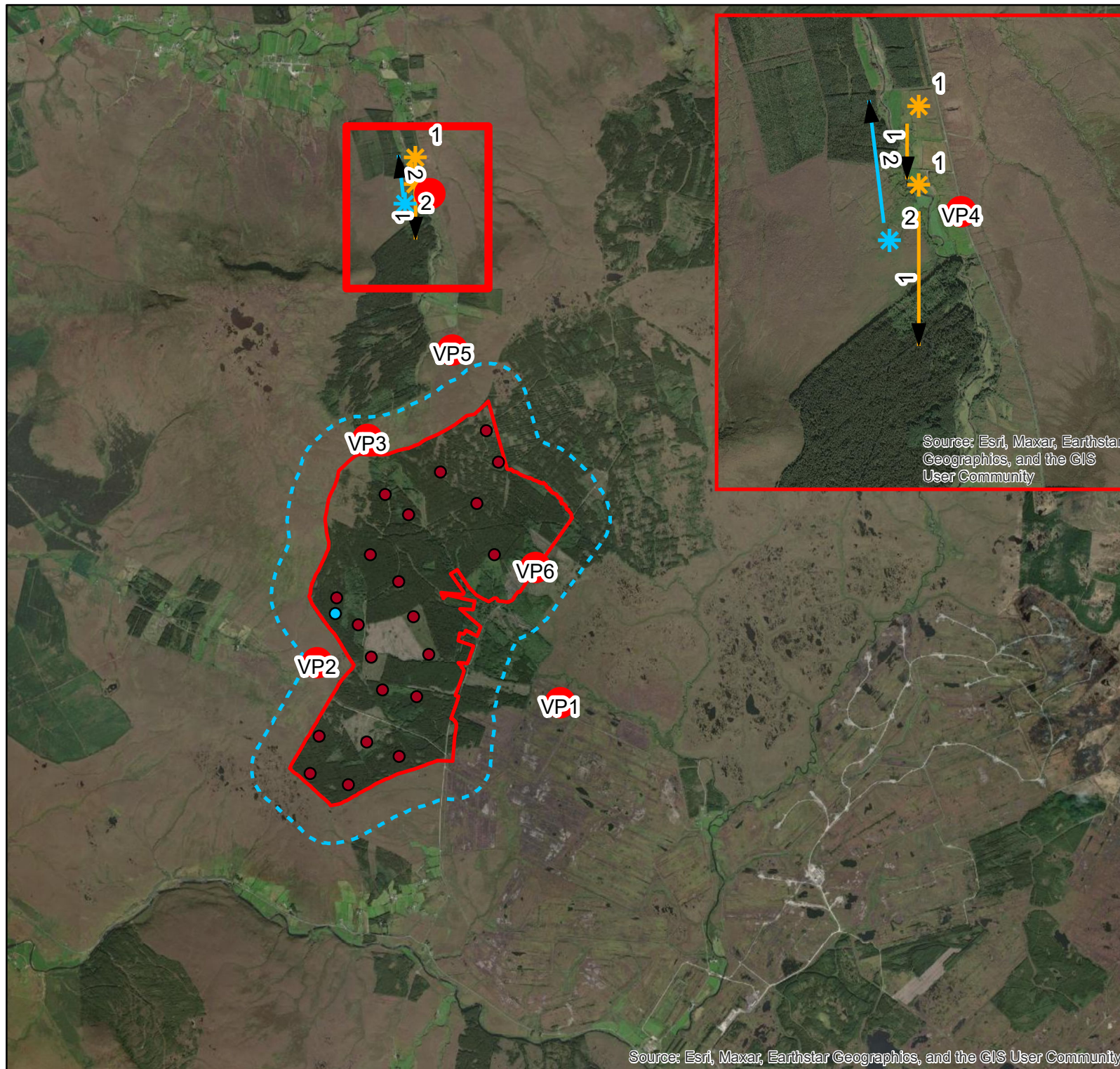
Drawn: VH

Checked: HD

Date: 01/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

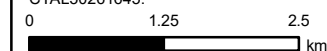
Buzzard Perched

- ✱ 1, 22/11/2021
- ✱ 2, 14/12/2021

Buzzard Flight Path

- 1, 22/11/2021
- 2, 14/12/2021

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Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 2-1 Buzzard






Drawn: VH Checked: HD

Date: 02/12/2022 Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

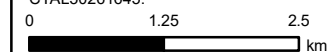


-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Common Gull Flight Path



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Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 3-1 Common Gull

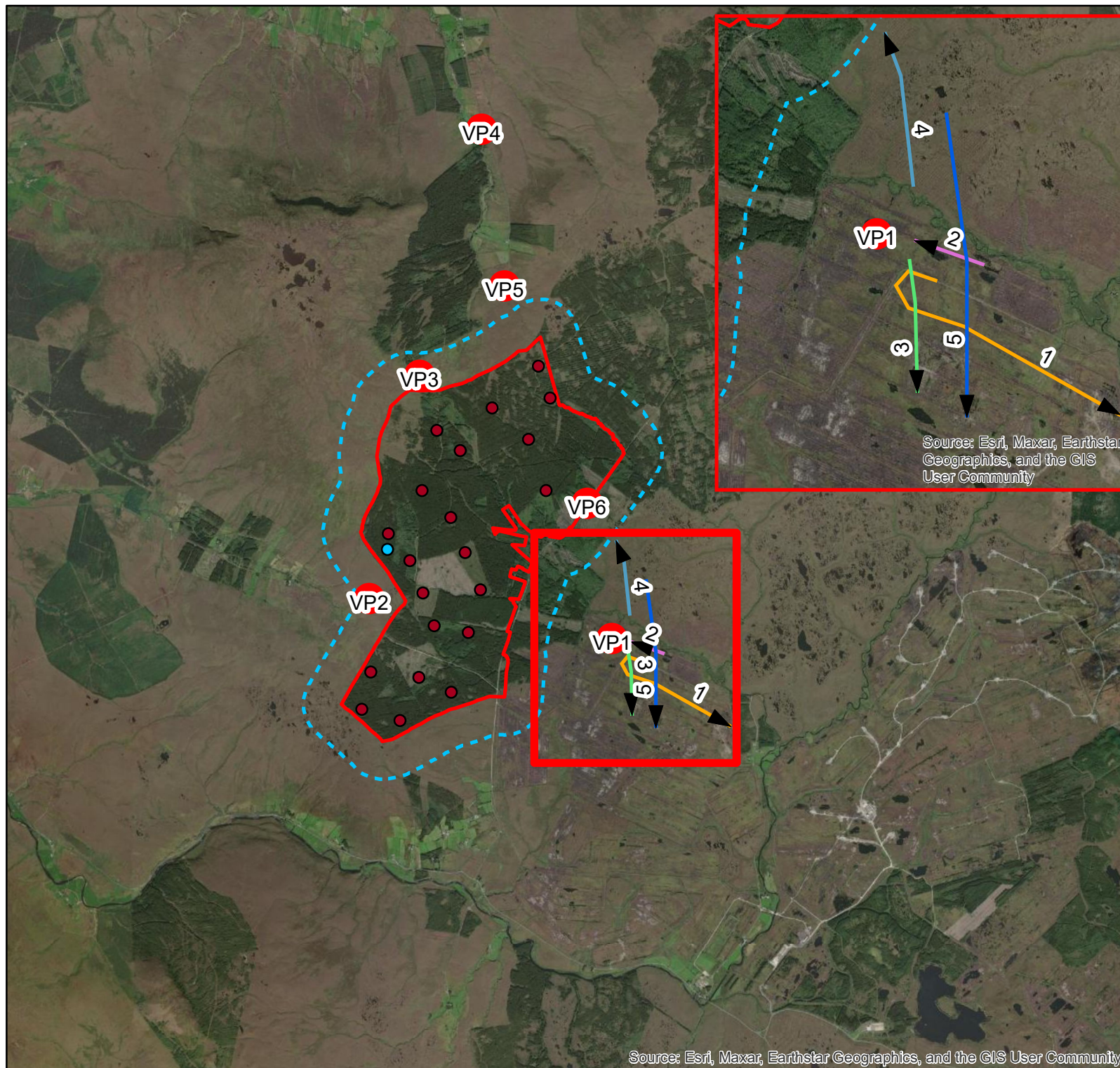
Drawn: VH

Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Cormorant Flight Path

- ➔ 1, 25/11/2021
- ➔ 2, 25/11/2021
- ➔ 3, 31/01/2022
- ➔ 4, 31/01/2022
- ➔ 5, 31/01/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

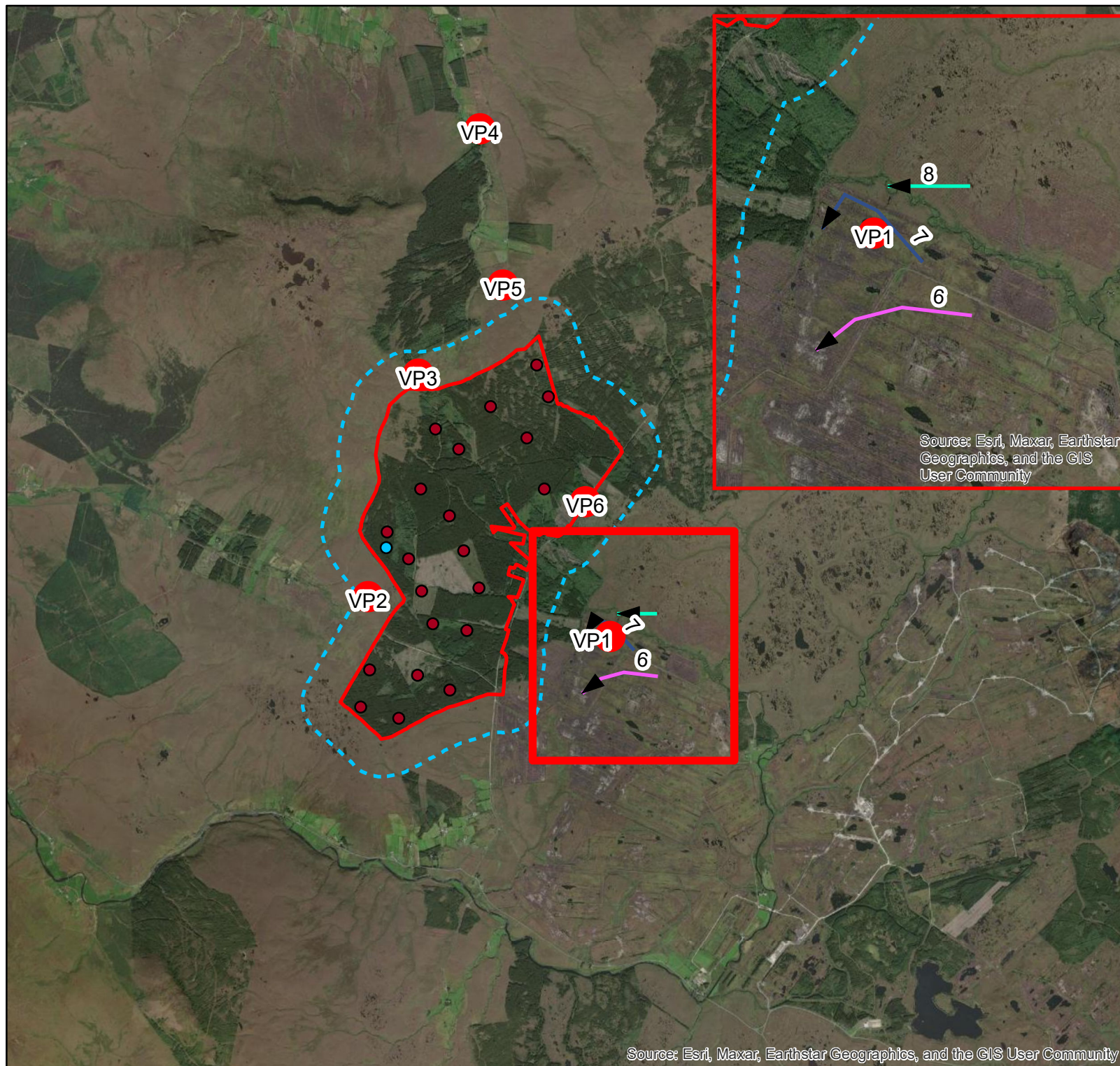
Drawing Title:
Bird Surveys Winter 2021/2022
Map 4-1 Cormorant

Drawn: VH Checked: HD

Date: 02/12/2022 Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Cormorant Flight Path

- 6, 31/01/2022
- 7, 17/02/2022
- 8, 17/02/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

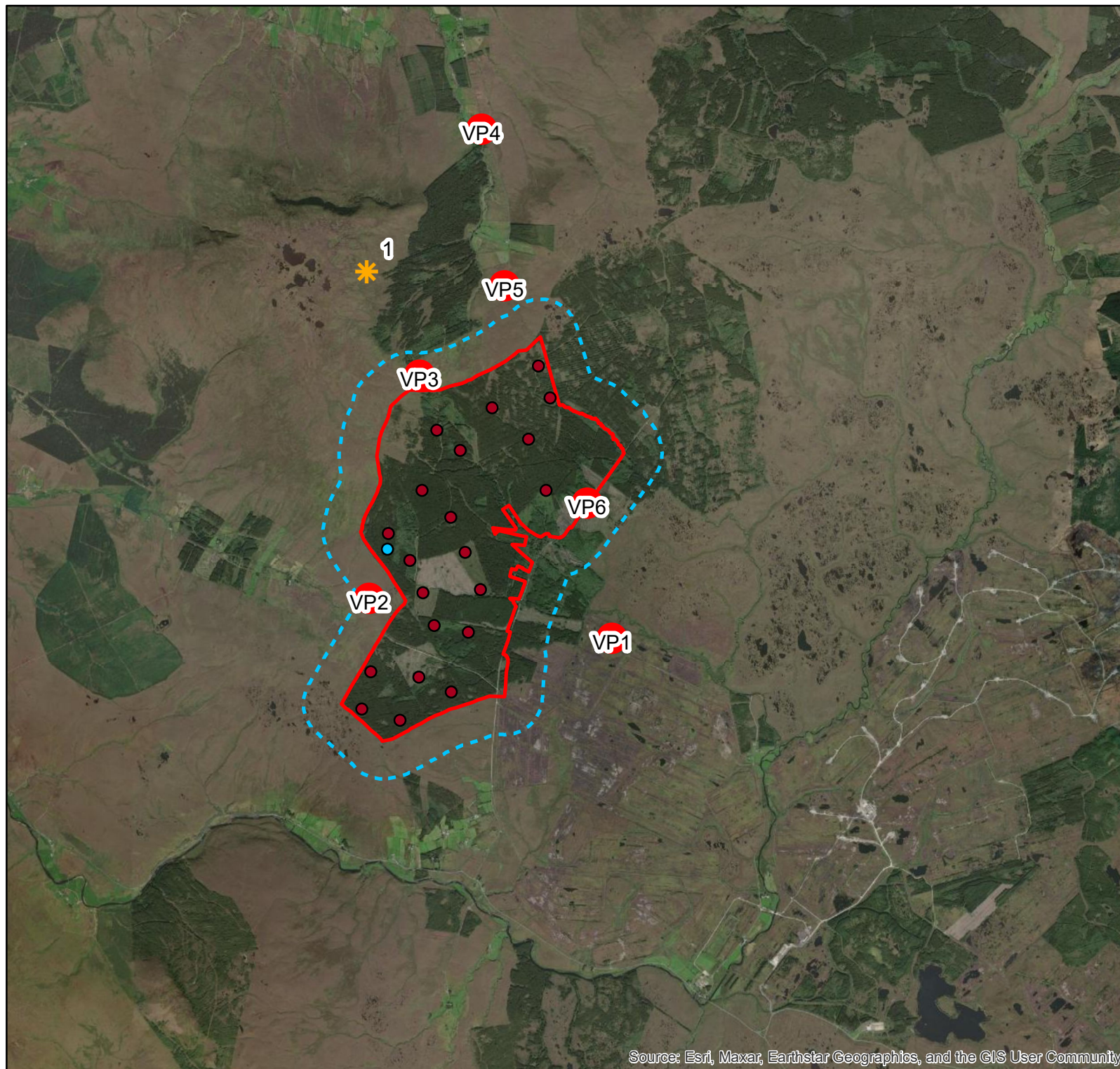
Client: SSE Renewables






Drawing Title:
Bird Surveys Winter 2021/2022
Map 4-2 Cormorant

Drawn: VH Checked: HD


Date: 02/12/2022 Scale (A4): 1:70,000

MWP



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Gannet Perched

 1, 04/10/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 5-1 Gannet

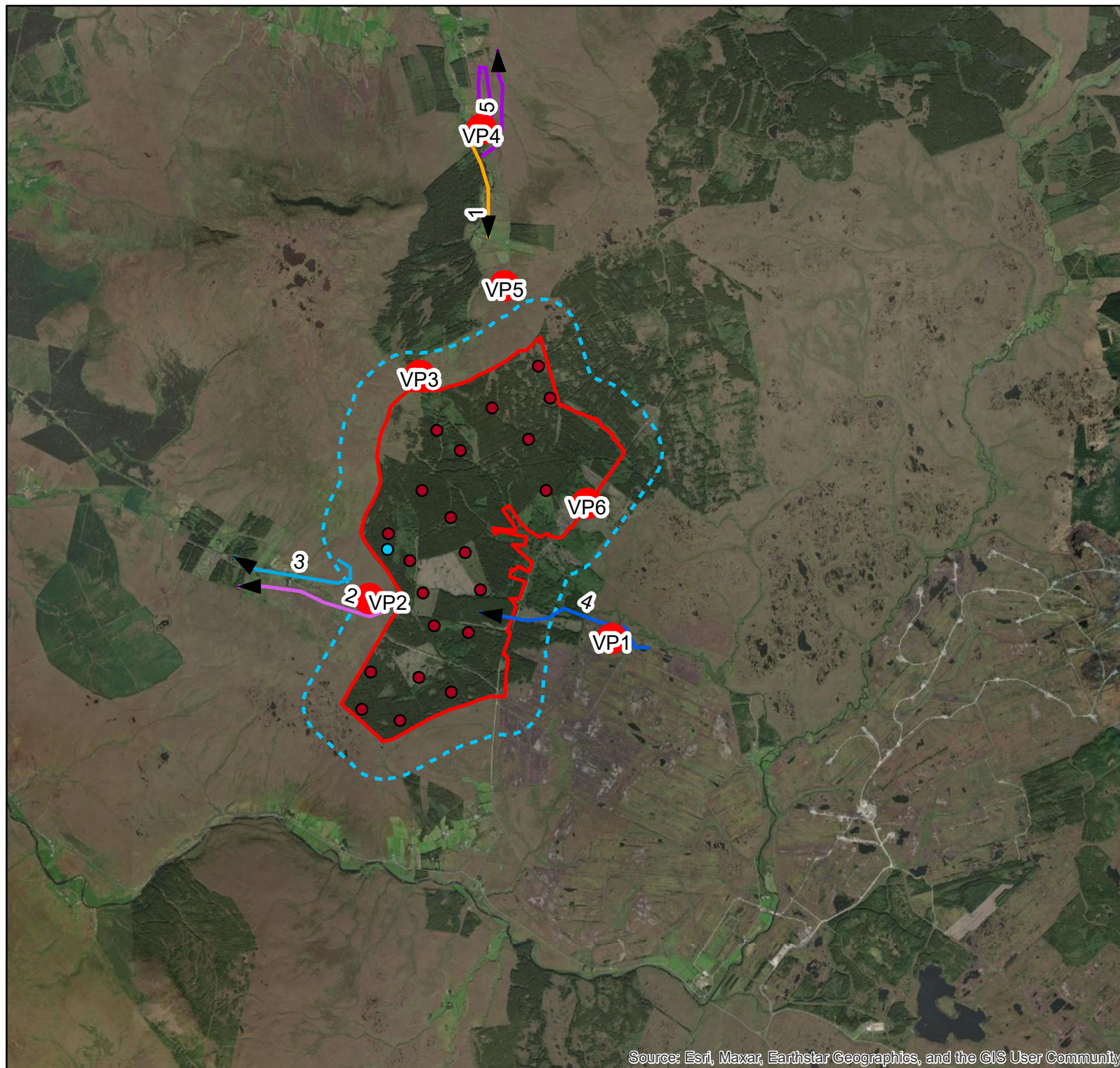
Drawn: VH

Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Great Black Backed Gull Flight Path

- ➔ 1, 15/12/2021
- ➔ 2, 26/01/2022
- ➔ 3, 26/01/2022
- ➔ 4, 31/01/2022
- ➔ 5, 16/02/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 6-1 Great Black Backed Gull

Drawn: VH	Checked: HD
Date: 02/12/2022	Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Grey Heron Flight Path

- ➔ 1, 02/10/2021
- ➔ 2, 25/11/2021
- ➔ 3, 25/11/2021
- ➔ 4, 31/01/2022
- ➔ 5, 15/03/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 7-1 Grey Heron

Drawn: VH






Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Grey Heron Flight Path

-  6, 15/03/2022
-  7, 15/03/2022
-  8, 23/03/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 7-2 Grey Heron

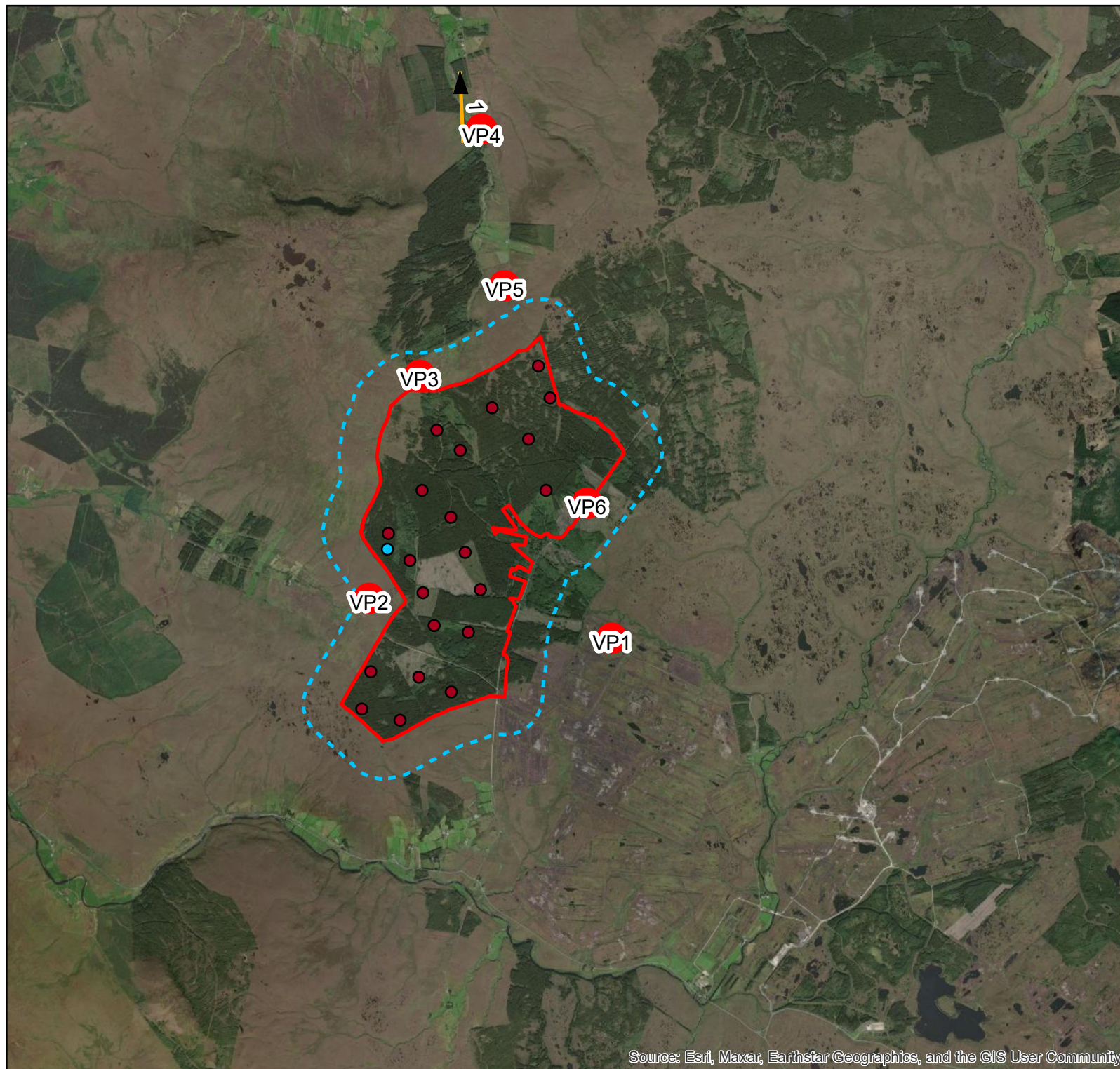
Drawn: VH






Checked: HD

Date: 02/12/2022


Scale (A4): 1:70,000

MWP



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Herring Gull Flight Path

 1, 04/10/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 8-1 Herring Gull

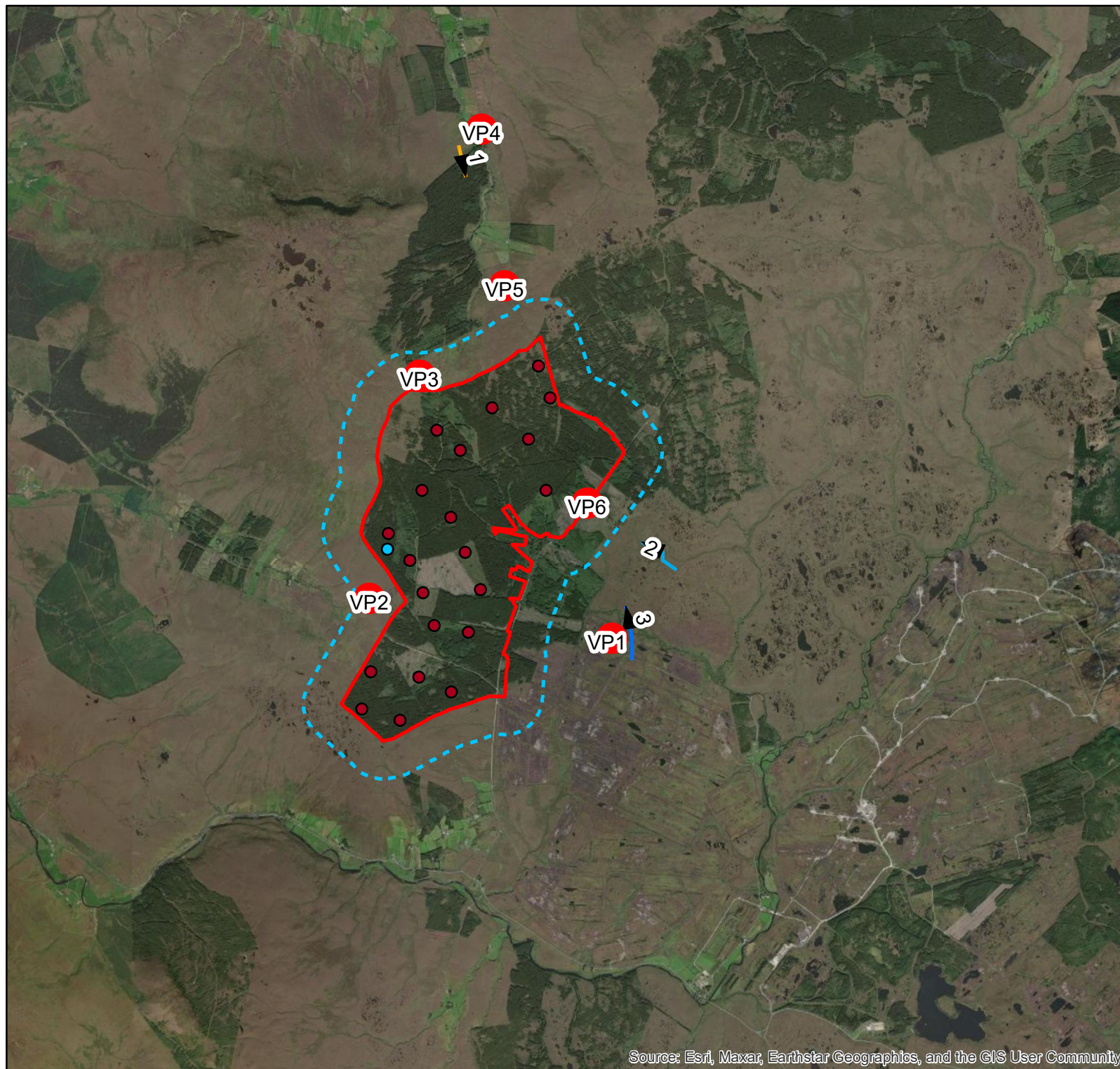
Drawn: VH






Checked: HD

Date: 02/12/2022




Scale (A4): 1:70,000

MWP



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Kestrel Flight Path

-  1, 07/10/2021
-  2, 25/11/2021
-  3, 31/01/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm






Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 9-1 Kestrel


Drawn: VH	Checked: HD
Date: 02/12/2022	Scale (A4): 1:70,000

MWP



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Lesser Black Back Gull Flight Path

 1, 08/03/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 10-1 Lesser Black Backed Gull

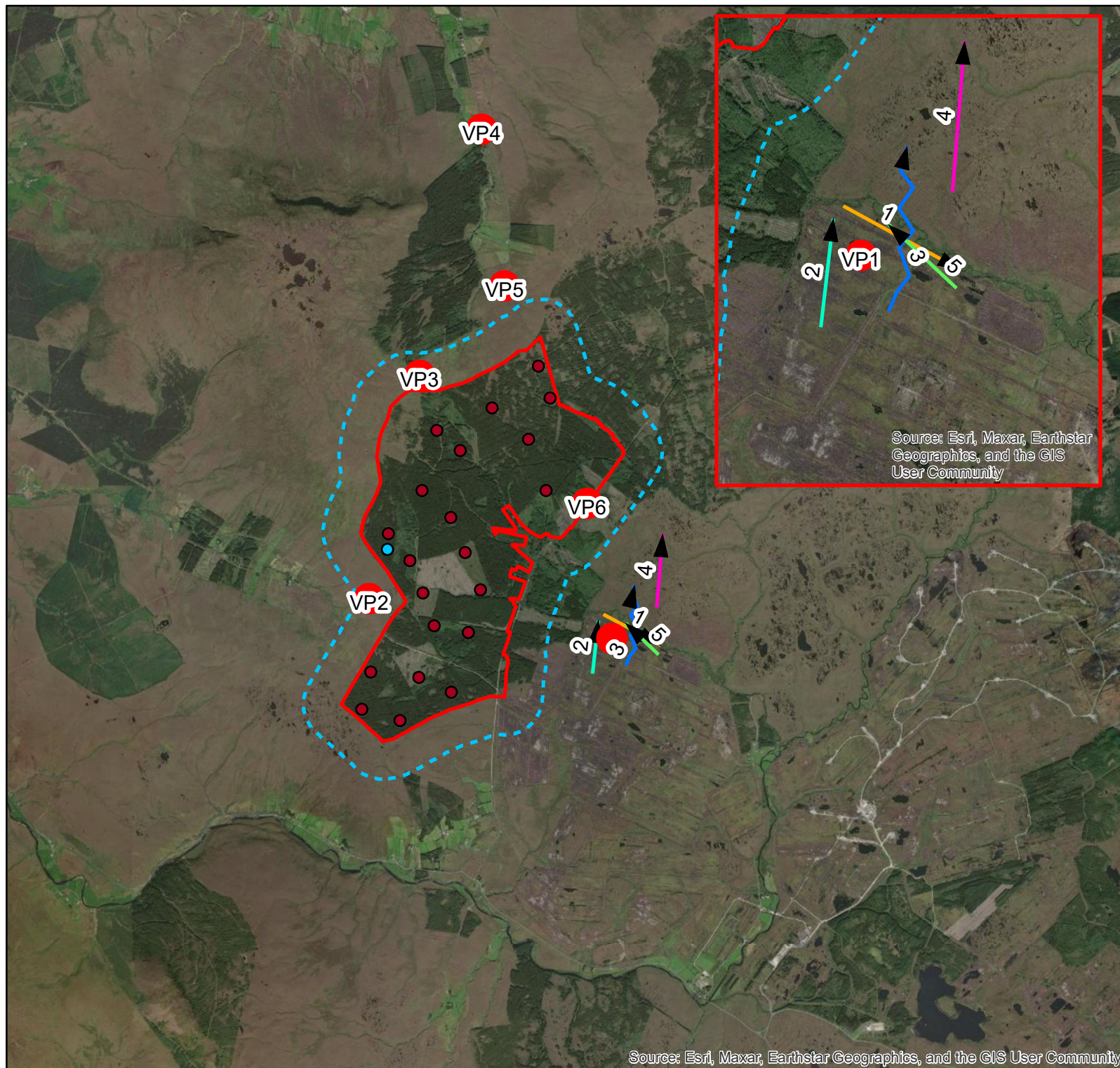
Drawn: VH

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Date: 02/12/2022

Scale (A4): 1:70,000

MWP

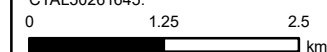


- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Mallard Flight Path

- ➔ 1, 06/10/2021
- ➔ 2, 06/10/2021
- ➔ 3, 06/10/2021
- ➔ 4, 06/10/2021
- ➔ 5, 06/10/2021

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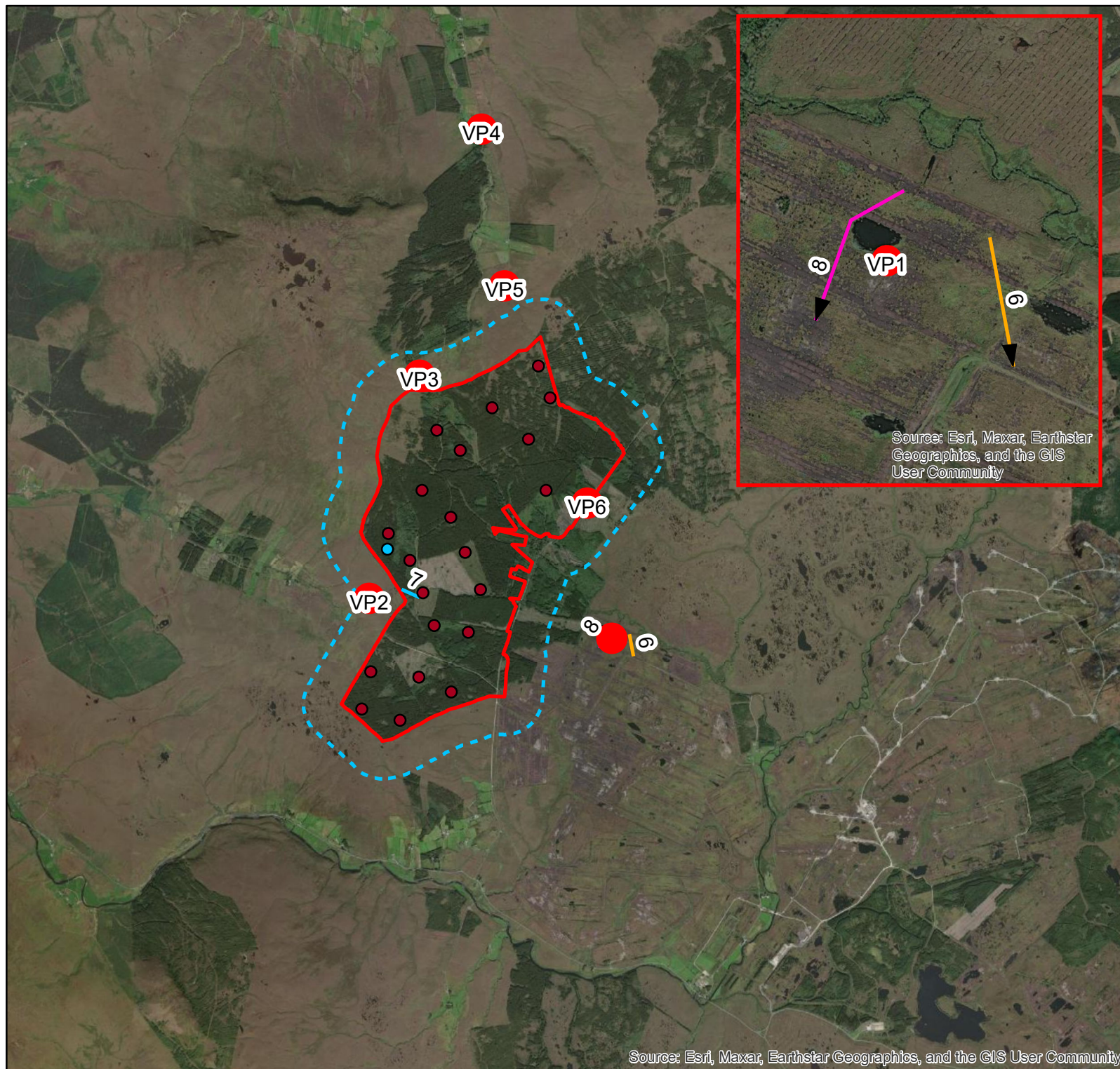
Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 11-1 Mallard

Drawn: VH	Checked: HD
Date: 02/12/2022	Scale (A4): 1:70,000

MWP

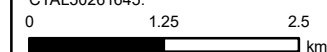


- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Mallard Flight Path

- ➔ 6, 25/11/2021
- ➔ 7, 18/01/2022
- ➔ 8, 31/01/2022

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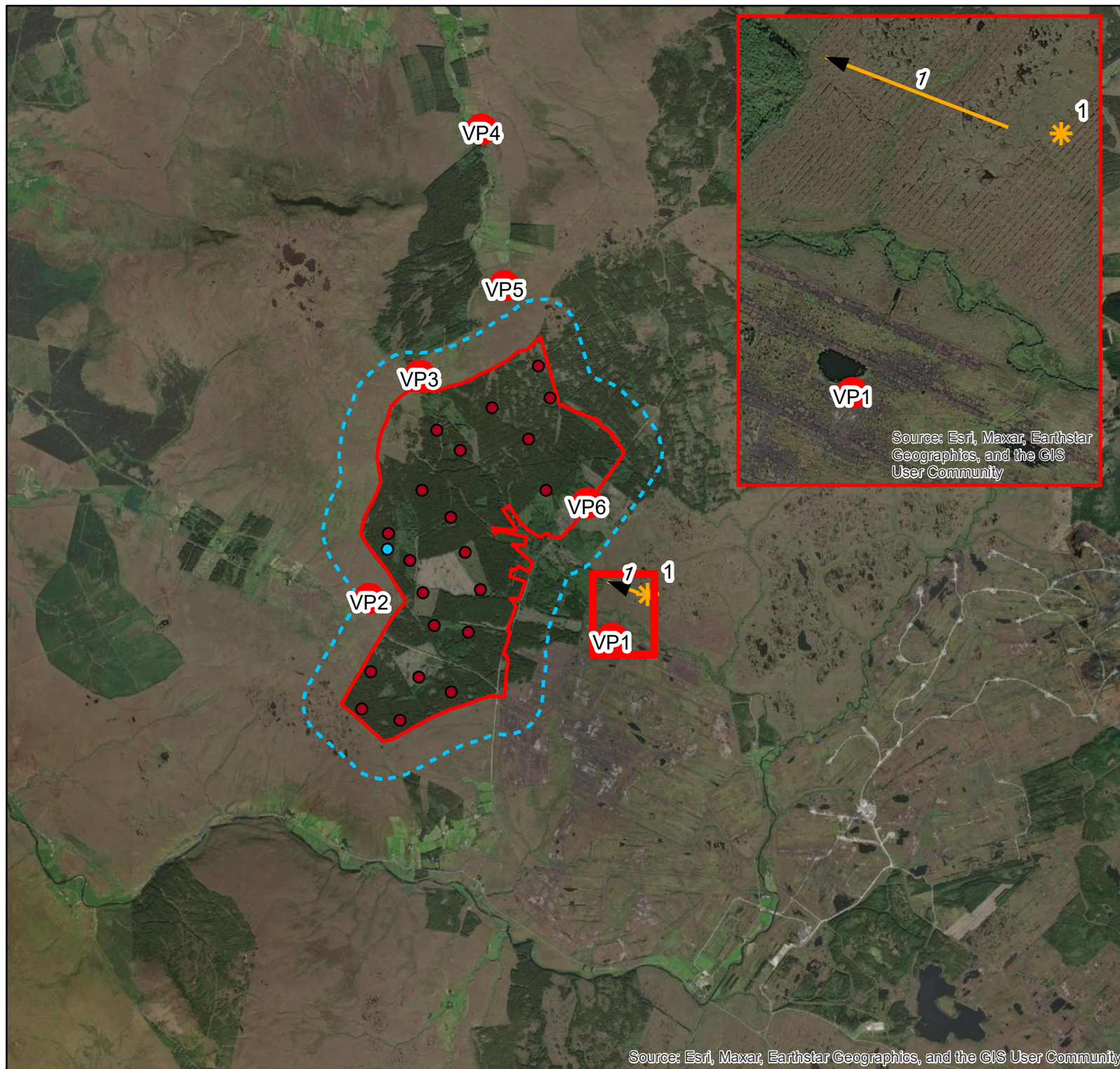
Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 11-2 Mallard

Drawn: VH	Checked: HD
Date: 02/12/2022	Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Merlin Perched

✱ 1, 25/11/2021

Merlin Flight Path

➡ 1, 25/11/2021

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CYAL50261645.

0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 12-1 Merlin

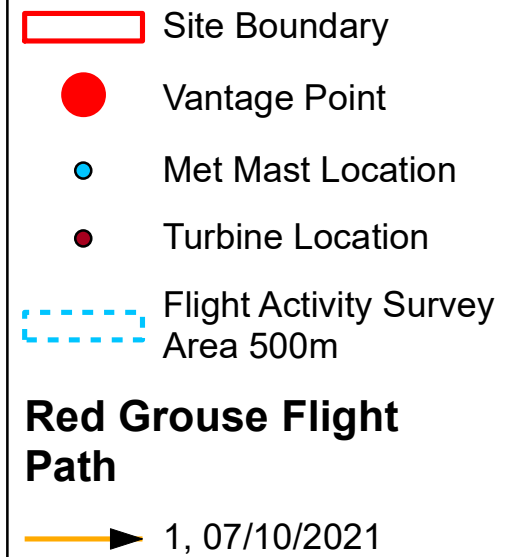
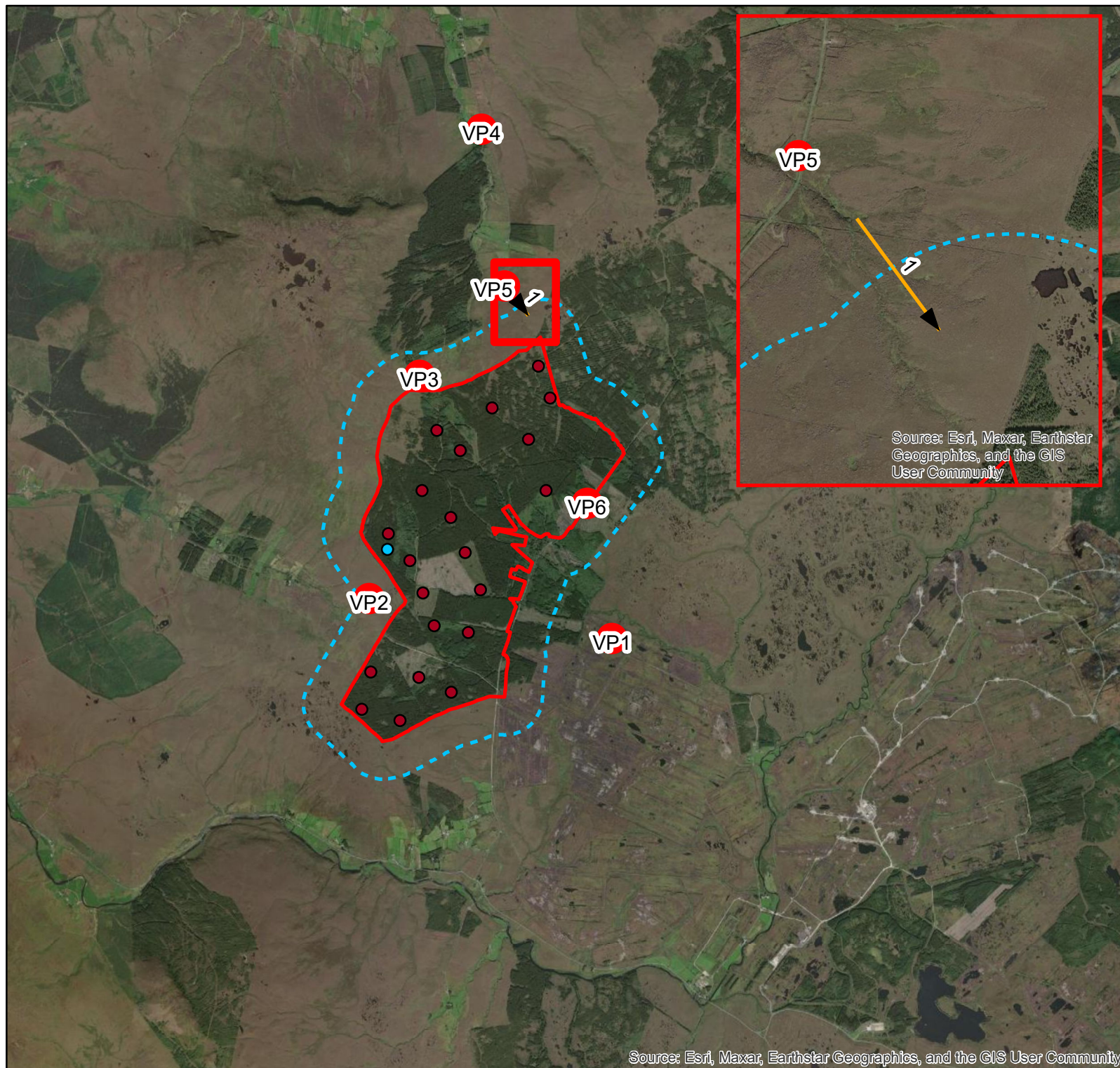
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Checked: HD

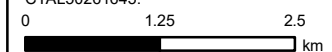
Date: 05/12/2022

Scale (A4): 1:70,000

MWP



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Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 13-1 Red Grouse

Drawn: VH

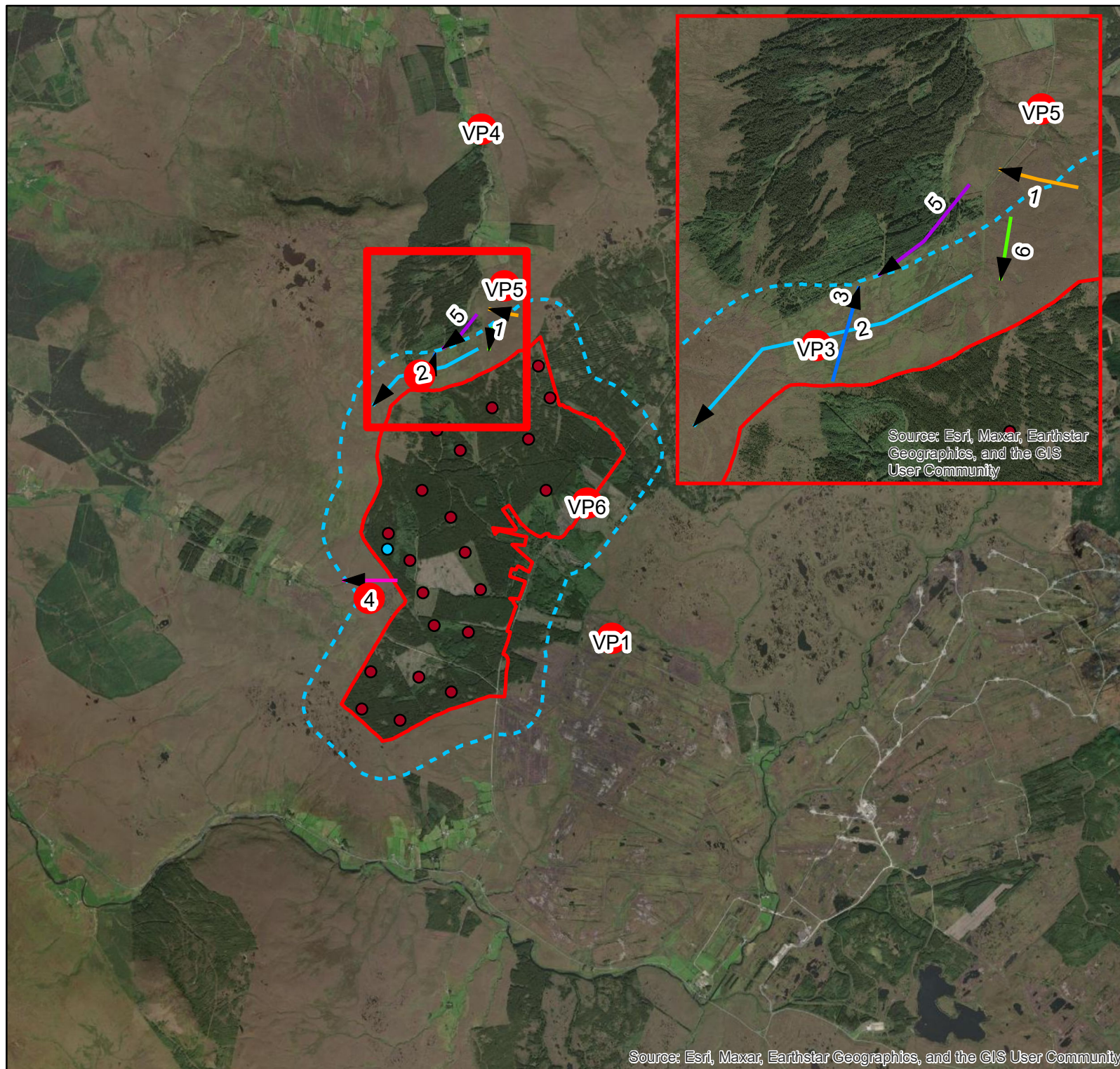
Checked: HD

Date: 05/12/2022

Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Snipe Flight Path

- 1, 06/10/2021
- 2, 15/12/2021
- 3, 19/01/2022
- 4, 11/02/2022
- 5, 16/02/2022
- 6, 11/03/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 14-1 Snipe

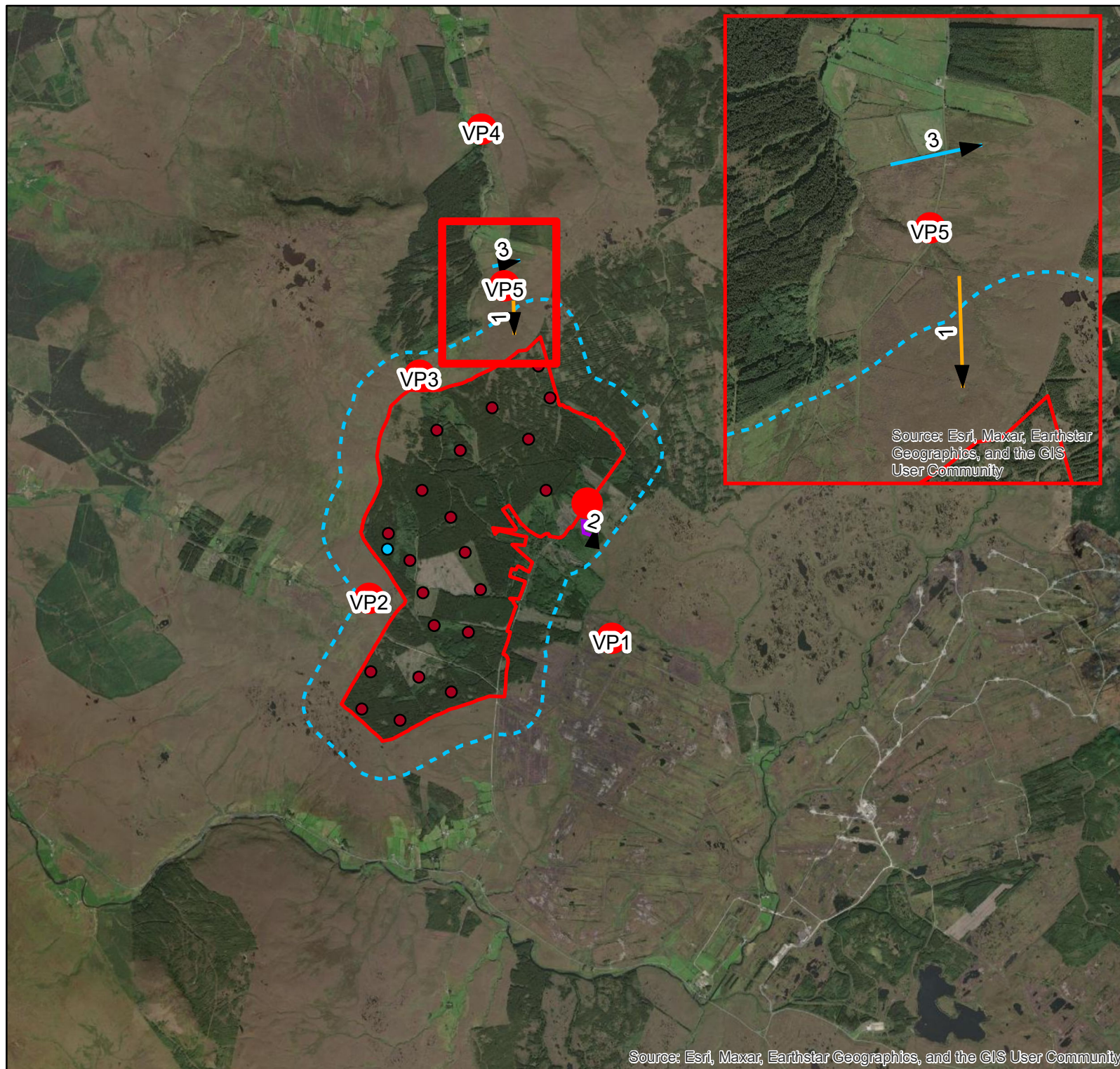
Drawn: VH

Checked: HD

Date: 05/12/2022

Scale (A4): 1:70,000

MWP



Site Boundary

Vantage Point

Met Mast Location

Turbine Location

Flight Activity Survey Area 500m

Sparrowhawk Flight Path

1, 24/11/2021 (*incidental*)

2, 10/12/2021

3, 16/12/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 15-1 Sparrowhawk

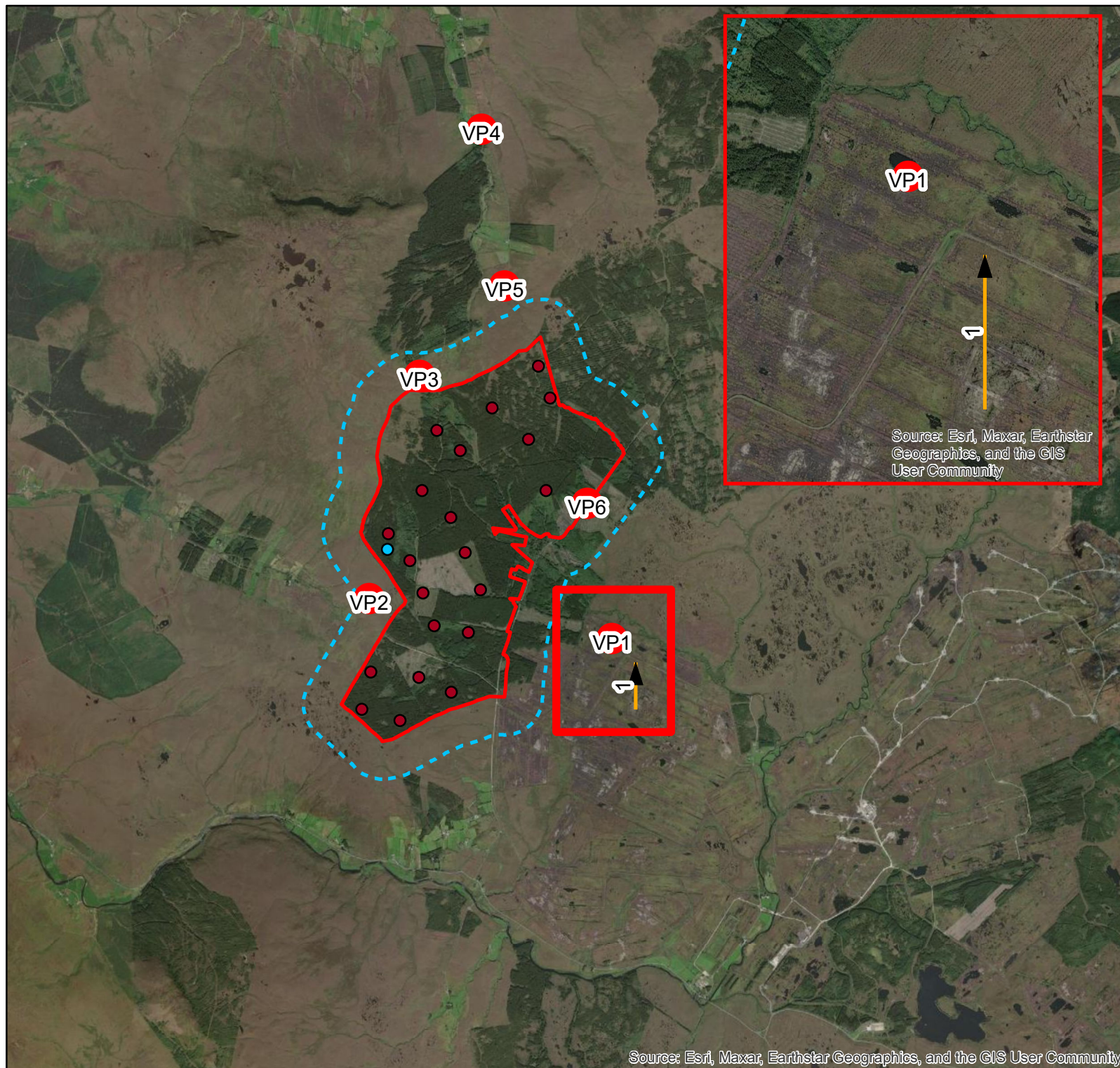
Drawn: VH






Checked: HD

Date: 05/12/2022


Scale (A4): 1:70,000

MWP



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Teal Flight Path

 1, 06/10/2021

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 16-1 Teal

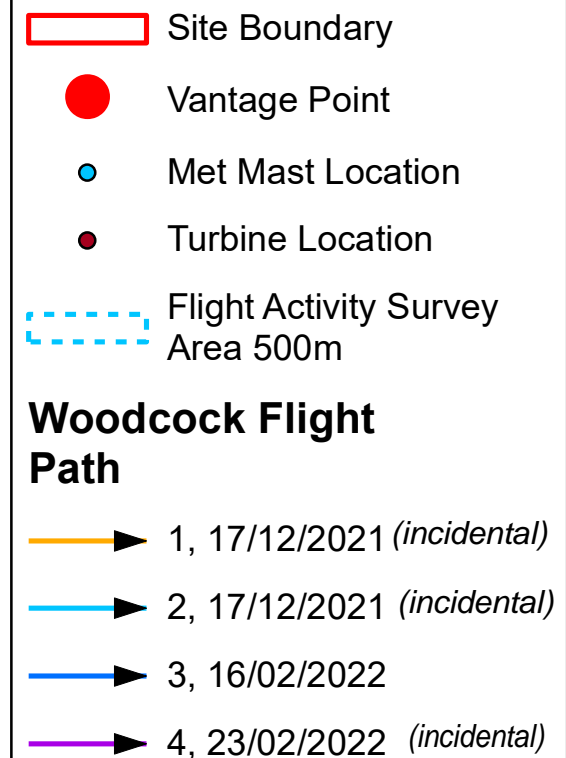
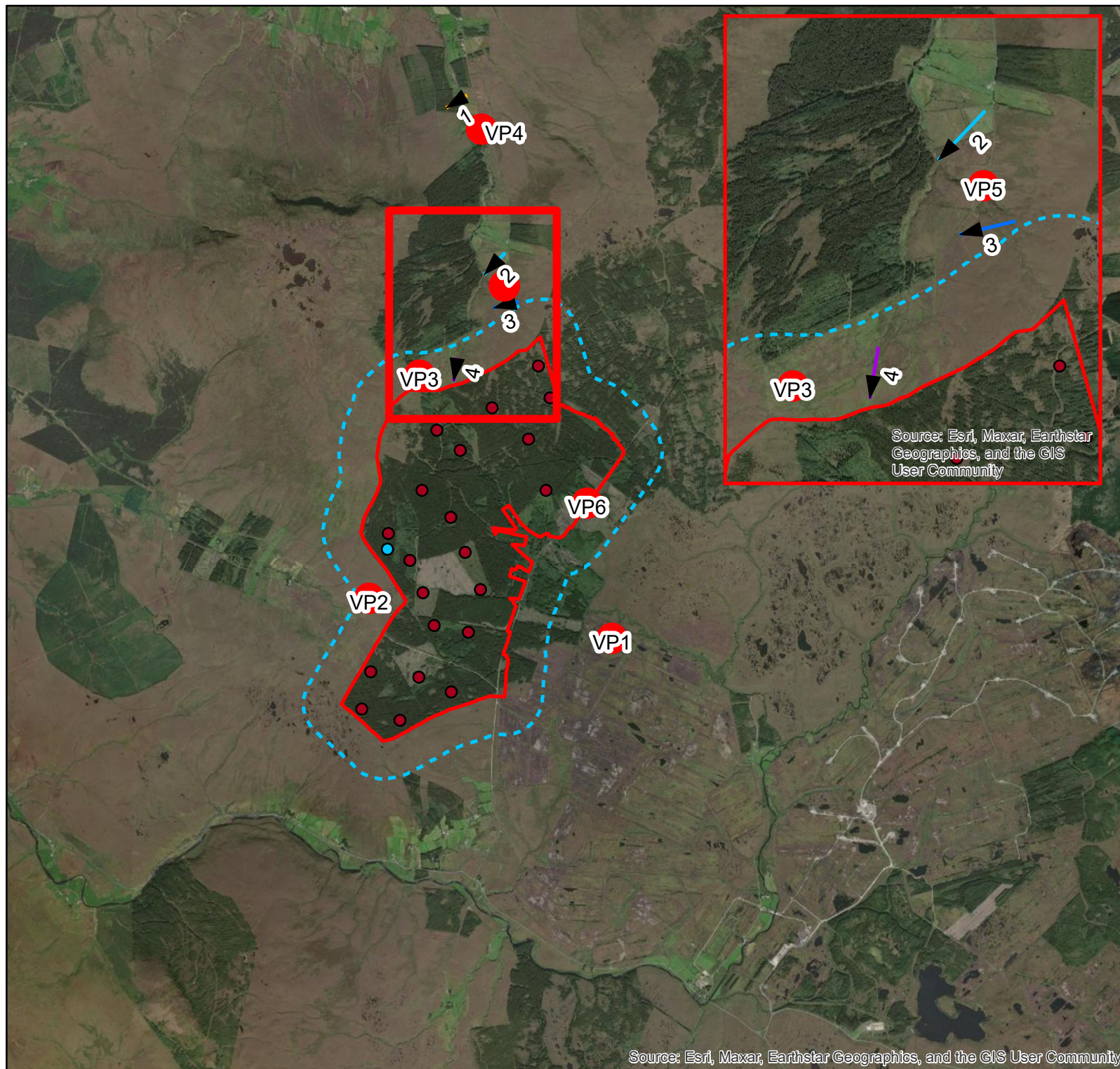
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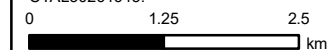
Date: 05/12/2022

Scale (A4): 1:70,000

MWP



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Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Winter 2021/2022
Map 17-1 Woodcock

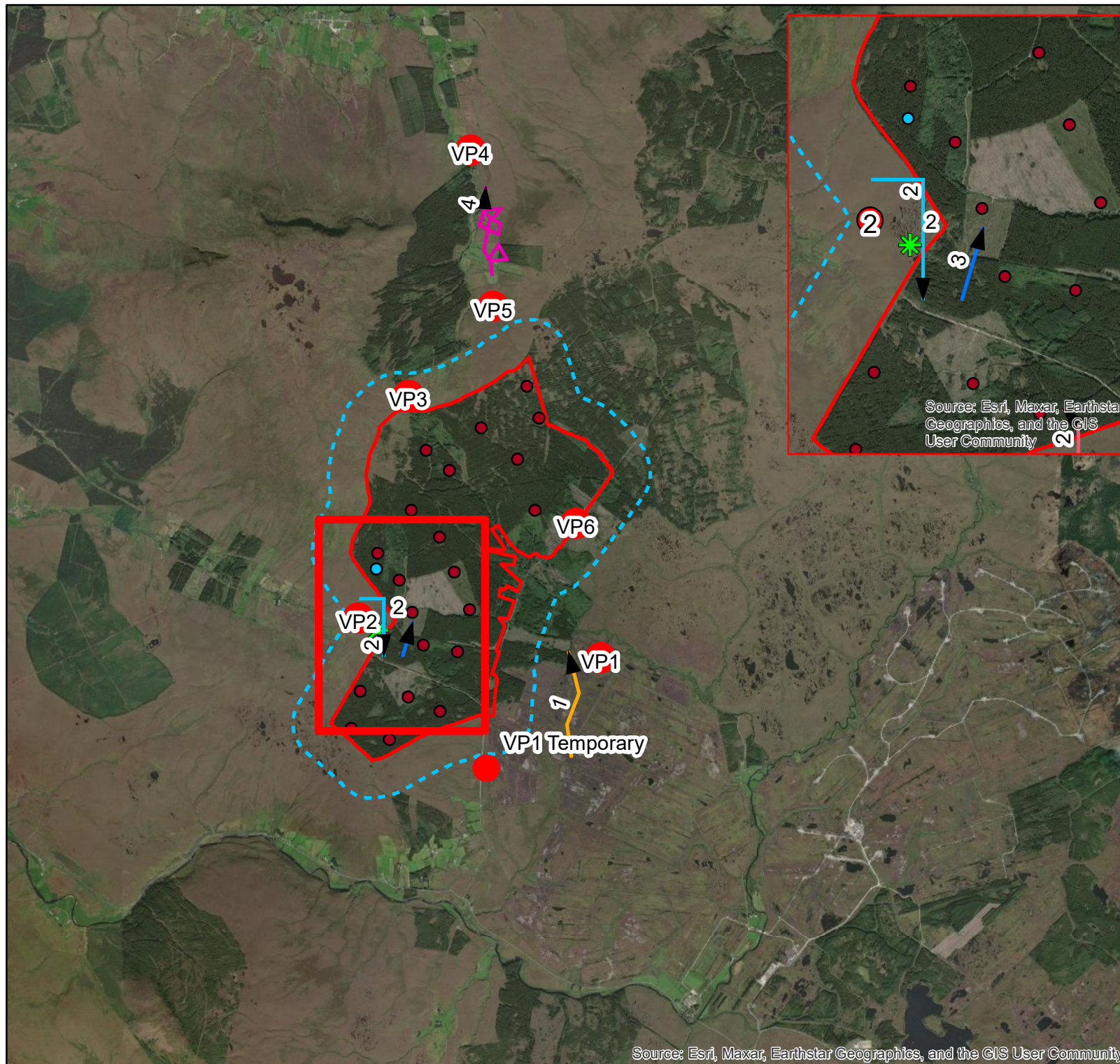
Drawn: VH

Checked: HD

Date: 05/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

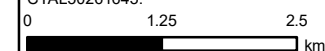
Buzzard Flight Path

- 1, 26/07/2022
- 2, 26/08/2022
- 3, 26/08/2022
- 4, 26/09/2022

Buzzard Perched

- 2, 26/08/2022

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Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 1-1 Buzzard

Drawn: VH Checked: HD

Date: 01/12/2022 Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Common Sandpiper Perched

✱ 1, 21/06/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 2-1 Common Sandpiper

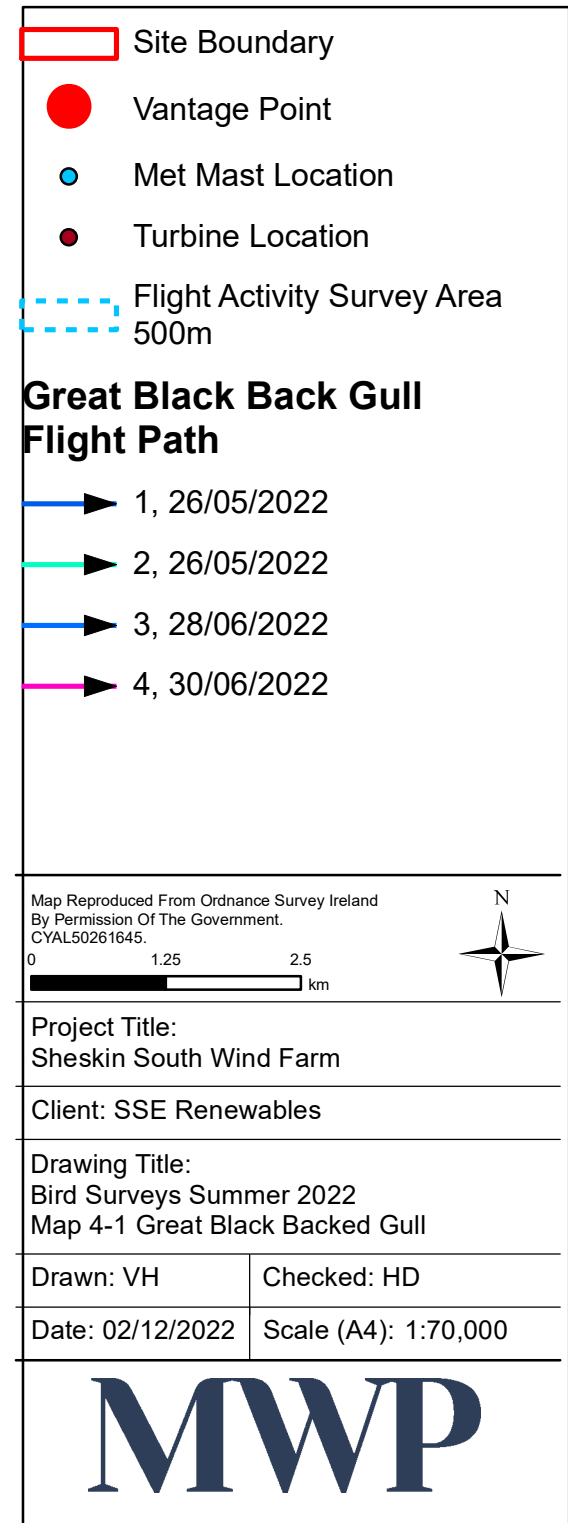
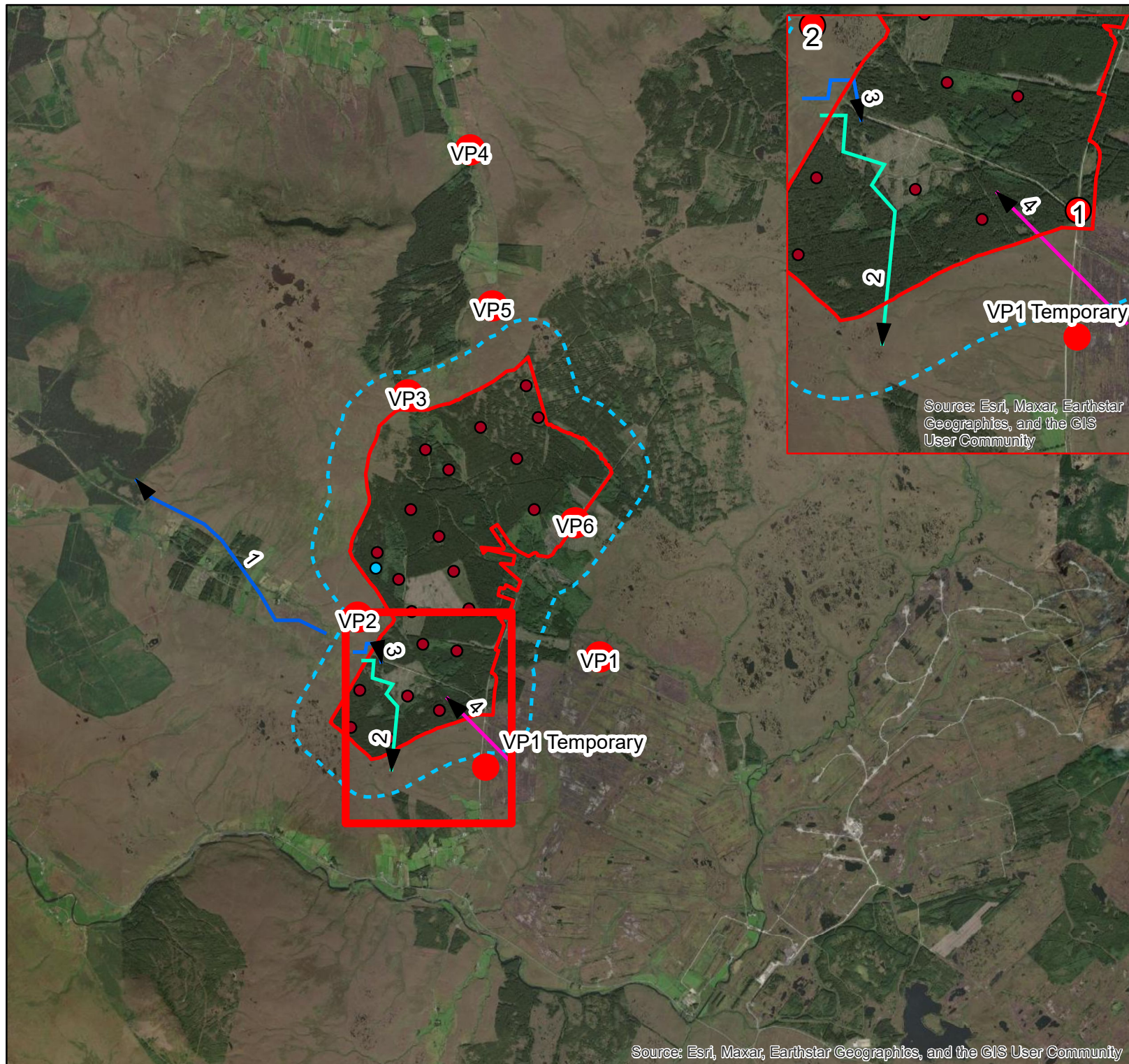
Drawn: VH

Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP





Site Boundary

Vantage Point

Met Mast Location

Turbine Location

Flight Activity Survey Area
500m

Grey Heron Flight Path

1, 16/05/2022

2, 24/06/2022

3, 28/09/2022

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0

1.25

2.5

km

N

Project Title:

Sheskin South Wind Farm

Client:

SSE Renewables

Drawing Title:

Bird Surveys Summer 2022
Map 5-1 Grey Heron

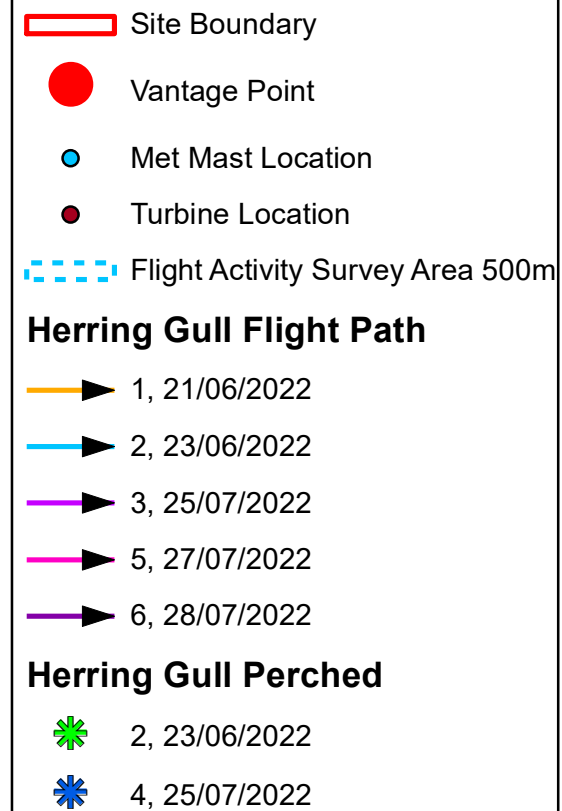
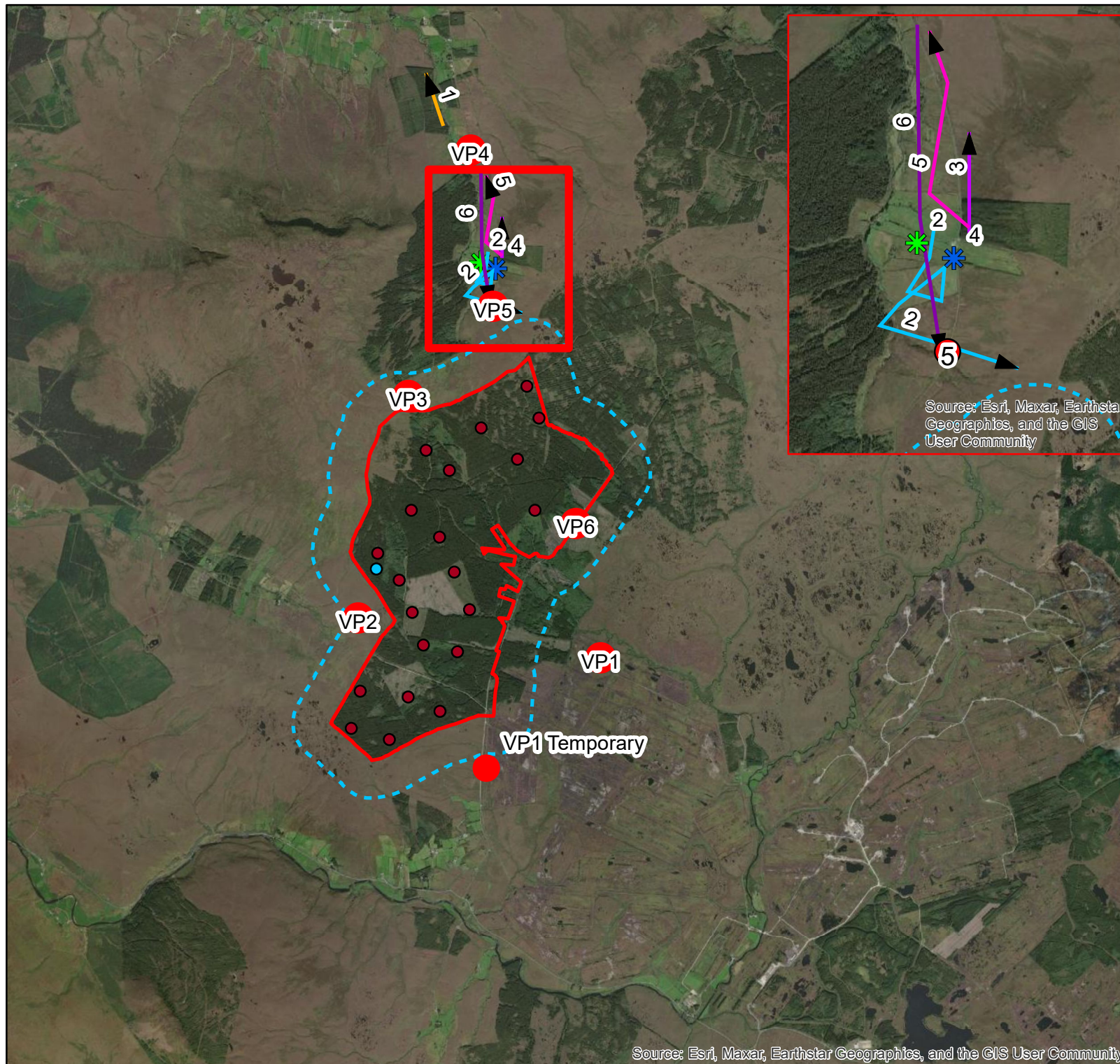
Drawn: VH

Checked: HD

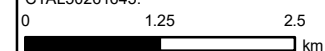
Date: 02/12/2022

Scale (A4): 1:70,000

MWP



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Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 6-1 Herring Gull

Drawn: VH

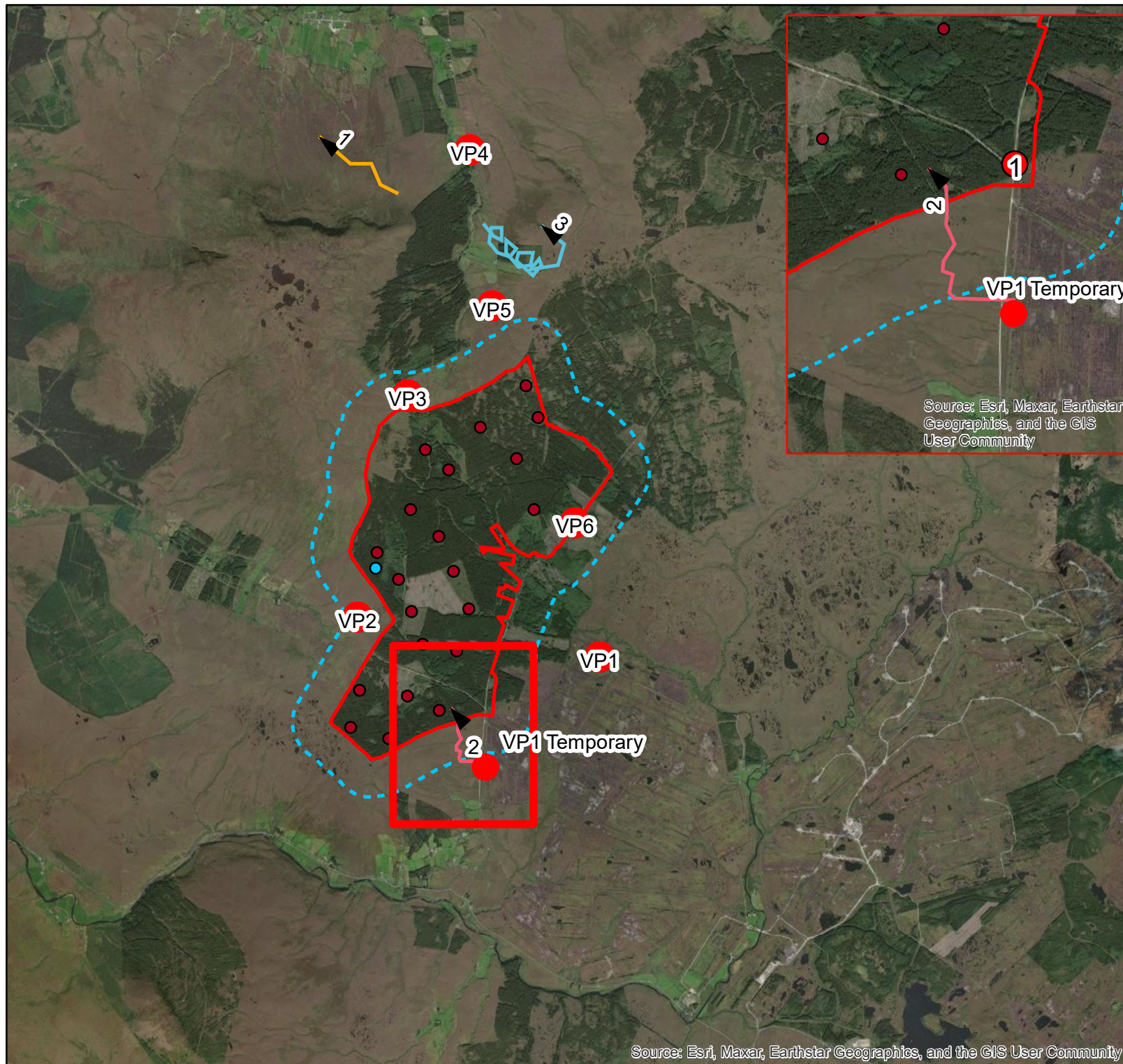
Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Hen Harrier Flight Path

- 1, 18/05/2022
- 2, 20/05/2022 (*incidental*)
- 3, 17/08/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 7-1 Hen Harrier

Drawn: VH

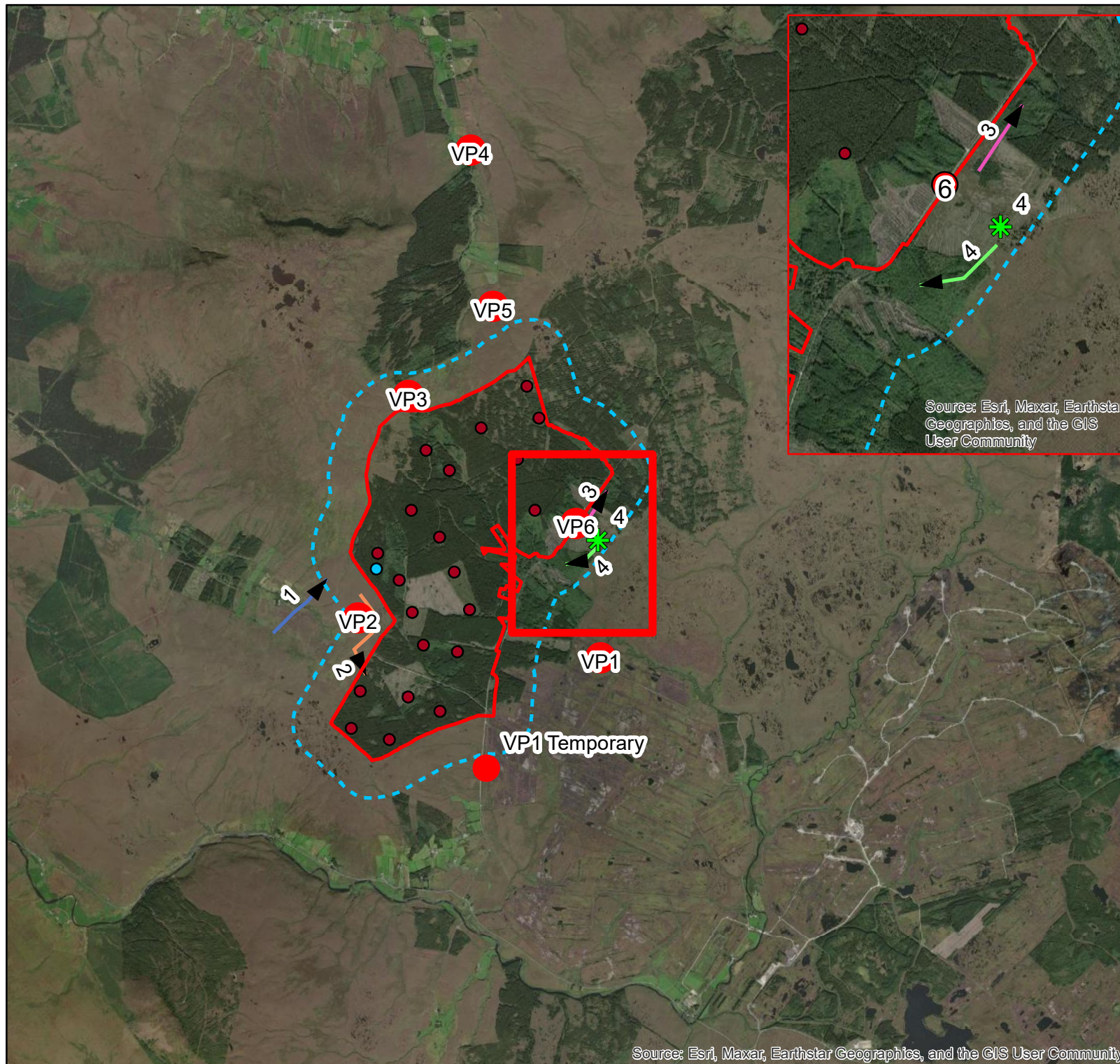
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Date: 02/12/2022

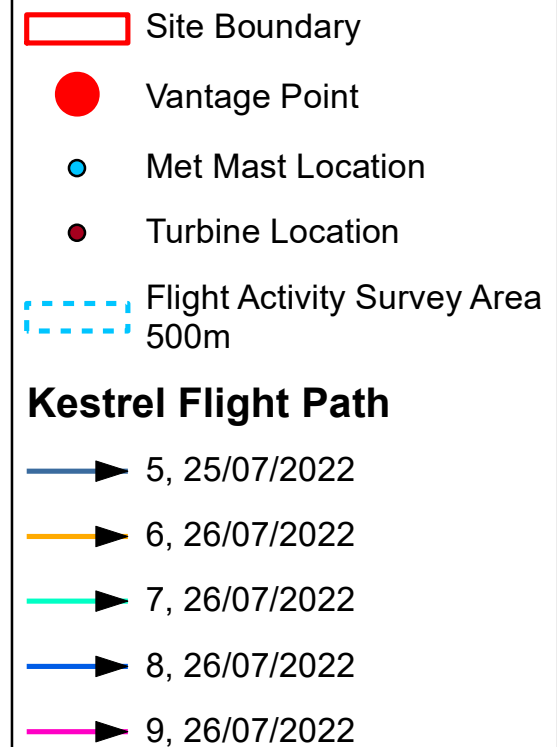
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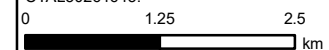
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



<div> <div> Site Boundary</div> <div>● Vantage Point</div> <div>● Met Mast Location</div> <div>● Turbine Location</div> <div> Flight Activity Survey Area 500m</div> </div>	
Kestrel Perched <div>✱ 4, 25/07/2022</div>	
Kestrel Flight Path <div> <div>➤ 1, 22/04/2022</div> <div>➤ 2, 22/04/2022</div> <div>➤ 3, 25/07/2022</div> <div>➤ 4, 25/07/2022</div> </div>	
<div> <div>Map Reproduced From Ordnance Survey Ireland By Permission Of The Government. CYAL50261645.</div> <div> <div>0 1.25 2.5 km</div> <div></div> </div> </div>	
Project Title: Sheskin South Wind Farm	
Client: SSE Renewables	
Drawing Title: Bird Surveys Summer 2022 Map 8-1 Kestrel	
Drawn: VH	Checked: HD
Date: 02/12/2022	Scale (A4): 1:70,000
<div style="font-size: 3em; font-weight: bold; letter-spacing: 0.1em;">MWP</div>	



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Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 8-2 Kestrel

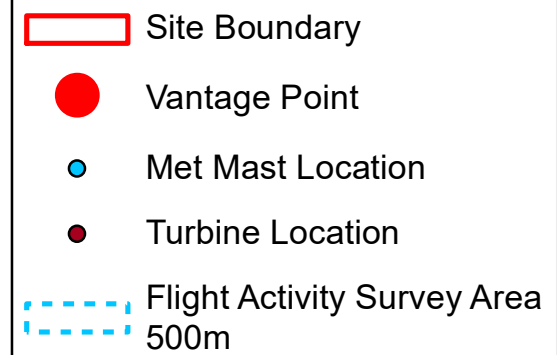
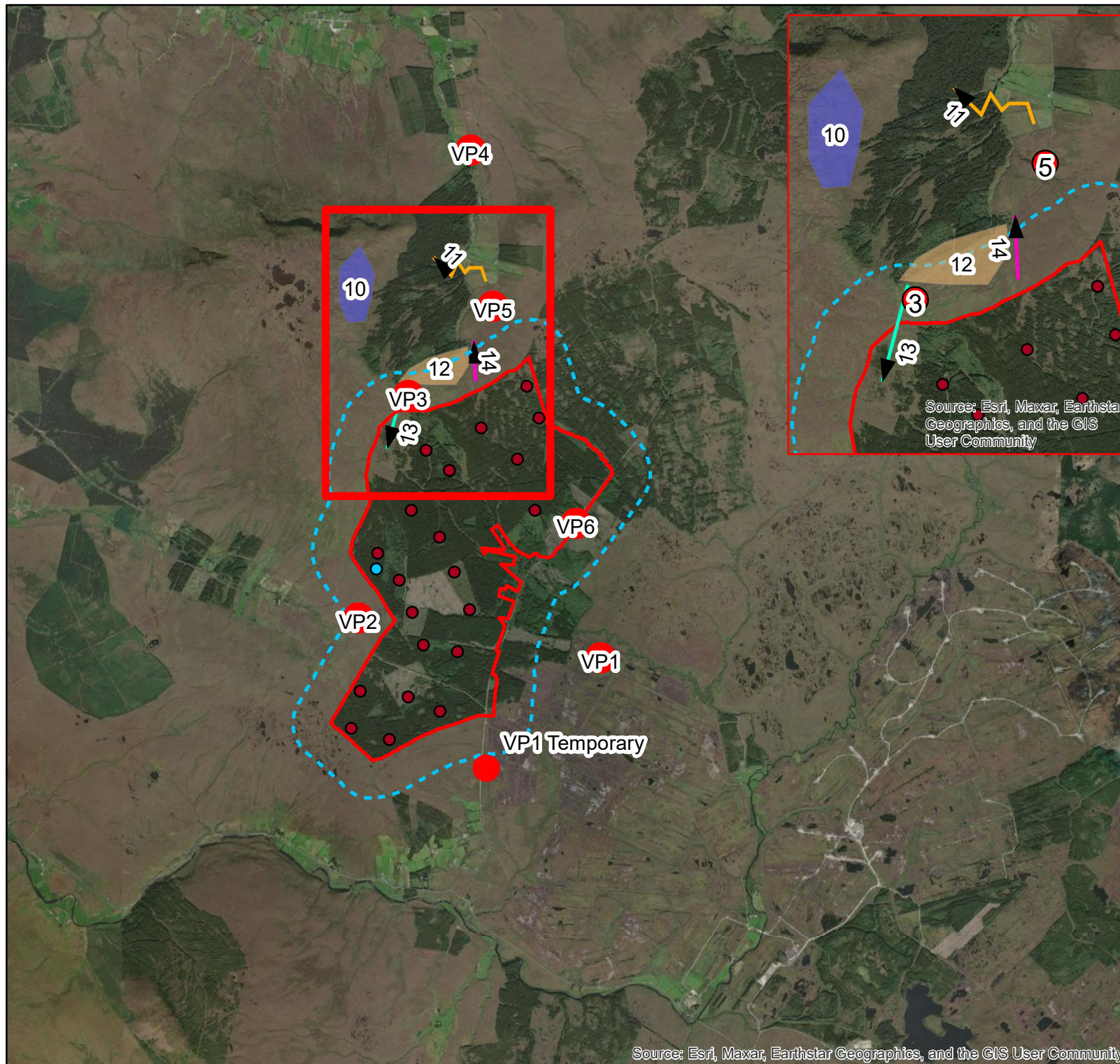
Drawn: VH

Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP



Kestrel Activity

10, 27/07/2022

12, 29/07/2022

Kestrel Flight Path

11, 27/07/2022

13, 29/07/2022

14, 17/08/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 8-3 Kestrel

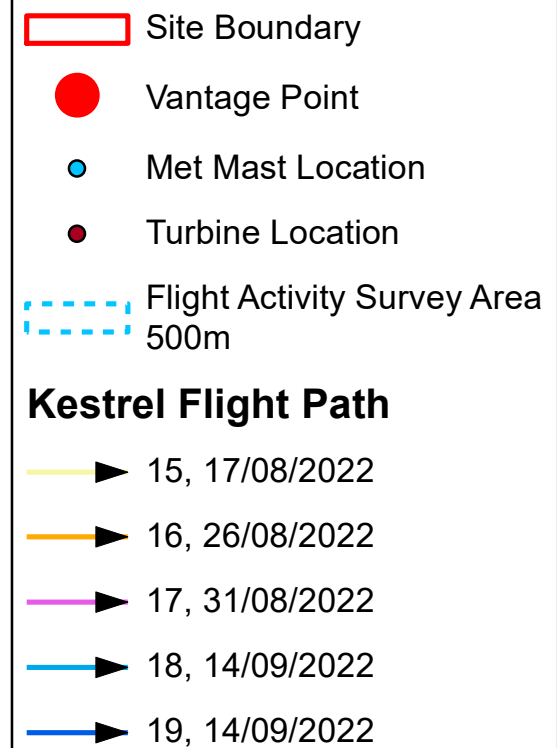
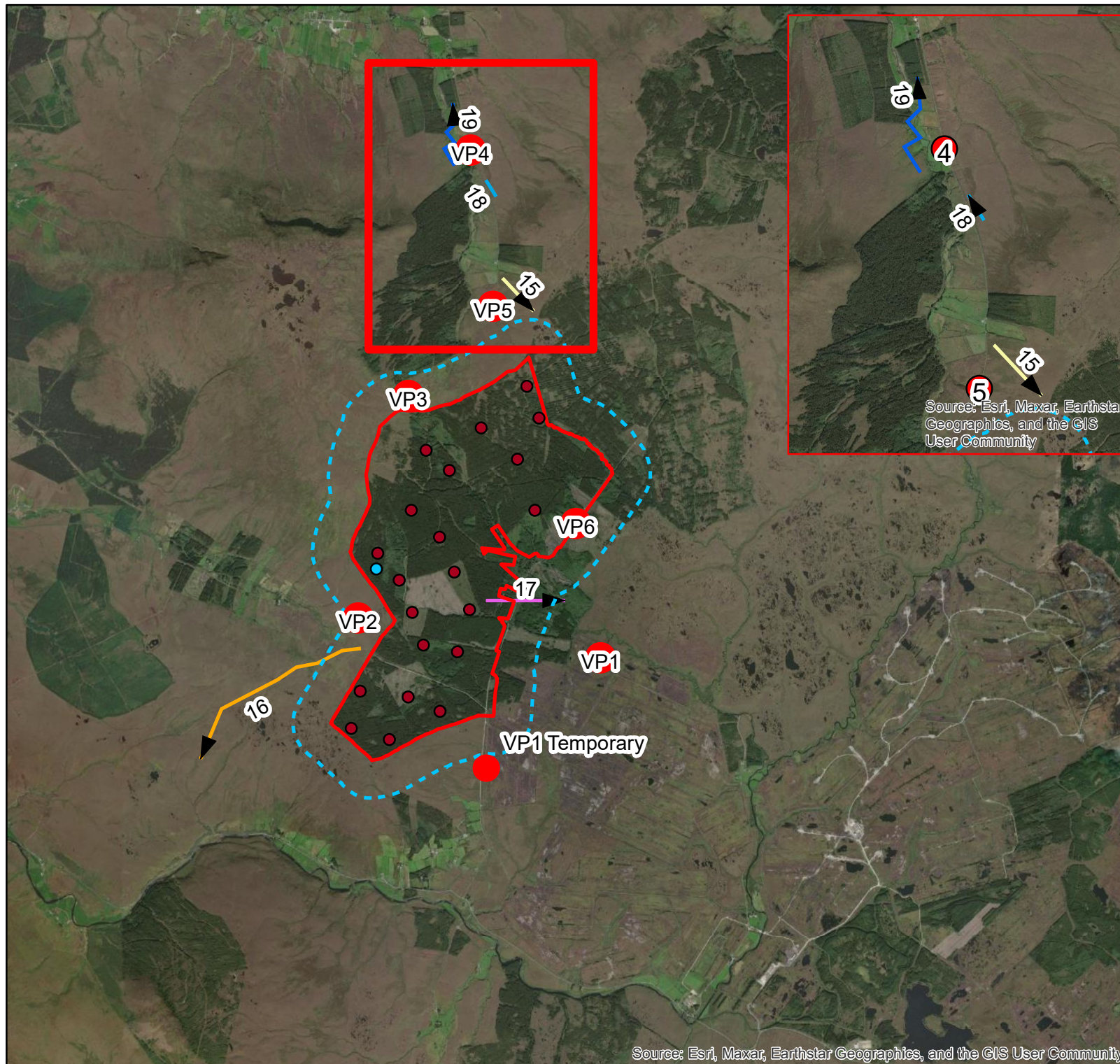
Drawn: VH

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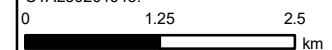
Date: 02/12/2022

Scale (A4): 1:70,000

MWP



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Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 8-4 Kestrel

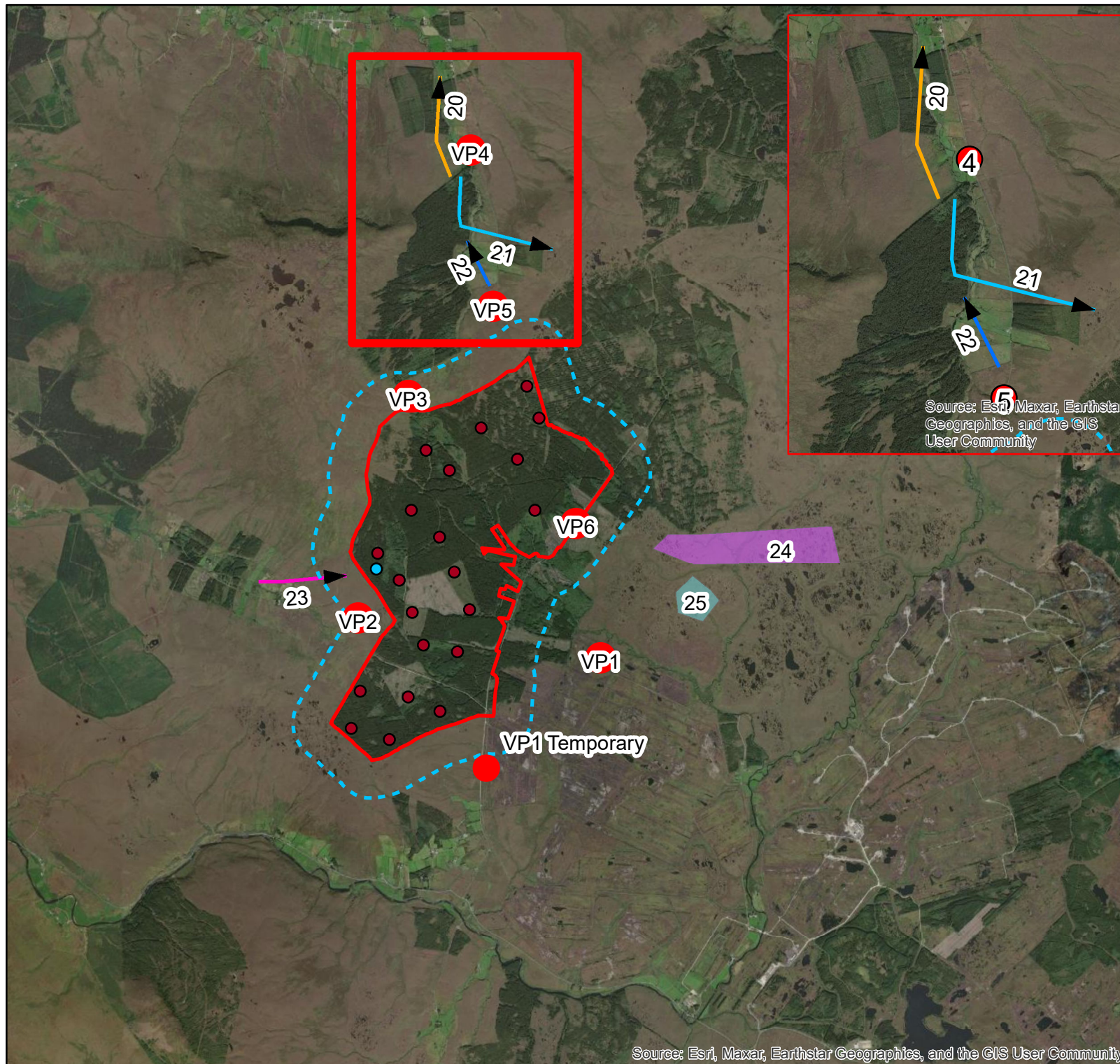
Drawn: VH

Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP



Site Boundary

Vantage Point

Met Mast Location

Turbine Location

Flight Activity Survey Area 500m

Kestrel Flight Path

20, 14/09/2022

21, 14/09/2022

22, 26/09/2022

23, 19/09/2022

Kestrel Activity

24, 28/09/2022

25, 28/09/2022

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0

1.25

2.5

km

N

Project Title:

Sheskin South Wind Farm

Client:

SSE Renewables

Drawing Title:

Bird Surveys Summer 2022

Map 8-5 Kestrel

Drawn: VH

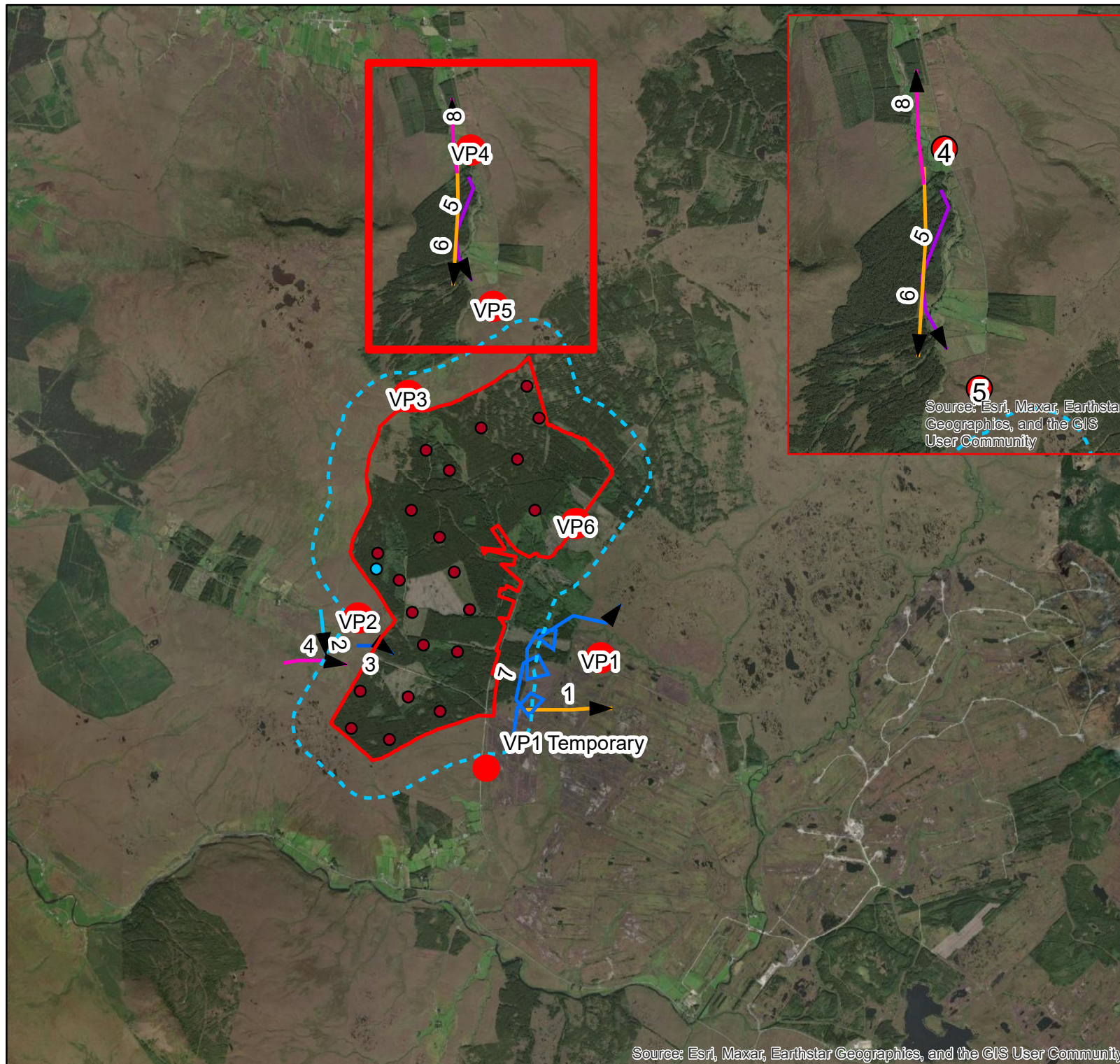
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Date: 14/12/2022

Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

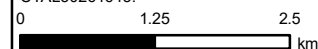


- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area

Lesser Black Backed Gull Flight Path

- ➔ 1, 22/04/2022
- ➔ 2, 22/04/2022
- ➔ 3, 22/04/2022
- ➔ 4, 22/04/2022
- ➔ 5, 17/05/2022
- ➔ 6, 18/05/2022
- ➔ 7, 20/05/2022
- ➔ 8, 25/07/2022

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Project Title:
Sheskin South Wind Farm

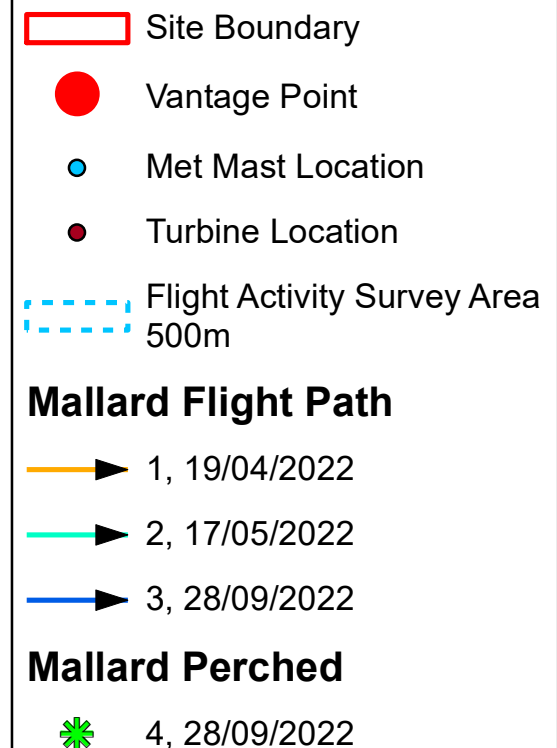
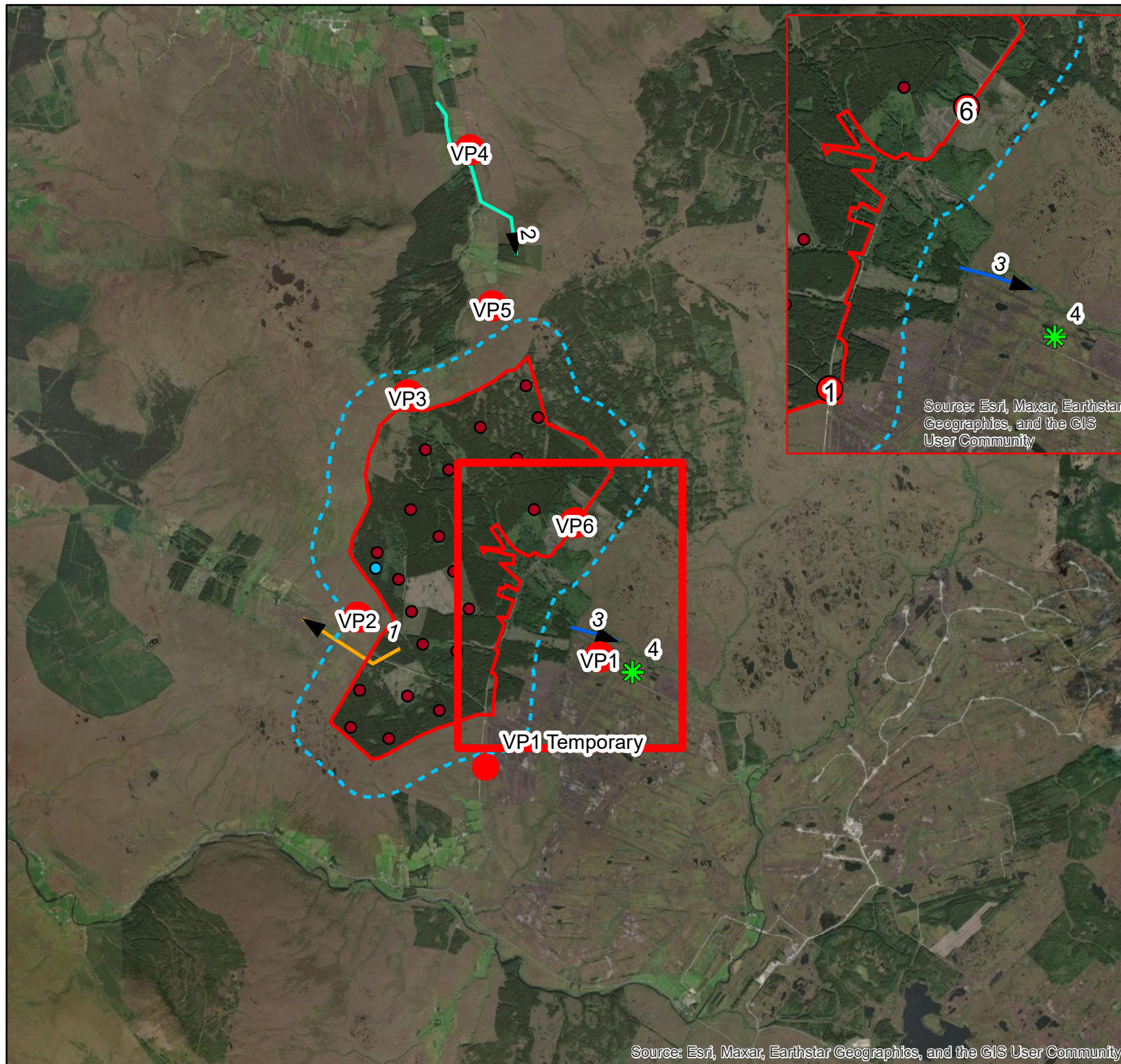
Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 9-1 Lesser Black Backed Gull

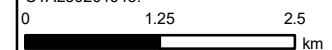
Drawn: VH	Checked: HD
Date: 02/12/2022	Scale (A4): 1:70,000

MWP

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



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Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 10-1 Mallard

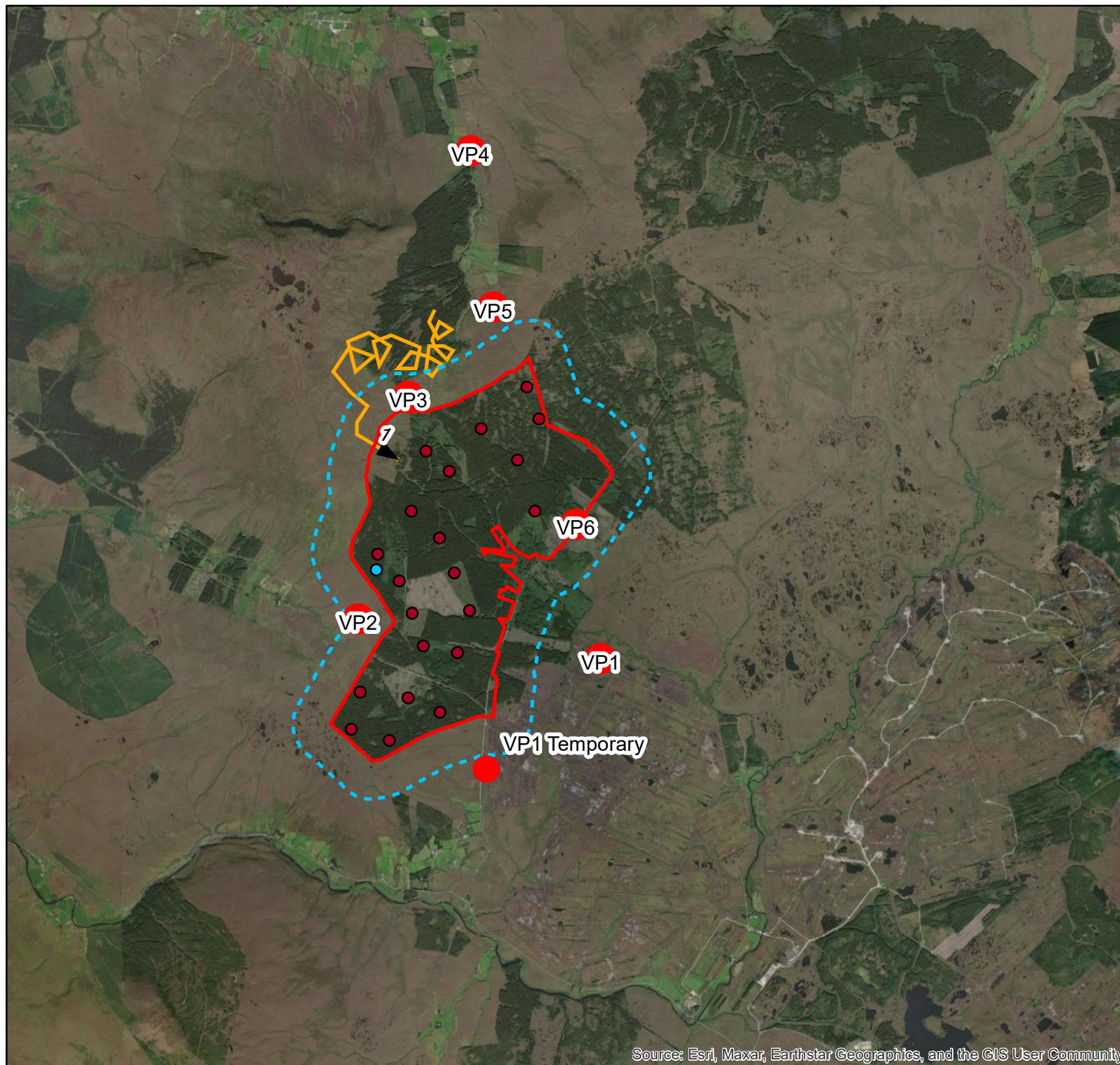
Drawn: VH

Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m
- Peregrine Flight Path**
- 1, 21/04/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 11-1 Peregrine

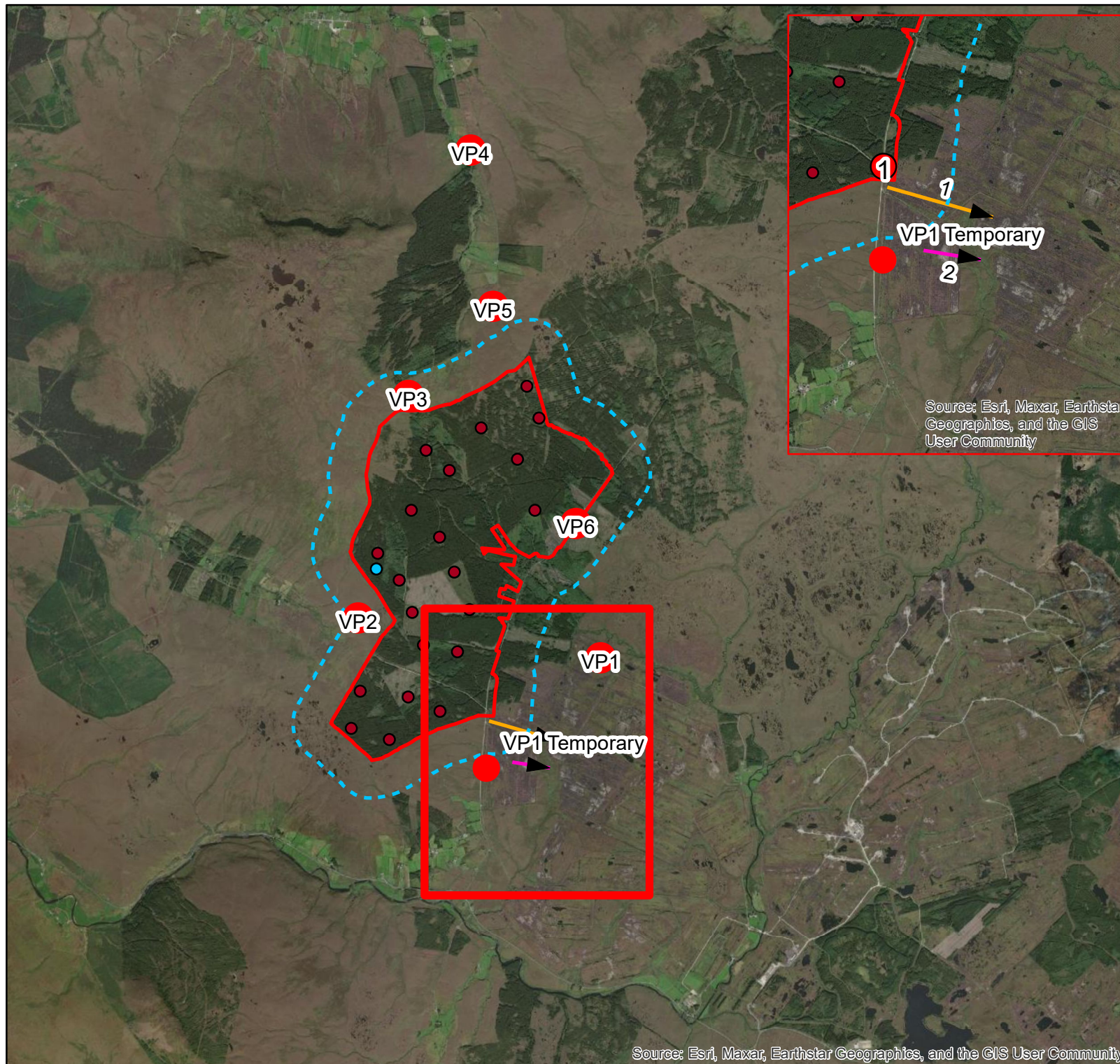
Drawn: VH

Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP



Site Boundary

Vantage Point

Met Mast Location

Turbine Location

Flight Activity Survey Area
500m

Ringed Plover Flight Path

1, 30/06/2022

2, 30/06/2022

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01.252.5

km

N

Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 12-1 Ringed Plover

Drawn: VH






Checked: HD

Date: 02/12/2022


Scale (A4): 1:70,000


MWP



-  Site Boundary
-  Vantage Point
-  Met Mast Location
-  Turbine Location
-  Flight Activity Survey Area 500m

Red Grouse Flight Path

 1, 18/05/2022

 2, 26/05/2022

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0 1.25 2.5
km



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 13-1 Red Grouse

Drawn: VH

Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP



- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

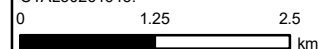
Sparrowhawk Flight Path

- ➔ 1, 26/05/2022
- ➔ 2, 17/05/2022
- ➔ 3, 26/07/2022

Sparrowhawk Activity

- 4, 27/07/2022
- 5, 29/07/2022
- 6, 17/08/2022

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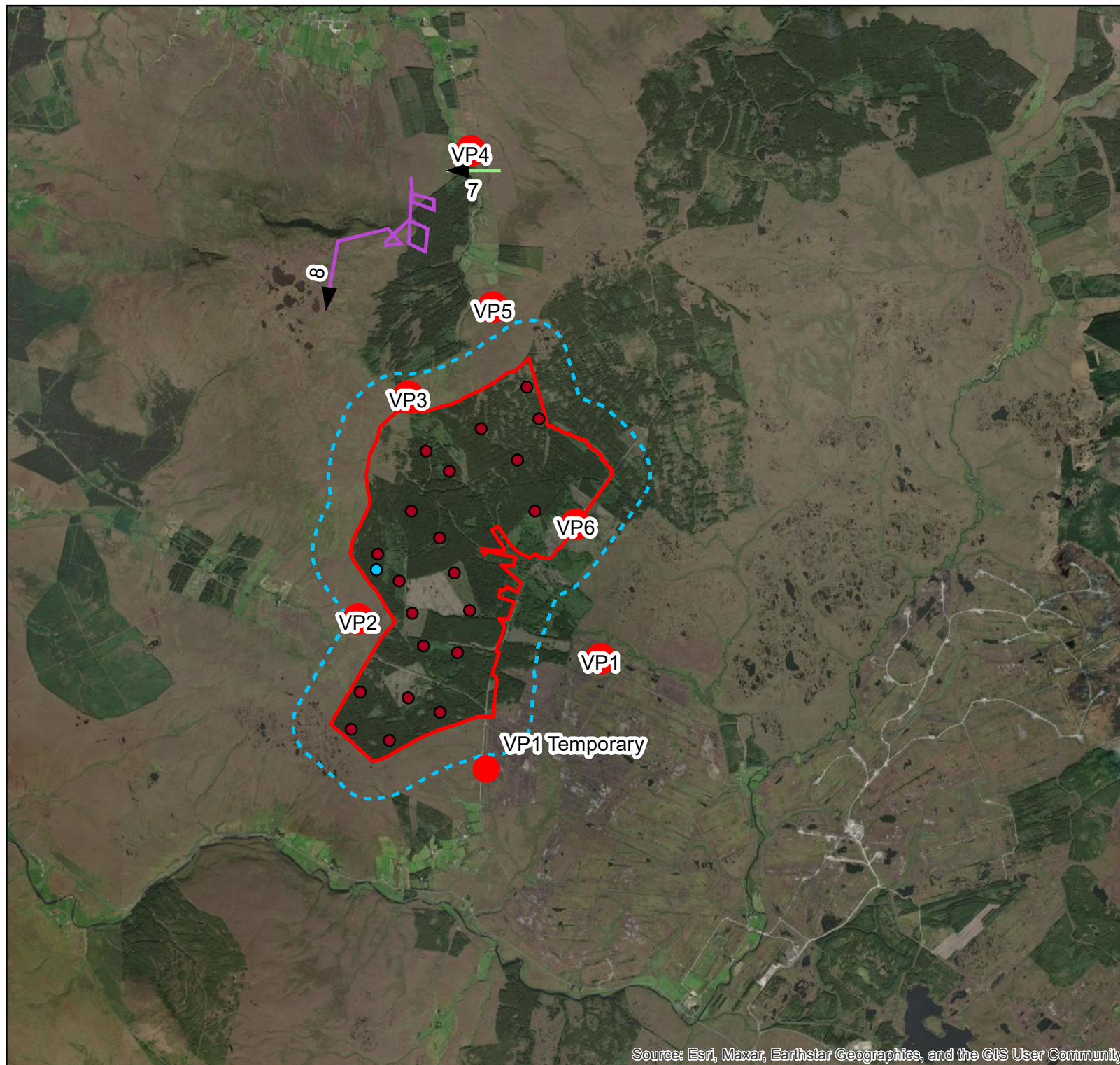
Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 14-1 Sparrowhawk

Drawn: VH	Checked: HD
Date: 02/12/2022	Scale (A4): 1:70,000

MWP

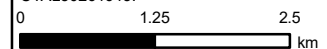


- Site Boundary
- Vantage Point
- Met Mast Location
- Turbine Location
- Flight Activity Survey Area 500m

Sparrowhawk Flight Path

- ▶ 7, 18/08/2022
- ▶ 8, 13/09/2022

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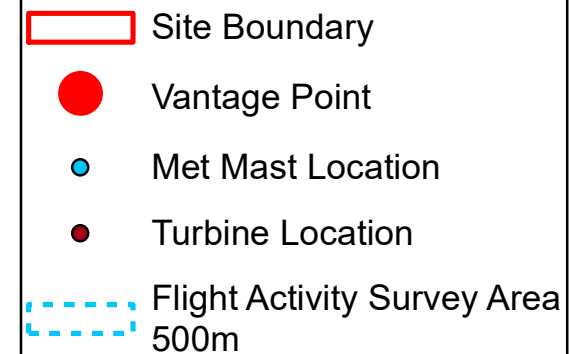
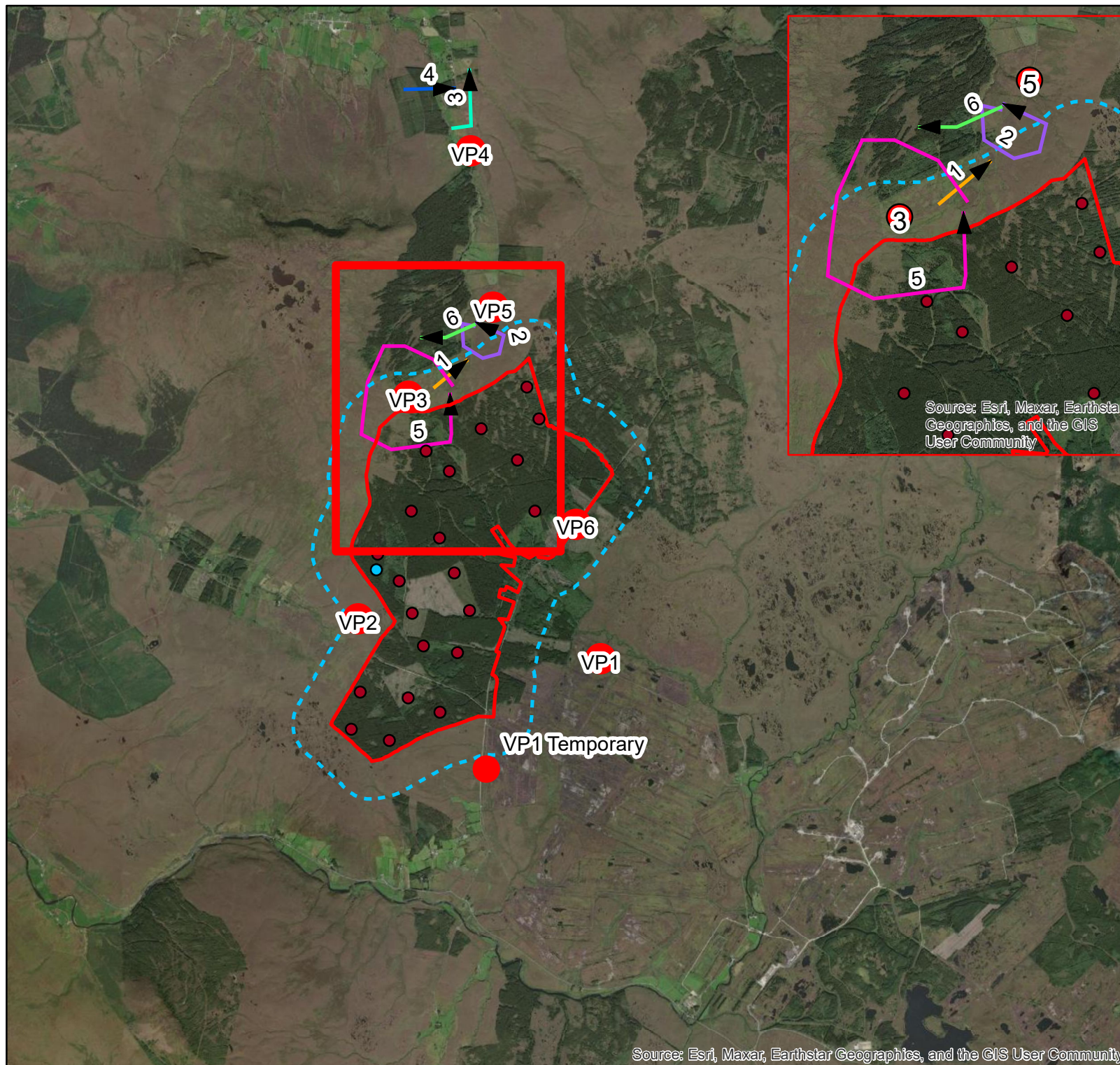
Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 14-2 Sparrowhawk

Drawn: VH	Checked: HD
Date: 02/12/2022	Scale (A4): 1:70,000

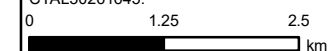
MWP



Snipe Flight Path

- 1, 20/04/2022
- 2, 20/04/2022
- 3, 21/04/2022
- 4, 21/04/2022
- 5, 19/05/2022
- 6, 19/05/2022

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Project Title:
Sheskin South Wind Farm

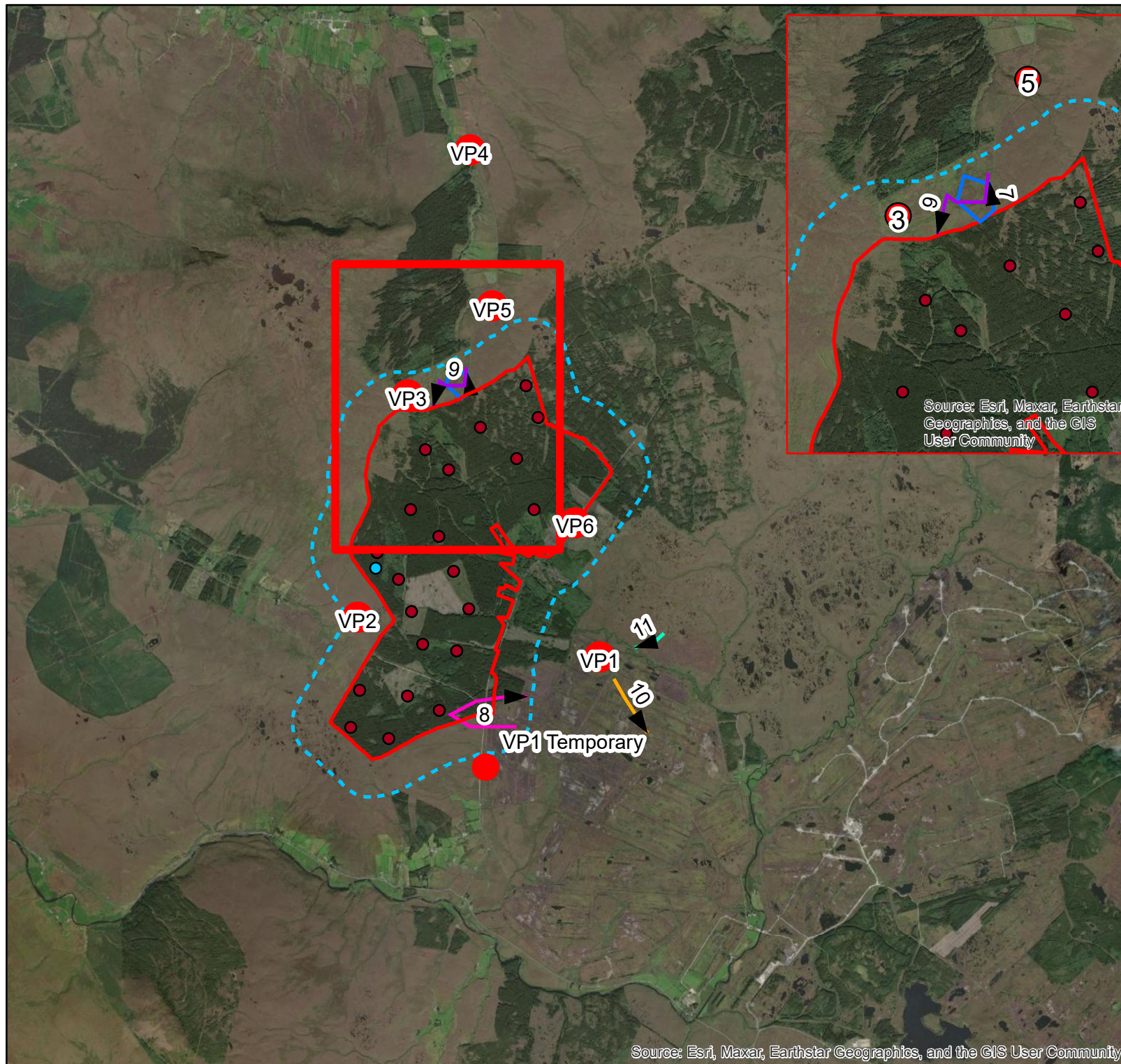
Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 15-1 Snipe

Drawn: VH Checked: HD

Date: 02/12/2022 Scale (A4): 1:70,000

MWP



Site Boundary

Vantage Point

Met Mast Location

Turbine Location

Flight Activity Survey Area 500m

Snipe Flight Path

7, 24/06/2022

8, 27/07/2022

9, 13/09/2022

10, 28/09/2022

11, 28/09/2022

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0

1.25

2.5

km

N

Project Title:

Sheskin South Wind Farm

Client:

SSE Renewables

Drawing Title:

Bird Surveys Summer 2022

Map 15-2 Snipe

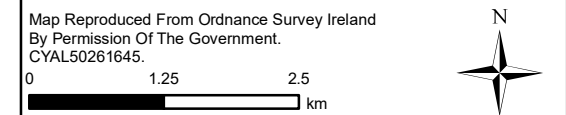
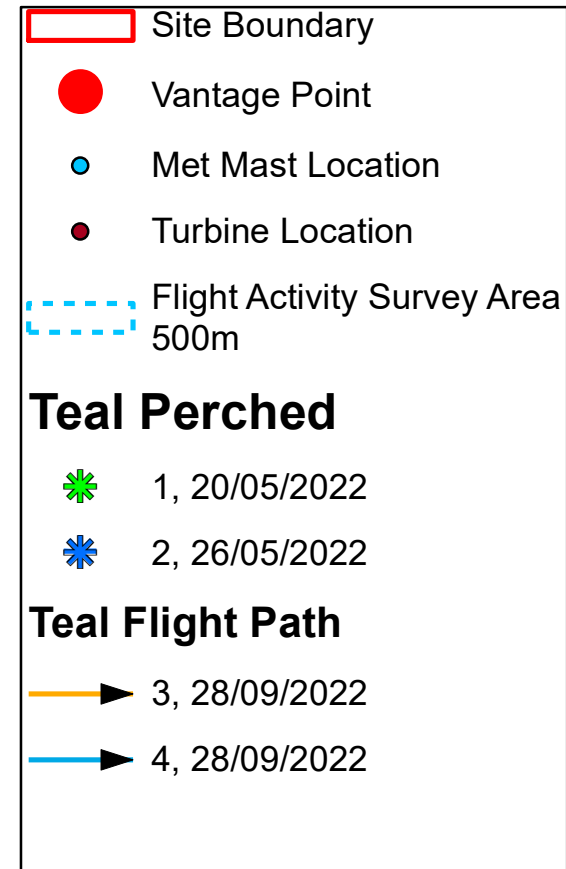
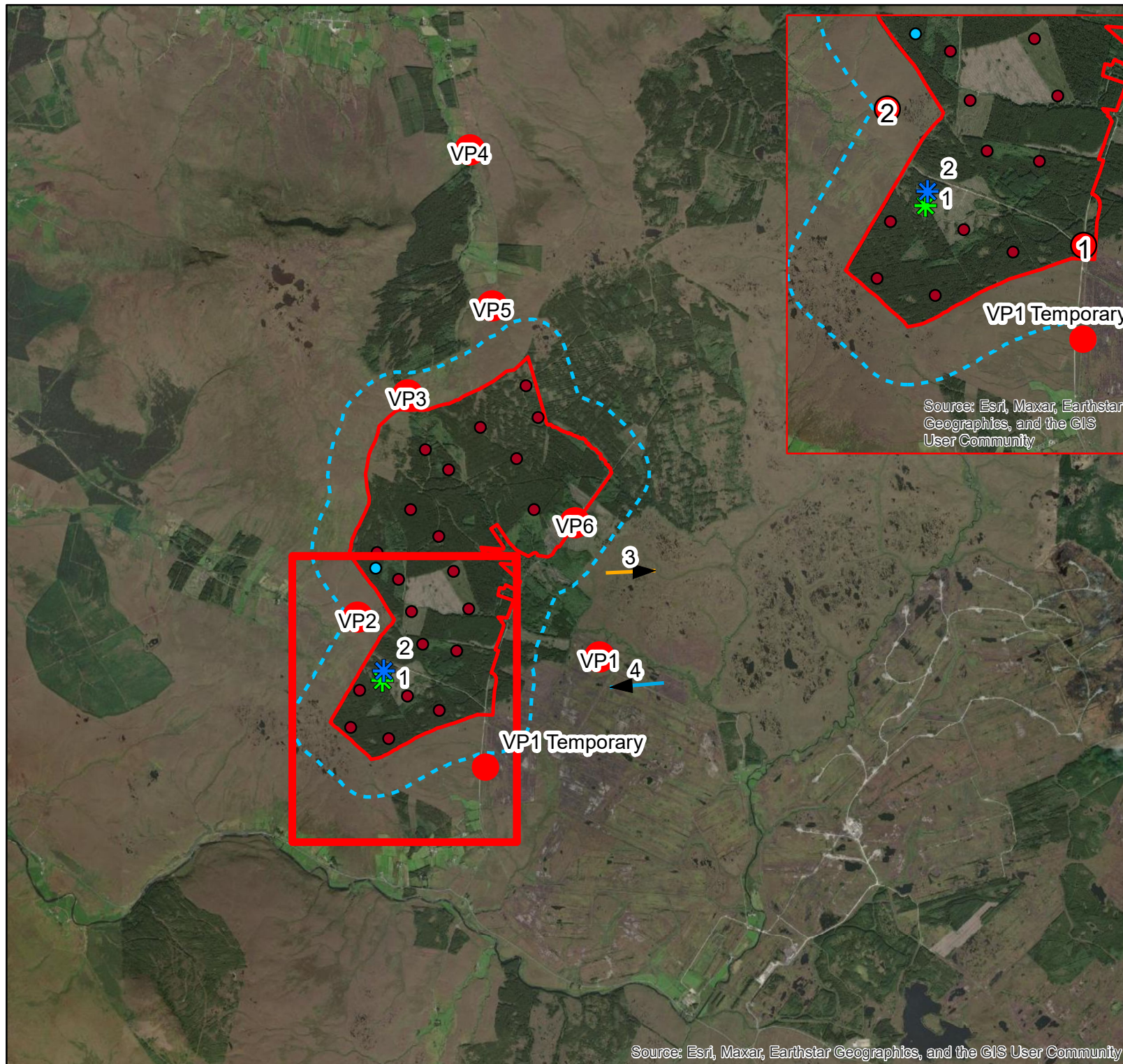
Drawn: VH

Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP



Project Title:
Sheskin South Wind Farm

Client: SSE Renewables

Drawing Title:
Bird Surveys Summer 2022
Map 16-1 Teal

Drawn: VH

Checked: HD

Date: 02/12/2022

Scale (A4): 1:70,000

MWP

Appendix 6

Non-target Species of Conservation Concern Recorded during VP Surveys

Winter October 2019 - March 2020

The following summary outlines all other species of conservation concern (BOCCI 4) recorded during the winter 2019/2020 VP surveys, with the table showing the peak monthly count for each individual species. Grey wagtail (*Motacilla cinerea*) and meadow pipit (*Anthus pratensis*) were the only other red-listed species which were recorded. Meadow pipit was recorded in every month except February throughout the site with numbers peaking in October. One grey wagtail was recorded in March only. Amber-listed species which were frequently recorded included goldcrest (*Regulus regulus*), while other less frequently recorded, amber-listed species comprised skylark (*Alauda arvensis*), starling (*Sturnus vulgaris*) and swallow (*Hirundo rustica*).

Common Name	Latin Name	Winter Season 2019/20					
		Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
Goldcrest	<i>Regulus regulus</i>	3	2	1	1		1
Grey wagtail	<i>Motacilla cinerea</i>						2
Meadow pipit	<i>Anthus pratensis</i>	25	18	4	6		12
Skylark	<i>Alauda arvensis</i>				1		8
Starling	<i>Sturnus vulgaris</i>			17			
Swallow	<i>Hirundo rustica</i>						2

Summer April 2020 – Sept 2020

The following summary outlines all other species of conservation concern (BOCCI 4) recorded during the 2020 breeding season VP surveys, with the table showing the peak monthly count for each individual species. Grey wagtail (*Motacilla cinerea*) and meadow pipit (*Anthus pratensis*) were the only other red-listed species which were recorded. Meadow pipit was recorded in every month throughout the site with numbers peaking in July, August and September. Grey wagtail was recorded in every month except for September. Amber-listed non-target species recorded in every month included skylark (*Alauda arvensis*) and swallow (*Hirundo rustica*). Amber-listed species which were frequently recorded included goldcrest (*Regulus regulus*), willow warbler (*Phylloscopus trochilus*) and wheatear (*Oenanthe oenanthe*), while other less frequently recorded, amber-listed species comprised house martin (*Delichon urbicum*), linnet (*Carduelis cannabina*), sand martin (*Riparia riparia*) and starling (*Sturnus vulgaris*).

Common Name	Latin Name	Breeding Season 2020					
		Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
Goldcrest	<i>Regulus regulus</i>	2	2		2	2	3
Grey wagtail	<i>Motacilla cinerea</i>	1	2	1	2	1	0
House martin	<i>Delichon urbicum</i>			10	2	2	2
Linnet	<i>Carduelis cannabina</i>					1	3
Meadow pipit	<i>Anthus pratensis</i>	10	17	12	18	18	18
Sand Martin	<i>Riparia riparia</i>	0	5		4	7	
Skylark	<i>Alauda arvensis</i>	10	8	12	10	3	2
Starling	<i>Sturnus vulgaris</i>				8		
Swallow	<i>Hirundo rustica</i>	2	2	4	5	7	5
Willow Warbler	<i>Phylloscopus trochilus</i>	3	4	5	3	2	
Wheatear	<i>Oenanthe oenanthe</i>	2	2		1		1

Winter October 2020 - March 2021

The following summary outlines all other species of conservation concern (BOCCI 4) recorded during the winter 2020/21 VP surveys, with the table showing the peak monthly count for each individual species. Grey wagtail and meadow pipit were the only other red-listed species which were recorded. Meadow pipit was recorded in every month throughout the site with maximum numbers in October. Grey wagtail was recorded once, in March only. Goldcrest was the only amber-listed non-target species recorded in every month. Linnet and skylark were the only other amber-listed species (recorded in March only).

Common Name	Latin Name	Winter Season 2020/21					
		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
Goldcrest	<i>Regulus regulus</i>	2	2	1	2	2	2
Grey wagtail	<i>Motacilla cinerea</i>						1
Linnet	<i>Carduelis cannabina</i>						1
Meadow pipit	<i>Anthus pratensis</i>	25	5	3	4	1	10
Skylark	<i>Alauda arvensis</i>						6

Summer April 2021 – September 2021

The following summary outlines all other species of conservation concern (BOCCI 4) recorded during the 2021 breeding season VP surveys, with the table showing the peak monthly count for each individual species. Grey wagtail (*Motacilla cinerea*), meadow pipit (*Anthus pratensis*) and swift (*Apus apus*) were the only other red-listed species which were recorded. Grey wagtail and meadow pipit were recorded in every month throughout the site. Swift was recorded in July only. Amber-listed non-target species recorded in every month included goldcrest (*Regulus regulus*), swallow (*Hirundo rustica*) and willow warbler (*Phylloscopus trochilus*). Amber-listed species which were frequently recorded was skylark (*Alauda arvensis*), while other less frequently recorded, amber-listed species comprised grasshopper warbler (*Locustella naevia*), house martin (*Delichon urbicum*), linnet (*Carduelis cannabina*), sand martin (*Riparia riparia*), starling (*Sturnus vulgaris*) and wheatear (*Oenanthe oenanthe*).

Common Name	Latin Name	Breeding Season 2021					
		April-21	May-21	June-21	July-21	Aug-21	Sept-21
Goldcrest	<i>Regulus regulus</i>	1	1	2	2	2	2
Grasshopper Warbler	<i>Locustella naevia</i>		1	1			
Grey Wagtail	<i>Motacilla cinerea</i>	1	2	1	2	2	1
House Martin	<i>Delichon urbicum</i>						9
Linnet	<i>Carduelis cannabina</i>						1
Meadow Pipit	<i>Anthus pratensis</i>	48	10	13	9	23	22
Sand Martin	<i>Riparia riparia</i>	10	1				1
Skylark	<i>Alauda arvensis</i>	32	10	9	7		2
Starling	<i>Sturnus vulgaris</i>					22	12
Swallow	<i>Hirundo rustica</i>	1	4	4	4	5	16
Swift	<i>Apus apus</i>				1		
Wheatear	<i>Oenanthe oenanthe</i>					2	1
Willow Warbler	<i>Phylloscopus trochilus</i>	3	4	4	3	2	2

Winter October 2021- March 2022

The following summary outlines all other species of conservation concern (BOCCI 4) recorded during the winter 2021/22 VP surveys, with the table showing the peak monthly count for each individual species.

Grey wagtail (*Motacilla cinerea*), meadow pipit (*Anthus pratensis*) and redwing (*Turdus iliacus*) were the only other red-listed species which were recorded. Meadow pipit was recorded in every month throughout the site with numbers peaking in November (35). Redwing was recorded in three of the survey months with numbers peaking in November (10). Grey wagtail was also recorded in three of the survey months with numbers peaking in March (2). Goldcrest (*Regulus regulus*) was the only amber-listed non-target species recorded in every month. Numbers of goldcrest peaked in October (3). While other less frequently recorded species comprised linnet (*Carduelis cannabina*), skylark (*Alauda arvensis*), starling (*Sturnus vulgaris*) and swallow (*Hirundo rustica*).

Common Name	Latin Name	Winter Season 2021/22					
		Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
Goldcrest	<i>Regulus regulus</i>	3	2	2	1	2	2
Grey Wagtail	<i>Motacilla cinerea</i>		1			1	2
Linnet	<i>Carduelis cannabina</i>	1					1
Meadow Pipit	<i>Anthus pratensis</i>	18	35	4	9	14	16
Redwing	<i>Turdus iliacus</i>		10	3		1	
Skylark	<i>Alauda arvensis</i>					2	4
Starling	<i>Sturnus vulgaris</i>	15					37
Swallow	<i>Hirundo rustica</i>	2					1

Summer April 2022- September 2022

The following summary outlines all other species of conservation concern (BOCCI 4) recorded during the 2022 breeding season VP surveys, with the table showing the peak monthly count for each individual species.

Grey wagtail (*Motacilla cinerea*), meadow pipit (*Anthus pratensis*), redwing (*Turdus iliacus*) and swift (*Apus apus*) were the only other red-listed species which were recorded. Grey wagtail and meadow pipit were recorded in every month. Meadow pipit numbers peaked in August (47). Redwing was recorded once in April (1) and swift was recorded once in July (1). Swallow (*Hirundo rustica*) was the only amber-listed species recorded in every month, numbers peaked in August (8). Other frequently-recorded, amber-listed species included goldcrest (*Regulus regulus*), skylark (*Alauda arvensis*) and willow warbler (*Phylloscopus trochilus*). Less frequently recorded, amber-listed species comprised house martin (*Delichon urbicum*), linnet (*Carduelis cannabina*), sand martin (*Riparia riparia*), starling (*Sturnus vulgaris*) and wheatear (*Oenanthe oenanthe*).

Common Name	Latin Name	Breeding Season 2022					
		April-22	May-22	June-22	July-22	Aug-22	Sept-22
Goldcrest	<i>Regulus regulus</i>	2		2	3	3	3
Grey Wagtail	<i>Motacilla cinerea</i>	1	1	1	1	2	1
House Martin	<i>Delichon urbicum</i>		1		4		
Linnet	<i>Carduelis cannabina</i>	2					
Meadow Pipit	<i>Anthus pratensis</i>	30	11	8	27	47	16
Redwing	<i>Turdus iliacus</i>	1					
Sand Martin	<i>Riparia riparia</i>	5	1				

Common Name	Latin Name	Breeding Season 2022					
		April-22	May-22	June-22	July-22	Aug-22	Sept-22
Skylark	<i>Alauda arvensis</i>	7	4	5	5		4
Starling	<i>Sturnus vulgaris</i>				3		
Swallow	<i>Hirundo rustica</i>	1	4	4	7	8	7
Swift	<i>Apus apus</i>				1		
Wheatear	<i>Oenanthe oenanthe</i>						1
Willow Warbler	<i>Phylloscopus trochilus</i>	4	2	2	2		

Appendix 7

Transect and Point Count Summary

Transect and Point Count Survey Summary

Date	Month	Transects	Observer	Start Time	Finish Time	Weather	Visibility
Sheskin Transect Survey Summary Winter October 2019 – March 2020							
27/11/2019	Nov	A	JC	12:30	13:10	Cloud cover 7/8, intermittent rain, wind direction NE, wind F4-6, temp 7-9°C	Moderate
27/11/2019	Nov	B	JC	13:15	14:55	Cloud cover 7/8, intermittent heavy rain, wind direction NE, wind F4-6, temp 7-9°C	Moderate
27/11/2019	Nov	C	JC	15:30	16:15	Cloud cover 7/8, intermittent rain, wind direction NE, wind F4-6, temp 7-9°C	Moderate
30/01/2020	Jan	A	JC	12:40	13:10	Intermittent rain, damp and wet, wind direction W, wind F5-6, temp 9-11°C	Poor
30/01/2020	Jan	B	JC	13:15	14:55	Intermittent rain, damp and wet, wind direction W, wind F5-6, temp 9-11°C	Poor
30/01/2020	Jan	C	JC	15:15	15:45	Cloud cover 7/8, intermittent rain, damp and wet, wind direction W, wind F5-6, temp 9-11°C	Poor - Moderate
26/02/2020	Feb	A	JC	13:45	14:15	Cloud cover 8/8, continuous heavy snow, terrible conditions, wind direction W, wind F4-6, temp 4-5°C	Poor
26/02/2020	Feb	B	JC	10:30	12:10	Cloud cover 7/8, intermittent heavy snow, hail and rain, wind direction W, wind F4-6, temp 4-5°C	Poor - Good
26/02/2020	Feb	C	JC	12:30	13:00	Cloud cover 6/8, intermittent heavy hail, rain and snow showers, wind direction W, wind F4-6, temp 4-5°C	Poor - Good
Sheskin Transect Survey Summary Breeding April 2020 – September 2020							
11/06/2020	June	A	AC	18.00	19.00	Cloud cover 4/8, sunshine, wind direction northeast, wind F 4-5, temp 13oC,	Good
11/06/2020	June	B	AC	19.10	21.15	Cloud cover 4/8, sunshine, wind direction northeast, wind F4-5, temp 12oC,	Good
11/06/2020	June	C	AC	21.25	22.40	Cloud cover 4/8, wind direction north-northeast, wind F3-4, temp 10oC,	Good
17/08/2020	Aug	A	PC	10.00	15.00	Dry and dull, wind direction east, wind F1-2, temp 17oC,	Moderate
17/08/2020	Aug	B	PC	10.00	15.00	Dry and dull, wind direction east, wind F1-2, temp 17oC,	Moderate
17/08/2020	Aug	C	PC	10.00	15.00	Dry and dull, wind direction east, wind F1-2, temp 17oC,	Moderate
17/09/2020	Sept	A	PC	8.30	2.30	Dry, dull and cloudy, wind direction southeast, wind F1-2, temp 15oC	
17/09/2020	Sept	B	PC	8.30	2.30	Dry, dull and cloudy, wind direction southeast, wind F1-2, temp 15oC	
17/09/2020	Sept	C	PC	8.30	2.30	Dry, dull and cloudy, wind direction southeast, wind F1-2, temp 15oC	

Date	Month	Transects	Observer	Start Time	Finish Time	Weather	Visibility
Sheskin Transect Survey Summary Winter October 2020 – March 2021							
22/10/2020	Oct	A	AC	8.40	9.40	Cloud cover 8/8, rain, wind direction east, wind F3-4, temp 10oC	Good-Moderate
22/10/2020	Oct	B	AC	9.55	12.45	Cloud cover 8/8, rain, wind direction east, wind F3-4, temp 12oC,	Moderate - Poor
22/10/2020	Oct	C	AC	13.30	15.30	Cloud cover 8/8, continuous rain wind direction east, wind F3-4, temp 13oC	Moderate - Poor
18/11/2020	Nov	A	PC	8.30	11.30	Cloudy with some showers, wind direction southwest, wind F4-5, temp 6oC,	Moderate
18/11/2020	Nov	B	PC	8.30	11.30	Cloudy with some showers, wind direction southwest, wind F4-5, temp 6oC,	Moderate
18/11/2020	Nov	C	AC	12.30	14.35	Cloud cover 7/8 – 8/8, rain showers and intermittent sunshine, wind direction southwest, wind F4-6, temp 7oC-9oC,	Good.
08/12/2020	Dec	A	AC	9.25	10.30	Cloud cover 8/8, intermittent sunshine, wind direction northwest, wind F3-4, temp 5oC,	Good.
08/12/2020	Dec	B	AC	10.50	13.25	Cloud cover 8/8 – 7/8, intermittent sunshine, wind direction northwest, wind F3-4, temp 6oC,	Good.
08/12/2020	Dec	C	AC	13.50	15.40	Cloud cover 7/8, intermittent sunshine, wind direction north-north, wind F3-4, temp 7oC-6oC,	Good.
20/01/2021	Jan	A	AC	9.00	10.00	Cloud cover 8/8 – 6/8, rain showers and intermittent sunshine, wind direction northwest, wind F1-2, temp 0-1oC,	Good.
20/01/2021	Jan	B	AC	10.10	12.45	Cloud cover 6/8, showers and intermittent sunshine, wind direction northwest, wind F1-2, temp 1oC-3oC,	Good.
20/01/2021	Jan	C	AC	13.00	14.30	Cloud cover 6/8, showers and intermittent sunshine, wind direction northwest, wind F1-2, temp 4oC-3oC,	Good.
22/02/2021	Feb	A	AC	14.05	15.00	Cloud cover 8/8, intermittent hazy sunshine, wind direction south, wind F4-5, temp 10oC,	Good.
22/02/2021	Feb	B	AC	11.20	14.00	Cloud cover 6/8 – 7/8, sunshine, wind direction south, wind F4-5, temp 9oC-10oC, visibility good	Good.
22/02/2021	Feb	C	AC	8.50	10.40	Cloud cover 3/8, sunshine, wind direction south-southwest, wind F3-4, temp 6oC- 8oC, visibility good	Good.
06/03/2021	Mar	A	PC	11.30	16.30	Sporadic showers, heavy rain interrupted by some dry spells, wind direction west, wind F4-6, temp 3oC,	Moderate
06/03/2021	Mar	B	PC	11.30	16.30	Sporadic showers, heavy rain interrupted by some dry spells, wind direction west, wind F4-6, temp 3oC,	Moderate

Date	Month	Transects	Observer	Start Time	Finish Time	Weather	Visibility
06/03/2021	Mar	C	PC	11.30	16.30	Sporadic showers, heavy rain interrupted by some dry spells, wind direction west, wind F4-6, temp 3oC,	Moderate
Sheskin Transect Survey Summary Breeding April 2021 – September 2021							
19/04/21	April	A B C	PC	08.45	15.00	Dull, 100% cloud cover with consistent light rain, wind direction southeast, wind F2-3, temp 8oC	Moderate
19/05/21	May	A	AC	09.15	10.10	Cloud cover 8/8, intermittent sunshine with rain showers, wind direction west, wind F3-4, temp 11oC	Good.
19/05/21	May	B	AC	10.20	12.45	Cloud cover 8/8 – 7/8 with intermittent sunshine, wind direction west, wind F3-4, temp 11oC-12oC	Good.
19/05/21	May	C	AC	13.20	14.55	Cloud cover 7/8 with intermittent sunshine, wind direction west, wind F3-4, temp 12oC-14oC	Good.
08/06/21	June	A B C	PC	08.00- 11.00	11.30- 14.00	Dry and cloudy with south-southwest winds, wind F2-4, temp 14oC	Good.
26/07/21	July	A B C	PC	08.00	14.00	100% cloud cover, dull with consistent light rain, wind direction northwest, wind F1-2, temp 15oC	Poor.
03/08/21	August	A B C	PC	08.30	14.30	100% cloud cover, dry and dull with southerly winds, wind F1-2, temp 15oC	Good.
07/09/21	September	A B C	PC	11.00	16.15	Dry, dull and overcast with south-easterly winds, wind F1-2, temp 16oC	Good.
Sheskin Transect Survey Summary Winter October 2021 – March 2022							
05.10.21	Oct	A	SC	08.45	09.50	A sunny day with some cloud, 4/8, and North-westerly winds F3-5. Temperature 9-11°C.	Good
05.10.21	Oct	B	SC	10.15	12.45	A sunny day with some cloud, 3/8, and North-westerly winds F3-4. Temperature 11-12°C.	Good
05.10.21	Oct	C	SC	13.35	14.35	A sunny day with some cloud, 4/8, and North-westerly winds F3-4. Temperature 13°C.	Good

Date	Month	Transects	Observer	Start Time	Finish Time	Weather	Visibility
25.11.21	Nov	A B C	PC	09.30	14.30	A dull day with 100% cloud cover and light rain. Winds North-westerly F2-3 and temperature 4°C	Good
17.12.21	Dec	A	SC	15.10	16.00	A sunny day with some cloud, 6/8, and South-easterly winds F2-3. Temperature 6-5°C.	Good
12.12.21	Dec	B	SC	11.35	13.30	A fresh sunny day with some cloud and East/South-easterly to South-easterly winds F2-3. Temperature 7°C.	Good
17.12.21	Dec	C	SC	13.35	14.55	A sunny day with light cloud and South-easterly winds F3-4. Temperature 7°C.	Good
21.01.22	Jan	A B C	PC	08.15	13.15	A dry sunny day with a little fog. South-westerly winds F2-3. Temperature 4°C.	Good
17.02.22	Feb	A	SC	12.50	13.45	Mostly cloudy but bright, becoming overcast with slack showers. Cloud, 6/8, and west-south-westerly winds F3-4. Temperature 4°C.	Good
12.02.22	Feb	B	SC	13.50	16.00	An overcast day with prolonged winterly showers. Cloud, 8/8, and west-south -westerly winds F3-5. Temperature 4-5°C.	Moderate
17.02.22	Feb	C	SC	16.05	17.30	Overcast damp evening. Cloud, 8/8, and west-south -westerly winds F2-3. Temperature 5-4°C.	Moderate
16.03.22	Mar	A	SC	09.10	10.05	Mostly blue skies and sunshine. Cloud 3/8 – 6/8, and south-westerly winds F2-3. Temperature 7°C.	Good
22.03.22	Mar	B	SC	15.30	16.45	A sunny but windy day with cloud, 5/8, and south-south-easterly winds F4-6. Temperature 15-14°C.	Good
22.03.22	Mar	C	SC	17.00	18.30	Cloud, 7/8, and south-south-easterly winds F4-6. Temperature 15-14°C.	Good
Sheskin Transect Survey Summary Breeding April 2022 – September 2022							
08.04.22	April	A	SC	10.40	11.40	Sunshine with some hail/snow showers. Cloud, 4/8. North- winds F4-5. Temperature 6°C.	Good
20.04.22	April	B	SC	10.00	12.10	An overcast, bright dry morning. Cloud, 8/8. South-southeast winds F4-5. Temperature 10-11°C.	Good
20.04.22	April	C	SC	12.15	13.30	An overcast, bright dry warm afternoon. Cloud, 8/8. South winds F3-4. Temperature 11-12°C.	Good
12.05.22	May	A B	PC	11.00	16.00	A wet, windy, dull day. Cloud cover 8/8. Rain 0.5 mm South-westerly winds F3-5 and temperature 12°C	Moderate
			PC				

Date	Month	Transects	Observer	Start Time	Finish Time	Weather	Visibility
		C	PC				
20.06.22	June	A B C	PC	16.30	21.30	A generally dry sunny day. Misty rain 0.1 mm. Westerly winds F2-3. Temperature 16°C.	Good to poor after 18.00
04.07.22	July	A	SC	14.10	15.00	An overcast breezy day. Cloud cover 8/8. West-north-west wind F 4. Temperature 14-15°C.	Good
04.07.22	July	B	SC	15.05	16.50	An overcast breezy day with some sunshine. Cloud cover 7/8 – 8/8. West-north-west wind F 4. Temperature 14°C.	Good
04.07.22	July	C	SC	16.55	18.20	An overcast evening, breezy but warm. Cloud cover 8/8. Westerly winds F-53. Temperature 14-13°C.	Good
11.08.22	Aug	A	SC	15.20	16.10	Very warm sunny day. Wind WNW-NW F1-2. Cloud 0/8. Temp 22C.	Good
23.08.22	Aug	B	SC	10.10	12.40	Mixture of sunshine and cloud with occasional shower. Cloud 7/8 – 5/8. Wind W F3. Temp 16C	Good
11.08.22	Aug	C	SC	16.20	17.25	Clear blue skies, very warm. Cloud 0/8. Wind NW-NNW F0-1. Temp 21-22C	Good
02.09.22	Sept	A B C	PC	10.00	15.00	Cloud 8/8, some light rain, wind SW F1-2. Temp 16C.	Good

Appendix 8

Transect and Point Count Results

TRANSECT SURVEY RESULTS FROM WINTER SEASON 2019/2020

The following table outlines the peak counts of all species recorded during transect A, B and C (TA, TB and TC) and point count surveys carried out at Sheskin South during winter 2019/2020. The names of species are colour-coded to indicate conservation status as determined in the most recent assessment of all regularly occurring birds in Ireland¹. Red-listed species are considered to be of a high conservation concern; amber-listed species are considered to be of lesser conservation concern but still with an unfavourable conservation status. Remaining species, which are 'green-listed', have a favourable conservation status. A total of 11 species were recorded.

Common Name	Latin Name	Winter Season 2019/2020								
		Nov TA	Nov TB	Nov TC	Jan TA	Jan TB	Jan TC	Feb TA	Feb TB	Feb TC
Blackbird	<i>Turdus merula</i>		1				1			
Blue tit	<i>Parus caeruleus</i>		2							
Coal tit	<i>Periparus ater</i>	3	6		1	1	4	1	1	4
Crossbill	<i>Loxia curvirostra</i>	3	2	8	2	4	3	1	1	4
Goldcrest	<i>Regulus regulus</i>		5			2	1			
Mistle thrush	<i>Turdus viscivorus</i>									1
Raven	<i>Corvus corax</i>	2	1			2	2			1
Robin	<i>Erithacus rubecula</i>		1			1	1			2
Siskin	<i>Carduelis spinus</i>			3		4				
Song thrush	<i>Turdus philomelos</i>									1
Wren	<i>Troglodytes troglodytes</i>	2	1	2		1	1	1	1	2

¹ Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 4: 2020-2026. *Irish Birds*, Volume 43, 1-22.

TRANSECT SURVEY RESULTS FROM BREEDING SEASON 2020

The following table outlines the peak counts of all species recorded during transect A, B and C (TA, TB and TC) and point count surveys carried out at Sheskin South during the 2020 breeding season. The names of species are colour-coded to indicate conservation status as determined in the most recent assessment of all regularly occurring birds in Ireland². Red-listed species are considered to be of a high conservation concern; amber-listed species are considered to be of lesser conservation concern but still with an unfavourable conservation status. Remaining species, which are 'green-listed', have a favourable conservation status. A total of 32 species were recorded.

Common Name	Latin Name	Breeding Season 2020								
		Jun TA	Jun TB	Jun TC	Aug TA	Aug TB	Aug TC	Sept TA	Sept TB	Sept TC
Blackbird	<i>Turdus merula</i>		1	1			1	1	2	1
Blackcap	<i>Sylvia atricapilla</i>	2	1	1		1	1			
Blue tit	<i>Parus caeruleus</i>					7	1			1
Bullfinch	<i>Pyrrhula pyrrhula</i>						1			
Chaffinch	<i>Fringilla coelebs</i>	3	2	2	1	2	2			1
Coal tit	<i>Periparus ater</i>	3	1		3	2	1	4	6	3
Crossbill	<i>Loxia curvirostra</i>	2				14	2		4	2
Dunnock	<i>Prunella modularis</i>				1	1		1	1	1
Goldcrest	<i>Regulus regulus</i>	1	2		2	3	2	3	6	4
Goldfinch	<i>Carduelis carduelis</i>									1
Great tit	<i>parus major</i>					1				2
Hooded crow	<i>Corvus cornix</i>			2				2		
Jay	<i>Garrulus glandarius</i>					2			1	
Kestrel	<i>Falco tinnunculus</i>		1							1
Lesser Black-backed gull	<i>Larus fuscus</i>					1				
Meadow pipit	<i>Anthus pratensis</i>			4		2	1	3	10	1
Mistle thrush	<i>Turdus viscivorus</i>			2						
Pied wagtail	<i>Motacilla alba</i>							1	2	

² Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 4: 2020-2026. *Irish Birds*, Volume 43, 1-22.

Common Name	Latin Name	Breeding Season 2020								
		Jun TA	Jun TB	Jun TC	Aug TA	Aug TB	Aug TC	Sept TA	Sept TB	Sept TC
Raven	<i>Corvus corax</i>						2		3	
Redpoll	<i>Carduelis flammea cabaret</i>									2
Reed bunting	<i>Emberzia schoenichus</i>									
Robin	<i>Erithacus rubecula</i>	1	2	1	4	5	3	3	8	8
Rook	<i>Corvus frugilegus</i>									
Siskin	<i>Carduelis spinus</i>	2	2						2	
Song thrush	<i>Turdus philomelos</i>				1	1		1		
Skylark	<i>Alauda arvensis</i>	3								
Starling	<i>Sturnus vulgaris</i>							4		
Stonechat	<i>Saxicola torquatus</i>		2							
Treecreeper	<i>Certhia familiaris</i>							1	1	
Willow warbler	<i>Phylloscopus trochilus</i>	2	4	1						
Woodpigeon	<i>Columba palumbus</i>									
Wren	<i>Troglodytes troglodytes</i>	2	2	1	3	3	2	1	3	3

TRANSECT SURVEY RESULTS FROM WINTER SEASON 2020/2021

The following table outlines the peak counts of all species recorded during transect A, B and C (TA, TB and TC) and point count surveys carried out at Sheskin South during winter 2020/2021. The names of species are colour-coded to indicate conservation status as determined in the most recent assessment of all regularly occurring birds in Ireland³. Red-listed species are considered to be of a high conservation concern; amber-listed species are considered to be of lesser conservation concern but still with an unfavourable conservation status. Remaining species, which are 'green-listed', have a favourable conservation status. A total of 24 species were recorded.

Common Name	Latin Name	Winter Season 2020/2021																	
		Oct TA	Oct TB	Oct TC	Nov TA	Nov TB	Nov TC	Dec TA	Dec TB	Dec TC	Jan TA	Jan TB	Jan TC	Feb TA	Feb TB	Feb TC	Mar TA	Mar TB	Mar TC
Blackbird	<i>Turdus merula</i>			1		1			1							2	1		
Blue tit	<i>Parus caeruleus</i>		1															2	
Bullfinch	<i>Pyrrhula pyrrhula</i>																	1	
Chaffinch	<i>Fringilla coelebs</i>	3	2	2								1		1	2	3		2	
Coal tit	<i>Periparus ater</i>	2	1	2	5	3	1	1	1	1	3	3	1	1	1	2	2	3	4
Crossbill	<i>Loxia curvirostra</i>	6	4			2			2	3				7	2	4		1	1
Dunnock	<i>Prunella modularis</i>							1									1		
Goldcrest	<i>Regulus regulus</i>			1	2	2	1		1			1	1		1	1	3	4	2
Great Black-backed gull	<i>Larus marinus</i>				1														
Grey heron	<i>Ardea cinerea</i>		1																
Grey wagtail	<i>Motacilla cinerea</i>														2				
Hooded crow	<i>Corvus cornix</i>	2																	
Jay	<i>Garrulus glandarius</i>	1		1						1									

³ Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 4: 2020-2026. *Irish Birds*, Volume 43, 1-22.

Common Name	Latin Name	Winter Season 2020/2021																	
		Oct TA	Oct TB	Oct TC	Nov TA	Nov TB	Nov TC	Dec TA	Dec TB	Dec TC	Jan TA	Jan TB	Jan TC	Feb TA	Feb TB	Feb TC	Mar TA	Mar TB	Mar TC
Long-tailed Tit	<i>Aegithalus caudatus</i>																		1
Meadow pipit	<i>Anthus pratensis</i>			2						2		1				2		6	
Mistle thrush	<i>Turdus viscivorus</i>																	2	
Raven	<i>Corvus corax</i>	3			1		1			2				3					
Robin	<i>Erithacus rubecula</i>	2	1	1	2	3	2	1	2			2	1	2	2	2	2	1	2
Siskin	<i>Carduelis spinus</i>		2							2									
Song thrush	<i>Turdus philomelos</i>																1		
Snipe	<i>Gallinago gallinago</i>			1															
Stonechat	<i>Saxicola torquatus</i>		2	2			1		2	2					2				
Woodcock	<i>Scolopax rusticola</i>										1							1	
Wren	<i>Troglodytes troglodytes</i>	3	1	1	1	1	1	1	1	1	1	1	1		3	1	2	1	1

TRANSECT SURVEY RESULTS FROM BREEDING SEASON 2021

The following table outlines the peak counts of all species recorded during transect A, B and C (TA, TB and TC) and point count surveys carried out at Sheskin South during the 2021 breeding season. The names of species are colour-coded to indicate conservation status as determined in the most recent assessment of all regularly occurring birds in Ireland⁴. Red-listed species are considered to be of a high conservation concern; amber-listed species are considered to be of lesser conservation concern but still with an unfavourable conservation status. Remaining species, which are 'green-listed', have a favourable conservation status. A total of 32 species were recorded.

Common Name	Latin Name	Breeding Season 2021																	
		Apr TA	Apr TB	Apr TC	May TA	May TB	May TC	June TA	June TB	June TC	Jul TA	Jul TB	Jul TC	Aug TA	Aug TB	Aug TC	Sept TA	Sept TB	Sept TC
Blackbird	<i>Turdus merula</i>		1	2	1		1			1			1						
Blackcap	<i>Sylvia atricapilla</i>		1	1			1	2	3	2		1	1		2	2		1	
Blue Tit	<i>Parus caeruleus</i>															1		1	
Bullfinch	<i>Pyrrhula pyrrhula</i>									1			2			1			
Chaffinch	<i>Fringilla coelebs</i>	4	18	2	4	4	3	3	4	2	1	2	7	1	4	4	1	4	1
Chiffchaff	<i>Phylloscopus collybita</i>									2									
Coal Tit	<i>Periparus ater</i>	1	3	3	2	2	1	1	2	2	3	5	3	3	4	2	7	6	3
Crossbill	<i>Loxia curvirostra</i>		16	8				1	2	2			1	1	1	2			
Cuckoo	<i>Cuculus canorus</i>								1	1									
Dunnock	<i>Prunella modularis</i>	1		1				1		1					1		1		
Goldcrest	<i>Regulus regulus</i>	1	4	2		1		1	3	1	1	4	2	4	7	2	2	3	2
Great Tit	<i>Parus major</i>		1												1				
Grey Heron	<i>Ardea cinerea</i>					1													
Grey Wagtail	<i>Motacilla cinerea</i>		3			2			2				1		1	2		1	
Hooded Crow	<i>Corvus cornix</i>													4		1		1	

⁴ Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 4: 2020-2026. *Irish Birds*, Volume 43, 1-22.

Common Name	Latin Name	Breeding Season 2021																	
		Apr TA	Apr TB	Apr TC	May TA	May TB	May TC	June TA	June TB	June TC	Jul TA	Jul TB	Jul TC	Aug TA	Aug TB	Aug TC	Sept TA	Sept TB	Sept TC
Jay	<i>Garrulus glandarius</i>											2							
Kestrel	<i>Falco tinnunculus</i>											1		4					
Long-tailed Tit	<i>Aegithalus caudatus</i>			2									1						
Meadow Pipit	<i>Anthus pratensis</i>	1	4	2		4	2		1	3	1	3	2	1	3	3	1	2	
Mistle Thrush	<i>Turdus viscivorus</i>				2	2					10								
Robin	<i>Erithacus rubecula</i>	2	7	2	1	2	2	1	2	1	2	3	3	2	4	3	2	4	4
Rook	<i>Corvus frugilegus</i>								1										
Siskin	<i>Carduelis spinus</i>	1	10	2		2	2	2	2	6	1	1	4		2	1			
Skylark	<i>Alauda arvensis</i>	1						1											
Snipe	<i>Gallinago gallinago</i>							1		1									
Song Thrush	<i>Turdus philomelos</i>		1	1			1	1	1	1						1	1		1
Sparrowhawk	<i>Accipiter nisus</i>							1						3					
Stonechat	<i>Saxicola torquatus</i>					2	2						2			2			
Treecreeper	<i>Certhia familiaris</i>		1																
Willow Warbler	<i>Phylloscopus trochilus</i>	2	3	2	5	3	2	2	2	1	1	1	2	1	3	2			
Woodpigeon	<i>Columba palumbus</i>	1		1					2	1									
Wren	<i>Troglodytes troglodytes</i>	2	3	4	2	2	1	3	7	3	1	4	3	3	4	4	2	2	2

TRANSECT SURVEY RESULTS FROM WINTER SEASON 2021/2022

The following table outlines the peak counts of all species recorded during transect A, B and C (TA, TB and TC) and point count surveys carried out at Sheskin South during winter 2021/2022. The names of species are colour-coded to indicate conservation status as determined in the most recent assessment of all regularly occurring birds in Ireland⁵. Red-listed species are considered to be of a high conservation concern; amber-listed species are considered to be of lesser conservation concern but still with an unfavourable conservation status. Remaining species, which are 'green-listed', have a favourable conservation status. A total of 25 species were recorded.

Common Name	Latin Name	Winter Season 2021/22																	
		Oct TA	Oct TB	Oct TC	Nov TA	Nov TB	Nov TC	Dec TA	Dec TB	Dec TC	Jan TA	Jan TB	Jan TC	Feb TA	Feb TB	Feb TC	Mar TA	Mar TB	Mar TC
Blackbird	<i>Turdus merula</i>		1			1	1		2	2		1						1	1
Blue Tit	<i>Cyanistes caeruleus</i>					4			2			1							
Bullfinch	<i>Pyrrhula pyrrhula</i>	0	1										1						
Chaffinch	<i>Fringilla coelebs</i>	2				1						2	1				9	6	1
Coal Tit	<i>Periparus ater</i>	6	8	2	1	3	4	1	1	1	3	5	3	6	2	1	9	2	2
Crossbill	<i>Loxia curvirostra</i>	3				2			5			3	1				1		
Dunnock	<i>Prunella modularis</i>	3	1	2		2	1		1	1		2					1		
Goldcrest	<i>Regulus regulus</i>	4	5	2	1	2	3		3	1	1	3	1	1	4	1	3	1	2
Golden Plover	<i>pluviaris apricaria</i>	1																	
Great Spotted Woodpecker	<i>Dendrocopus major</i>			1															
Hooded Crow	<i>Corvus cornix</i>			1					1										
Jay	<i>Garrulus glandarius</i>		1				1		1		2						1		
Kestrel	<i>Falco tinnunculus</i>					1													
Magpie	<i>Pica pica</i>	1																	
Meadow Pipit	<i>Anthus pratensis</i>	5	1			1			1			3	1	1	3		1		2
Pied Wagtail	<i>Motacilla alba</i>		1																

⁵ Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 4: 2020-2026. *Irish Birds*, Volume 43, 1-22.

Common Name	Latin Name	Winter Season 2021/22																	
		Oct TA	Oct TB	Oct TC	Nov TA	Nov TB	Nov TC	Dec TA	Dec TB	Dec TC	Jan TA	Jan TB	Jan TC	Feb TA	Feb TB	Feb TC	Mar TA	Mar TB	Mar TC
Raven	<i>Corvus corax</i>	1	1	5		1						2					1	2	
Redpoll	<i>Carduelis flammea cabaret</i>											1			2				
Robin	<i>Erithacus rubecula</i>	6	4	3	1	3	3	1	2	4	3	4	2	1	4	2	4	1	3
Siskin	<i>Carduelis spinus</i>						18			21		2		1			1	2	2
Skylark	<i>Alauda arvensis</i>																3		
Song Thrush	<i>Turdus philomelos</i>																1		
Treecreeper	<i>Certhia familiaris</i>										1								
Woodpigeon	<i>Columba palumbus</i>												1		1	2	1		2
Wren	<i>Troglodytes troglodytes</i>	5	5	2	2	2	3	1	5	2	3	4	3	2	2	1	4	2	4

TRANSECT SURVEY RESULTS BREEDING SEASON 2022

The following table outlines the peak counts of all species recorded to date during transect A, B and C (TA, TB and TC) and point count surveys carried out at Sheskin South during the 2022 breeding season. The names of species are colour-coded to indicate conservation status as determined in the most recent assessment of all regularly occurring birds in Ireland⁶. Red-listed species are considered to be of a high conservation concern; amber-listed species are considered to be of lesser conservation concern but still with an unfavourable conservation status. Remaining species, which are 'green-listed', have a favourable conservation status. A total of 34 species were recorded.

Common Name	Latin Name	Breeding Season 2022																	
		Apr TA	Apr TB	Apr TC	May TA	May TB	May TC	June TA	June TB	June TC	Jul TA	Jul TB	Jul TC	Aug TA	Aug TB	Aug TC	Sep TA	Sep TB	Sep TC
Blackbird	<i>Turdus merula</i>		3			1			2		1		1			1			1
Blackcap	<i>Sylvia atricapilla</i>		4	2	1	2	1		3	2		2	1		1				1
Blue Tit	<i>Parus caeruleus</i>			2					1								1		
Bullfinch	<i>Pyrrhula pyrrhula</i>															2			
Buzzard	<i>Buteo buteo</i>														1			1	
Chaffinch	<i>Fringilla coelebs</i>	1	7	2	4	3	2	2	3	2	1	3		2	1			1	1
Coal Tit	<i>Periparus ater</i>	3	6	1	1	1	1	2	2	1	1	3	2	4	9	1	2	4	2
Collared Dove	<i>Streptopelia decaocto</i>																		
Crossbill	<i>Loxia curvirostra</i>		29		1	1	1						6		1		1	1	
Cuckoo	<i>Cuculus canorus</i>		1			1													
Dunnock	<i>Prunella modularis</i>		1					1	1				2	1	1	1			2
Goldcrest	<i>Regulus regulus</i>	1	3	3	3	3	3	3	5	1	2	3	2	2	4	1	2	4	5
Great Black-backed Gull	<i>Larus marinus</i>	2																	
Great Tit	<i>Parus major</i>		1			1						1							
Grey heron	<i>Ardea cinerea</i>																2		
Grey Wagtail	<i>Motacilla cinerea</i>		1		1	1		1	1						2				
Hooded Crow	<i>Corvus cornix</i>			1	1				2				1						
Jay	<i>Garrulus glandarius</i>						1								2			2	

⁶ Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 4: 2020-2026. *Irish Birds*, Volume 43, 1-22.

Common Name	Latin Name	Breeding Season 2022																	
		Apr TA	Apr TB	Apr TC	May TA	May TB	May TC	June TA	June TB	June TC	Jul TA	Jul TB	Jul TC	Aug TA	Aug TB	Aug TC	Sep TA	Sep TB	Sep TC
Long-tailed Tit	<i>Aegithalus caudatus</i>								4										
Meadow Pipit	<i>Anthus pratensis</i>	1	1	1			3			2	2			2	2		1	4	1
Mistle Thrush	<i>Turdus viscivorus</i>			2															
Raven	<i>Corvus corax</i>																	3	2
Redpoll	<i>Carduelis flammea cabaret</i>					1				1				1					
Robin	<i>Erithacus rubecula</i>	2	2	1	3	2	1		2	1	3	2	3	1	4	2	1	2	6
Siskin	<i>Carduelis spinus</i>	3	3	2	1	2		1	2	2		1	1						5
Skylark	<i>Alauda arvensis</i>							1			1								
Song Thrush	<i>Turdus philomelos</i>								1						1				
Sparrowhawk	<i>Accipiter nisus</i>											1					1		1
Stonechat	<i>Saxicola torquatus</i>								1			1		2			1		
Swallow	<i>Hirundo rustica</i>							2			3	3			1	1			1
Treecreeper	<i>Certhia familiaris</i>																		1
Willow Warbler	<i>Phylloscopus trochilus</i>		2	2	1	2	3	2	1	1	1	1	2		1	1			
Woodpigeon	<i>Columba palumbus</i>		1	2						1			1			1	1		
Wren	<i>Troglodytes troglodytes</i>	4	6	3	3	3	4	1	4	3	2	2	2	3	4	5	1	3	3

Appendix 9

Winter Season Walkover Survey Summaries and Results

WINTER WALKOVER SURVEYS

WINTER SEASON 2019/20

RED GROUSE, MERLIN AND GOLDEN PLOVER

Date	Month	Observer	Start Time	Finish Time	Weather	Results/Comments
27.02.20	Feb	JC	09.30	10.55	Dry and sunny. Cloud 5/8. Wind WNW F3-5. Temp 4-6C. Visibility Good to Excellent	Golden plovers were heard calling high up on the hill above VP 3 to the west. See Map 1 No. 1 Red Grouse was close to VP3 on the ground and showed no fear of human presence, didn't fly away.

WINTER SEASON 2020/21

RED GROUSE, MERLIN AND GOLDEN PLOVER

Date	Month	Observer	Start Time	Finish Time	Weather	Results/Comments
22.02.21	Feb	PC	09.00	12.00	Dry and sunny, some cloud cover. Wind SSW F5-6. Temp 5C. Visibility good.	Chaffinch 4 Skylark 6 Meadow pipit 4 Coal tit 2 Wren 1 Reed bunting 1

Date	Month	Observer	Start Time	Finish Time	Weather	Results/Comments
						See Map 2 No.1 Red grouse droppings No. 2 Red grouse calling, not seen No.3 Golden plover heard calling
22.02.21	Feb (cont.)	PC	13.00	15.00	Dry and dull, some cloud cover. Wind SW F4-5. Temp 10C. Visibility good	Reed bunting Robin Meadow pipit Hooded crow Coal tit Skylark Raven See Map 2 No. 4 Hen harrier hunting at height 2m (immature female) No. 5 Ringed plover on ground beside pool of water No. 6 Snipe flying SE at height 2m No. 7 Snipe flushed, flew W at height 2m

WINTER SEASON 2021/22

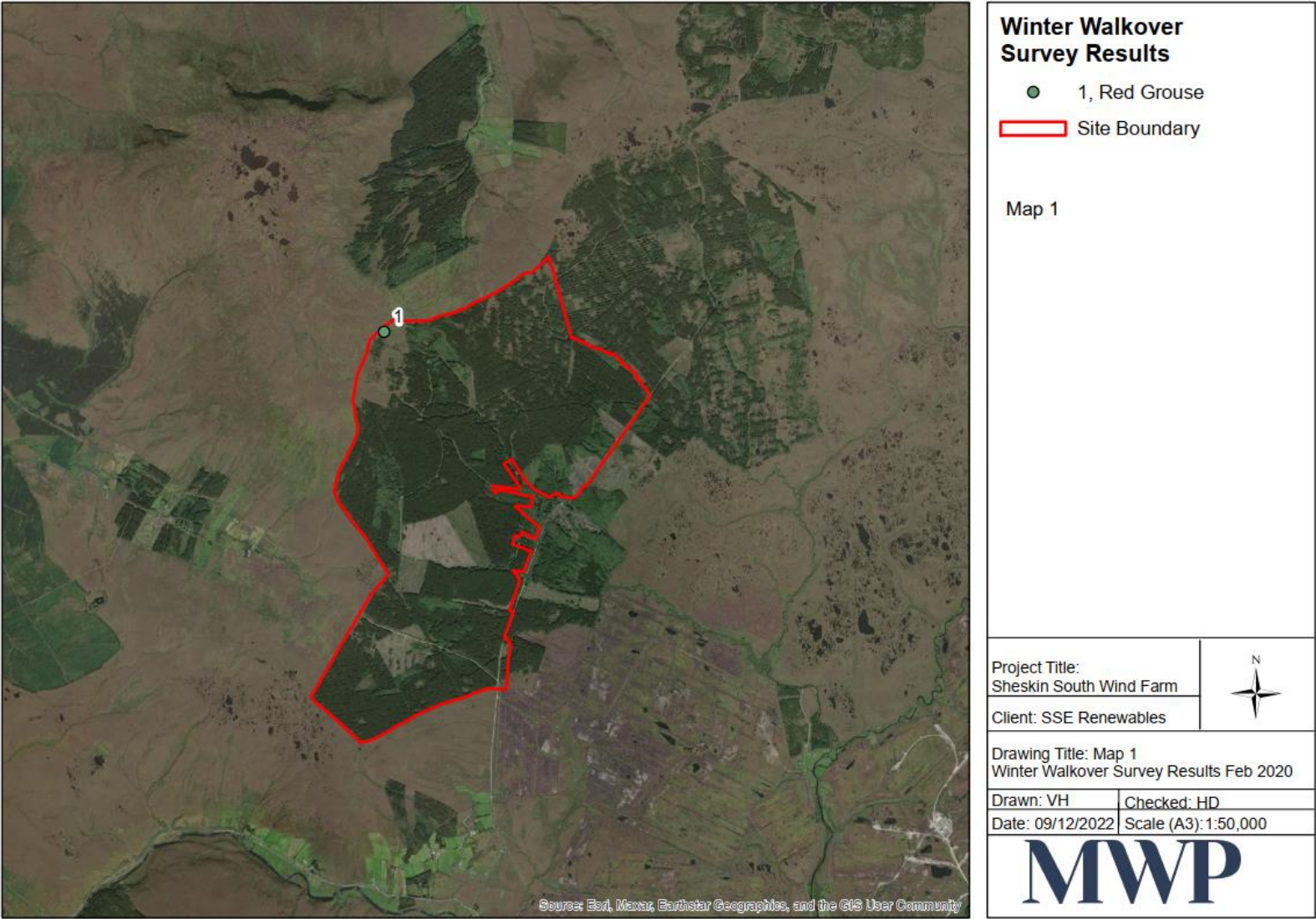
RED GROUSE, MERLIN AND GOLDEN PLOVER

Date	Month	Observer	Start Time	Finish Time	Weather	Results/Comments
23.11.21	Nov	PC & SC	09.00	14.00	Dry, sunny. Cloud 5/8. Wind SW F1. Temp 9C. Visibility good.	Redwing 40 Robin 1 Wren 7 Pied wagtail 1 Hooded crow 2 Song thrush 1 Red grouse 5 Fieldfare 10 Meadow pipit 17 Raven 3 Stonechat 2 Dunnock 1 Coal tit 1 Goldcrest 2 Reed bunting 1 Crossbill 1 Chaffinch 1 Snipe 6 See Map 3a & 3b No. 1 Red grouse x 1 in flight No. 2 red grouse x 1 in flight No. 3 Snipe x 1 in flight No. 4 Snipe x 1 in flight

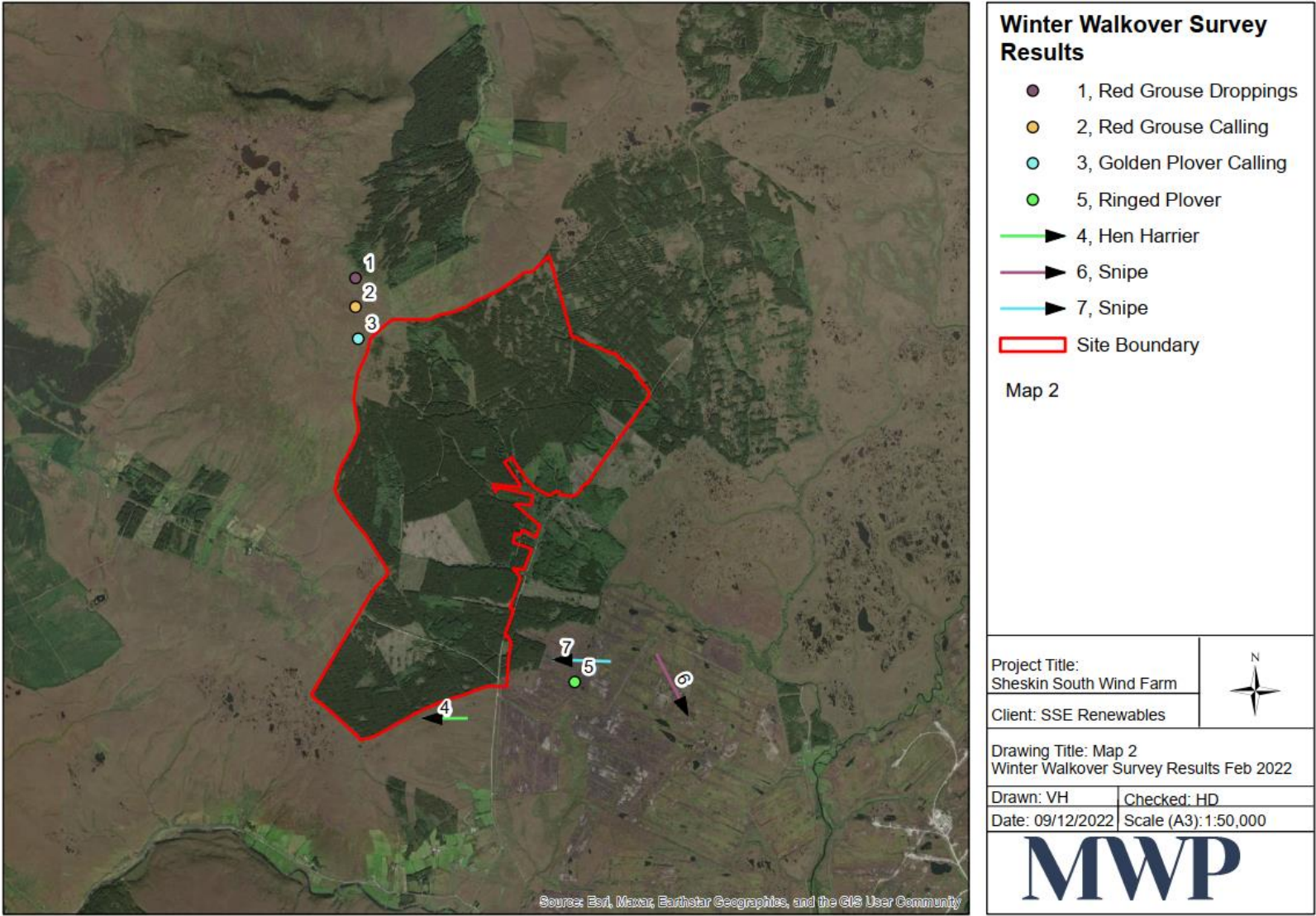
Date	Month	Observer	Start Time	Finish Time	Weather	Results/Comments
20.01.22	Jan	PC & SC	08.45	13.30	Bright day with some fog in low areas. Cloud 2/8. Wind N-NNW F1-2. Temp 5-7C. Visibility good	No. 5 Snipe x 1 in flight No. 6 Red grouse (fresh droppings) No. 7 Red grouse (old droppings) No. 8 Red grouse (old droppings) No. 9 Red grouse (old droppings) No. 10 Snipe x 1 in flight No. 11 Mallard (pair) on pond. Flew onto the lough. No. 12 Mallard (pair) flew onto lough No. 13 Red grouse (pair) flushed No. 14 red grouse (old droppings) No. 15 Same pair as No. 13 flushed No. 16 Red grouse (old droppings) No. 17 Snipe flushed
						Crossbill 3 Fieldfare 3 Meadow pipit 7 Raven 2 Reed bunting 2 Robin 1 Stonechat 4 Wren 2 See Map 4 No. 1 Jack snipe x 1 flushed No.2 Red grouse (droppings) No. 3 Red grouse (droppings) No. 4 Snipe flushed No. 5 red grouse (droppings)

Date	Month	Observer	Start Time	Finish Time	Weather	Results/Comments
						No. 6 red grouse (pair) flushed No. 7 Snipe flushed No. 8 Red grouse (droppings) No. 9 Mallard (pair) No. 10 Golden plover x 48 observed to SSW flying south at 200m No. 11 Red grouse (droppings)
						Robin 1 Blackbird 1 Meadow pipit 6 Song thrush 2 Raven 4 Mallard x 4 on lake
15.02.22	Feb	PC	10.00	14.30	Dull and cloudy, cloud 8/8, wind SW F1, temp 7C, visibility good	See Map 5 No. 1 Snipe x 1 in flight No. 2 Red grouse x 1 in flight No 3 Golden plover x 3 flew S No. 4 Golden plover x 4 flew NE to SW <i>Incidental</i> Herring gull (second-calendar year) at VP4 Great black-backed gull x 2 near VP4

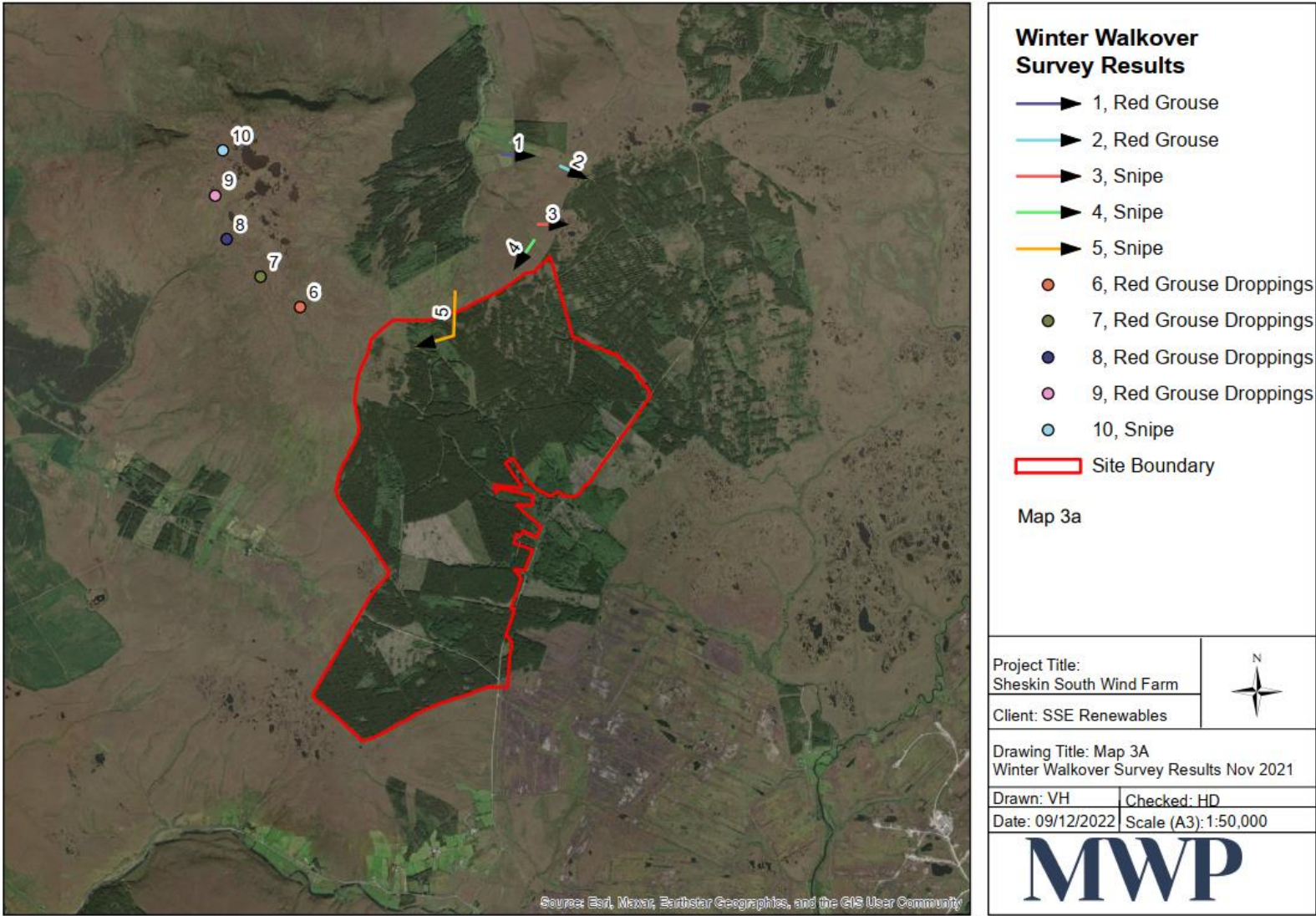
Map 1



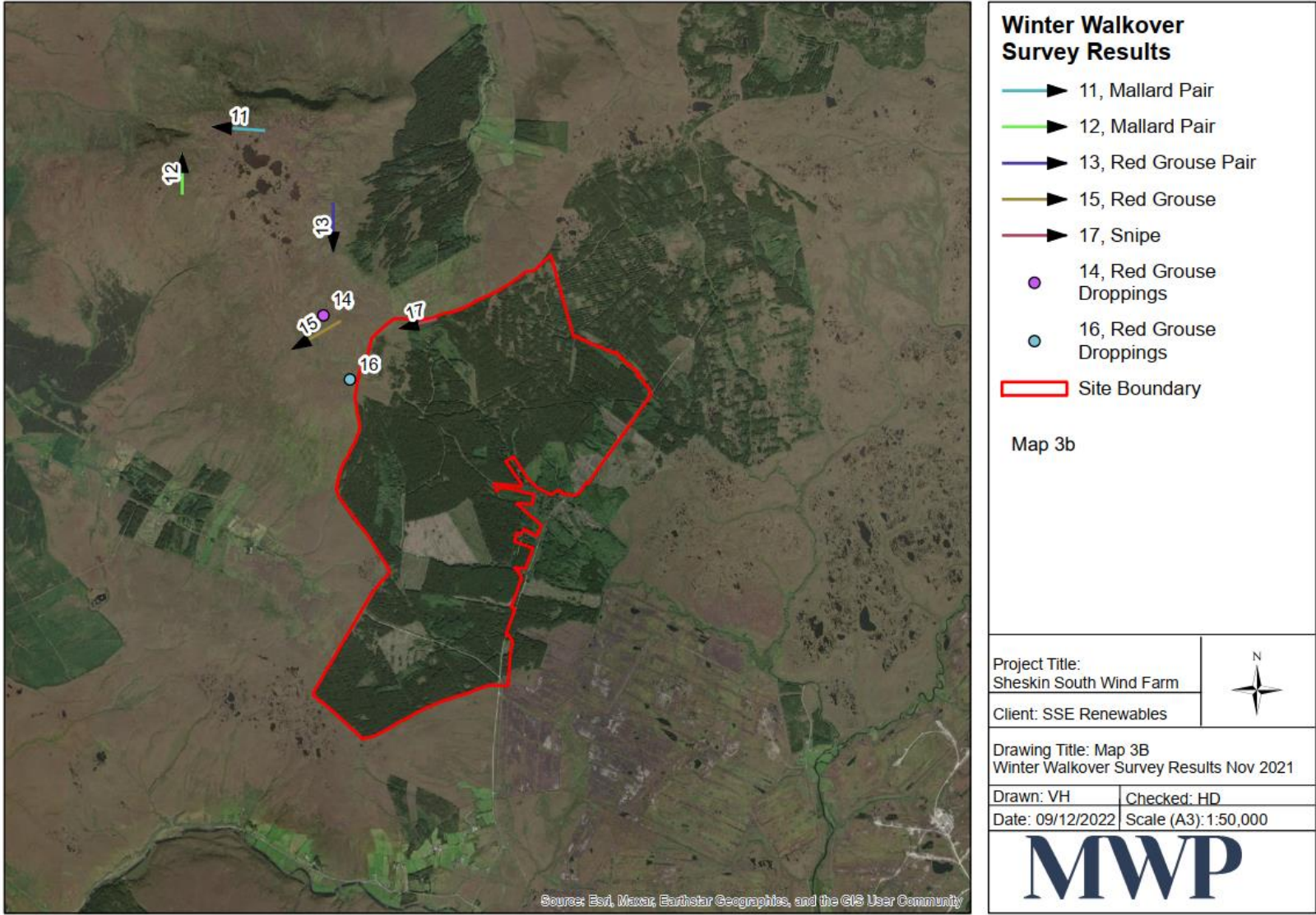
Map 2



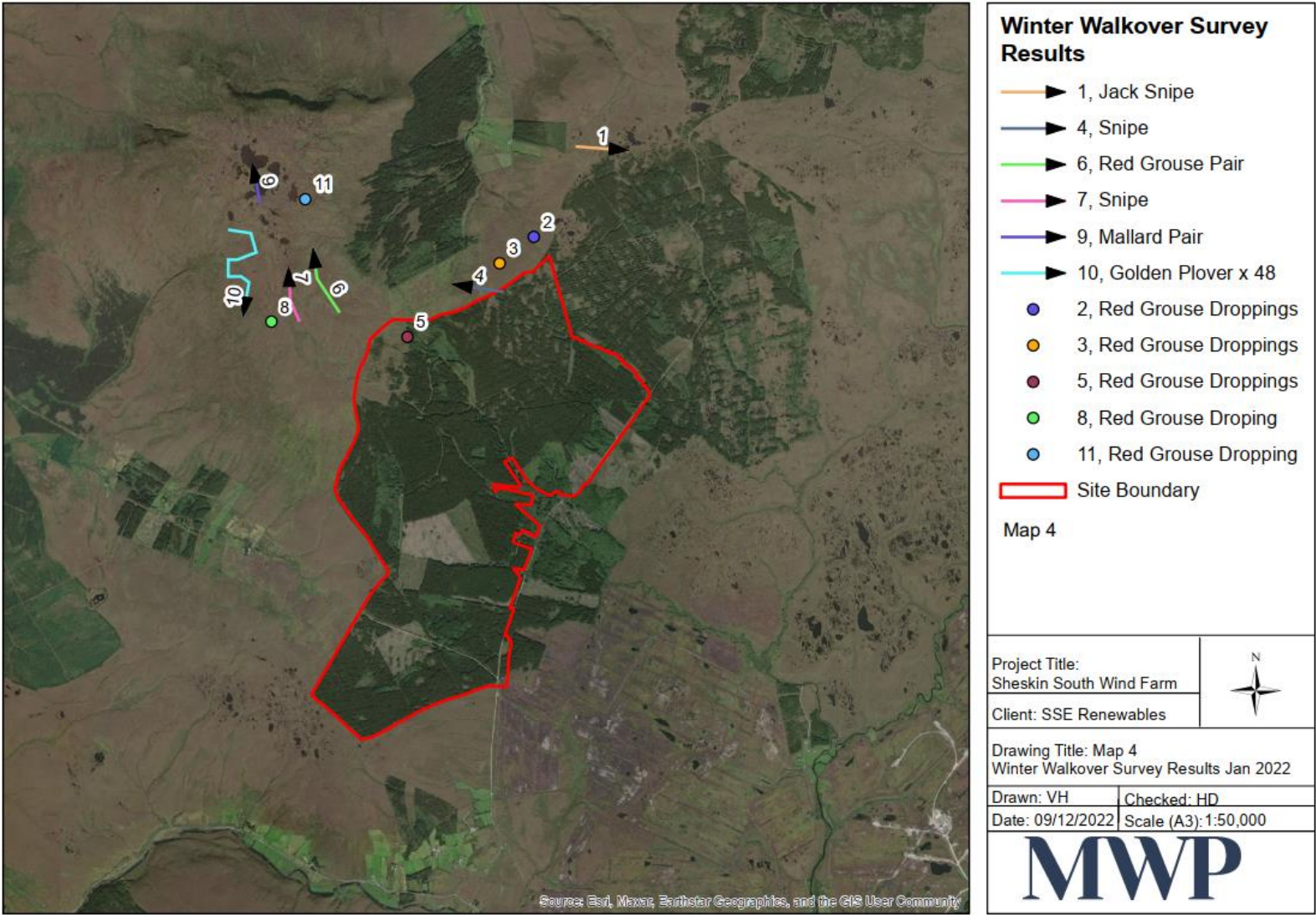
Map 3a



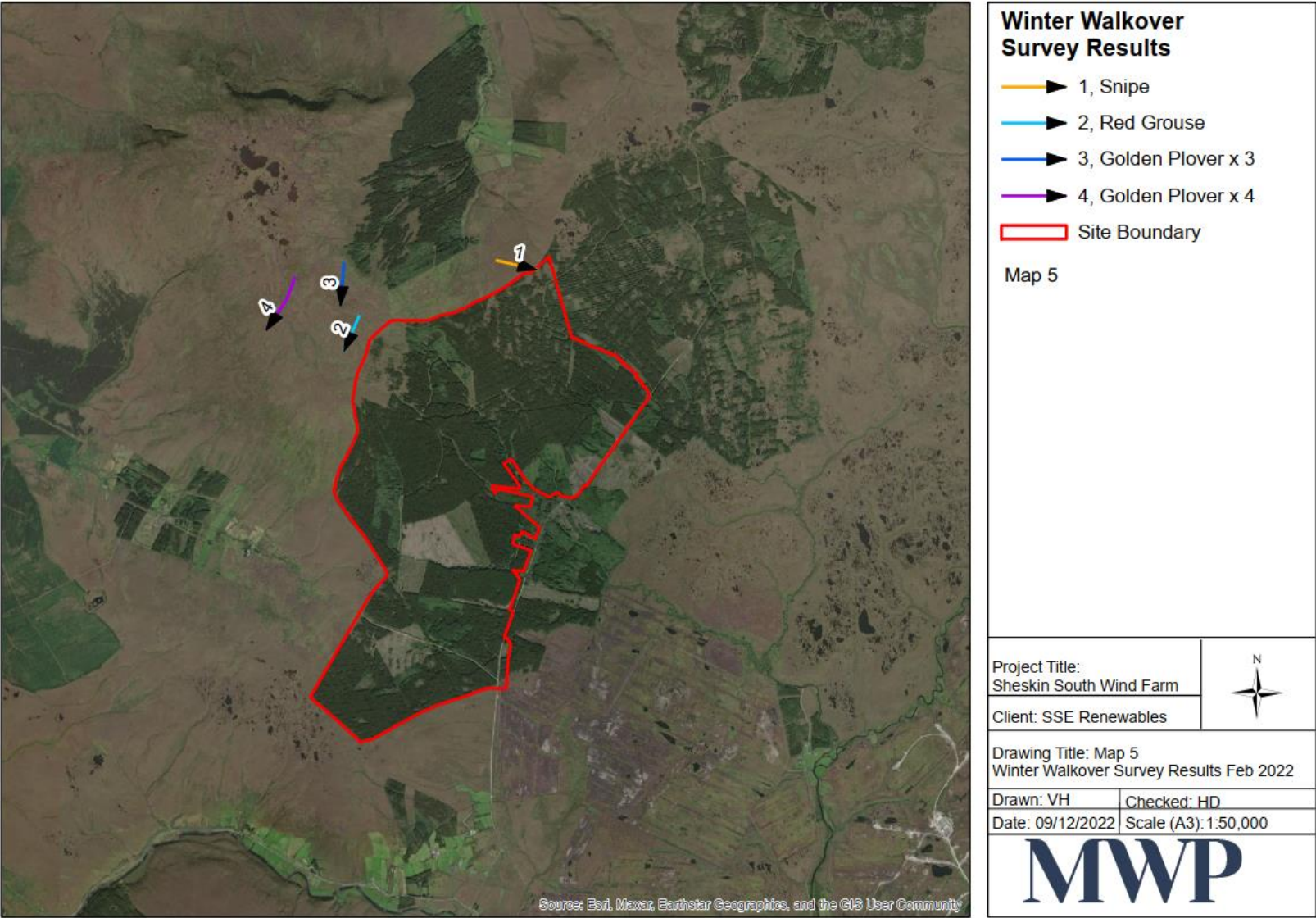
Map 3b



Map 4



Map 5



Appendix 10

Breeding Season Walkover Survey Summaries and Results

BREEDING SEASON WALKOVER SURVEYS**BREEDING SEASON 2020****WOODCOCK AND NIGHTJAR**

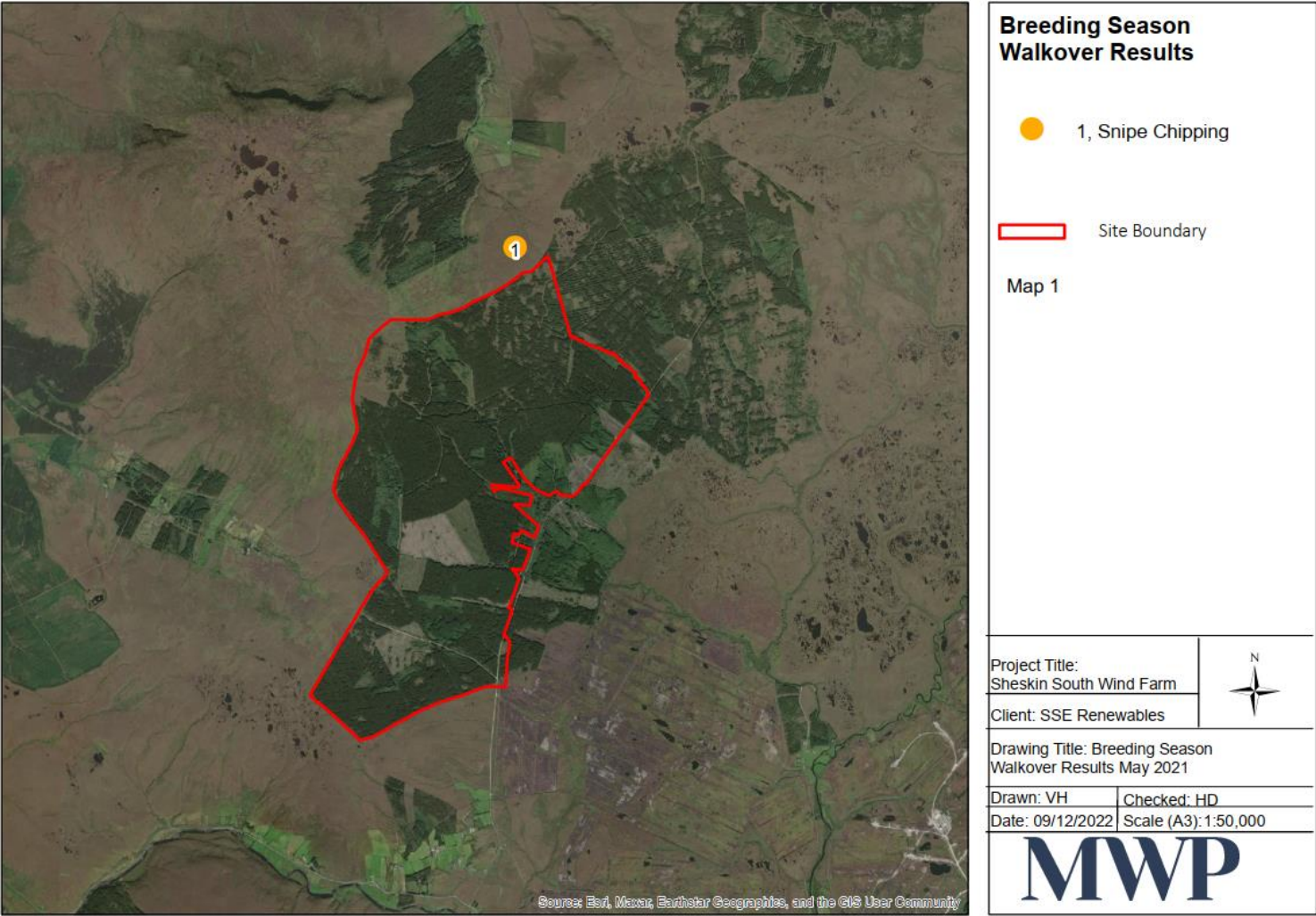
Date	Month	Observer	Start Time	Finish Time	Weather	Results/Comments
11.06.20	June	AC	23.00	01.10	Wind NNE F3-4. Cloud 4/8. Temp 10C. Visibility good.	No woodcock/nightjar observed or heard calling.

BREEDING SEASON 2021**RED GROUSE, MERLIN AND GOLDEN PLOVER**

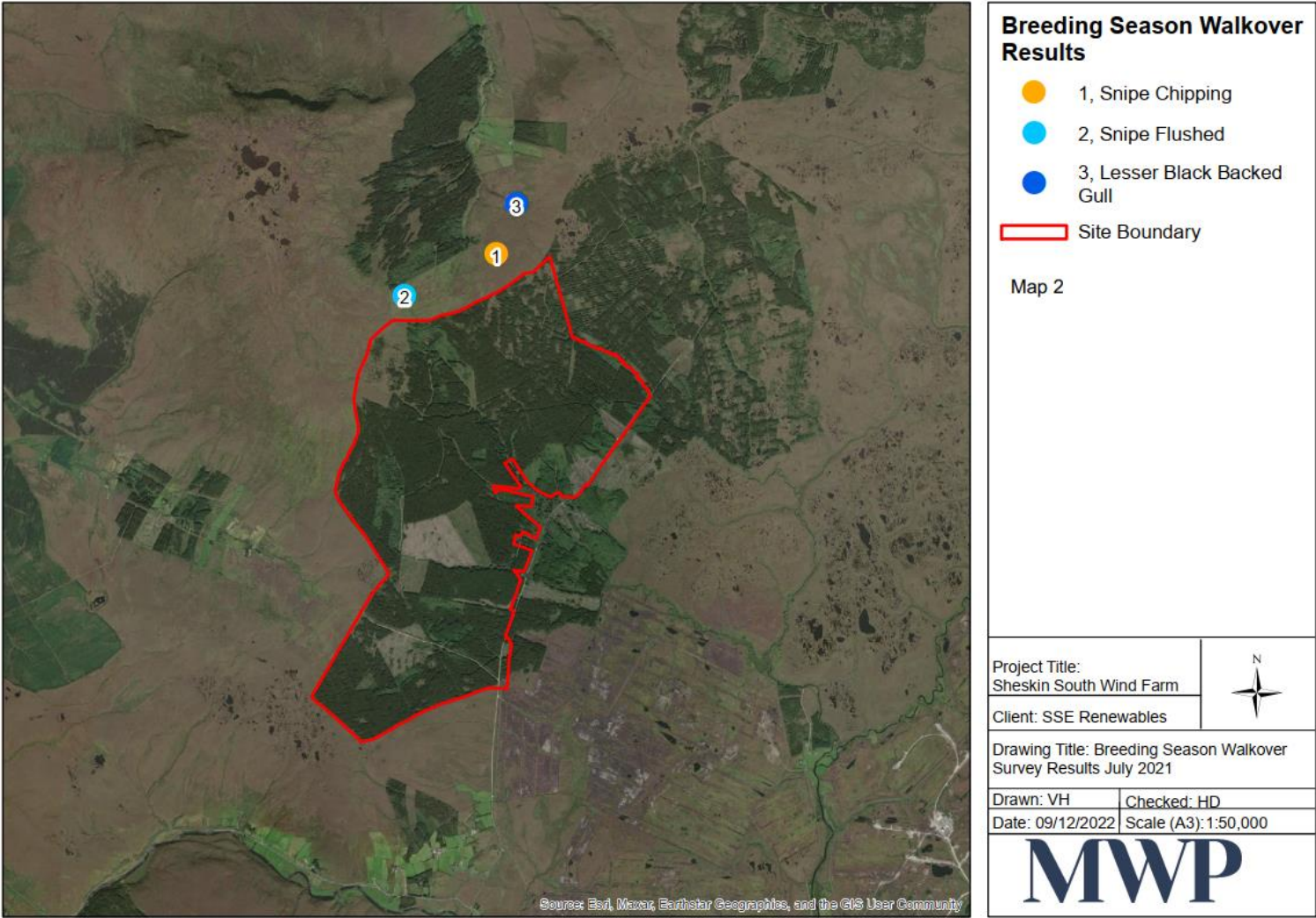
Date	Month	Observer	Start Time	Finish Time	Weather	Results/Comments
12.05.21	May	PC	08.00	12.00	Dry and sunny. Cloud 3/8. Wind E F1-2. Temp 4C. Visibility good	Skylark 8 Cuckoo 2 Meadow pipit 9 Song thrush 4 Chaffinch 3 Willow warbler 1 Coal tit 2 Blackbird 2 Wren 3 Robin 2 Siskin 1 Hooded crow 1

Date	Month	Observer	Start Time	Finish Time	Weather	Results/Comments
09.07.21	July	PC	12.00	16.00	Dry, dull with occasional shower. Wind W F1-2. Temp 16C. Visibility good.	Sedge warbler 1 Swallow 2 Woodpigeon 1 See Map 1 No. 1 Snipe 1 (heard chipping, not seen)
						Wren 4 Skylark 11 Meadow pipit 14 Stonechat 2 Willow warbler 3 Robin 2 Hooded crow 2 Swallow 3 Siskin 6 Crossbill 4 Redpoll 2 Swallow 2 See Map 2 No. 1 Snipe 2 (chipping, not seen) No. 2 Snipe flushed flew NW No. 3 Lesser black-backed gull 1 (flying south)

MAP 1



MAP 2



WOODCOCK AND NIGHTJAR

Date	Month	Observer	Start Time	Finish Time	Weather	Results/Comments
02.06.21	June	AC	22.30	23.50	Light rain, cloud 8/8, wind NNE F1-2, temp 11-12C, Visibility moderate.	No woodcock/nightjar observed or heard calling.

BREEDING SEASON 2022**WOODCOCK AND NIGHTJAR**

Date	Month	Observer	Start Time	Finish Time	Weather	Results/Comments
20.06.22	June	PC	21.45	23.15	Dry and dull. Wind SW F2. Temp 12C. Visibility good.	Snipe heard chipping near VP2 Pine martin observed at VP6

MOORLAND BREEDING BIRD SURVEY (ADAPTED BROWN AND SHEPHERD, 1993)

The following table provides summary background information for the Moorland Breeding Bird survey (adapted Brown and Shepherd, 1993) undertaken at the site in 2022.

Date	Month	Observer	Start Time	Finish Time	Weather
04.05.22	May	NL & SC	10.45	19.15	An overcast warm dry day. West wind F 3-4. Temperature 11-14°C. Visibility good. Disturbance: hill walker on mountain top close to transect.
21.05.22	May	PC & SC	10.00	16.30	Dry dull and cloudy day with sporadic rain (0.1 mm). North westerly wind F2-3. Temperature 12 °C. Visibility good.
14.07.22	July	PC & CBH	09.30	17.30	Dull but dry morning, with some sunny spells between 10-11.45, rain later in the afternoon, getting heavier towards end of survey, southwest wind F1-2, humidity >80%, Temp 10-17oC, getting warmer as day progressed. Cloud cover 7/8, moving to 8/8 as day progressed. Visibility good.
21.07.22	July	DO'B & SC	09.20	17.10	An overcast, calm day with light misty rain on the mountain top. North northeast wind F1-2. Temperature 15-16 °C. Visibility good.

MOORLAND BREEDING BIRDS SURVEY RESULTS – BREEDING 2022

The following table outlines the results of the Moorland Breeding Bird survey (adapted Brown and Shepherd, 1993) undertaken in 2022.

BTO Activity Codes: **F** Flying over; **M** Species observed but suspected to be still on migration; **U** Species observed but suspected to be summering non-breeder; **H** Bird(s) observed in suitable breeding habitat; **S** Bird singing territorially; **P** Pair on likely territory observed; **T** Bird(s) observed in known territory or showing territorial behaviour; **D** Bird(s) displaying; **N** Birds visiting probable nest site; **A** Bird(s) observed showing aggressive or agitated territorial behaviour; **B** Nest building or excavating nest-hole; **DD** Distraction/display or injury feigning; **UN** Used nest or eggshells found; **FL** Fledgling bird(s) usually with adults still on territory; **ON** Likely nest location observed; **FF** Adult bird(s) carrying food or faecal sac; **NE** nest containing eggs; **NY** nest with young seen or heard.

Date	Observer	FP No.	Time	Target Species	BTO Code	Notes
Visit 1 04.05. 22	NL & SC	1	12.52	Red grouse	H	One adult red grouse flushed and flew west.
		2	13.01-18.00	Golden plover	A	One adult bird was observed calling and flying briefly at 13.01 and was still there at 18.00.
		3	13.42	Snipe	S	An adult snipe was heard chipping from the ground.
		4	14.30	Snipe	H	A 2 nd snipe was flushed and flew west.
		5	14.50	Mallard	H	At an adult male mallard was observed flying southeast over ponds.
		6		Red grouse droppings	N/a	Red grouse droppings observed on the ground.
		7	16.30	Snipe	H	A 3 rd adult snipe was observed flushing and flying north.
		8	17.00	Snipe	H	A 4 th snipe was observed flushing and flying northwest.
		9	17.18	Red grouse X2	H	A pair of red grouse were flushed and flew north.
		10	17.26	Snipe	H	A 5 th snipe was observed flushing northwest.
Visit 2 21.05.22	PC & SC	1	11.00	Snipe	H	Snipe flushed from ground and flew northeast at 0.5 m height.
		2	11.09	Snipe	S	A snipe was flushed from the ground and flew south gaining in height to 20 m. This bird then started

Date	Observer	FP No.	Time	Target Species	BTO Code	Notes
						drumming at heights of 20-30 m for two minutes.
		3	11.25 - 11.42	Golden plover x 2	A	A pair of golden plover were observed displaying and alarm calling. The pair appeared to be protecting a nest in the general area. A third bird was heard calling to the northwest in the distance.
		4	11.56	Red grouse	H	A red grouse was flushed and flew east at 0.5 m height.
		5		Dunlin	S	Dunlin heard in song multiple times by both observers but couldn't be located.
		6	12.00	Golden plover	H	A golden plover was observed.
		7	12.21	Grey heron	F	A grey heron was observed west at 2 m height.
		8		Red grouse droppings	N/a	Red grouse droppings.
		9	12.56	Red grouse X2	H	A pair of red grouse were flushed and flew west.
		10	13.23	Golden plover X2	A	A pair of golden plover alarm calling and showing extreme agitation at the surveyor's presence. The pair appeared to be protecting a nest nearby.
		11	13.39	Snipe	H	A snipe was flushed and flew south.
		12	13.44	Golden plover	H	A golden plover observed.
		13	14.20	Snipe	D	A snipe was heard drumming and chipping.
		14		Golden plover X2	T	Two golden plover heard calling to each other far northwest of the transect.
		15		Golden plover X2	T	At the same time a separate golden plover pair were alarm calling on deck. The surveyor stated that these were presumably the same pair as the 3 rd observation.
		16		Red grouse droppings	N/a	Red grouse droppings
		17		Red grouse	H	Red grouse on the deck in heather.
Visit 3	PC & CBH	1		Skylark	H	Singing

Date	Observer	FP No.	Time	Target Species	BTO Code	Notes
14.07.22		2		Meadow Pipit	H	Singing
		3		Golden Plover x1	S	Observed briefly over hill
		4		Golden plover x2 adults	N	An adult pair near high point on hill, anxiety calling while 2 juvenile moved through high grass, occasionally flying short distances to cover
		5		Dunlin x2	P	Adult pair near the golden plover pair heard and seen moving, could have nest nearby but could not locate it
		6		Golden plover x2 juvenile	FL	Two juveniles with the 2 adults as mentioned above
		7		Red Grouse Droppings	N/a	No red grouse seen or heard, but droppings found
		8		Red Grouse Droppings	N/a	No red grouse seen or heard, but droppings found
		9		Golden Plover X35	H	Sparrowhawk chased GP from high point on hill, moving towards lakes where 35 GP and 4 Dunlin were flushed into the air, joined by a Meadow Pipit to avoid Sparrowhawk
		10		Female Sparrowhawk	N/a	Sparrowhawk chased GP from high point on hill, moving towards lakes where 35 GP and 4 Dunlin were flushed into the air, joined by a Meadow Pipit to avoid Sparrowhawk
		11		Dunlin x4	H	Sparrowhawk chased GP from high point on hill, moving towards lakes where 35 GP and 4 Dunlin were flushed into the air, joined by a Meadow Pipit to avoid Sparrowhawk
		12		Skylark	S	Singing
		13		Meadow Pipit	S	Singing
Visit 4 21.07.22	DO'B & SC	1	11.45	Golden plover	S	A single bird calling/singing on heather mound
		2	12.30	Golden plover x 5	H, S	Three adults and two juveniles alarm calling and flew northeast. Two more were flushed and flew southwest.
		3	12.38	Golden plover x10	P, S, H, A, FL	Two adults with two juveniles observed on the ground. They were flushed and alarm called and joined a flock of six more golden plover.

Date	Observer	FP No.	Time	Target Species	BTO Code	Notes
		4	12.41	Golden plover x 22 Dunlin x 4	H, S	As surveyor walked toward the previous flock they flushed and flew southwest with a total of 22 golden plovers and four dunlin.
		5	14.22	Kestrel	N/a	A female kestrel was observed hunting over ponds.
		6	15.07	Snipe	H	An adult snipe flushed and flew north.

After each visit, mapped observations were reviewed to identify breeding pairs / territories taking into account those records considered to comprise duplicate observations. At the end of the season all four maps were combined to produce a final map identifying the total estimated number and location of breeding birds present in the survey area.

Please refer to **Appendix 15** Confidential Appendix for summary mapping relating to the results of the 2022 Moorland Breeding Bird Survey at the site.

Appendix 11

Hinterland Survey Summaries and Results

HINTERLAND SURVEYS WINTER 2019/20

CARROWMORE LAKE SURVEY SUMMARY

Carrowmore Lake Winter 2019/20						
Survey Type	Date	Observer	Start Time	Finish Time	Length of VP watch (hours)	Weather
Carrowmore Lake	31/10/2019	JM	/	/	/	/
Carrowmore Lake	28/11/2019	JM	/	/	/	A dry day with some sunny spells, wind direction N, wind speed f1-2, temp 9°C and visibility good.
Carrowmore Lake	11/12/2019	JM	/	/	/	A dry cold day, wind direction W-NW, wind speed f2, temp 3°C and visibility good.
Carrowmore Lake	18/12/2019	JM	/	/	/	/
Carrowmore Lake	26/01/2020	JM	/	/	/	/
Carrowmore Lake	26/02/2020	AC	09:00	11:00	2	Cloud cover 7/8, Wind direction W, wind speed f3-4, temp 4°C and visibility good.

CARROWMORE LAKE SURVEY RESULTS

Common Name	Latin Name	31/10/2019	28/11/2019	11/12/2019	18/12/2019	27/01/2020	26/02/2020
Cormorant	<i>Phalacrocorax carbo</i>	2	12		10	5	
Goldeneye	<i>Bucephala clangula</i>		2		6	7	6
Great crested grebe	<i>Podiceps cristatus</i>		1		2		
Grey heron	<i>Ardea cinerea</i>	2	2			1	
Herring gull	<i>Larus argentatus</i>					1	
Kingfisher*	<i>Alcedo atthis</i>		1				
Lesser scaup	<i>Aythya affinis</i>	1					
Mallard	<i>Anas platyrhynchos</i>	10	23		15	4	20
Moorhen	<i>Gallinula chloropus</i>	4			2	3	
Mute swan	<i>Cygnus olor</i>	4			2	4	
Ring-necked duck	<i>Aythya collaris</i>	1			1	1	1
Scaup	<i>Aythya marila</i>						1
Snipe	<i>Gallinago gallinago</i>	6					2
Teal	<i>Anas crecca</i>	8	34		46	12	32
Tufted duck	<i>Aythya fuligula</i>	60	42		48	77	73
Whooper swan*	<i>Cygnus cygnus</i>		9		6	2	
Greenland White-fronted goose*	<i>Anser albifrons</i>			19			
Wigeon	<i>Anas penelope</i>				34	3	

LOUGH NAHELLY SURVEY SUMMARY

A whooper swan survey was carried out on Lough Nahelly on 31st October, on 28th November, on 11th December 2019 and on 28th January 2020.

LOUGH NAHELLY SURVEY RESULTS

- On 31st October and on 28th November no observation of whooper swans were made.
- On 11th December 24 whooper swans were observed on the lough and on 28th January 23 whooper swans were observed grazing in the fields west of Lough Nahelly.

HINTERLAND SURVEY WINTER 2020/21

CARROWMORE LAKE SURVEY SUMMARY

Carrowmore Lake Winter 2020/21			
Survey Type	Date	Observer	Weather
Carrowmore Lake	12/10/2020	PC	Cloud cover 7/8, intermittent sunshine, heavy rain showers, wind direction northwest, wind F4-5, temp 12oC-11oC, visibility good some periodic showers
Carrowmore Lake	11/11/2020	PC	Constant heavy showers, dull and cloudy, wind direction south, wind F3-4, temp 11oC, visibility poor
Carrowmore Lake	08/12/2020	PC	Dry, sunny and cloudy, wind direction northwest, F 5-6, temp 4oC.
Carrowmore Lake	20/01/2021	PC	Dry, sunny, mostly cloudy with odd shower, wind direction southwest, wind F2-3, temp 3oC
Carrowmore Lake	17/02/2021	JM	Cloud cover 7/8 – 8/8, rain and hail showers, intermittent sunshine, wind direction southwest, wind F5-7, temp 6-7oC, visibility good- moderate in showers

Carrowmore Lake Winter 2020/21			
Survey Type	Date	Observer	Weather
Carrowmore Lake	11/03/2021	PC	-

CARROWMORE LAKE SURVEY RESULTS

Common Name	Latin Name	12/10/2020	11/11/2020	08/12/2020	20/01/2021	17/02/2021	11/03/2021
Black-headed gull	<i>Larus ridibundus</i>		1				
Common gull	<i>Larus canus</i>	1					4
Cormorant	<i>Phalacrocorax carbo</i>	6	8	7	10	2	4
Goldeneye	<i>Bucephala clangula</i>		6	8	4	16	20
Goosander	<i>Mergus merganser</i>			1	3		
Great Black-backed gull	<i>Larus marinus</i>	2	1	1	3	1	2
Greenland White-fronted goose*	<i>Anser albifrons</i>	17	17	18	17		16
Grey heron	<i>Ardea cinerea</i>	2	1	1	4		2
Herring gull	<i>Larus argentatus</i>	1	1				2
Lesser Black-backed gull	<i>Larus fuscus</i>					1	5
Little egret	<i>Egretta garzetta</i>			1			
Long tailed duck	<i>Clangula hyemalis</i>			1	1		
Mallard	<i>Anas platyrhynchos</i>	5	6	7	13	34	14

Common Name	Latin Name	12/10/2020	11/11/2020	08/12/2020	20/01/2021	17/02/2021	11/03/2021
Merlin	<i>Falco columbarius</i>					1	
Moorhen	<i>Gallinula chloropus</i>					2	
Mute swan	<i>Cygnus olor</i>	4	10	2			1
Red-Breasted merganser	<i>Mergus serrator</i>			1	1		2
Ring-necked duck	<i>Aythya collaris</i>					1	1
Snipe	<i>Gallinago gallinago</i>			1			1
Teal	<i>Anas crecca</i>	8	10	10	15	18	
Tufted duck	<i>Aythya fuligula</i>	80	75	106	19	93	99
Whooper swan*	<i>Cygnus cygnus</i>	2	2	2	2		5
Wigeon	<i>Anas penelope</i>	6	12		10		12

SRUWADDAON BAY, TRAW KIRTAN AND LOUGH NEHELLY SURVEY SUMMARIES

Survey Location	Co-ordinates	Date	Observer	Weather
Sruwaddacon Bay	(54.2570612, -9.7666482)	08/12/2020	PC	Dry, sunny and cloudy, wind direction northwest, F 5-6, temp 4°C.
Traw Kirtan	(54.2272420, -9.8522609)	08/12/2020	PC	Dry, sunny and cloudy, wind direction northwest, F 5-6, temp 4°C.
Lough Nahelly	(54.1638200, -9.9183345)	08/12/2020	PC	Dry, sunny and cloudy, wind direction northwest, F 5-6, temp 4°C.
Sruwaddacon Bay	(54.2570612, -9.7666482)	20/01/2021	PC	Dry, sunny with intermittent showers, wind direction north, F 3-4, temp 3C

Survey Location	Co-ordinates	Date	Observer	Weather
Traw Kirtan	(54.2272420, -9.8522609)	20/01/2021	PC	Dry, sunny with intermittent showers, wind direction north, F 3-4, temp 3C
Lough Nahelly	(54.1638200, -9.9183345)	20/01/2021	PC	Dry, sunny with intermittent showers, wind direction north, F 3-4, temp 3C.
Sruwaddacon Bay	(54.2570612, -9.7666482)	11/02/2021	PC	Wet, windy, wind direction westerly, F 4-6, temp 4C.
Traw Kirtan	(54.2272420, -9.8522609)	11/02/2021	PC	Wet, windy, wind direction westerly, F 4-6, temp 4C.
Lough Nahelly	(54.1638200, -9.9183345)	11/02/2021	PC	Wet, windy, wind direction westerly, F 4-6, temp 4C.
Lough Nahelly	(54.1638200, -9.9183345)	17/02/221	JNM	Dry, sunny with some cloud cover, sporadic showers of rain, wind direction west, wind F3-4, temp 6°C, visibility good

SRUWADDA CON BAY SURVEY RESULTS

Common Name	Latin Name	08/12/2020	20/01/2021	11/02/2021
Black-headed gull	<i>Larus ridibundus</i>			30
Cormorant	<i>Phalacrocorax carbo</i>	6	2	
Curlew	<i>Numenius arquata</i>	1		5
Great Northern Diver *	<i>Gavia immer</i>		7	
Greenshank	<i>Tringa nebularia</i>	2		
Herring gull	<i>Larus argentatus</i>	4		2
Mallard	<i>Anas platyrhynchos</i>	2		
Oystercatcher	<i>Haematopus ostralegus</i>	2		4
Red-Breasted merganser	<i>Mergus serrator</i>		2	2

TRAW KIRTAN/BROADHAVEN BAY SURVEY RESULTS

Common Name	Latin Name	08/12/2020	20/01/2021	11/02/2021
Brent goose	<i>Branta bernicla</i>	7	20	
Curlew	<i>Numenius arquata</i>	1	1	
Great Black-backed gull	<i>Larus marinus</i>	5	12	3
Grey heron	<i>Ardea cinerea</i>	1		
Herring gull	<i>Larus argentatus</i>	14	18	16
Lesser Black-backed gull	<i>Larus fuscus</i>			5
Little egret	<i>Egretta garzetta</i>	1	1	
Mallard	<i>Anas platyrhynchos</i>		4	
Oystercatcher	<i>Haematopus ostralegus</i>		39	
Red-Breasted merganser	<i>Mergus serrator</i>		1	

LOUGH NAHELLY SURVEY RESULTS

Common Name	Latin Name	08/12/2020	20/01/2021	11/02/2021	17/02/2021
Mallard	<i>Anas platyrhynchos</i>		11	10	
Peregrine*	<i>Falco peregrinus</i>			1	
Teal	<i>Anas crecca</i>		12	12	
Whooper swan*	<i>Cygnus cygnus</i>	72		4	2
Wigeon	<i>Anas penelope</i>		16	99	

HINTERLAND SURVEY WINTER 2021/22

CARROWMORE LAKE, SRUWADDAON BAY, TRAW KIRTAN AND LOUGH NEHELLY SURVEY SUMMARIES

Carrowmore Lake, Sruwaddacon bay, Traw Kirtan and Lough Nehelly Survey Summaries Winter 2021/22							
Hinterland	Month	Date	Observer	Start Time	Finish Time	Weather	Visibility
1	October	05.10.21	PC	08.00	09.50	A dry, sunny day with westerly winds F2. Temperature 13°C.	Good
1	October	05.10.21	PC	14.00	19.00	A dry, sunny day with westerly winds F2-3. Temperature 13°C.	Good
2	November	19.11.21	SC	08.30	14.30	A mixture of cloud and sunshine with strong south-westerly winds F4-6. Temperature 13°C.	Good
3	December	18.12.21	SC	08.00	17.00	A lovely sunny morning to start becoming overcast and foggy later with east/south-east winds F0-2. Cloud cover 5/8 – 8/8. Temperature 4-6°C.	Good to moderate.
4	January	17.01.22	SC	11.00	13.15	Carrowmore Lake: A lovely bright sunny day. Cloud cover 0/8 - 1/8. Wind south east F 1-3. Temperature 5-7°C.	Good
4	January	17.01.22	SC	15.00	15.15	Traw Kirtan/Barr na Tra: A lovely bright sunny day. Cloud cover 0/8 - 1/8. Wind south east F 1-3. Temperature 5-7°C.	Good
4	January	17.01.22	SC	13.45	14.45	Sruwaddacon bay: A lovely bright sunny day. Cloud cover 0/8 - 1/8. Wind south east F 1-3. Temperature 5-7°C.	Good
4	January	17.01.22	SC	15.30	16.00	Lough Nahelly: A lovely bright sunny day. Cloud cover 0/8 - 1/8. Wind south east F 1-3. Temperature 5-7°C.	Good
5	February	21.02.22	SC	13.00	13.20	Lough Nahelly: A dry overcast day to start but later persistent rain and strong winds. Winds westerly F 3-4. Temperature 9-8°C.	Good
5	February	21.02.22	SC	13.30	15.35	Carrowmore Lake: A dry overcast day to start but later persistent rain and strong winds. Winds westerly F 3-4. Temperature 9-8°C.	Good
5	February	21.02.22	SC	16.10	17.10	Sruwaddacon bay: A dry overcast day to start but later persistent rain and strong winds. Winds westerly F 3-4. Temperature 9-8°C.	Good to Poor

Carrowmore Lake, Sruwaddacon bay, Traw Kirtan and Lough Nehelly Survey Summaries Winter 2021/22							
Hinterland	Month	Date	Observer	Start Time	Finish Time	Weather	Visibility
5	February	21.02.22	SC	17.30	17.45	Traw Kirtan/Barr na Tra: : A dry overcast day to start but later persistent rain and strong winds. Winds westerly F 3-4. Temperature 9-8°C.	Poor
6	March	29.03.22	PC	09.00	10.30	Carrowmore Lake: Dry and sunny. Cloud cover 1/8. Temperature 14°C.	Good
6	March	29.03.22	PC	10.40	11.30	Sruwaddacon bay: Dry and sunny. Cloud cover 1/8. Temperature 12°C.	Good
6	March	29.03.22	PC	11.45	12.15	Traw Kirtan: Dry and sunny. Cloud cover 1/8. Temperature 12°C.	Good
6	March	29.03.22	PC	13.00	13.20	Lough Nahelly: Dry and sunny. Cloud cover 1/8. Temperature 14°C.	Good

CARROWMORE LAKE AND SRUWADDAON BAY SURVEY RESULTS

Carrowmore Lake and Sruwaddaon Bay Survey Results Winter 2021/22													
Species Common Name	Species scientific Name	Carrowmore Lake 5 th Oct	Carrowmore Lake 19 th Nov	Carrowmore Lake 18 th Dec	Carrowmore Lake 17 th Jan	Carrowmore Lake 21 st Feb	Carrowmore Lake 29 th Mar	Srudachan Bay 5 th Oct	Srudachan Bay 19 th Nov	Srudachan Bay 18 th Dec	Srudachan Bay 17 th Jan	Srudachan Bay 21 st Feb	Srudachan Bay 29 th Mar
Bar-tailed godwit*	<i>Limosa lapponica</i>									7			
Black-headed Gull	<i>Larus ridibundus</i>							70	22	5	16	22	103
Black-tailed godwit	<i>Limosa limosa</i>									1	28		
Brent goose (light-bellied)	<i>Branta bernicla hrota</i>										40	12	37
Common Gull	<i>Larus canus</i>						42		13	8	13	10	8
Cormorant	<i>Phalacrocorax carbo</i>	2	12	7	2	3	3	8	6	8	1	4	7
Feral goose					8					7			
Curlew	<i>Numenius arquata</i>							18	24	35	19	22	5
Goldeneye	<i>Bucephala clangula</i>		2	3	1	10							
Golden Plover*	<i>Pluvialis apricaria</i>											21	
Goosander	<i>Mergus merganser</i>						1						
Great Black-backed Gull	<i>Larus marinus</i>		1			3	9	8	16		5		
Great Crested Grebe	<i>Podiceps cristatus</i>						2						
Greenshank	<i>Tringa nebularia</i>								7	6	4	2	
Greenland White-fronted goose*	<i>Anser albifrons</i>					22							
Grey Heron	<i>Ardea cinerea</i>	1	1					1		5	4		1
Herring Gull	<i>Larus argentatus</i>							14	5	9	9	4	2
Kingfisher*	<i>Alcedo atthis</i>				1								

Carrowmore Lake and Sruwaddacon Bay Survey Results Winter 2021/22													
Species Common Name	Species scientific Name	Carrowmore Lake 5 th Oct	Carrowmore Lake 19 th Nov	Carrowmore Lake 18 th Dec	Carrowmore Lake 17 th Jan	Carrowmore Lake 21 st Feb	Carrowmore Lake 29 th Mar	Srudachan Bay 5 th Oct	Srudachan Bay 19 th Nov	Srudachan Bay 18 th Dec	Srudachan Bay 17 th Jan	Srudachan Bay 21 st Feb	Srudachan Bay 29 th Mar
Lesser Black-backed Gull	<i>Larus fuscus</i>						17						6
Little Grebe	<i>Tachybaptus ruficollis</i>				2								
Mallard	<i>Anas platyrhynchos</i>	7	18	12	18	7	9			13	3	1	
Mute Swan	<i>Cygnus olor</i>	1	2		1		1						
Oystercatcher	<i>Haematopus ostralegus</i>							15	24	34	37	9	8
Red-breasted merganser	<i>Mergus serrator</i>						4		2	12	7		6
Redshank	<i>Tringa totanus</i>								8	17	15	18	9
Sanderling	<i>Calidris alba</i>										37		
Ring-necked duck	<i>Aythya collaris</i>			2		1	1						
Teal	<i>Anas crecca</i>		19	33	19	11	12						
Tufted Duck	<i>Aythya fuligula</i>	21	25	16	38	59	45						
Whooper Swan*	<i>Cygnus cygnus</i>		2	2	7	3							
Wigeon	<i>Anas penelope</i>		7	10	7	8	6						

HINTERLAND SURVEY RESULTS FROM TRAW KIRTAN AND LOUGH NEHELLY

Traw Kirtan and Lough Nehelly Survey Results Winter 2021/22

Species Common Name	Species scientific Name	Traw Kirtan 5 th Oct	Traw Kirtan 19 th Nov	Traw Kirtan 18 th Dec	Traw Kirtan 17 th Jan	Traw Kirtan 21 st Feb	Traw Kirtan 29 th Mar	Lough Nahelly 5 th Oct	Lough Nahelly 19 th Nov	Lough Nahelly 18 th Dec	Lough Nahelly 17 th Jan	Lough Nahelly 21 st Feb	Lough Nahelly 29 th Mar
Bar-tailed godwit*	<i>Limosa lapponica</i>	5											
Black-headed Gull	<i>Larus ridibundus</i>	8	9	10	5		6						
Brent goose	<i>Branta bernicla</i>			26									
Common Gull	<i>Larus canus</i>		20	4	3								
Coot	<i>Fulica arta</i>												2
Curlew	<i>Numenius arquata</i>	1	2	3	2	3							
Great Black-backed Gull	<i>Larus marinus</i>	28	8	6	4	1	4						
Greenshank	<i>Tringa nebularia</i>			1									
Grey Heron	<i>Ardea cinerea</i>								2				
Herring Gull	<i>Larus argentatus</i>	25	22	15	10		8						
Lesser Black-backed Gull	<i>Larus fuscus</i>						6						
Little Egret	<i>Egretta garzetta</i>		1	1				2					
Mallard	<i>Anas platyrhynchos</i>							4		4	6	10	3
Moorhen	<i>Gallinula chloropus</i>								1				1
Mute Swan	<i>Cygnus olor</i>							1					
Oystercatcher	<i>Haematopus ostralegus</i>	10	2	21	2		2						
Redshank	<i>Tringa totanus</i>			2	1								
Ringed plover	<i>Charadrius hiaticula</i>				112								
Teal	<i>Anas crecca</i>							10			24	10	
Whooper Swan*	<i>Cygnus cygnus</i>								12 (4 Adults, 8 juveniles)	16			8

Traw Kirtan and Lough Nehelly Survey Results Winter 2021/22

Species Common Name	Species scientific Name	Traw Kirtan 5 th Oct	Traw Kirtan 19 th Nov	Traw Kirtan 18 th Dec	Traw Kirtan 17 th Jan	Traw Kirtan 21 st Feb	Traw Kirtan 29 th Mar	Lough Nahelly 5 th Oct	Lough Nahelly 19 th Nov	Lough Nahelly 18 th Dec	Lough Nahelly 17 th Jan	Lough Nahelly 21 st Feb	Lough Nahelly 29 th Mar
Wigeon	<i>Anas penelope</i>								3	25	13	23	

SUMMER 2021

DRIVEN HINTERLAND SURVEYS

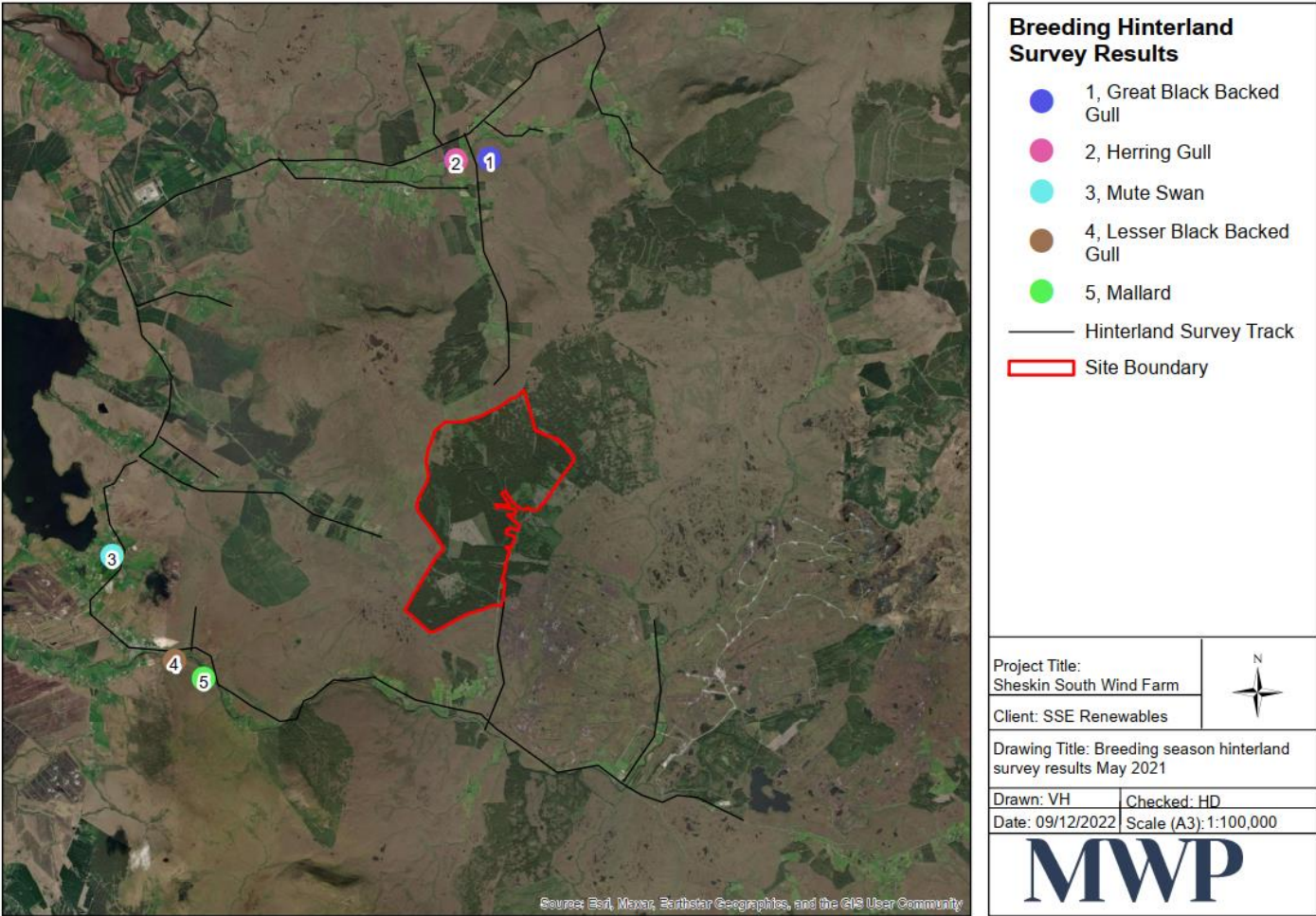
SURVEY SUMMARY

Date	Month	Observer	Start Time	Finish Time	Weather	Visibility
12/05/21	May	PC	12.30	15.30	Dry and sunny with 40% cloud cover, temp 12oC	Good.
30/06/21	June	PC	09.00 12.30	12.00 15.30	Dry, dull and cloudy, wind direction north, wind F1-2, temp 15oC	Good.

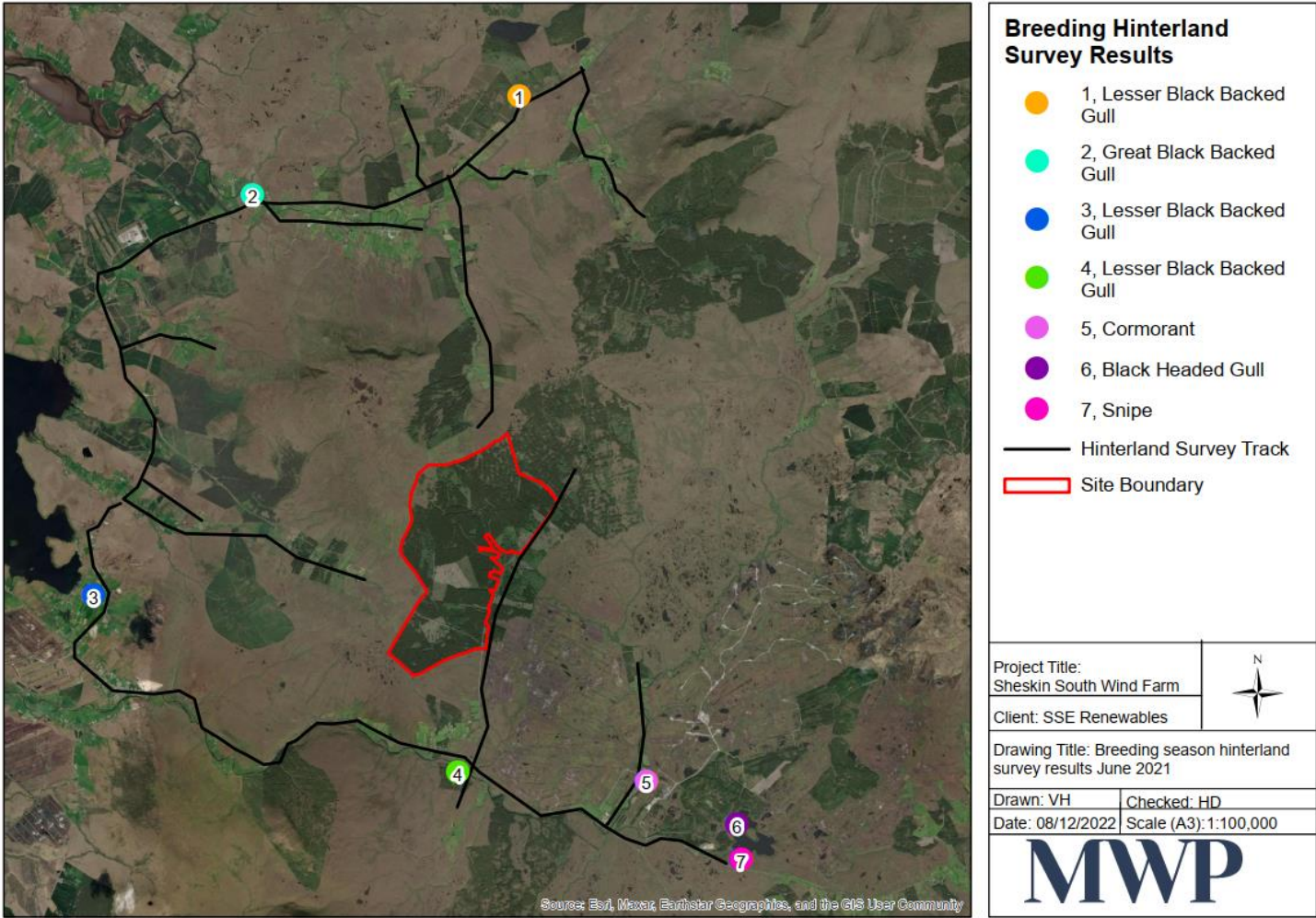
SURVEY RESULTS – SEE MAPS BELOW

Date	Month	Observer	Start Time	Finish Time	Results
12/05/21	May	PC	12.30	15.30	4 Great black-backed gulls 2 Lesser black-backed gull 1 Herring gull 2 Mute swan 1 Mallard
30/06/21	June	PC	09.00 12.30	12.00 15.30	1 Black-headed gull 1 Snipe heard only, not seen 4 Common gull in a field 2 Great black-backed gull 13 Lesser black-backed gull

MAY 2021 DRIVEN HINTERLAND SURVEY RESULTS – MAP 1



JUNE 2021 DRIVEN HINTERLAND SURVEY RESULTS – MAP 2



SUMMER 2022

DRIVEN HINTERLAND SURVEY

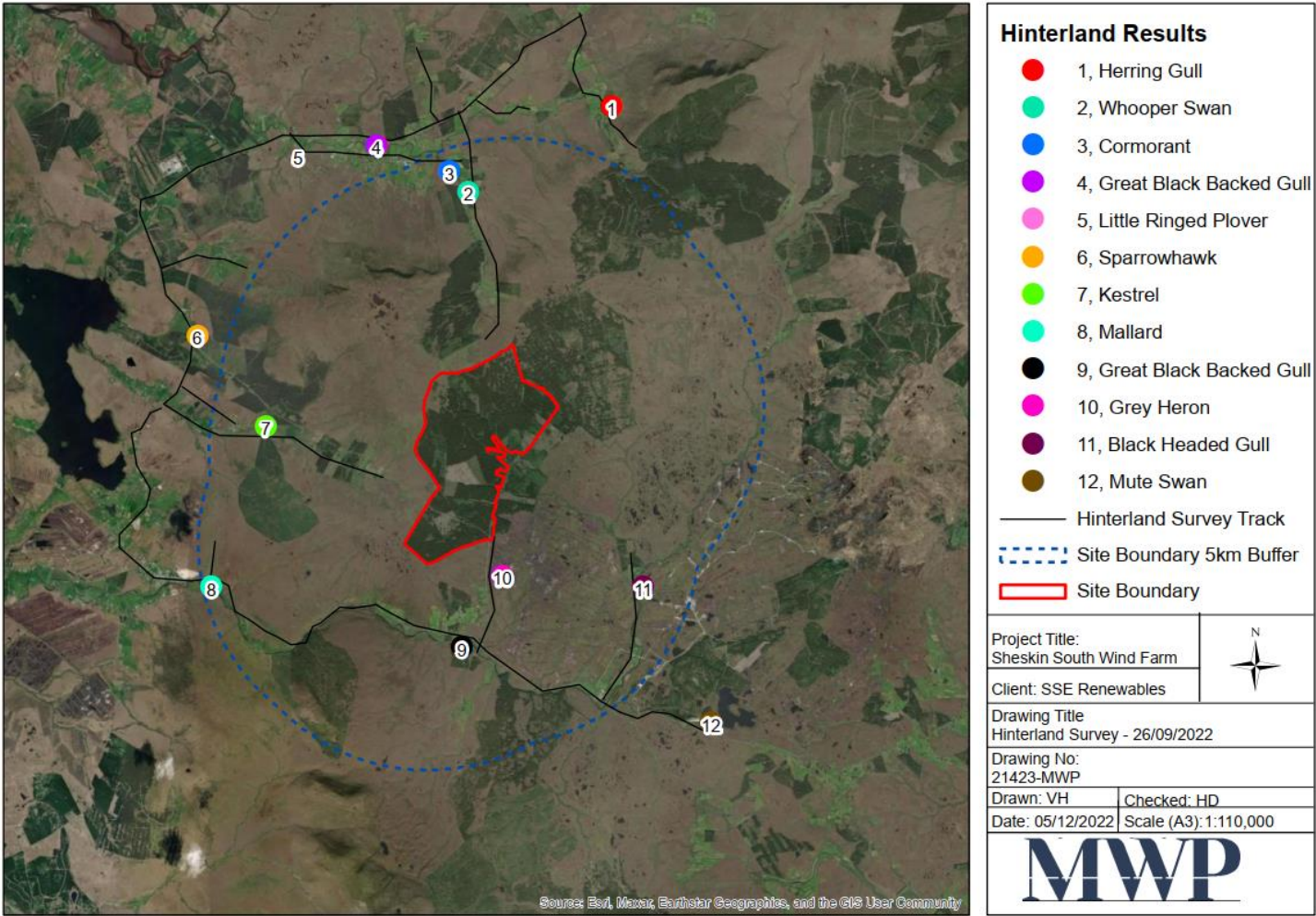
SURVEY SUMMARY

Date	Month	Observer	Start Time	Finish Time	Weather	Visibility
26.09.22	Sept	PC	10.00	15.30	Cloud 7/8, Temp 12C	Good

SURVEY RESULTS

Date	Month	Observer	Start Time	Finish Time	Results
26.09.22	Sept	PC	10.00	15.30	1 Herring gull 3 Whooper swan 3 Cormorant 2 Great black-backed gull 1 Lesser black-backed gull 1 Sparrowhawk 1 Kestrel 1 Mallard 1 Grey heron 1 Black-headed gull 6 Mute swan

SUMMER 2022 DRIVEN HINTERLAND SURVEY RESULTS – MAP 3



Appendix 12

List of all Species Recorded

Winter 2019/20

The following table outlines all species recorded during the winter 2019/20 bird surveys at Sheskin. A total of 50 species were recorded.

Common Name	Latin Name	Winter 2019/20					
		Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
Blackbird	<i>Turdus merula</i>						
Blue tit	<i>Parus caeruleus</i>						
Bullfinch	<i>Pyrrhula pyrrhula</i>						
Chaffinch	<i>Fringilla coelebs</i>						
Coal tit	<i>Periparus ater</i>						
Cormorant	<i>Phalacrocorax carbo</i>						
Crossbill	<i>Loxia curvirostra</i>						
Cuckoo	<i>Cuculus canorus</i>						
Dunnock	<i>Prunella modularis</i>						
Fieldfare	<i>Turdus pilaris</i>						
Goldcrest	<i>Regulus regulus</i>						
Goldfinch	<i>Carduelis carduelis</i>						
Golden plover*	<i>Pluvialis apricaria</i>						
Goosander	<i>Mergus merganser</i>						
Great Black-backed gull	<i>Larus marinus</i>						
Great tit	<i>parus major</i>						
Greylag goose	<i>Anser anser</i>						
Grey heron	<i>Ardea cinerea</i>						
Grey wagtail	<i>Motacilla cinerea</i>						
Hooded crow	<i>Corvus cornix</i>						
Jackdaw	<i>Corvus monedula</i>						
Jay	<i>Garrulus glandarius</i>						
Kestrel	<i>Falco tinnunculus</i>						
Magpie	<i>Pica pica</i>						
Mallard	<i>Anas platyrhynchos</i>						
Meadow pipit	<i>Anthus pratensis</i>						
Merlin*	<i>Falco columbarius</i>						
Mistle thrush	<i>Turdus viscivorus</i>						
Pheasant	<i>Phasianus colchicus</i>						
Pied wagtail	<i>Motacilla alba</i>						
Raven	<i>Corvus corax</i>						
Redpoll	<i>Carduelis flammea cabaret</i>						
Redwing	<i>Turdus iliacus</i>						
Reed bunting	<i>Emberzia schoenichus</i>						
Ringed Plover	<i>Charadrius hiaticula</i>						
Robin	<i>Erithacus rubecula</i>						
Rook	<i>Corvus frugilegus</i>						

		Winter 2019/20					
Common Name	Latin Name	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
Sedge Warber	<i>Acrocephalus schoenobaenus</i>						
Siskin	<i>Carduelis spinus</i>						
Song thrush	<i>Turdus philomelos</i>						
Skylark	<i>Alauda arvensis</i>						
Snipe	<i>Gallinago gallinago</i>						
Sparrowhawk	<i>Accipiter nisus</i>						
Starling	<i>Sturnus vulgaris</i>						
Stonechat	<i>Saxicola torquatus</i>						
Swallow	<i>Hirundo rustica</i>						
Willow Warbler	<i>Phylloscopus trochilus</i>						
Woodcock	<i>Scolopax rusticola</i>						
Woodpigeon	<i>Columba palumbus</i>						
Wren	<i>Troglodytes troglodytes</i>						

Summer 2020

The following table outlines all species recorded during the summer 2020 bird surveys at Sheskin. A total of 49 species were recorded.

Common Name	Latin Name	Breeding 2020					
		April-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
Blackbird	<i>Turdus merula</i>						
Blue tit	<i>Parus caeruleus</i>						
Blackcap	<i>Sylvia atricapilla</i>						
Black-headed gull	<i>Larus ridibundus</i>						
Chaffinch	<i>Fringilla coelebs</i>						
Chiffchaff	<i>Phylloscopus collybita</i>						
Coal tit	<i>Periparus ater</i>						
Crossbill	<i>Loxia curvirostra</i>						
Cuckoo	<i>Cuculus canorus</i>						
Dunnock	<i>Prunella modularis</i>						
Goldcrest	<i>Regulus regulus</i>						
Goldfinch	<i>Carduelis carduelis</i>						
Grasshopper Warbler	<i>Locustella naevia</i>						
Great Black-backed gull	<i>Larus marinus</i>						
Grey heron	<i>Ardea cinerea</i>						
Grey wagtail	<i>Motacilla cinerea</i>						
Hooded crow	<i>Corvus cornix</i>						
House martin	<i>Delichon urbicum</i>						
Jay	<i>Garrulus glandarius</i>						
Kestrel	<i>Falco tinnunculus</i>						
Linnet	<i>Carduelis cannabina</i>						
Lesser Black-backed gull	<i>Larus fuscus</i>						
Magpie	<i>Pica pica</i>						
Mallard	<i>Anas platyrhynchos</i>						
Merlin*	<i>Falco columbarius</i>						
Meadow pipit	<i>Anthus pratensis</i>						
Mistle thrush	<i>Turdus viscivorus</i>						
Pheasant	<i>Phasianus colchicus</i>						
Pied wagtail	<i>Motacilla alba</i>						
Raven	<i>Corvus corax</i>						

Common Name	Latin Name	Breeding 2020					
		April-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
Redpoll	<i>Carduelis flammea cabaret</i>						
Reed bunting	<i>Emberiza shoenichus</i>						
Robin	<i>Erithacus rubecula</i>						
Ringed Plover	<i>Charadrius hiaticula</i>						
Sand Martin	<i>Riparia riparia</i>						
Sedge warbler	<i>Acrocephalus schoenobaenus</i>						
Siskin	<i>Carduelis spinus</i>						
Song thrush	<i>Turdus philomelos</i>						
Skylark	<i>Alauda arvensis</i>						
Snipe	<i>Gallinago gallinago</i>						
Sparrowhawk	<i>Accipiter nisus</i>						
Starling	<i>Sturnus vulgaris</i>						
Stonechat	<i>Saxicola torquatus</i>						
Swallow	<i>Hirundo rustica</i>						
Whitethroat	<i>Sylvia communis</i>						
Willow Warbler	<i>Phylloscopus trochilus</i>						
Wheatear	<i>Oenanthe</i>						
Woodpigeon	<i>Columba palumbus</i>						
Wren	<i>Troglodytes troglodytes</i>						

Winter 2020/21

The following table outlines all species recorded during the winter 2020/21 bird surveys at Sheskin. A total of 44 species were recorded.

Common Name	Latin Name	Winter 2020/21					
		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
Blackbird	<i>Turdus merula</i>						
Blue tit	<i>Parus caeruleus</i>						
Chaffinch	<i>Fringilla coelebs</i>						
Coal tit	<i>Periparus ater</i>						
Cormorant	<i>Phalacrocorax carbo</i>						
Crossbill	<i>Loxia curvirostra</i>						
Dunnock	<i>Prunella modularis</i>						
Fieldfare	<i>Turdus pilaris</i>						
Goldcrest	<i>Regulus regulus</i>						
Goldfinch	<i>Carduelis carduelis</i>						
Great Black-backed gull	<i>Larus marinus</i>						
Great tit	<i>parus major</i>						
Grey heron	<i>Ardea cinerea</i>						
Grey wagtail	<i>Motacilla cinerea</i>						
Hen Harrier*	<i>Circus cyaneus</i>						
Hooded crow	<i>Corvus cornix</i>						
Jack snipe	<i>Lymnocyptes minimus</i>						
Jay	<i>Garrulus glandarius</i>						
Kestrel	<i>Falco tinnunculus</i>						
Linnet	<i>Carduelis cannabina</i>						
Lesser Black-backed gull	<i>Larus fuscus</i>						
Magpie	<i>Pica pica</i>						
Mallard	<i>Anas platyrhynchos</i>						
Meadow pipit	<i>Anthus pratensis</i>						
Merlin *	<i>Falco columbarius</i>						
Mistle thrush	<i>Turdus viscivorus</i>						
Pink footed goose	<i>Anser brachyrhynchus</i>						
Pied wagtail	<i>Motacilla alba</i>						

Common Name	Latin Name	Winter 2020/21					
		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
Raven	<i>Corvus corax</i>						
Red Grouse	<i>Lagopus lagopus scotica</i>						
Redpoll	<i>Carduelis flammea cabaret</i>						
Redwing	<i>Turdus iliacus</i>						
Reed bunting	<i>Emberzia shoenichus</i>						
Ringed Plover	<i>Charadrius hiaticula</i>						
Robin	<i>Erithacus rubecula</i>						
Siskin	<i>Carduelis spinus</i>						
Song thrush	<i>Turdus philomelos</i>						
Skylark	<i>Alauda arvensis</i>						
Snipe	<i>Gallinago gallinago</i>						
Sparrowhawk	<i>Accipiter nisus</i>						
Stonechat	<i>Saxicola torquatus</i>						
Woodcock	<i>Scolopax rusticola</i>						
Woodpigeon	<i>Columba palumbus</i>						
Wren	<i>Troglodytes troglodytes</i>						

Summer 2021

The following table outlines all species recorded during the summer 2021 bird surveys at Sheskin. A total of 54 species were recorded.

Common Name	Latin Name	Breeding 2021					
		April	May	June	July	Aug	Sep
Blackbird	<i>Turdus merula</i>						
Blackcap	<i>Sylvia atricapilla</i>						
Blue Tit	<i>Parus caeruleus</i>						
Buzzard	<i>Buteo buteo</i>						
Chaffinch	<i>Fringilla coelebs</i>						
Chiffchaff	<i>Phylloscopus collybita</i>						
Coal Tit	<i>Periparus ater</i>						
Crossbill	<i>Loxia curvirostra</i>						
Cuckoo	<i>Cuculus canorus</i>						
Duncock	<i>Prunella modularis</i>						
Goldcrest	<i>Regulus regulus</i>						
Golden Plover*	<i>Pluvialis apricaria</i>						
Goldfinch	<i>Carduelis carduelis</i>						
Grasshopper Warbler	<i>Locustella naevia</i>						
Great Black-backed Gull	<i>Larus marinus</i>						
Great northern diver*	<i>Gavia immer</i>						
Great Tit	<i>Parus major</i>						
Grey Heron	<i>Ardea cinerea</i>						
Grey Wagtail	<i>Motacilla cinerea</i>						
Hooded Crow	<i>Corvus cornix</i>						
House Martin	<i>Delichon urbicum</i>						
Jay	<i>Garrulus glandarius</i>						
Kestrel	<i>Falco tinnunculus</i>						
Lesser Black-backed Gull	<i>Larus fuscus</i>						
Linnet	<i>Carduelis cannabina</i>						
Magpie	<i>Pica pica</i>						
Mallard	<i>Anas platyrhynchos</i>						
Meadow Pipit	<i>Anthus pratensis</i>						
Mistle Thrush	<i>Turdus viscivorus</i>						
Pheasant	<i>Phasianus colchicus</i>						
Pied Wagtail	<i>Motacilla alba</i>						
Raven	<i>Corvus corax</i>						
Redpoll	<i>Carduelis flammea cabaret</i>						
Reed Bunting	<i>Emberiza shoenichus</i>						
Ringed plover	<i>Charadrius hiaticula</i>						

Common Name	Latin Name	Breeding 2021					
		April	May	June	July	Aug	Sep
Robin	<i>Erithacus rubecula</i>						
Rook	<i>Corvus frugilegus</i>						
Sand Martin	<i>Riparia riparia</i>						
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>						
Siskin	<i>Carduelis spinus</i>						
Skylark	<i>Alauda arvensis</i>						
Snipe	<i>Gallinago gallinago</i>						
Song Thrush	<i>Turdus philomelos</i>						
Sparrowhawk	<i>Accipiter nisus</i>						
Starling	<i>Sturnus vulgaris</i>						
Stonechat	<i>Saxicola torquatus</i>						
Swallow	<i>Hirundo rustica</i>						
Swift	<i>Apus apus</i>						
Teal	<i>Anas crecca</i>						
Wheatear	<i>Oenanthe oenanthe</i>						
Whitethroat	<i>Sylvia communis</i>						
Willow Warbler	<i>Phylloscopus trochilus</i>						
Woodpigeon	<i>Columba palumbus</i>						
Wren	<i>Troglodytes troglodytes</i>						

Winter 2021/22

The following table outlines all species recorded during the winter 2021/22 bird surveys at Sheskin. A total of 50 species were recorded.

Common Name	Latin Name	Winter 2021/22					
		Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
Blackbird	<i>Turdus merula</i>						
Black-headed Gull	<i>Larus ridibundus</i>						
Blue Tit	<i>Parus caeruleus</i>						
Bullfinch	<i>Pyrrhula pyrrhula</i>						
Buzzard	<i>Buteo buteo</i>						
Chaffinch	<i>Fringilla coelebs</i>						
Coal Tit	<i>Periparus ater</i>						
Common Gull	<i>Larus canus</i>						
Cormorant	<i>Phalacrocorax carbo</i>						
Crossbill	<i>Loxia curvirostra</i>						
Dunnock	<i>Prunella modularis</i>						
Fieldfare	<i>Turdus pilaris</i>						
Gannet	<i>Morus bassana</i>						
Goldcrest	<i>Regulus regulus</i>						
Golden Plover *	<i>Pluvialis apricaria</i>						
Goldfinch	<i>Carduelis carduelis</i>						
Great Black-backed Gull	<i>Larus marinus</i>						
Great Tit	<i>Parus major</i>						
Grey Heron	<i>Ardea cinerea</i>						
Grey Wagtail	<i>Motacilla cinerea</i>						
Herring Gull	<i>Larus argentatus</i>						
Hooded Crow	<i>Corvus cornix</i>						
Jack Snipe	<i>Lymnocyptes minimus</i>						
Jay	<i>Garrulus glandarius</i>						
Kestrel	<i>Falco tinnunculus</i>						
Lesser Black-backed Gull	<i>Larus fuscus</i>						

Common Name	Latin Name	Winter 2021/22					
		Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
Linnet	<i>Carduelis cannabina</i>						
Long-tailed Tit	<i>Aegithalus caudatus</i>						
Magpie	<i>Pica pica</i>						
Mallard	<i>Anas platyrhynchos</i>						
Meadow Pipit	<i>Anthus pratensis</i>						
Merlin*	<i>Falco columbarius</i>						
Mistle Thrush	<i>Turdus viscivorus</i>						
Pied Wagtail	<i>Motacilla alba</i>						
Raven	<i>Corvus corax</i>						
Red Grouse	<i>Lagopus lagopus hibernicus</i>						
Redpoll	<i>Carduelis flammea cabaret</i>						
Redwing	<i>Turdus iliacus</i>						
Reed Bunting	<i>Emberiza shoenichus</i>						
Robin	<i>Erithacus rubecula</i>						
Siskin	<i>Carduelis spinus</i>						
Skylark	<i>Alauda arvensis</i>						
Snipe	<i>Gallinago gallinago</i>						
Song Thrush	<i>Turdus philomelos</i>						
Sparrowhawk	<i>Accipiter nisus</i>						
Starling	<i>Sturnus vulgaris</i>						
Stonechat	<i>Saxicola torquatus</i>						
Swallow	<i>Hirundo rustica</i>						
Teal	<i>Anas crecca</i>						
Woodcock	<i>Scolopax rusticola</i>						
Woodpigeon	<i>Columba palumbus</i>						
Wren	<i>Troglodytes troglodytes</i>						

Summer 2022

The following table outlines all species recorded during the 2022 summer bird surveys at Sheskin. A total of 61 species were recorded.

Common Name	Latin Name	Breeding 2022					
		April	May	June	July	Aug	Sept
Blackbird	<i>Turdus merula</i>						
Blackcap	<i>Sylvia atricapilla</i>						
Black-headed Gull	<i>Larus ridibundus</i>						
Bullfinch	<i>Pyrrhula pyrrhula</i>						
Buzzard	<i>Buteo buteo</i>						
Chaffinch	<i>Fringilla coelebs</i>						
Coal Tit	<i>Parus ater</i>						
Common sandpiper	<i>Actitis hypoleucos</i>						
Cormorant	<i>Phalacrocorax carbo</i>						
Crossbill	<i>Loxia curvirostra</i>						
Cuckoo	<i>Cuculus canorus</i>						
Dipper	<i>Cinclus cinclus</i>						
Dunlin*	<i>Calidris alpina</i>						
Dunnock	<i>Prunella modularis</i>						
Goldcrest	<i>Regulus regulus</i>						
Goldfinch	<i>Carduelis carduelis</i>						
Golden Plover *	<i>Pluvialis apricaris</i>						
Grasshopper Warbler	<i>Locustella naevia</i>						
Great Black-backed Gull	<i>Larus marinus</i>						
Great Tit	<i>Parus major</i>						
Grey Heron	<i>Ardea cinerea</i>						
Grey Wagtail	<i>Motacilla cinerea</i>						
Hen Harrier*	<i>Circus cyaneus</i>						
Herring Gull	<i>Larus argentatus</i>						
Hooded Crow	<i>Corvus cornix</i>						
House Martin	<i>Delichon urbicum</i>						
Jackdaw	<i>Corvus monedula</i>						
Jay	<i>Garrulus glandarius</i>						
Kestrel	<i>Falco tinnunculus</i>						
Lesser Black-backed Gull	<i>Larus fuscus</i>						
Linnet	<i>Carduelis cannabina</i>						
Magpie	<i>Pica pica</i>						
Mallard	<i>Anas platyrhynchos</i>						
Meadow Pipit	<i>Anthus pratensis</i>						
Mistle Thrush	<i>Turdus viscivorus</i>						
Mute Swan	<i>Cygnus olor</i>						

Common Name	Latin Name	Breeding 2022					
		April	May	June	July	Aug	Sept
Peregrine*	<i>Falco peregrinus</i>						
Pied Wagtail	<i>Motacilla alba</i>						
Raven	<i>Corvus corax</i>						
Red Grouse	<i>Lagopus lagopus hibernicus</i>						
Redpoll	<i>Carduelis flammea cabaret</i>						
Redwing	<i>Turdus iliacus</i>						
Reed Bunting	<i>Emberiza shoenichus</i>						
Ringed plover	<i>Charadrius hiaticula</i>						
Robin	<i>Erithacus rubecula</i>						
Rook	<i>Corvus frugilegus</i>						
Sand Martin	<i>Riparia riparia</i>						
Siskin	<i>Carduelis spinus</i>						
Skylark	<i>Alauda arvensis</i>						
Snipe	<i>Gallinago gallinago</i>						
Song Thrush	<i>Turdus philomelos</i>						
Sparrowhawk	<i>Accipiter nisus</i>						
Starling	<i>Sturnus vulgaris</i>						
Stonechat	<i>Saxicola torquatus</i>						
Swallow	<i>Hirundo rustica</i>						
Swift	<i>Apus apus</i>						
Teal	<i>Anas crecca</i>						
Whitethroat	<i>Sylvia communis</i>						
Willow Warbler	<i>Phylloscopus trochilus</i>						
Whooper Swan*	<i>Cygnus cygnus</i>						
Woodpigeon	<i>Columba palumbus</i>						
Wren	<i>Troglodytes troglodytes</i>						

Appendix 13

Species Previously Recorded in Hectad F92 from Desktop Study

The following table outlines all bird species which have been previously recorded in the relevant hectad, F92, including their conservation and protection status in an Irish and European context, including their most recent wintering and breeding status.

Bird Atlas (2007-2011) status of all bird species previously recorded in the hectad F92

Species Name	Winter Atlas 2007-11	Breeding Atlas 2007-11	Conservation/Protection Status ¹
Barnacle Goose (<i>Branta leucopsis</i>) F92	Present	Present	BoCCI Amber-listed/ Wildlife Acts
Blackbird (<i>Turdus merula</i>) F92	Present	Confirmed	BoCCI Green-listed/ Wildlife Acts
Blackcap (<i>Sylvia atricapilla</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Blue Tit (<i>Cyanistes caeruleus</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Chaffinch (<i>Fringilla coelebs</i>) F92,	Present	Confirmed	BoCCI Green-listed/ Wildlife Acts
Chiffchaff (<i>Phylloscopus collybita</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Coal Tit (<i>Periparus ater</i>) F92	Present	Confirmed	BoCCI Green-listed/ Wildlife Acts
Collared Dove (<i>Streptopelia decaocto</i>) F92	Present	Possible	BoCCI Green-listed/ Wildlife Acts
Common Gull (<i>Larus canus</i>) F92	Present	Confirmed	BoCCI - Amber List /Wildlife Acts
Common Sandpiper (<i>Actitis hypoleucos</i>) F92	Present	Confirmed	BoCCI - Amber List /Wildlife Acts
Cormorant (<i>Phalacrocorax carbo</i>) F92	Present	Not Confirmed	BoCCI - Amber List /Wildlife Acts
Cuckoo (<i>Cuculus canorus</i>) F92,	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Curlew (<i>Numenius arquata</i>) F92	31/07/1972 Not Confirmed	Possible	BoCCI - Red List /Annex II, Section II Bird Species / Wildlife Acts
Dunlin (<i>Calidris alpina</i>) F92	Present	Confirmed	BoCCI Red-listed/ Annex I Bird Species /Wildlife Acts
Dunnock (<i>Prunella modularis</i>) F92,	Present	Possible	BoCCI Green-listed/ Wildlife Acts
Fieldfare (<i>Turdus pilaris</i>) F92	Present	Not confirmed	BoCCI Green-listed/ Wildlife Acts
Goldcrest (<i>Regulus regulus</i>) F92,	Present	Probable	BoCCI Amber-listed/ Wildlife Acts
Golden Plover (<i>Pluvialis apricaria</i>) F92	Present	Confirmed	BoCCI Red-listed/Annex I Bird Species/ Annex II, Section II Bird Species/ Annex III, Section III EU Birds Directive/ Wildlife Acts
Goldfinch (<i>Carduelis carduelis</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Grasshopper Warbler (<i>Locustella naevia</i>) F92	Present	Possible	BoCCI Amber-listed/ Wildlife Acts
Great Black-backed Gull (<i>Larus marinus</i>) F92	Present	Not Confirmed	BoCCI Green-List /Third schedule of the Wildlife Acts

¹ SCI of SPA: Species of Conservation Interest of Special Protection Area within 20-kilometres of Wind Farm

Species Name	Winter Atlas 2007-11	Breeding Atlas 2007-11	Conservation/Protection Status ¹
Great Tit (<i>Parus major</i>) F92	Present	Confirmed	BoCCI Green-listed/ Wildlife Acts
Greenfinch (<i>Carduelis chloris</i>) F92	Present	Not confirmed	BoCCI Green-listed/ Wildlife Acts
Grey Heron (<i>Ardea cinerea</i>) F92	Present	Possible	BoCCI Green-listed/ Wildlife Acts
Grey Wagtail (<i>Motacilla cinerea</i>) F92	Present	Confirmed	BoCCI Red-listed/ Wildlife Acts
Hen Harrier (<i>Circus cyaneus</i>) F92	Present	Present	BoCCI Amber-listed/ Annex I EU Birds Directive/ Fourth schedule of the Wildlife Acts 1976-2012
House Sparrow (<i>Passer domesticus</i>) F92	Present	Confirmed	BoCCI – Amber-listed /Third schedule of the Wildlife Acts
Jackdaw (<i>Corvus monedula</i>) F92	Present	Not confirmed	BoCCI Green-listed/ Third schedule of the Wildlife Acts
Jay (<i>Garrulus glandarius</i>) F92	Present	Not confirmed	BoCCI Green-listed/ Wildlife Acts
Kestrel (<i>Falco tinnunculus</i>) F92, F93	Present	Possible	BoCCI Red-listed/Fourth schedule of the Wildlife Acts 1976-2012
Linnet (<i>Carduelis cannabina</i>) F92	Present	Possible	BoCCI Amber-listed/ Wildlife Acts
Little Grebe (<i>Tachybaptus ruficollis</i>) F92	Present	Confirmed	BoCCI – Green List /Wildlife Acts
Long-tailed Tit (<i>Aegithalos caudatus</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Magpie (<i>Pica pica</i>) F92	Present	Possible	BoCCI Green-listed/ Third schedule of the Wildlife Acts
Mallard (<i>Anas platyrhynchos</i>) F92	Present	Confirmed	BoCCI Amber-listed/Annex II & Annex III EU Birds Directive/Wildlife Acts
Meadow Pipit (<i>Anthus pratensis</i>) F92	Present	Confirmed	BoCCI Red-listed/ Wildlife Acts
Mistle Thrush (<i>Turdus viscivorus</i>) F92	Present	Not Confirmed	BoCCI Green-listed/ Wildlife Acts
Moorhen (<i>Gallinula chloropus</i>) F92	Present	Not confirmed	BoCCI Green-listed/ Wildlife Acts
Peregrine falcon (<i>Falco peregrinus</i>) F92	Present	Present	BoCCI Green-listed/ Annex I EU Birds Directive / Fourth schedule of the Wildlife Acts 1976-2012
Pied Wagtail (<i>Motacilla alba</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Raven (<i>Corvus corax</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Red Grouse (<i>Lagopus lagopus hibernicus</i>) F92	Present	Probable	BoCCI Red-listed/ Annex II & Annex III EU Birds Directive/Wildlife Acts
Redpoll (<i>Carduelis cabaret</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Redwing (<i>Turdus iliacus</i>) F92	Present	Not Confirmed	BoCCI Red-listed/ Wildlife Acts
Reed Bunting (<i>Emberiza schoeniclus</i>) F92	Present	Confirmed	BoCCI Green-listed/ Wildlife Acts

Species Name	Winter Atlas 2007-11	Breeding Atlas 2007-11	Conservation/Protection Status ¹
Ringed Plover (<i>Charadrius hiaticula</i>) F92	Present	Confirmed	BoCCI - Amber List /Wildlife Acts
Robin (<i>Erithacus rubecula</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Rook (<i>Corvus frugilegus</i>) F92	Present	Not Confirmed	BoCCI Green-listed/ Third schedule of the Wildlife Acts
Sand Martin (<i>Riparia riparia</i>) F92	Present	Probable	BoCCI - Amber List /Wildlife Acts
Sedge Warbler (<i>Acrocephalus schoenobaenus</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Siskin (<i>Carduelis spinus</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Skylark (<i>Alauda arvensis</i>) F92	Present	Probable	BoCCI - Amber List /Wildlife Acts
Snipe (<i>Gallinago gallinago</i>) F92	Present	Probable	BoCCI Red-listed /Annex II & Annex III EU Birds Directive/ Wildlife Acts
Snow Bunting (<i>Plectrophenax nivalis</i>) F92	Present	Not Confirmed	BoCCI Green-listed/ Wildlife Acts
Snowy Owl (<i>Bubo scandiaca</i>) F92	Not Confirmed	Survey: Rare birds of Ireland 2008	Annex I Bird Species /Fourth schedule of the Wildlife Acts
Song Thrush (<i>Turdus philomelos</i>) F92	Present	Probable	BoCCI Green-listed/ Wildlife Acts
Sparrowhawk (<i>Accipiter nisus</i>) F92	Present	Possible	BoCCI Green-listed /Fourth schedule of the Wildlife Acts
Spotted Flycatcher (<i>Muscicapa striata</i>) F92	Present	Possible	BoCCI - Amber List /Wildlife Acts
Starling (<i>Sturnus vulgaris</i>) F92	Present	Confirmed	BoCCI Amber-listed/ Third schedule of the Wildlife Acts
Stonechat (<i>Saxicola torquata</i>) F92	Present	Confirmed	BoCCI Green-listed / Wildlife Acts
Swallow (<i>Hirundo rustica</i>) F92	Not Confirmed	Probable	BoCCI Amber-listed/ Wildlife Acts
Teal (<i>Anas crecca</i>) F92	Present	Probable	BoCCI Amber-listed /Annex II, Section I Bird Species Annex III, Section II EU Birds Directive/Wildlife Acts
Wheatear (<i>Oenanthe oenanthe</i>) F92	Present	Confirmed	BoCCI - Amber List /Wildlife Acts
White-throated Dipper (<i>Cinclus cinclus</i>) F92	Present	Possible	BoCCI Green-listed/ Wildlife Acts
Wigeon (<i>Anas penelope</i>) F92	Present	Not Confirmed	BoCCI Amber-listed / Annex II, Section I, Annex III, Section II EU Birds Directive/ Wildlife Acts
Willow Warbler (<i>Phylloscopus trochilus</i>) F92	Present	Confirmed	BoCCI Amber-listed/ Wildlife Acts
Wood Pigeon (<i>Columba palumbus</i>) F92	Present	Possible	BoCCI Green-listed/Annex II EU Birds Directive/ Third schedule of the Wildlife Acts

Species Name	Winter Atlas 2007-11	Breeding Atlas 2007-11	Conservation/Protection Status ¹
Woodcock (<i>Scolopax rusticola</i>) F92	Present	Not Confirmed	BoCCI Red-listed/ Annex II & Annex III EU Birds Directive/Wildlife Acts
Wren (<i>Troglodytes troglodytes</i>) F92	Present	Confirmed	BoCCI Green-listed/ Wildlife Acts

Appendix 14

Non-core Bird Survey Summary Data

SUMMARY OF NON-CORE BIRD SURVEY SPECIES DATA

Target Species	Wider Hinterland Survey Results (please also refer to Appendix 11)
Whooper Swan	<p>Whooper swan were recorded on three occasions at Carrowmore Lake (7.4 km to the west of Proposed Development site) in winter 2019/20 between the end of November 2019 and the end of January 2020. Numbers recorded ranged from two to nine birds.</p> <p>A survey for whooper swan was undertaken at Lough Nahelly (17.9 km west of Proposed Development site) on several dates in winter 2019/20. On the 11th December 2019, 24 whooper swans were recorded on the lake. On the 28th January 2020, 23 whooper swans were observed grazing in fields to the west of the lake.</p> <p>During the winter 2020/21 period, whooper swans were recorded on the majority of survey dates at Carrowmore Lake. Between mid-October 2020 and mid-March 2021, the number of whooper swans recorded at this location ranged from two to five birds. Whooper swan were also recorded at Lough Nahelly. Between mid-December 2020 and mid-February 2021, the number of birds at this location ranged from two to 72 birds (recorded on 8th December 2020).</p> <p>During the winter 2021/22 period, whooper swans were recorded on several dates at Carrowmore Lake between mid-November 2021 and mid-February 2022. Numbers recorded ranged from two to seven birds. Whooper swan were also recorded at Lough Nahelly. On the 19th November 2021, 12 birds including four adults and eight juveniles were recorded. A flock of 16 was recorded in mid-December 2021 and a flock of 8 birds was recorded in mid-March 2022.</p> <p>During a driven hinterland survey encompassing the area extending out to 5 km radius of the site, undertaken on the 26th September 2022, three whooper swans were recorded flying east, approximately 4.8 km north of the site boundary.</p> <p>There were no additional observations of whooper swan recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.</p>
Light-bellied Brent Goose	<p>Light-bellied Brent goose were recorded on two dates at Traw Kirtaun (13.8 km to the west of Proposed Development site) during the winter 2020/21 period. A total of seven birds were recorded in mid-December 2020, while 20 birds were recorded in mid-January 2021. During winter 2021/22, light-bellied brent geese were recorded at Sruwaddacon Bay (10.2 km north-west of the Proposed Development site). Between mid-January 2022 and the end of March 2022, between 12 and 40 birds were recorded at this location. A flock of 26 birds was recorded at Traw Kirtaun on the 19th December 2021.</p>

Target Species	Wider Hinterland Survey Results (please also refer to Appendix 11)
	There were no additional observations of light-bellied Brent goose recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.
Greenland White-fronted Goose	<p>A total of 19 Greenland white-fronted geese were recorded at Carrowmore Lake (7.4 km to the west of the Proposed Development site) on the 11th December 2019. Greenland white-fronted geese were recorded on five separate dates at Carrowmore Lake over the winter 2020/21 season. Counts ranged from a minimum of 16 to a maximum count of 18 birds. A total of 22 Greenland white-fronted geese were recorded at Carrowmore Lake on the 21st February 2022. This was the only recording of Greenland white-fronted geese during the winter 2021/ 22 survey period.</p> <p>There were no additional observations of Greenland white-fronted goose recorded during any of the other surveys carried out during the 3-year survey period October 2019 to September 2022, inclusive.</p>
Sparrowhawk	One bird was recorded in excess of 7 km west of the Proposed Development site towards Carrowmore Lake during the Summer 2022 driven hinterland survey on 26 th September 2022.
Peregrine	A peregrine was recorded at Lough Nahelly (located approximately 18 km from the site) on the 11th February 2021 during winter bird counts.
Golden Plover	<p>On the 22nd February 2021, golden plover were heard in-flight moving across Lough Dahybaun (in excess of 6 km from the site) but were not seen.</p> <p>During a hinterland survey at Sruwaddacon Bay (in excess of 10 km from the site) on the 21st February 2022, a flock of 21 golden plover was recorded.</p>
Snipe	One snipe was heard calling at Lough Dahybaun (in excess of 6 km from the site) during a survey conducted on the 30 th June 2021.
Goosander	<p>Winter 2020/21, a maximum of three goosander recorded at Carrowmore Lake (in excess of 7 km from the site) in mid-January 2021.</p> <p>Winter 2021/22, one individual recorded at Carrowmore Lake on 29th March 2022.</p>
Great Northern Diver	Winter 2020/21, seven great-northern divers were recorded at Sruwaddacon Bay (in excess of 10 km from the site) on the 10 th January 2021.
Curlew	Recorded on two dates during winter 2020/21 counts at Sruwaddacon Bay (in excess of 10 km from the site) in mid-December 2020 and mid-February 2021, when one and five birds were recorded respectively. One curlew was also recorded at Traw Kirtaun in Broadhaven Bay (in excess of 13 km from the site) in both mid-December 2020 and mid-January 2021.

Target Species	Wider Hinterland Survey Results (please also refer to Appendix 11)
	<p>Flocks of curlew were recorded on six occasions at Sruwaddacon Bay over the winter 2021/22 period. Numbers recorded ranged from a minimum of five birds to a maximum of 35 birds, recorded in mid-December 2021. Curlew were recorded on five occasions at Traw Kirtaun in Broadhaven Bay over the same period. Numbers observed ranged from one to a maximum of three birds.</p> <p>There were no additional observations of curlew recorded during any of the other surveys carried out during the 3-year survey period October 2019 to September 2022, inclusive.</p>
Redshank	<p>Redshank were recorded on five separate dates during winter 2021/22 counts at Sruwaddacon Bay (in excess of 10 km from the site) between 19th November 2021 and 29th March 2022. Counts for redshank ranged from a minimum of eight to a maximum of 18 birds recorded.</p> <p>There were no additional observations of redshank recorded during any of the other surveys carried out during the 3-year survey period October 2019 to September 2022, inclusive.</p>
Tufted Duck	<p>Tufted ducks were recorded on several dates at Carrowmore Lake (in excess of 7 km from the site) during the winter 2019/20, winter 2020/21 and winter 2021/22 periods. Between the end of October 2019 and the end of February 2020, numbers recorded ranged from 42 to 77 birds. Between the mid-October 2020 and mid-March 2021, numbers recorded ranged from 19 to 106 birds. Between the start of October 2021 and the end of March 2022, numbers recorded ranged from 16 to 59 birds.</p> <p>There were no additional observations of tufted duck recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.</p>
Wigeon	<p>Wigeon were recorded at Carrowmore Lake (in excess of 7 km from the site) on two occasions during the winter 2019/20 period. A total of 34 birds were recorded on the 18th December 2019. Three birds were recorded on the 27th January 2020. During the winter 2020/21 period, wigeon were recorded at Carrowmore Lake on several dates between mid-October 2020 and mid-March 2021. Numbers of wigeon recorded ranged from six to 12 birds. Wigeon were also recorded at Lough Nahelly (located approximately 18 km from the site). 16 birds were observed on the 20th January 2021 while 99 birds were recorded on the 11th February 2021.</p> <p>During the winter 2021/22 period, wigeon were recorded during most of the surveys carried out at Carrowmore Lake. Between mid-November 2021 and the end of March 2022, numbers ranged from six to ten birds. At Lough Nahelly, numbers recorded ranged from three to 25 birds over a similar period.</p>

Target Species	Wider Hinterland Survey Results (please also refer to Appendix 11)
	There were no additional observations of wigeon recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.
Bar-tailed Godwit	<p>Seven bar-tailed godwits were recorded at Sruwaddacon Bay (in excess of 10 km from the site) on 18th December 2021, while five were observed at Traw Kirtaun (in excess of 13 km from the site) on 5th October 2021.</p> <p>There were no additional observations of bar-tailed godwit recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.</p>
Little Egret	<p>One little egret was seen at Carrowmore Lake (in excess of 7 km from the site) on 8th December 2020, one was recorded at Traw Kirtaun (in excess of 13 km from the site) on both 8th December 2020 and 20th January 2021, and one was recorded at Traw Kirtaun on both 19th November 2021 and 19th December 2021.</p> <p>There were no additional observations of little egret recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.</p>
Kingfisher	<p>One kingfisher was observed at Carrowmore Lake (in excess of 7 km from the site) on 28th November 2019, one again at Carrowmore Lake on 17th January 2022.</p> <p>There were no additional observations of kingfisher recorded during any of the other surveys carried out during the 3-year survey period from October 2019 to September 2022, inclusive.</p>

Secondary Species	Wider Hinterland Survey Results (please also refer to Appendix 11)
Grey Heron	<ul style="list-style-type: none"> – Winter 2019/20, a maximum count of two grey herons recorded at Carrowmore Lake (in excess of 7 km from the site) – Winter 2020/21, up to four birds were recorded at Carrowmore Lake. Grey heron was also recorded at Traw Kirtaun (in excess of 13 km from the site) during winter counts – Winter 2021/22, grey heron was recorded at Carrowmore Lake, Sruwaddacon Bay (in excess of 10 km from the site) and Lough Nahelly (located approximately 18 km from the site).
Cormorant	<ul style="list-style-type: none"> – Winter 2019/20, between two and 12 cormorants recorded at Carrowmore Lake (in excess of 7 km from the site) between end of October and mid-January – Winter 2020/21, between two and ten cormorants recorded at Carrowmore Lake between mid-October and mid-March. Up to six birds recorded at Sruwaddacon Bay (in excess of 10 km from the site) in December 2020.

Secondary Species	Wider Hinterland Survey Results (please also refer to Appendix 11)
	<ul style="list-style-type: none"> – Winter 2021/22, between two and 12 cormorants recorded at Carrowmore Lake, and a maximum of eight recorded at Sruwaddacon Bay between start of October and end of March. – Summer 2022, three cormorants recorded during the driven hinterland survey on 26th September 2022, approximately 4.5 km north of the site.
Mallard	<ul style="list-style-type: none"> – Winter 2019/20, between four and 23 mallards recorded at Carrowmore Lake (in excess of 7 km from the site) between late October 2019 and late February 2020 during hinterland counts – Winter 2020/21, between five and 34 mallards recorded at Carrowmore Lake between mid-October 2020 and mid-March 2021 during hinterland counts. Two mallards observed at Sruwaddacon Bay (in excess of 10 km from the site) on 8th December 2020. Four mallards observed at Traw Kirtaun (in excess of 13 km from the site) on 20th January 2021. A maximum of 11 mallard recorded at Lough Nahelly (located approximately 18 km from the site) in mid-January 2021. – Winter 2021/22, between seven and 18 mallards recorded at Carrowmore Lake between early October 2021 and late March 2022. A maximum of 13 mallard recorded at Sruwaddacon Bay on the 18th December 2021. A maximum of ten mallard recorded at Lough Nahelly on the 21st February 2022. – Summer 2022, one bird recorded during the driven hinterland survey on 26th September 2022 approximately 5 km south-west of the site.
Teal	<ul style="list-style-type: none"> – Winter 2019/20, teal were recorded on several dates at Carrowmore Lake (in excess of 7 km from the site) during winter counts. Numbers ranged from a minimum of eight to a maximum of 46 birds recorded. – Winter 2020/21, teal were recorded on several dates at Carrowmore Lake during winter counts. Numbers ranged from a minimum of eight to a maximum of 18 birds recorded. Twelve teal were also recorded at Lough Nahelly (located approximately 18 km from the site) on two separate occasions during this period. – Winter 2021/22, numbers of teal recorded at Carrowmore Lake ranged from 11 to 33 birds over the winter period. A maximum of 24 teal were recorded at Lough Nahelly.
Black-headed Gull	<ul style="list-style-type: none"> – Winter 2020/21, one black-backed gull recorded at Carrowmore Lake (in excess of 7 km from the site) in mid-November 2020. Thirty recorded at Sruwaddacon Bay (in excess of 10 km from the site) in mid-February 2021. – Winter 2021/22, between 5 and 103 black-headed gulls recorded throughout the winter count period at Sruwaddacon Bay. Between 5 and 10 black-headed gulls recorded at Traw Kirtaun (in excess of 13 km from the site) over the same period. – Summer 2021, one black-headed gull recorded approximately 7 km south-east of the site on 30th June 2021 during a driven hinterland survey.

Secondary Species	Wider Hinterland Survey Results (please also refer to Appendix 11)
	<ul style="list-style-type: none"> – Summer 2022, one bird recorded during the driven hinterland survey on 26th September 2022, approximately 4 km east of the site.
Great Black-backed Gull	<ul style="list-style-type: none"> – Winter 2020/21, a maximum of three great black-backed gulls recorded at Carrowmore Lake (in excess of 7 km from the site) over the winter count period. A maximum of 12 great black-backed gulls recorded Traw Kirtaun (in excess of 13 km from the site) in mid-January 2021. – Winter 2021/22, a maximum of nine birds recorded at Carrowmore Lake. A maximum count of 16 recorded at Sruwaddacon Bay (in excess of 10 km from the site) in mid-November 2021. A maximum of 28 birds recorded at Traw Kirtaun in early October 2021. – Summer 2021, a maximum of three great black-backed gulls observed during the driven hinterland survey in May 2021, approximately 5 km north of the site. – Summer 2022, two birds recorded during the driven hinterland survey on 26th September 2022, one approximately 2 km to the south and one approximately 5.5 km north-west of the site.
Lesser Black-backed Gull	<ul style="list-style-type: none"> – Winter 2020/21, a maximum of five lesser black-backed gulls recorded at Carrowmore Lake (in excess of 7 km from the site) in mid-March 2021. Five birds recorded at Traw Kirtaun (in excess of 13 km from the site) in mid-February 2021. – Winter 2021/22, 17 lesser black-backed gulls recorded at Carrowmore Lake, six birds recorded at Sruwaddacon Bay (in excess of 10 km from the site) and six birds recorded at Traw Kirtaun at the end of March 2022. – Summer 2021, one lesser black-backed gull observed during driven hinterland surveys in both May and June 2021 (closest record approximately 2.2 km south of site). – Summer 2022, one bird recorded during the driven hinterland survey on 26th September 2022, approximately 7.5 km north-west of site.
Herring Gull	<ul style="list-style-type: none"> – Winter 2019/20, one herring gull recorded at Carrowmore Lake (in excess of 7 km from the site) at the end of January 2020. – Winter 2020/21, a maximum of two herring gulls recorded at Carrowmore Lake, four at Sruwaddacon Bay (in excess of 10 km from the site) and a maximum of 18 recorded at Traw Kirtaun (in excess of 13 km from the site). – Winter 2021/22, numbers of herring gull recorded at Sruwaddacon Bay ranged from two to 14, and eight to 25 at Traw Kirtaun over the winter count period. – Summer 2022, a 2nd calendar year herring gull recorded during the driven hinterland survey on 26th September 2022, approximately 5 km north of the site.

Secondary Species	Wider Hinterland Survey Results (please also refer to Appendix 11)
Black-tailed Godwit	<ul style="list-style-type: none"> – Recorded at Sruwaddacon Bay (in excess of 10 km from the site) in winter 2021/22, maximum count (28) recorded on the 17th January 2022
Common Gull	<ul style="list-style-type: none"> – Recorded at Carrowmore Lake (in excess of 7 km from the site) in winter 2020/21, maximum count (4) recorded on the 11th March 2021. – 42 common gulls recorded at Carrowmore Lake at the end of March 2022. Between 8 and 13 common gulls recorded at Sruwaddacon Bay (in excess of 10 km from the site), and a maximum of 20 common gulls recorded at Traw Kirtaun (in excess of 13 km from the site) over the winter 2021/22 count period. – Four common gulls recorded in a field on 30th June 2021.
Coot	<ul style="list-style-type: none"> – Two recorded at Lough Nahelly (located 18 km from the site) on 20th March 2022
Goldeneye	<ul style="list-style-type: none"> – Recorded at Carrowmore Lake (in excess of 7 km from the site) on multiple dates in winter 2019/20, maximum count (7) recorded on the 27th January 2020. – Recorded at Carrowmore Lake on multiple dates in winter 2020/21, maximum count (20) recorded on the 11th March 2021. – Recorded on multiple dates at Carrowmore Lake in winter 2021/22, maximum count (10) recorded on the 21st February 2022.
Great-crested Grebe	<ul style="list-style-type: none"> – Recorded at Carrowmore Lake (in excess of 7 km from the site) on two dates in winter 2019/20, maximum of two birds recorded. – Two recorded at Carrowmore Lake on the 29th March 2022.
Greenshank	<ul style="list-style-type: none"> – Two recorded at Sruwaddacon Bay (in excess of 10 km from the site) on the 8th December 2020. – Recorded on multiple dates at Sruwaddacon bay in winter 2021/22, maximum count (seven) recorded on the 19th November 2021. – One recorded at Traw Kirtaun (in excess of 13 km from the site) on the 19th December 2021.
Lesser Scaup	<ul style="list-style-type: none"> – One recorded at Carrowmore Lake (in excess of 7 km from the site) on the 31st October 2019.
Little Grebe	<ul style="list-style-type: none"> – Two recorded at Carrowmore Lake (in excess of 7 km from the site) on the 17th January 2022.
Long-tailed Duck	<ul style="list-style-type: none"> – One recorded at Carrowmore Lake (in excess of 7 km from the site) on two dates in winter 2020/21.
Moorhen	<ul style="list-style-type: none"> – Recorded at several dates at Carrowmore Lake (in excess of 7 km from the site) in winter 2019/20, maximum count (four). – Two recorded at the same site on the 17th February 2021. – One recorded on two different dates at Lough Nahelly (18 km from the site) in winter 2021/22.

Secondary Species	Wider Hinterland Survey Results (please also refer to Appendix 11)
Mute Swan	<ul style="list-style-type: none"> – Recorded on several dates at Carrowmore Lake (in excess of 7 km from the site) in winter 2019/20, winter 2020/21 and winter 2021/22, maximum count (ten). – One recorded at Lough Nahelly (18 km from the site) on the 19th November 2021. – A family group, including four juveniles, recorded during the Summer 2022 driven hinterland survey.
Oystercatcher	<ul style="list-style-type: none"> – Recorded on two dates at Sruwaddacon Bay (in excess of 7 km from the site) in winter 2020/21, maximum count (four). A count of 39 recorded at Traw Kirtaun (in excess of 13 km from the site) on the 20th January 2021. – Recorded on all survey dates at Sruwaddacon Bay in winter 2021/22, maximum count (37). Recorded on all survey dates at Traw Kirtaun in winter 2021/22, maximum count (21).
Red-breasted Merganser	<ul style="list-style-type: none"> – Recorded on several dates at Carrowmore Lake (in excess of 7 km from the site) in winter 2020/21, maximum count (two). Also recorded at Sruwaddacon Bay (in excess of 10 km from the site) and Traw Kirtaun (in excess of 13 km from the site) during the same period, maximum count (two). – Four recorded at Carrowmore Lake on the 29th March 2022. Recorded on multiple dates at Sruwaddacon Bay in winter 2021/22, maximum count (12).
Ring-necked Duck	<ul style="list-style-type: none"> – Recorded on several dates at Carrowmore Lake (in excess of 7 km from the site) in winter 2019/20, winter 2020/21 and winter 2021/22, maximum count (two).
Sanderling	<ul style="list-style-type: none"> – Recorded on one date at Sruwaddacon Bay (in excess of 10 km from the site) in winter 2021/22, 37 recorded on the 17th January 2022.
Scaup	<ul style="list-style-type: none"> – Recorded at Carrowmore Lake (in excess of 7 km from the site) on one date in winter 2019/20 (one bird on the 26th February 2020).

Appendix 15

Confidential Appendix

HEN HARRIER WINTER ROOST SURVEY WINTER 2019/20

SURVEY SUMMARY

A hen harrier winter roost survey was carried out at a previously known traditional roost-site located approximately 7.5 km south-east of the site on 29th January 2020 between the hours of 17:00 and 18:00.

SURVEY RESULTS

On 29th January 2020 one male and one female hen harrier were observed at the roost site.

HEN HARRIER WINTER ROOST SURVEY WINTER 2020/21

SURVEY SUMMARY

Survey Type	Date	Observer	Weather
Roost watch	12/10/2020	PC	Cloud cover 7/8, intermittent sunshine, heavy rain showers, wind direction northwest, wind F4-5, temp 12oC-11oC, visibility good some periodic showers
Roost watch	11/11/2020	PC	Constant heavy showers, dull and cloudy, wind direction south, wind F3-4, temp 11oC, visibility poor
Roost watch	08/12/2020	PC	Dry, sunny and cloudy, wind direction northwest, F 5-6, temp 4oC.
Roost watch	20/01/2021	PC	Dry, sunny, mostly cloudy with odd shower, wind direction southwest, wind F2-3, temp 3oC
Roost watch	22/02/2021	PC	Dry and dull, wind direction southwest, wind F 5-6, temp 6oC
Roost watch	19/03/2021	AC	Cloud cover 2/8, sunshine, wind direction north, wind F3-4, temp 10oC- 8oC, visibility good.

SURVEY RESULTS

Date	Observer	Results
12/10/2020	PC	No birds recorded
11/11/2020	PC	No birds recorded
08/12/2020	PC	No birds recorded
20/01/2021	PC	At 16.06 a 2 nd calendar year hen harrier flew northwest-east at 60m height for 120 seconds into the roost.
22/02/2021	PC	At 17.02 a 2 nd calendar year hen harrier flew west to east at 2m height for 60 seconds into the roost. Likely the same bird was observed earlier in the day at the entrance to the Sheskin site before grouse walkover surveys. Golden Plover also heard but not seen flying over lake at 16.25 during roost watch.
19/03/2021	AC	At 17.42 and adult male hen harrier came into view flying in a westerly direction at 10m height over heather on a field east of vantage point. The bird was in flight for 60 seconds before landing on heather. The bird stayed perched for 120 seconds before flying east at 1 m height out of view. This was the only hen harrier sighting on this date.

HEN HARRIER WINTER ROOST SURVEY WINTER 2021/22

SURVEY SUMMARY

Hen Harrier Roost Survey Summary						
Month	Date	Observer	Start Time	Finish Time	Weather	Visibility
October	05.10.21	PC	17.30	19.00	Dry, sunny evening with westerly winds F2-3. Temperature 13°C.	Good
November	23.11.21	SC	15.15	17.10	A bright, calm evening with a lot of cloud cover, 7/8, and a light south-westerly winds F1-2. Temperature 7-6°C.	Good
November	25.11.21	SC	15.45	17.05	An overcast afternoon with some showers and west/north-west winds F1-2. Cloud cover 8/8. Temperature 7°C.	Good
December	18.12.21	SC	14.45	17.00	An overcast evening with some fog and east/south-east winds F0-2. Temperature 4-6°C.	Good to moderate
January	17.01.22	SC	16.30	17.30	Sunny, bright, cold evening. Southeast wind F1-4. Cloud cover 3/8. Temperature 4°C.	Good
February	22.02.22	SC	16.50	18.40	An overcast evening with some heavy squalls. Westerly winds F4-6. Cloud cover 8/8. Temperature 6°C.	Moderate
March	21.03.22	SC	18.00	19.00	A warm sunny evening. South easterly winds F3-5. Cloud cover 6/8. Temperature 12-11°C.	Good

SURVEY RESULTS

Hen Harrier Roost Survey Results					
Month	Date	Observer	Start Time	Finish Time	Results
October	05.10.21	PC	17.30	19.00	No hen harriers observed
November	23.11.21	SC	15.15	17.10	2 female and 1 male at the roost

Hen Harrier Roost Survey Results					
Month	Date	Observer	Start Time	Finish Time	Results
					<ul style="list-style-type: none"> At 16.23, one female hen harrier was observed moving east to west over hilltops and back again. Lost sight of the bird behind hill. At 16.40, a male hen harrier was observed flying in from the north and moving over and back across the hill. At 16.44, a second female was observed flying in from the west.
November	25.11.21	SC	15.45	17.05	2 female and 2 males at the roost <ul style="list-style-type: none"> At 15.50, a female hen harrier was observed flying in from the north. At 16.32, 2 male hen harriers were observed together flying in from the northeast. At 16.39, a second female was observed over the hill dropping into heather when presumably the first female joined her.
December	18.12.21	SC	14.45	17.00	1 female and 2 male at the roost <ul style="list-style-type: none"> At 16.19, a female hen harrier came into roost from the north. At 16.21, a male hen harrier came into roost from the west. At 16.34, a second male came into roost from the west.
January	17.01.22	SC	16.30	17.30	2 possibly 3 males at the roost <ul style="list-style-type: none"> At 14.41, an adult male hen harrier was observed flying west at the back of the hill. At 16.42, a second male joined the first and they flew east. At 17.00, one male dropped into roost in the heather. At 17.03, a second male dropped into roost in the heather. At 17.12, either a third male flew west across the hill and dropped into the roost, or it was the 1st male that move.
February	22.02.22	SC	16.50	18.40	2 possibly 3 males at the roost <ul style="list-style-type: none"> At 17.33, a male hen harrier observed flying in from the north. At 17.38, a second male hen harrier observed flying in from the northwest. At 18.20, presumably one of the first males reappeared and was observed dropping into the roost.

Hen Harrier Roost Survey – Other Species Results								
Common Name	Scientific Name	5 th Oct 2021	23 rd Nov 2021	25 th Nov 2021	18 th Dec 2021	17 th Jan 2022	22 nd Feb 2022	21 st Mar 2022
Little Egret*	<i>Egretta garzetta</i>	6						
Mallard	<i>Anas platyrhynchos</i>				10			
Mute Swan	<i>Cygnus olor</i>				7	1		
Ring-necked duck	<i>Aythya collaris</i>	3			1			
Snipe	<i>Gallinago gallinago</i>							1
Tufted Duck	<i>Aythya fuligula</i>	19			12	8		
Whooper Swan*	<i>Cygnus cygnus</i>				2			

MOORLAND BREEDING BIRD SURVEY 2022 (FINAL SUMMARY MAPPING)

