Orsted Onshore Ireland Midco Limited

Proposed Oatfield Wind Farm

Natura Impact Statement

604569

DECEMBER 2023

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Ireland Ltd.

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NATURA IMPACT STATEMENT

1.1 Introduction

This Natura Impact Statement (NIS) report assesses whether the proposed Oatfield Wind Farm Project (hereafter referred to as the 'Proposed Development') is anticipated to result in any adverse effects on the integrity of any European sites. Where likely adverse effects on the integrity of a European site are identified, this NIS report prescribes mitigation measures for the avoidance of such effects.

The Screening for Appropriate Assessment Report for the Proposed Development (Part 4 of this Planning Application)) identified the potential for Likely Significant Effects (LSE) on internationally designated sites which could not be screened out during Stage 1 of the assessment process. It is respectfully submitted that Appropriate Assessment of adverse effects on the integrity of the European sites is required, however it is the competent authority (An Bord Pleanála) that will make that determination.

This report has been produced in accordance with the requirements of EEC (as amended) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (as amended) (the Habitats Directive) and the National Parks and Wildlife Service (NPWS) Guidance for Planning Authorities (2010). The preparation of this NIS report has been prepared in accordance with current legislation and best practice guidance (as described below), and supplementary data obtained during a desk study and field surveys between 2021 and 2023 inclusive. Assessment of effects on ecological features not relating to European sites is provided in EIAR Chapter 7 Biodiversity and EIAR Chapter 8 Ornithology.

1.1.1 Legislative Context and Relevant Guidance

Article 6(3) of the Habitats Directive requires that, in relation to internationally designated sites (SACs, SPAs and Ramsar sites, and candidate sites for these designations), "*any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives*".

A Competent Authority (e.g., a Local Authority) can only agree to a plan or project after having determined that it will not adversely affect the integrity of the site concerned unless the Article 6(4) of the Habitat Directive applies.

In the EU court ruling Sweetman V An Bord Pleanála, it was ruled that permission could not be granted where "*the disappearance or the partial and irreparable destruction of the protected site*" would occur due to loss of an Annex I priority habitat. As such, under Article 6(3) and 6(4), where a priority Annex I habitat is present and will be lost to any extent due to the project or plan proposed, a competent authority cannot agree to the plan or project regardless of the compensatory measures adopted.

For the purposes of this assessment, and in accordance with Irish case law (e.g., Case C-418/04), Important Bird Areas (IBAs) have also been considered herein due to their importance to the conservation of bird populations at an international level. For ease of reporting, all relevant internationally designated sites, including SPAs, SACs, Ramsar sites, IBA and candidate sites for these designations are collectively referred to as 'European sites' within the remainder of this report.

Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of Environment, Heritage and Local Government (DoEHLG, 2010);

Communication from the Commission on the Precautionary Principle (European Commission, 2000);

Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (known as MN2000), Office for Official Publications of the European Communities, Luxembourg (European Commission, 2018);

Nature and biodiversity cases: Ruling of the European Court of Justice (European Commission, 2006);

Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (European Commission, 2013); and

The Planning and Development Act 2000 (as amended) "*177T.— (1) In this Part—*

(b) A Natura impact statement means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites.

(2) Without prejudice to the generality of subsection (1), a Natura impact report or a Natura impact statement, as the case may be, shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one European site in view of the conservation objectives of the site or sites.

(4) The applicant for consent for proposed development may, or if directed in accordance with subsection (5) by a competent authority, shall furnish a Natura impact statement to the competent authority in relation to the proposed development.

1.1.2 Statement of Authority

This report has been prepared by RSK Biocensus and Inis Environmental Consultants Ltd (INIS) ecologists who are experienced in undertaking field surveys and assessments of relevant habitats and species Personnel are listed below:

Andrew Whitfield MA BA CEnv CEcol (Associate Consultant): Andrew has over 30 years of experience in undertaking and co-ordinating ecological and environmental impact assessments across a wide variety of infrastructure projects. These include projects of varying type and scale, ranging from new nuclear power generation facilities and housing developments to major road and rail construction schemes. Andrew has undertaken Habitat Regulations Assessments (HRA) of various plans and projects

including transport improvement options for the Scottish Government, water supply options for Greater London, and the Heads of the Valleys road improvements in South Wales. Andrew has also given evidence at approximately 20 planning inquiries/hearings in the UK, Ireland and Africa.

Howard Williams BSc CEnv CBiol MRSB MIFM (Principal Ecologist and CEO INIS): Chartered Environmentalist and Chartered Biologist who has authored and managed Ecological Impact Assessments (EcIA), Construction Environmental Management Plans and Article 6 Appropriate Assessments for over 50 wind farm projects. Howard is an expert in the field of avian ecology and has extensive knowledge and experience of providing management recommendations for a range of terrestrial and aquatic protected species.

Dr Alex Copland BSc PhD (Principal Ecologist, INIS): experienced conservation scientist specialising in the conservation of wild birds and biodiversity in the wider countryside, particularly in agricultural, upland and peatland landscapes. Alex is proficient in data analysis and has studied bird populations in Ireland for over 18 years. He has managed several large-scale, multi-disciplinary conservation projects including research and conservation work for species of conservation concern. Alex has also worked with NGOs at EU-level and EU institutions (European Commission and European Parliament).

Peter O Connor BA MSc (Lead GIS Specialist, INIS): lead GIS Specialist experienced in overseeing the completion of mapping for multiple windfarm projects. Peter has experience in conducting Viewshed Analysis in support of selected Vantage Points for ornithological surveys, involving the complex use of Digital Terrain Models and/or Digital Elevations Models in addition to bespoke Viewshed Analysis plugins for QGIS. Peter also has experience with field data capture and integration into project mapping (e.g., for habitats, birds, bats and invasive species), including for figures supporting EIAR chapters and associated reports.

Cillian Burke BSc (Assistant Ecologist, INIS): ecologist with a BSc (Hons) in Environmental Science from the University of Galway. Cillian has experience in undertaking multi-disciplinary surveys including habitat classification, ornithology Vantage Point surveys, breeding wader surveys, Ecological Clerk of Works and bat surveys, and has authored ecological reports including AA Screening Reports, NIS, EcIA and Biodiversity Net Gain (BNG) Reports.

James O'Connell BSc (Hons) (Ecologist, INIS): James was awarded a BSc (Hons) in Wildlife Biology from IT Tralee. James regularly conducts ornithological surveys for various projects across Ireland. He has a broad range of ecological survey experience ~~i~~ncluding Vantage Point surveys, transect surveys, habitat classification and bat surveys. James led a wide a range of ornithological field surveys to inform this NIS report.

Chris McKiernan BSc (Hons) (Ecologist, INIS): Chris has over three years of experience of carrying out professional ornithology surveys in Ireland on a variety of projects. They received a BSc in Ecology and Environmental Biology from UCC in 2020 and is a Qualifying member of CIEEM. Chris was heavily involved in carrying out and coordinating ornithological field surveys to inform this NIS report, including Vantage Point surveys, transect surveys, breeding and wintering raptor surveys, and surveys for wintering waterbirds.

Emily Marsh BSc (Hons) PGDip MSc (Ecologist, INIS): Emily has an MSc in Sustainable Resource Management awarded jointly from the University of Galway and University of Limerick, a Postgraduate Diploma in Climate Change Science & Policy from University of Bristol, and a BSc (Hons) in Environmental & Earth System Science from University College Cork. Emily's expertise is primarily in ornithological surveys, terrestrial mammal surveys and habitat assessment. She is experienced in delivering ecological fieldwork and reporting for renewable energy projects in accordance with industry best practice standards. Emily completed ornithological survey work informing this NIS report including; Vantage Point surveys and surveys for breeding and wintering raptors.

Darren McCartney BSc (Ecologist and GIS Specialist, INIS): Darren has worked in both the field ecology and GIS teams at INIS and is a Qualifying member of CIEEM. He has experience of undertaking ornithological field surveys in relevant habitats, and completed various surveys to inform this NIS report including Vantage Point surveys, transect surveys, surveys for breeding waders, surveys for breeding and wintering raptors, and surveys for wintering waterbirds. As a member of the INIS GIS team, Darren also contributed to figure production and habitat calculations for this NIS report.

Michael Whelan (Consultant Ornithologist): Micheal is a field ecologist based in Co. Offaly, and has been working for INIS since 2018. Michael has substantial experience of many relevant ornithological surveys types, and led varied surveys to inform this NIS report including Vantage Point surveys, transect surveys, surveys for breeding waders, surveys for breeding and wintering raptors, and surveys for wintering waterbirds.

Ross Macklin B.Sc. (Hons), MIFM, HDip GIS, PDip IPM is an ecologist with over 16 years' professional experience in Ireland. He specialises in freshwater fisheries ecology, biology and water quality. He has considerable experience in a wide range of ecological and environmental projects including EIAR, EcIA, AA/NIS, CEMP reporting, as well as biodiversity, water quality monitoring, invasive species and fisheries management. Ross was involved in all aquatic surveys undertaken for the Proposed Development used to inform this NIS report He also has expert identification skills in macrophytes, freshwater invertebrates, protected aquatic habitats and protected aquatic species including freshwater pearl mussel. His diverse project list includes work on renewable energy developments, flood relief schemes, road schemes, blueways/greenways, biodiversity projects, fisheries management projects and catchment wide water quality management. He is currently completing his Ph.D. on the ecology and impact of Common Carp (*Cyprinus carpio*) in Irish waters.

Bill Brazier B.Sc. (Hons) MIFM is an aquatic ecologist with over 10 years' professional experience in Ireland. He specialises in freshwater fisheries ecology, biology and water quality. He has considerable experience in a wide range of ecological and environmental projects including EIAR, EcIA and AA/NIS reporting, as well as biodiversity, invasive species and fisheries management. Bill was involved in all aquatic surveys undertaken for the Proposed Development used to inform this NIS report. His diverse project list includes work on renewal energy developments, flood relief schemes, road schemes, blueways/greenways and biodiversity projects. He is currently completing his Ph.D. on the genetics, reproductive biology and invasive potential impact of Common Carp (*Cyprinus carpio*) in Irish waters. Additionally, Bill runs the highly respected *Off the Scale*

magazine, Ireland's most-read recreational angling publication and is the national coordinator for the novel Anglers National Line Recycling Scheme (ANLRS).

Nick Henson MSc CEnv MCIEEM (Associate Director, RSK Biocensus): Nick has a wealth of experience from over 18 years as an ecological consultant. Nick has produced and reviewed numerous Appropriate Assessment Screening and NIS reports, and he has a technical specialism in ornithology which he has used to provide support to various projects including wind farms, for which he has extensive experience of providing technical advice and leadership in the UK and Ireland.

George Wilkinson BSc MSc MCIEEM (Senior Ornithologist, RSK Biocensus): George has over five years of consultancy experience and over 15 years of birdwatching experience. His work has primarily focused on ornithological surveys, impact assessment and habitat management in the UK, during which he has frequently led ornithological assessments and surveys for a variety of species and development types including wind farms. This has included work on wind farms and other development types in Ireland. George has also authored and reviewed multiple HRA and NIS reports.

1.2 Consultation

Consultees and their responses are listed in full in EIAR Chapter 3. Regarding potential impacts on features of potential relevance to European Sites, the following bodies were consulted in relation to the Proposed Development:

- An Bord Pleanála pre-application consultation;
- National Parks and Wildlife Service (NPWS): sensitive data request issued 24/02/2023, response received 06/03/2023 (areas searched: R56 and R57);
- NPWS Development Applications Unit (DAU): request for recommendations and observations issued 21/02/2023, response received 30/03/2023. The DAU made no comment on this referral (areas searched: Proposed Development (see **Appendix B-I: Oatfield Windfarm Project Location**);
- Inland Fisheries Ireland: contacted 24/02/2023, response received 13/04/2023 (areas searched: see Proposed Development (see **Appendix B-I: Oatfield Windfarm Project Location**); and

Whilst Bat Conservation Ireland was contacted, no comment was made on the Proposed Development (05/12/2023).

1.3 Proposed Development Description

The site of the Proposed Development is located in the Oatfield and Gortacullin areas. At the nearest point, the Proposed Development site is approximately 1.3km to the South of Broadford, 4.7km to the East of Sixmilebridge, 7.6km North of Ardnacrusha, 9.2km North of Limerick, and 19.7km South of Ennis.

The Proposed Development site boundary (which is the planning boundary) includes:

- Two distinct areas containing the wind farm infrastructure, including turbines and on-site substation. Each distinct area is referred to as the Western DA and the

Eastern DA (comprising principally of conifer plantation, transitional woodland scrub, mixed forest, pastures, agricultural lands, and peat lands.

- An IPP connection route from the Eastern DA to the 110kV substation located in the Western DA. The IPP cables will be installed within the body of the local public road network and public access trackway on approach to the Western DA. The overall length of this interconnecting IPP cable route is ca. 10.6km.
- Electrical energy generated from the wind farm will be exported to the national grid via double circuit underground grid connection cables to the proposed 110kV loop-in masts at Ballycar North, County Clare, where it will connect to the existing overhead 110kV line. Two options for the interconnection with the OHL are proposed.
    - The first is a loop-in to the existing Ardnacrusha – Ennis 110kV OHL at Ballycar North (ca. 3.83km cable length) and the second is a loop-in to the existing Ardnacrusha – Drumline 110kV OHL, also at Ballycar North (ca. 4.16km cable length).
    - Once the 110kV double circuit export cable leaves the Proposed Development site, the grid connection infrastructure will be installed within the body of the public road network along the route until it reaches third party lands where the loop-in towers will be located, beneath the existing OHL in the townland of Ballycar North.
- An area of land take required for accommodation works along the proposed turbine delivery route from Foynes Port to the Proposed Development site (see **EIAR Chapter 5: Project Description** for further details).

1.4 Methodology

1.4.1 Stages of the Appropriate Assessment Process

Guidance on the Appropriate Assessment (AA) process was produced by the European Commission (EC) in 2002, which was subsequently developed into guidance specifically for Ireland by the Department of Environment, Heritage and Local Government (DEHLG) (2010). These guidance documents identify a staged approach to conducting an AA, as shown in **Figure 1- 1** below. Each step or stage in the assessment process precedes and provides a basis for other steps. The four stages in an AA are further described below.

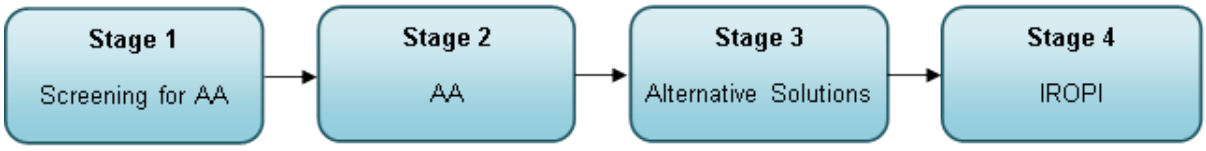

Figure 1- 1: The Appropriate Assessment Process (from *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, DEHLG, 2010*)

1.4.1.1 Stage 1 – Screening for AA

This stage examines the likely effects of a project either alone or in combination with other projects upon any European Site and considers whether it can be objectively concluded

in the light of the *best scientific knowledge* in the field, that these effects will be significant in nature. Where significant effects cannot be screened out, it is necessary to proceed to Stage 2, also referred to as a Natura Impact Statement (NIS).

The threshold for an LSE is considered as being above a de minimis level[1]. The opinion of the Advocate General in CJEU case C-258/11 outlines:

> "*The requirement that the effect in question be 'significant' exists in order to lay down a de minimis threshold. Plans or projects that have no appreciable effect on a European site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill*."

As such, 'relevant' European Sites in this report are those within the potential ZoI of activities associated with the Proposed Development (see Section 1.4.3), where impact pathways to European sites were identified through the source-pathway-receptor model.

Significant effects can be considered for European Sites with mobile species that may be present in habitats connected to a project or plan. For example, in the case of a European site with Otter as a Qualifying Interest (QI) upstream of a river bridge repair project, even if the project is located downstream of the designated site, Otters may be directly or indirectly affected by the project elements due to their typical movement patterns. As such, it would be necessary to proceed to Stage 2 for those effects to be fully assessed and where necessary, mitigated to avoid significant effects.

1.4.1.2 Stage 2 – Appropriate Assessment

If LSE of any project cannot be screened out in Stage 1, the process moves to Stage 2. *Stage Two AA is a focused and detailed examination, analysis and evaluation carried out by the competent authority of the implications of the plan or project, alone and in-combination with other plans and projects, on the integrity of a European site in view of that site's conservation objectives. Case law has established that such an Appropriate Assessment, to be lawfully conducted, in summary:*

(i) must identify, in the light of the best scientific knowledge in the field, all aspects of the proposed development which can, by itself or in-combination with other plans or projects, affect the conservation objectives of the European site;

(ii) must contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps; and

(iii) may only include a determination that the proposed development will not adversely affect the integrity of any relevant European site where the competent authority decides (on the basis of complete, precise and definitive findings and conclusions) that no reasonable scientific doubt remains as to the absence of the identified potential effects. If adverse impacts can be satisfactorily avoided or successfully mitigated at this stage,

[1] Sweetman v. An Bord Pleanála (Court of Justice of the EU, case C-285/11). A de minimis effect is a level of risk that is too small to be concerned with when considering ecological requirements of an Annex I habitat or a population of Annex II species present on a European site necessary to ensure their favourable conservation condition. If low level effects on habitats or individuals of species are judged to be in this order of magnitude and that judgment has been made in the absence of reasonable scientific doubt, then those effects are not considered to be likely significant effects.

so that no reasonable doubt remains as to the absence of the identified potential effects, then the process is complete. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to stage three and, if necessary, stage four.

1.4.2 Determining the Zone of Influence

Following consideration of the Proposed Development and its potential source-pathway-receptor model (i.e., based on its geographical location and potential scope for impacts), European sites designated within the Natura 2000 network occurring within 15 km of the Proposed Development were subject to detailed consideration herein. As such, a preliminary Zone of Influence (ZoI) of 15 km was adopted within this assessment.

The proximity of the Proposed Development to European sites is important when identifying potential effects. A conservative 15 km ZoI was adopted to ensure comprehensive assessment of potential impact pathways. When identifying potential impact pathways, the complete list of all Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of European sites in Ireland (i.e., potential receptors) was considered, in accordance with Irish departmental guidance on AA:

> "*For projects, the distance could be much less than 15 km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects*" (DoEHLG, 2010, p. 32).

Following the guidance set out by the National Roads Authority (NRA) (2009) and the Office of the Planning Regulator (2021), the Proposed Development has been evaluated based on an identified ZoI with regards to the potential source-pathway-receptor model for the development. The likely ZoI for mobile species (e.g., birds, mammals, fish) and static species and habitats (e.g., saltmarshes, woodlands, flora) is considered differently. Mobile species have a 'range' outside of the designated sites for which they are QIs and SCIs. The range of mobile QI/SCI species varies considerably, from several metres (e.g., in the case of whorl snails *Vertigo* spp.), to hundreds of kilometres (in the case of migratory wetland birds). Whilst static species and habitats are generally considered to have ZoIs in close proximity to a development, they can be significantly affected at considerable distances from an effect source; for example, where an aquatic QI habitat or species is located many kilometres downstream from a pollution source.

Hydrological linkages between developments and statutory designated sites (and their QIs/SCIs) can occur over significant distances; however, any effect will be site-specific depending on the receiving aquatic environment and nature of the potential impact. A reasonable worst-case ZoI for water pollution from a development is considered to be the hydrological pathway from the development until it reaches the first lenthic water body (i.e., lake) or transitional water body (e.g., estuary), as the depositional nature of these waterbodies would limit the transport capacity of any potential influences from the development to downstream designated sites.

Regarding consideration of in-combination effects, the ZoI is considered to potentially be greater than 15 km due to inter-project effects that multiple wind farms can have at a

greater spatial scale. As such, wind farm projects within 27 km of the Proposed Development are considered for potential cumulative effects on European sites.

1.4.3 Determining the Ecological Baseline

This NIS report has been informed by the detailed ecological baseline for the Proposed Development established during desk-based reviews and field surveys undertaken between 2021 and 2023 inclusive. This is presented in full in EIAR Chapters 7 and 8, which should be referred to for detailed methods and results regarding sensitive receptors (i.e., habitats and species). Methods for establishing the ecological baseline are summarised below.

1.4.3.1 Desk Study

A Desk Study was completed on 17/10/2023 to assess the potential for all QIs and SCIs of relevant European Sites to occur within and near the Proposed Development. This was undertaken in reference to their ecological requirements as identified by Balmer et al. (2013) (for SCIs) and the National parks and Wildlife Service (NPWS) (for QIs). As mobile qualifying features (e.g., birds, bats, aquatic features) can travel many kilometres from their core areas, the Desk Study assessed the potential presence of such species beyond the European Sites for which they are QIs/SCIs. The Desk Study was informed by the following:

- Tabulated lists of SCIs and QIs for all relevant European Sites, obtained from NPWS;
- Details of QIs/SCIs of relevant European Sites within the National Biodiversity Action Plan 2017-2021 (DoCHG, 2017);
- Information on the ranges of mobile QI populations, obtained from Volume 1 of NPWS's Status of EU Protected Habitats and Species in Ireland (NPWS, 2019a), including associated digital shapefiles;
- Information on the ranges of mobile SCI bird species, from the Bird Atlas 2007–11 (Balmer et al., 2013) and (for raptors) Hardey et al. (2013);
- Mapping of European site boundaries and Conservation Objectives for relevant sites, available online from the NPWS (mapping completed on 01/12/2023, sensitive data request issued 24/02/2023, response received 06/03/2023 **(Section 1.2)**, areas searched: R56 and R57);
- Distribution records for QI and SCI species of European Sites, held online by the National Biodiversity Data Centre (NBDC) (accessed on 02/10/2023, area searched include R56 and R57 10 km grid squares within which the Proposed Development is located (see **Figure 1-1**);
- National Biodiversity Network (NBN) Atlas (accessed on 02/10/2023, areas searched include the Proposed Development (see **Figure 1-1**); and
- Northern Ireland Environment Agency (NIEA) Catchment Data Map Viewer.
- Data including surface and ground water quality status, and river catchment boundaries, available from the online database of the Environmental Protection

Agency (EPA) (accessed on 15/10/2023, areas searched include groundwater bodies and river catchment boundaries within which the Proposed Development is located);

- Information on groundwater aquifers, recharge, and vulnerability available from the online database of Geological Survey Ireland (GSI) (accessed on 15/10/2023, areas searched include groundwater GSI vulnerability and GSI aquifer boundaries within which the Proposed Development is located;
- National and regional surveys of semi-natural habitats, including grasslands (O'Neill et al., 2013), saltmarsh (McCorry & Ryle, 2009; Devaney & Perrin, 2015), and woodland (Perrin et al., 2008); and
- Boundaries for catchments with confirmed or potential Freshwater Pearl Mussel (FWPM) (*Margaritifera margaritifera*) populations in GIS format, available online from the NPWS.

1.4.3.2 Field Surveys

Multidisciplinary ecological field surveys including birds, bats, reptiles, amphibians, invertebrates and aquatic features were undertaken by INIS ecologists (see Section 1.1.2) within the Proposed Development site and appropriate buffers between October 2021 and October 2023 inclusive. Ecological field surveys of the TDR were undertaken in November 2023. These surveys were conducted to inform the ecological baseline of the Proposed Development, and to provide information on all habitats and species relevant to nearby European Sites. The methods for these field surveys are summarised below. Full details of these survey methods are provided in EIAR Chapters 7 and 8.

Habitats

The study area was selected based on professional judgement and as per best practice (CIEEM, 2019b) and all habitats within the likely zone of influence of this study area were surveyed and mapped according to best practice methods (Fossitt, 2000; Smith et al., 2011). The surveys were carried out in good weather with no constraints. Habitat surveys were undertaken for the study area for the Proposed Development site (i.e. boundary of the Proposed Development site plus a 50 m buffer) on August 11th and 28th 2023. Only areas of the TDR with proposed works were subject to habitat surveys.

Avifauna

Detailed ornithological field surveys of the Proposed Development and appropriate buffers were undertaken between 2021 and 2023 inclusive to identify the bird populations present, and to gather supporting data to enable detailed impact assessment (e.g., through collision risk modelling) (see EIAR Chapter 8, Section 8.3.2 for detailed ornithological survey methods). Surveys undertaken to inform the Proposed Development were as follows:

- Countryside Bird Survey (CBS) transect surveys during the breeding seasons (i.e., April to September inclusive) 2022 and 2023, and during the winter season (i.e., October to March inclusive) 2022/23 (CBS, 2012).

- Vantage Point (VP) surveys during the breeding seasons 2022 and 2023, and during the winter seasons 2021/22 and 2022/23, plus a minimum 500 m buffer around all proposed turbines was used in accordance to best practice (SNH, 2017);
- Breeding Woodcock (*Scolopax rusticola*) surveys plus a 500 m buffer was used during the breeding seasons 2022 and 2023. These surveys were informed by the best practice guidelines provided by Hoodless et al. (2009), Heward et al. (2015) and Brewin et al., (2022).;
- Breeding wader surveys during the breeding seasons 2022 and 2023. All suitable peatland and wetland habitat was surveyed within the Proposed Development and 500 m buffer. These were undertaken in accordance with relevant best practice guidance (Brown & Shepherd, 1993);
- Breeding raptor surveys (notably for Hen Harrier (*Circus cyaneus*)) during the breeding seasons 2022 and 2023. Based on best practice disturbance buffers and core foraging zones for these species (SNH, 2016; Goodship & Furness, 2022). These surveys covered all suitable raptor breeding habitat within a 2 km buffer around the Proposed Development turbines (Gilbert et al., 1998; Hardey et al., 2013);
- Breeding Barn Owl (*Tyto alba*) surveys during the breeding seasons 2022 and 2023, with a 1 km buffer, with any buildings and other artificial habitats (e.g., quarries) identified as having high suitability for nesting and roosting Barn Owls subject to further surveys (SNH, 2017);
- Red Grouse (*Lagopus lagopus*) surveys during the winter season (January and February 2023). A pair of observers, 250 m apart, walked four transects across a 1 km^2 area at a steady pace in suitable weather conditions (e.g., clear, dry weather) -in accordance with best practice methodology (Cummins et al., 2010b);
- Kingfisher (*Alcedo atthis*), Dipper (*Cinclus cinclus*) and Grey Wagtail (*Motacilla cinerea*) surveys during the breeding season 2023. A standard transect survey methodology was used (Cummins et al., 2010a; Crowe et al. 2008).;
- Wintering Wetland Bird Surveys (WeBS) during the winter season 2022/23, within a study area of 5 km (SNH, 2016) from the Proposed Development turbines; and
- Wintering Hen Harrier roost surveys during the winter season 2022/23. Best practice guidance recommends that data for Hen Harrier should be collected for roosting sites within 2km of wind farm sites (SNH, 2017). In addition, Hen Harriers have a typical foraging range of up to 10 km (SNH, 2016).

All surveys for sensitive breeding and wintering birds (e.g., raptors, waders) were undertaken in accordance with current legislation and best practice guidance regarding the avoidance of disturbance during surveys, and were conducted by suitably experienced ornithologists (see Section 1.1.2).

The survey approach adopted was based on best practice guidance and professional judgement, in reference to known bird-habitat associations and in accordance with best practice survey methods for target species. The geographical scope of the field surveys was determined in reference to Scottish Natural Heritage (SNH) and CIEEM guidance (SNH, 2017; CIEEM, 2018).

Certain bird species were identified as 'target species' for consideration in relation to the Proposed Development, with survey methods designed to aid recording of these target species. Selection of target species took into consideration:

- Their known or likely presence within or in close proximity to the Proposed Development;
- Their likely sensitivity to the Proposed Development; particularly their potential collision risk and susceptibility to disturbance (Nairn & Partridge, 2013);
- Their level of legislative protection and conservation concern; and
- Their relevance to any nearby designated sites (e.g., as QIs/SCIs).

The following species were identified as target species for this assessment. As such, all observations of these species during the field surveys described below were recorded and mapped, with emphasis on accurate recording of flight lines and heights, wintering aggregations and breeding territories/nest locations. Where these species were recorded during surveys targeting other species (e.g., observations of raptors during wintering wetland bird surveys) these are referred to as 'incidental sightings'. Target species comprised:

- All species of waterfowl;
- All species of raptor;
- All species of owl;
- All species of grouse;
- All species of wader; and
- All species of gull.

Otter

Otter *(Lutra lutra)* surveys followed the NRA *Guidelines for Treatment of Otters During Construction of National Road Schemes* (NRA, 2006), which state that, although there are no seasonal constraints for Otter surveys, any dense vegetation (especially in summer) can reduce success in the identification of Otter holts or couches. Hence the confirmatory surveys were carried out in spring 2022 in order to optimize detection of otters.

Guidance on the extent of the study area for Otters was taken from the *British Highways Agency's Nature Conservation Advice in Relation to Otters HA8199* (Highways Agency, 1999) which dictates a linear search of 300m upstream and downstream of each watercourse crossing is undertaken.

The presence of otter was determined through the recording of otter signs within 150m radius of each survey site. Notes on the age and location of signs (ITM coordinates) were made, in addition to the quantity and visible constituents of spraint (i.e. remains of fish, crustaceans, molluscs etc.).

Bats

The landscape surrounding the Proposed Development is predominantly improved agricultural landscapes and forestry, with hedgerows / treelines along roadsides, in addition to low-density houses and farm buildings. The aims of the bat surveys carried

out on site were to assess the bat roost suitability of bridges, buildings and mature trees that could be directly affected and identify potential indirect effects on bats, e.g. from disruption of commuting routes, or lighting. The TDR work areas were not assessed as designs were not yet finalised. Field surveys undertaken to inform this report were carried out by suitably experienced ecologists (see Section 1.1.2) and are as follows (see EIAR Chapter 7, Section 7.11 for detailed survey methods):

- Preliminary roost assessments for buildings within the Proposed Development site in addition to suitable trees and watercourse crossing structures such as bridges and culverts;
- Bat Activity Surveys at the site of the Proposed Development were undertaken using automated Anabat Express bat detectors;
- Spring, Summer and Autumn Transect surveys were conducted within the Proposed Development site in 2023;
- A preliminary ecological appraisal was carried out for all buildings within 250m of the Proposed Development Turbines in 2023 (Collins, 2016);
- Ground-level roost assessments were carried out for all trees with moderate or low bat suitability within 250m of the Proposed Development Turbines (as explained for the buildings surveys), using binoculars (Steiner SkyHawk 3.0 10x42);
- Roost surveys (carried out within the Proposed Development in April 2023) ; and
- Emergence/Re-entry surveys (carried out within the Proposed Development between July-September 2023).

Aquatics

Aquatic surveys of the watercourses within the vicinity of the Proposed Development were conducted on the 21st, 22nd, 23rd, and 29th August and 1st September 2023. All aquatic surveys were carried out by Ross Macklin and Bill Brazier (see Section 1.1.2). Survey effort focused on both instream and riparian habitats at each aquatic sampling location, the furthest sampling location is B17, located 4.7 km southeast of the gird connection. Surveys at each of these sites were as follows (see EIAR Chapter 7 for detailed aquatic surveys):

- Fisheries assessment (electro-fishing and fisheries habitat appraisal);
- White-clawed crayfish (*Austropotamobius pallipes*) survey;
- Macrophyte and aquatic bryophyte survey;
- Biological water quality sampling (Q-sampling);
- Macro-invertebrate sweep sampling;
- Fish Stock Assessment (Electro-Fishing);
- Freshwater Pearl Mussel survey (eDNA only); and
- General eDNA analysis.

1.5 Screening of Likely Significant Effects

1.5.1 Screening Process

The Screening process examines the likely effects of the Proposed Development as described, either alone or in combination with other projects or plans, on European sites and considers whether it can be objectively concluded that these effects will not be significant. The likely effects of the Proposed Development on European sites have been appraised using a source-pathway-receptor model. The findings of the Screening process are presented separately in the 'Screening for Appropriate Assessment report' and are summarised below.

1.5.2 Screening Summary

Screening of SACs in relation to the Proposed Development identified the presence of potential impact pathways between the Proposed Development and designated features of the following three SACs, which are therefore considered further within this NIS:

- Lower River Shannon SAC [002165];
- Danes Hole, Poulnalecka SAC [000030]; and
- Ratty River Cave SAC [002316].

LSEs on the following 16 SACs within 15 km of the Proposed Development were screened out and therefore do not require further assessment in relation to the Proposed Development:

- Glenomra Wood SAC [001013];
- Slieve Bernagh Bog SAC [002312];
- Kilkishen House SAC [002319];
- Clare Glen SAC [000930];
- Silvermines Mountains West SAC [002258];
- Glenstal Wood SAC [001432];
- Keeper Hill SAC [001197];
- Tory Hill SAC [000439];
- Poulnagordon Cave (Quin) SAC [000064];
- Askeaton Fen Complex SAC [002279];
- Lough Gash Turlough SAC [000051];
- Silvermine Mountains SAC [000939];
- Newgrove House SAC [002157];
- Curraghchase Woods SAC [000174];
- Bolingbrook Hill SAC [002124]; and
- Old Domestic Building (Keevagh) SAC [002010].

Screening of SPAs in relation to the Proposed Development identified the presence of potential impact pathways between the Proposed Development and the following SPAs, which are therefore considered further within this NIS:

- River Shannon and River Fergus Estuaries SPA [004077];
- Lough Derg (Shannon) SPA [004165]; and
- Slievefelim to Silvermines Mountains SPA [004058].

The bird populations of River Shannon and River Fergus Estuaries SPA are also included within the designation of Shannon and Fergus Estuaries IBA. Considering the interest features and geographical coverage of the IBA are also included within the SPA designation, further consideration of effects on River Shannon and River Fergus Estuaries SPA in relation to the Proposed Development is sufficient to also address potential effects on Shannon and Fergus Estuaries IBA.

LSEs on the following three SPAs within 15 km of the Proposed Development were screened out and therefore do not require further assessment in relation to the Proposed Development:

- Slieve Aughty Mountains SPA [004168].

1.5.3 Screening Conclusion

With regard to Article 42 (7) of the *European Communities (Birds and Natural Habitats) Regulations* 2011, it can be concluded on the basis of objective scientific information following Screening, that the Proposed Development, individually or in combination with other plans or projects, could, in the absence of mitigation, have LSE on the European sites listed below. Consequently, it is concluded that Stage 2 Appropriate Assessment is required with respect to the following European sites only:

- Lower River Shannon SAC [002165];
- Danes Hole, Poulnalecka SAC [000030];
- Ratty River Cave SAC [002316]; and
- River Shannon and River Fergus Estuaries SPA [004077].
- Lough Derg (Shannon) SPA; and
- Slievefelim to Silvermines Mountains SPA.

1.6 Relevant European Sites

Relevant European Sites of nature conservation importance, including SPAs and SACs and Ramsar sites, are summarised in **Table 1- 1** below.

A precautionary approach was adopted when identifying relevant European Sites, assessing all European Sites within a 15 km radius of the Proposed Development as well as more distant sites where potential hydrological linkage exists (OPR, 2021).

As presented in **Table 1- 1** below, 23 European Sites were identified for assessment in relation to the Proposed Development; specifically four SPAs and 19 SACs. The distance to the nearest element of the Proposed Development is stated below. Where this is

significantly different to the distance from the Proposed Development turbines, this is stated. The locations of these European Sites are presented in **Appendix A: European Sites within 15 km of the Proposed Development**, with the distances from the Proposed Development provided in **Table 1- 1** below.

As indicated in **Table 1- 2** below, three IBAs were identified within the ZoI of the Proposed Development. These overlap with other European Sites. No other relevant IBAs were identified.

The Proposed Development Turbines and Grid Connection do not overlap with any IBA boundaries. The nearest IBA, Shannon and Fergus Estuaries IBA, is located approximately 6.4 km from the Proposed Development turbines.

Those that are of relevance to this NIS (i.e. those where LSE could not be screened-out at Stage 1 of the assessment process) are outlined in **Table 1- 1** below.

Table 1- 1: Proximity of relevant European Sites to the Proposed Development, including Grid Connection and TDR.

No.	European site	Distance from Proposed Development	Distance from Proposed Development turbines	Hydrological connectivity (yes/no)
1	Lower River Shannon SAC (002165)	0 m (from closest point of TDR)	7.2 km	TDR spans the SAC via the Killaloe Bypass
2	River Shannon and River Fergus Estuaries SPA (004168)	380 m (from closest point of TDR)	9.1 km	Yes, SPA is located 17.3 km downstream from gird connection
3	Glenomra Wood SAC (001013)	1.3 km	4.5 km	No
4	Danes Hole, Poulnalecka SAC (000030)	2.0 km	2.1 km	No
5	Lough Derg (Shannon) SPA (004165)	2.1 km	12.6 km	No
6	Slieve Bernagh Bog SAC (002312)	3.5 km	4.1 km	No
7	Slievefelim to Silvermines Mountains SPA (004058)	3.8 km	>15 km	No
8	Ratty River Cave SAC (002316)	4.3 km	4.4 km	No
9	Kilkishen House SAC (002319)	5.1 km	5.1 km	No
10	Clare Glen SAC (000930)	5.7 km	>15 km	No
11	Silvermines Mountains West SAC (002258)	6.9 km	>15 km	No
12	Glenstal Wood SAC (001432)	7.8 km	>15 km	No

No.	European site	Distance from Proposed Development	Distance from Proposed Development turbines	Hydrological connectivity (yes/no)
13	Keeper Hill SAC (001197)	8.5 km	>15 km	No
14	Tory Hill SAC (000439)	10.8 km	>15 km	No
15	Poulnagordon Cave (Quin) SAC (000064)	11.3 km	11.4 km	No
16	Askeaton Fen Complex SAC (002279)	11.7 km	>15 km	No
17	Slieve Aughty Mountains SPA (004077)	11.8 km	11.9 km	No
18	Lough Gash Turlough SAC (000051)	12.1 km	13 km	No
19	Silvermine Mountains SAC (000939)	12.2 km	>15 km	No
20	Newgrove House SAC (002157)	13.3 km	13.4 km	No
21	Curraghchase Woods SAC (000174)	13.6 km	>15 km	No
22	Bolingbrook Hill SAC (002124)	13.7 km	>15 km	No
23	Old Domestic Building (Keevagh) SAC (002010)	14.1 km	14.2 km	No

The Proposed Development does not overlap with any European Sites, with the exception of Lower River Shannon SAC, for which the TDR spans over the SAC via the Killaloe Bypass. No TDR works will be required at this section of the TDR, and the SAC is approximately 3.4 km from the Proposed Development turbines. The nearest SPA, River Shannon and River Fergus Estuaries SPA, is located approximately 380 m from the TDR, and approximately 6.4 km from the Proposed Development turbines. As such, European Sites were carried forward for consideration as Key Ecological Features.

There are no Ramsar sites within 15 km of the Proposed Development, with the nearest Ramsar site (Ballyallia Lough, site number: 845) located approximately 18.9 km from the Proposed Development. Considering this distance, and the scope for impacts from the Proposed Development, no Ramsar sites were carried forward for further assessment.

Table 1- 2: Proximity of relevant Important Bird Areas to the Proposed Development, including Grid Connection and TDR.

No.	Name	Distance from the Proposed Development	Distance from Proposed Development turbines	Hydrological connectivity (yes/no)
1	Shannon and Fergus Estuaries	7.9 km	11.6 km	Yes (downstream

No.	Name	Distance from the Proposed Development	Distance from Proposed Development turbines	Hydrological connectivity (yes/no)
				of Proposed Development)
2	Slieve Aughty Mountains	11.9 km	12 km	No
3	Lough Derg (Shannon)	12.1 km	13.1 km	No

The Qualifying Interest (QI) and Special Conservation Interests (SCI) for each site identified within the ZoI of the Proposed Development is presented in **Table 1- 3** below.

Table 1- 3: Qualifying Interests of relevant European sites to the Proposed Development*

European Site Name and Code	Qualifying Interest /Special Conservation Interest and Code (*denotes a priority habitat)	Summary Description (from Site Synopsis (NPWS))
Danes Hole, Poulnalecka SAC [000030]	Caves not open to the public [8310] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	This site consists of a small fossil cave in the banks of the Ahaclare River situated within a wood approximately 4 km west of Broadford, Co. Clare. It is a winter hibernation site and also a mating site of the Lesser Horseshoe Bat. A nearby summer roost and the commuting routes between the two are also included within the SAC designation.
Ratty River Cave SAC [002316]	Caves not open to the public [8310] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	This site lies approximately 2.5 km north of Sixmilebridge in Co. Clare. It consists of a cave, and also an important winter roost and a breeding site of the Lesser Horseshoe Bat. The cave in Ratty River Cave SAC is a natural fossil limestone cave set into the east facing bank of Ratty River (also known as Owenogarney River). The cave entrance is overgrown with Bramble (*Rubus fruticosus agg.*). Inside the entrance there is a low crawl, but the cave opens into a main chamber before diverging into two tunnels. Lesser Horseshoe Bats have been using the cave beside the Ratty River as a hibernation site for some years. During the winter of 2001, 187 bats were recorded here making it a site of international importance. A stretch of river and the bankside vegetation are included in the site as these are used by commuting bats. A derelict cottage which is situated nearby is also included as it contains a

European Site Name and Code	Qualifying Interest /Special Conservation Interest and Code (*denotes a priority habitat)	Summary Description (from Site Synopsis (NPWS))
		maternity roost of Lesser Horseshoe Bats. A total of 65 bats were recorded here in July 1998. The foraging areas used by these bats have yet to be established. Neither roost is subject to disturbance and there are no other known threats to this site at present.
Lower River Shannon SAC [002165]	Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150]* Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]	This very large site stretches along the Shannon valley from Killaloe in Co. Clare to Loop Head/ Kerry Head, a distance of some 120 km. The site thus encompasses the Shannon, Feale, Mulkear and Fergus estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head. Rivers within the sub-catchment of the Feale include the Galey, Smearlagh, Oolagh, Allaughaun, Owveg, Clydagh, Caher, Breanagh and Glenacarney. Rivers within the sub-catchment of the Mulkear include the Killeenagarriff, Annagh, Newport, the Dead River, the Bilboa, Glashacloonaraveela, Gortnageragh and Cahernahallia.

European Site Name and Code	Qualifying Interest /Special Conservation Interest and Code (*denotes a priority habitat)	Summary Description (from Site Synopsis (NPWS))
	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*) [91E0]* *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Lutra lutra* (Otter) [1355]	
River Shannon and River Fergus Estuaries SPA [004077] **Shannon and Fergus Estuaries IBA**	Cormorant (*Phalacrocorax carbo*) [A017] Whooper Swan (*Cygnus cygnus*) [A038] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Scaup (*Aythya marila*) [A062] Ringed Plover (*Charadrius hiaticula*) [A137]	The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises the entire estuarine habitat from Limerick City westwards as far as Doonaha in Co. Clare and Dooneen Point in Co. Kerry. The site has vast expanses of intertidal flats which contain a diverse macroinvertebrate community, e.g. *Macoma-Scrobicularia-Nereis*, which provides a rich food resource for the wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for the wintering birds. Elsewhere in the site the shoreline comprises stony or shingle beaches. The site is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl (57,133 – five year mean for the period 1995/96 to 1999/2000), a concentration easily of international importance. The site has internationally important populations of Light-bellied Brent Goose (494), Dunlin (15,131),

European Site Name and Code	Qualifying Interest /Special Conservation Interest and Code (*denotes a priority habitat)	Summary Description (from Site Synopsis (NPWS))
	Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Greenshank (*Tringa nebularia*) [A164] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Wetland and Waterbirds [A999]	Black-tailed Godwit (2,035) and Redshank (2,645). A further 17 species have populations of national importance ,i.e. Cormorant (245), Whooper Swan (118), Shelduck (1,025), Wigeon (3,761), Teal (2,260), Pintail (62), Shoveler (107), Scaup (102), Ringed Plover (223), Golden Plover (5,664), Grey Plover (558), Lapwing (15,126), Knot (2,015), Bar-tailed Godwit (460), Curlew (2,396), Greenshank (61) and Black-headed Gull (2,681) – figures are five year mean peak counts for the period 1995/96 to 1999/2000. The site is among the most important in the country for several of these species, notably Dunlin (13 % of national total), Lapwing (6% of national total) and Redshank (9% of national total).
Slievefelim to Silvermines Mountains SPA (004058)	Hen Harrier *(Circus cyaneus)* [A082]	The site consists of a variety of upland habitats, though approximately half is afforested. The site is also a traditional breeding site for a pair of Peregrine. Merlin has been recorded within the site but further survey is required to determine its status. Red Grouse is found on some of the unplanted areas of bog and heath – this is a species that has declined in Ireland and is now Red-listed. The Slievefelim to Silvermines Mountains SPA is of ornithological importance because it provides excellent nesting and foraging habitat for breeding Hen Harrier and is one of the top sites in the country for the species. The presence of three species, Hen Harrier, Merlin and Peregrine, which are listed on Annex I of the E.U. Birds Directive is of note.

** Data Source last accessed online www.npws.ie on 13/11/2023*

1.6.1 Conservation Objectives

The standard conservation objective for all SACs and SPAs in Ireland is "*to maintain or restore the favourable conservation condition of the qualifying interests for which the SAC/SPA has been selected*". In addition, the Department of Culture, Heritage and the Gaeltacht has produced detailed conservation objectives for the relevant European sites. These can be viewed on the NPWS website (http://www.npws.ie/protected-sites).

In a generic sense, 'favourable conservation status' of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing;
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- The conservation status of its typical species is favourable.

Favourable conservation status of species is typically achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis. In addition, European Sites may have site-specific conservation objectives.

1.7 Ecological Baseline

Full details of the ecological baseline of the Proposed Development are provided in EIAR Chapters 7 and 8 and in Section 1.6 of the Appropriate Assessment Screening Report.

1.7.1 Habitats

The planning boundary for the Proposed Development primarily comprises two areas covering approximately 292 ha: the Western DA (covering approximately 153 ha), and the Eastern DA (covering approximately 139 ha). The habitats on-site in 2023, as per Fossitt (2000), predominantly comprise conifer plantation, transitional woodland scrub, mixed forest, pasture, agricultural lands and peatlands (see **Appendix B-II: Habitat Maps**). Habitats identified on-site and their Fossitt codes (Fossitt, 200) are outlined in **Table 1-4.**

Table 1- 4: Baseline habitats within the Proposed Development site

Fossitt Code	Area_(ha)
BL3 Buildings and artificial surfaces	16.697
BL3/ ED2 Buildings and artificial surfaces/ Spoil and bare ground	0.113
BL3/ ED3 Buildings and artificial surfaces/ Recolonising bare ground	0.095

BL3/ GA1 Buildings and artificial surfaces/ Improved agricultural grassland	0.917
BL3/ GA2 Buildings and artificial surfaces/ Amenity Grassland	11.62
BL3/GA2/WD5 Buildings and artificial surfaces/ Amenity Grassland/ Scattered trees and parkland	0.632
BL3/ GS4 Buildings and artificial surfaces/ Wet grassland	0.251
BL3 /WS1 Buildings and artificial surfaces/ Scrub	0.188
BL3 /WS2 Buildings and artificial surfaces/ Immature Woodland	0.891
ED2 Spoil and bare ground	0.38
ED2/GM1 Spoil and bare ground/ Marsh	0.703
ED3 Recolonising bare ground	0.364
GA1 Improved agricultural grassland	51.406
GA1/GS4 Improved agricultural grassland/ Wet Grassland	0.266
GA1/WS1 Improved agricultural grassland/ Scrub	2.637
GM1 Marsh	0.34
GS1/GS3 Dry calcareous and neutral grassland/ Dry-humid acid grassland	0.035
GS2 Dry meadows and grassy verges	0.786
GS3/HH1	0.590
GS2/HD1 Dry meadows and grassy verges/ Dense bracken	0.066
GS3 Dry-humid acid grassland	5.764
GS3/GS4 Dry-humid acid grassland/ Wet grassland	1.039
GS3/GS4/HH1 Dry-humid acid grassland/ Wet grassland/ Dry siliceous heath	0.033
GS3/HH1 Dry-humid acid grassland/ Dry siliceous heath	0.59
GS3/WS1 Dry-humid acid grassland/ Scrub	5.302
GS4 Wet grassland	30.02
GS4/HH2 Wet grassland/ Dry calcareous heath	0.199
GS4/HH3 Wet grassland/ Wet heath	0.154
GS4/HH3/PB2 Wet grassland/ Wet heath/ Lowland blanket bog	0.075
GS4/PB2 Wet grassland/ Lowland blanket bog	0.299
GS4/WS1 Wet grassland/ Scrub	3.064
HD1 Dense bracken	0.122
HD1/WS1 Dense bracken/ Scrub	0.593
HH3 Wet heath	14.058
HH3/WD4 Wet heath/Conifer plantation	3.044
HH3/WS1 Wet heath/Scrub	1.11
WD1 (Mixed) broadleaved woodland	2.156
WD2 Mixed broadleaved woodland/ conifer plantation	1.984
WN6 Wet willow-alder-ash woodland	1.374
WD3 (Mixed) conifer woodland	1.168
WD4 Conifer plantation	62.186
WD4/WS1 Conifer plantation/Scrub	2.74

WS1 Scrub	13.234
WS1/WD2 Scrub/ Mixed broadleaved woodland/ conifer plantation	0.023
WS1/WS2 Scrub/ Immature woodland	1.436
WS2 Immature woodland	0.584
WS3 Ornamental/non-native shrub	0.431
WS5 Recently-felled woodland	10.46
Fossitt Code	**Length (m)**
BL1 Stone walls and other stonework	1029.05
BL2 Earth banks	4935.04
BL2/WL1 Earth banks/ Hedgerows	791.96
BL2/WL1/WL2 Earth banks/ Hedgerows/ Treelines	251.86
BL2/WL2 Earth banks/ Treelines	329.27
FW1 Eroding/upland rivers	97.63
FW4 Drainage ditches	3553.18
WL1 Hedgerows	7836.29
WL1/WL2 Hedgerows/ Treelines	7094.51
WL2 Treelines	5461.43

1.7.1.1 Buildings and artificial surfaces (BL3)

This broad category incorporates areas of built land that do not fit elsewhere in the classification. It includes all buildings (domestic, agricultural, industrial and community) other than derelict stone buildings and ruins (see stone walls and other stonework - BL1). It also includes areas of land that are covered with artificial surfaces of tarmac, cement, paving stones, bricks, blocks or astroturf (e.g., roads, car parks, pavements, runways, yards, and some tracks, paths, driveways and sports grounds). This habitat consists of existing roads within the Proposed Development, IPP connection route and grid connection route, the area is 16.697 ha.

This habitat forms mosaics with habitats including amenity grassland (11.62ha), improved agricultural grassland (0.93 ha), scattered trees and parkland (0.63ha), wet grassland (0.25 ha) and immature woodland (0.87 ha). These mosaic habitats collectively occur along the grid connection route, IPP connection route and TDR.

1.7.1.2 Spoil and bare ground (ED2)

This category includes heaps of spoil and rubble, and other areas of bare ground that are either very transient in nature or persist for longer periods of time because of ongoing disturbance or maintenance. Spoil is generally associated with the excavation or construction of roads and buildings, or with drainage and dredging activities. Once the disturbance ends, spoil is readily colonised by plants. This habitat occurs within the Proposed Development site, adjacent to T1, 86 m north of T7 and adjacent to the grid connection route, this land cover has an area of 0.38 ha.

1.7.1.3 *Recolonising bare ground (ED3)*

This category is used for any areas where bare or disturbed ground, derelict sites or artificial surfaces of tarmac, concrete or hard core have been invaded by herbaceous plants. Vegetation cover should be greater than 50% for inclusion in this category. Most of the typical colonisers are ruderals or opportunistic plants. Common species identified include perennial ryegrass *(Lolium perenne)* and nettle *(Urtica dioica)*. This habitat occurs within proposed site roads, adjacent to T7 and adjacent to the IPP connection route and TDR, the area of this habitat is 0.36ha.

1.7.1.4 *Improved agricultural grassland (GA1)*

This category is used for intensively managed or highly modified agricultural grassland that has been reseeded and/or regularly fertilised and is now heavily grazed and/or used for silage making. It includes regularly reseeded monoculture grasslands and rye-grass leys that are planted as part of an arable rotation. Species identified include perennial ryegrass, creeping buttercup *(Ranunculus repens),* broad leaved dock *(Rumex obtusifolius),* white clover *(Trifolium repens),* thistle *(Cirsium spp.)* and nettle. This habitat occurs predominantly along the IPP connection route/TDR and 93m south of T7. This habitat has a total area of 51.4 ha.

This habitat forms mosaics with other habitats including wet grassland (0.26 ha) and scrub (2.66 ha).

1.7.1.5 *Dry meadows and grassy verges (GS2)*

Dry meadows that are rarely fertilised or grazed and are mown only once or twice a year for hay are now rare in Ireland. Most have been improved for agriculture and this type of grassland is now best represented on grassy roadside verges, on the margins of tilled fields, on railway embankments, in churchyards and cemeteries, and in some neglected fields or gardens. These areas are occasionally mown (or treated with herbicides in the case of some railway embankments), and there is little or no grazing or fertiliser application. This pattern of management produces grasslands with a high proportion of tall, coarse and tussocky grasses such as False Oat-grass *(Arrhenatherum elatius)* and Cock's-foot *(Dactylis glomerata).* This habitat occurs along the margins of existing roads adjacent to the IPP connection route/TDR 0.78ha in total.

1.7.1.6 *Conifer Plantation (WD4)*

Conifer plantation within the Proposed Development includes areas that support dense stands of planted conifers, with a broadleaved component of less than 25%. The overriding management interest for these areas is commercial timber production. This habitat is characterised by even-aged stands of trees planted in regular rows, often forming angular blocks. Species diversity is low and single species stands are common. Blocks of conifer plantation are present throughout the receiving environment including within the Proposed Development. The most dominant species of conifer identified was Sitka spruce *(Picea sitchensis*). Occurrences of this habitat include the footprints of all turbines and the grid connection route. This habitat covers a combined area of 62.18 ha.

1.7.1.7 *Scrub (WS1)*

This broad category includes areas that are dominated by at least 50% cover of shrubs, stunted trees or brambles. The canopy height is generally less than 5m, or 4m in the case of wetland areas. Scrub frequently develops as a precursor to woodland and is often found in inaccessible locations, or on abandoned or marginal farmland. In the absence of grazing and mowing, scrub can expand to replace grassland or heath vegetation. Trees are included as components of scrub if their growth is stunted as a result of exposure, poor soils or waterlogging. Species identified within the habitat include bramble *(Rubus fruticosus agg.),* nettle*,* gorse *(Ulex europaeus),* willow *(Salix spp.)*, common hazel *(Corylus avellana)* and thistle *(Cirsium spp.).* Scrub habitat is prominent within the Western DA, other areas of where this habitat occurs include adjacent to the IPP connection route, TDR and grid connection route, this habitat has a total area of 13.23 ha.

This habitat forms mosaic habitats which include wet heath, which is present within the Western DA: specifically, between T5 and T6, 163 m east of the proposed on-site substation, and in the vicinity of T10. This habitat covers a combined area of 1.11 ha.

Scrub forms a mosaic habitat with wet grassland, which occurs adjacent to the proposed site roads located within the Proposed Development, 250 m north of T4, adjacent to the eastern boundary of the Western DA and adjacent to the IPP connection route, TDR and the grid connection route. It also forms a mosaic habitat with dense bracken (HD1) adjacent to the grid connection route (0.25 ha). This habitat covers a combined area of 3.06 ha.

1.7.1.8 *Immature woodland (WS2)*

Immature woodland includes areas that are dominated by young or sapling trees that have not yet reached the threshold heights (5m, or 4m in the case of wetland areas) for inclusion in the woodland categories previously described. Recently planted areas and young plantations are also included here, with the exception of conifer plantations - WD4. This habitat occurs adjacent to the grid connection route, the area of this habitat is 0.58 ha.

1.7.1.9 *Ornamental/non-native shrub (WS3)*

This category is used for areas that are dominated by ornamental and non-native shrubs. Most of these originate from planting and can be found in formal beds and borders in gardens, parks and other landscaped areas. It also includes areas where non-native shrubs have escaped and become naturalised in urban and rural situations. This habitat occurs adjacent to the footprint of the IPP connection route and TDR. The area of the habitat is 0.43 ha.

1.7.1.10 *Stone walls and other stonework (BL1)*

This category incorporates stone walls and most other built stone structures in rural and urban situations, apart from intact buildings (see buildings and artificial surfaces - BL3) and coastal constructions made of stone. This habitat is located 265 m south of the proposed on-site substation. The total length of this habitat is 1029 m.

1.7.1.11 *Earth banks (BL2)*

Earth banks are a common type of field boundary in many parts of Ireland. Constructed from local materials such as peat, earth, gravel or stone, these narrow linear ridges are often bordered by drainage ditches. Most are completely vegetated when intact and feature elements of a range of habitats, including grassland, heath, hedgerow and scrub. This habitat occurs along the IPP connection route/TDR,grid connection route and adjacent to existing roads at the entrance of the Proposed Development. The total length of the habitat is 4935 m.

Earth banks form mosaics with other habitats including hedgerows and treelines (1373 m), occurring along the IPP connection route/TDR and grid connection route. These habitats have significant overlap with aforementioned non-mosaic Earth banks habitat.

1.7.1.12 *Eroding/upland rivers (FW1)*

This category includes natural watercourses, or sections of these, that are actively eroding, unstable and where there is little or no deposition of fine sediment. Eroding conditions are typically associated with the upland parts of river systems where gradients are often steep, and water flow is fast and turbulent. Rivers in spate are included. For some rivers on the seaward side of coastal mountains, particularly in the west of Ireland, eroding conditions persist to sea level because of comparatively steep gradients over short distances, and high rainfall. Small sections of other lowland rivers may also be eroding where there are waterfalls, rapids or weirs. The beds of eroding/upland rivers are characterised by exposed bedrock and loose rock. Pebbles, gravel and coarse sand may accumulate in places, but finer sediments are rarely deposited. An unnamed river is located on the Western DA 72.5 m east of T7. The total length of the habitat is 98 m.

The Oatfield River (EPA Code: 25O07) (1040.85 m) and Snaty River (EP Code: 25S34) (918.21 m) are both located within the Proposed Development site (Western DA), running through it.

1.7.1.13 *Drainage ditches (FW4)*

This category includes linear water bodies or wet channels that are entirely artificial in origin, and some sections of natural watercourses that have been excavated or modified to enhance drainage and control the flow of water. This habitat occurs within the Western DA, adjacent to T4 and T7, the on-site substation and intersecting with the grid connection route. The total length of the habitat is 3553 m.

1.7.1.14 *Hedgerows (WL1)*

Linear strips of shrubs and occasionally low scrub, often with occasional trees, typically forming field boundaries. Common species identified within this habitat include willow, ash *(Fraxinus excelsior)*, hawthorn *(Crataegus monogyna)*, gorse and bracken.

This habitat is present throughout the Proposed Development, including the IPP grid connection route, TDR and grid connection route. Hedgerows extend for a total length of 7836 m.

1.7.1.15 *Treelines (WL2)*

Narrow rows or single lines of trees greater than 5m in height and typically occurring along field boundaries. Common species identified include ash, sycamore *(Acer pseudoplatanus)*, ivy *(Hedera helix)* and downy birch *(Betula pubescens).*

This habitat occurs throughout the Proposed Development, including areas adjacent to proposed site roads and crossing the footprint of T4. Treelines delineate other elements of the Proposed Development including thegrid connection route and proposed IPP connection route/TDR. The total length of this habitat is 5461 m.

1.7.1.16 *Hedgerows/Treelines (WL1/WL2)*

A mosaic of these two aforementioned linear habitats is present along the footprint of the grid connection route and the IPP connection route/TDR. The total length of this habitat is 7094 m.

1.7.1.17 *Wet Willow-alder-ash Woodland (WN6)*

Includes woodlands of permanently waterlogged sites that are dominated by Willows (*Salix* spp.), Alder (*Alnus glutinosa*) and/or Ash. This habitat is present within the footprint of T8 and 166 m southeast of T4, and is also present along the grid connection route. This habitat covers a combined area of 1.37 ha.

1.7.1.18 *Wet Heath (HH3)*

Vegetation with at least 25% cover of dwarf shrubs on peaty soils and shallow wet peats with an average depth of 15-50cm. Species identified include cross-leaved heath (*Erica tetralix*) (>5%), common heather (*Calluna vulgaris*) (>5%), bell heather *(Erica cinerea)* (15%), gorse (10%), purple moor grass *(Molinia caerulea)* (80%), bog asphodel *(Narthecium ossifragum)* (>5%) and *Sphagnum spp.* (40%). This habitat corresponds to Appendix I habitat, 'northern Atlantic wet heaths with *Erica tetralix* (4010)'.

This habitat occurs within the footprints of T2-T3 and T5-T11, and adjacent to proposed site roads and the IPP connection route and TDR. This habitat covers a combined area of 14.06 ha.

1.7.1.19 *Dry siliceous heath (HH1)*

Dry siliceous heath can be found on flat to steeply sloping ground in upland and lowland areas. This habitat was identified on the eastern boundary of the Western DA, the area of the habitat is 0.23 ha. It forms a mosaic habitat with dry-humid acid grassland along the IPP connection route, the area of this habitat is 0.59 ha.

1.7.1.20 *Upland Blanket Bog (PB2)*

Upland blanket bog occurs on flat or gently sloping ground above 150 m. The 150 m limit serves to distinguish upland from lowland blanket bog but is loosely applied. Peat depths vary and normally fall in the range of 1-2 m. This habitat occurs along the western boundary of the Eastern DA, 77 m west of T11 and is located within the Gortaculllin Bog NHA. This habitat forms a mosaic with wet grassland and wet heath. The total area of these habitats is 1.04 ha.

1.7.1.21 *Wet Grassland (GS4)*

Occurs on wet or waterlogged mineral or organic soils that are poorly drained or subject to periodic flooding. Species identified include perennial ryegrass, soft rush *(Juncus effusus),* thistle *(Cirsium spp.),* nettle, common St. Johnswort *(Hypericum spp.),* creeping buttercup, tormentil *(Potentilla erecta),* white clover, devil's bit-scabious *(Succisa pratensis)* and yarrow *(Achillea millefolium).* Wet grassland is present within the footprints of T3-T5, T7 and T10, and within the footprint of the proposed on-site substation and site roads. Significant areas are present adjacent to the IPP connection route/TDR, the northern boundary of the Eastern DA and the southern boundary of the Western DA. Wet grassland is also present along the grid connection route. This habitat covers a combined area of 29.13 ha.

1.7.1.22 *(Mixed) Broadleaved Woodland (WD1)*

Areas of woodland with 75-100% cover of broadleaved trees and 0-25% cover of conifers which cannot be classified as semi-natural, with a minimum canopy height of 4m. This habitat is located adjacent to the IPP connection route/TDR, the grid connection route and the footprint of T10, covering a total area of 2.16 ha.

1.7.1.23 *Mixed Broadleaved/conifer Woodland (WD2)*

Includes woodland areas with mixed stands of broadleaved trees and conifers, where both types have a minimum cover of 25% and a maximum cover of 75%, and canopy height is at least 4m. Species identified include sycamore, beech (*Fagus salvation*), hawthorn, yew *(Taxus baccata),* ivy *(Hedera hibernica)* and cherry laurel *(Prunus laurocerasus).*

This habitat was recorded adjacent to the IPP connection route/TDR and within the Proposed Development site adjacent to site roads south of T5. This habitat covers a combined area of 2.16 ha.

1.7.1.24 *(Mixed) Conifer Woodland (WD3)*

Includes woodland areas with 75-100% cover of conifers that are not conifer plantations (WD4), typically dominated by non-native tree species. This habitat is present along the grid connection route, IPP connection route/TDR and Western DA, 269m south of the proposed on-site substation. This habitat covers a combined area of 1.18 ha.

1.7.1.25 *Dry-humid Acid Grassland (GS3)*

Unimproved or semi-improved grassland occurring on free-draining acid soils that are dry to humid (but not waterlogged). This habitat frequently grades into, or forms mosaics with, dry siliceous heath.

This habitat is present within the footprint of T7, on the northern boundary of the Eastern DA, with an area of 11.47 ha.

This habitat forms mosaics with other habitats including scrub, which occurs within the footprint of proposed site roads south of T7 and west of T3. This habitat is also present within the IPP connection route and TDR. This habitat covers a combined area of 5.29 ha.

A mosaic of dry-humid acid grassland with dry siliceous heath is present along the IPP connection route/TDR, covering a total area of 0.59 ha.

Dry-humid acid grassland recorded within the Proposed Development forms mosaic habitats with wet grassland. This habitat mosaic is present within the footprint of site roads located at the entrance to the Eastern DA. A small section is also located 530 m east of T9. This habitat covers a combined area of 0.84 ha.

1.7.1.26 Occurrence of Flora Protection Order Species & QI Species

The proposed windfarm lies within Ordnance Survey National Grid 10km Squares R46, R56 and R57. No Flora Protection Order (FPO) species are present within, or in close proximity to, construction works areas.

1.7.1.27 Occurrence of Invasive Species

Seven Invasive Species plants are recorded in the NBDC records for OS Grid reference R46, R56 and R57, within which the site of the Proposed Development is located. These species are “High Impact Invasive Species” (Regulation S.I. 477).

Butterfly bush was recorded adjacent to the IPP cable, of which the closest stand is located approximately 1.5km southwest of T4.

Himalayan Knotweed was recorded approximately 664m south of T4.

Japanese Knotweed was recorded along the proposed site roads within the Proposed Development site between T1 and T3.

Rhododendron ponticum was recorded along the IPP cable connection route.

1.7.2 Avifauna

1.7.2.1 Cormorant

Cormorant (*Phalacrocorax carbo*) is an Annex I species of the EC Birds Directive, and a designated SCI of the River Shannon and River Fergus Estuaries SPA. An estimated population of thirty-eight registered counts of Cormorant was recorded during the winter 2022/23 wetland bird surveys. All sightings were confined to two main territories approximately 2.6 km and 3.7 km north of the site boundary. No sightings were registered within the site boundary. Behaviours include resting on the shore, fishing and roosting.

1.7.2.2 Whooper Swan

Whooper Swan (*Cygnus cygnus*) is an Annex I species of the EC Birds Directive, and a designated SCI of the River Shannon and River Fergus Estuaries SPA. Whooper Swan was observed on two occasions, with counts of four and seven birds for each sighting during the winter 2022/23 wetland bird surveys. Behaviours observed included foraging and resting on the shore approximately 4.1 km north of the site boundary at Clonlea Lough and 3.4 km north of the site boundary at Doon Lough.

1.7.2.3 *Wigeon*

Wigeon (*Anas penelope*) is an Annex I species of the EC Birds Directive, and a designated SCI of the River Shannon and River Fergus Estuaries SPA. Wigeon was observed on one occasion when four birds were counted during the winter 2022/23 wetland bird surveys. Behaviour observed included resting on the lake shore approximately 3.4 km north of the site boundary.

1.7.2.4 *Golden Plover*

Golden Plover *(Pluvialis apricaria*) is an Annex I species of the EC Birds Directive and a designated SCI of the nearby River Shannon and River Fergus Estuaries SPA.

A peak count of 146 Golden Plovers were observed during the winter season 2022/23 VP surveys. No other observations of Golden Plover were recorded throughout the bird survey period. Flightline activity suggests most activity occurs outside of the Proposed Development boundary, within the Gortacullin Bog NHA, although some activity was recorded near the footprint of T11. No Golden Plovers were observed during the breeding seasons of 2022 and 2023.

1.7.2.5 *Merlin*

Merlin (*Falco columbarius*) is included on Annex I of the EC Birds Directive and an SCI of the Slieve Aughty Mountains SPA.

One individual was observed hunting small passerines during the breeding season 2022 VP surveys approximately 94 m west of the IPP connection route. No Merlin were identified during breeding Merlin surveys, although plucked feathers suggestive of Merlin feeding activity were recorded near the Proposed Development boundary.

1.7.2.6 *Lapwing*

Lapwing (*Vanellus vanellus*) is a designated SCI of the River Shannon and River Fergus Estuaries SPA.

Lapwing were observed twice during the 2022/23 wintering wetland bird surveys. These sightings were recorded near Clonlea Lough approximately 4.1 km north of the Proposed Development boundary. No Lapwings were recorded during the breeding seasons in 2022 and 2023.

1.7.2.7 *Curlew*

Curlew (*Numenius arquata*) is a designated SCI of the River Shannon and River Fergus Estuaries SPA.

Curlew was observed twice during the 2022 breeding season VP surveys, including a sighting approximately 1.6 km east of the IPP connection route. No Curlews were observed in the 2023 breeding season or 2022/23 winter season.

1.7.2.8 *Redshank*

Redshank (*Tringa totanus*) is a designated SCI of the River Shannon and River Fergus Estuaries SPA.

Redshank was observed once during the 2022/23 wintering wetland bird surveys, along the banks of the Ardnacrusha Headrace Canal adjacent to the Turbine Delivery Route.

1.7.2.9 Black-headed Gull

Black-headed Gull (*Chroicocephalus ridibundus*) is a designated SCI of the River Shannon and River Fergus Estuaries SPA.

The species was observed on 12 occasions during the 2022 breeding season VP surveys, with all observations recorded outside the Proposed Development boundary. Black-headed Gull was recorded once during the 2023 breeding season VP surveys. The species was observed on 20 occasions during the 2022/23 wintering wetland bird surveys, with all sightings confined to one area along the banks of the Ardnacrusha Headrace Canal, adjacent to the Turbine Delivery Route.

1.7.2.10 Hen Harrier

Hen Harrier is included on Annex I of the EC Birds Directive and an SCI of the Slievefelim to Silvermines Mountains SPA.

Twenty-five Hen Harrier observations were recorded during the 2022 breeding season VP surveys. Eighteen Hen Harrier sightings were recorded during the 2023 breeding season VP surveys. High levels of activity recorded during these breeding seasons included multiple territories, including within the footprint of the Proposed Development and north of the Proposed Development boundary, the IPP connection route and Gortacullin Bog NHA located west of the Eastern DA.

A total of 63 Hen harrier observations were recorded during breeding Hen Harrier surveys in 2022 and 2023. Territories were identified overlapping with the Eastern and Western DAs, north and northeast of the Western DA, the Gortacullin Bog NHA and IPP connection route. Observations included juveniles and birds exhibiting breeding behaviour including food passes between adults, hunting, diving, calling, perching and carrying prey to potential nest sites.

Three active Hen Harrier nest sites were recorded in 2022:

- 616 m north of T3;
- 356 m north of T7; and
- 1 km west of T11.

Two active Hen Harrier nest sites were recorded in 2023:

- 970 m west of T11; and
- 487 m south of T8.

Twelve sightings of Hen Harrier were recorded during the 2021/22 winter season VP surveys, with no flight activity recorded within the Proposed Development site. Four main wintering areas were recorded; east and west of the IPP connection route, on the northern boundary of the Western DA, approximately 862 m southwest of the Western DA and approximately 642 m west of the Eastern DA.

Four Hen Harrier observations were recorded during the 2022/23 winter season VP surveys. One male was recorded flying over the footprint of the IPP connection route, whilst another male sighting was recorded approximately 624 m west of the IPP connection route. One female was recorded approximately 309 m west of T11, and a ringtail (immature) Hen Harrier was recorded hunting over heath and forestry approximately 614 m north of the site boundary, circling over Knockanuarha Mountain.

Wintering Hen Harrier roost surveys undertaken during the 2022/23 winter season returned 11 observations comprising ten observations of males and one observation of a female. Key areas used for foraging included land just south of Gortacullin Bog NHA, and north of the Western DA. One female was observed within the Western DA (approximately 176 m west of T5), and one male was observed hunting over the footprint of T7. No roosts were identified during these surveys.

1.7.2.11 Otter

There are 17 records for Otter sightings in the National Biodiversity Data Centre's 10 km grid square references (R56 and R57) within which the Proposed Development is located. The last recorded sighting was from 13/01/2014.

Areas of suitable habitat for Otter, i.e., watercourses with fisheries value, are present in the area of the Proposed Development. However, the results of camera trap deployments in the Study Area returned no sightings of Otters.

Records of secondary evidence (e.g. mammal crossing/potential trail into stream/ potential couch/rest spot/spraints) were recorded during Otter surveys.

Two mammal crossings were identified within or within close proximity to the Proposed Development. One mammal crossing was located on the banks of the East Cloontra River (EPA Code: 25E28), approximately 124 m west of the IPP connection route. The second mammal crossing was identified on the banks of the Blackwater (Clare) River (EPA Code: 25B06), approximately 107 m west of the Loop-In grid connection (see Annex A, Figure 1- 14.

Two Otter spraints were identified, with one spraint located on the banks of the Oatfield River (EPA Code: 25O07), approximately 55 m west of the Loop-In gird connection and another older spraint, recorded within the site boundary, along the banks of the Snaty River (EPA Code: 25S34), approximately 208 m east of T6 (see Annex A, Figure 1- 14).

1.7.3 Bats

Bat activity surveys within the Proposed Development site show it is used regularly (High Activity) by Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*) and Leisler's Bat (*Nyctalus leisleri*).

Other bat species recorded with Negligible to Low Activity within the Proposed Development site include Nathusius' Pipistrelle *(Pipistrellus nathusii),* Myotis Species and Brown Long Eared Bat (*Plecotus 33uratus*).

Negligible to Low activity of Lesser Horseshoe *(Rhinolophus hipposideros)*, an SCI species of several SACs within the ZoI*,* was also recorded during bat activity surveys (see EIAR Chapter 7, Appendix C for detailed results).

1.7.4 Aquatics

The following outlines the available water quality data for the watercourses in context of the Proposed Development. Only recent water quality (i.e., since 2015) is summarised below.

1.7.4.1 Owenogarney River

There are a number of contemporary EPA biological monitoring stations located on the Owenogarney River (27O01) in the downstream vicinity of the Proposed Development. At Agouleen Bridge (station RS27O010600) the river achieved Q4 (good status) in 2022. However, at Pollagh Bridge (station RS27O010700) and Annagore Bridge (station RS27O010900, survey site A7), located 2.7 km north of the Proposed Development, and Old Mill Bridge (station RS27O011100, downstream of Sixmilebridge) this rating fell to Q3-4 (moderate status) in the same period.

In the vicinity of the Proposed Development, the Owengarney River (Owenogarney_030 and _040 river waterbodies), located 3.6 km west of the Proposed Development, was of good ecological status in the 2016-2021 period. Both were considered 'not at risk' of failing to achieve good ecological status (WFD Risk 3rd cycle). The Snaty Stream, Clashduff Stream, Gortadroma Stream, Belvoir Stream and Ballyvorgal North Stream are all located within these river catchments.

1.7.4.2 Mountrice River

A single contemporary EPA biological monitoring station is located on the Mountrice River (25M03) located 3.7 km west of the Proposed Development. The river achieved Q4-5 (high status) at Clogher Bridge (station RS25M030300, survey site B12) in 2021.

The Mountrice River (Mountrice_010 river waterbody) was of good status in the 2016-2021 period, the river waterbody was considered 'not at risk' of failing to achieve good ecological status (WFD Risk 3rd cycle). However, agriculture and forestry are recognised pressures within the wider catchment (EPA, 2022).

1.7.4.3 River Blackwater

A single contemporary EPA biological monitoring station was located on the River Blackwater located 3 km east of the Proposed Development. At station RS25B060120, downstream of survey site B13, the river achieved Q4 (good status) in 2021.

The upper reaches of the river (Blackwater (Clare)_010 river waterbody) were good status in the 2016-2021 period but were considered 'at risk' of not achieving good ecological status due to significant sediment pressures from agriculture and forestry (EPA, 2022). Downstream of Killaly's Bridge (Survey site B13), the river (Blackwater (Clare)_020 river waterbody) was of moderate status in the 2016-2021 period but was not considered at risk.

1.7.4.4 Gourna River

A single contemporary EPA biological monitoring station was located on the Gourna River in the located 1.7 km west of the Proposed Development. At station RS27G020600, in the lower reaches, the river achieved Q4-5 (high status) in 2021.

The Gourna_010 river waterbody achieved good status in the 2016-2021 period and was considered 'not at risk' of failing to achieve good ecological status (WFD Risk 3rd cycle).

1.7.4.5 Salmonids

Atlantic Salmon *(Salmon salar)* is an Annex II species under the EU Habitats Directive and a QI species of the Lower River Shannon SAC.

Salmonid populations were widespread in the vicinity of the Proposed Development with Atlantic salmon recorded at a total of ten sites on the Owenogarney River, River Blackwater and associated tributaries (sites A4, A7, A11, B6, B7, B15, B16, D6, D20 & E1). The nearest sites from the Proposed Development are B6 and B7, located in the Oatfield River (25O07) and West Cloontra River (25W36), both rivers intersect with the footprint of the Proposed Development (IPP connection route). The highest salmon parr densities and highest quality habitats were present at sites on the Clashduff Stream (A7), Owenogarney River (A11), Gourna River (D6) and the Clovemill Stream (E1), located to the south-west of the Proposed Development site (see EIAR Chapter 7, Appendix D for detailed results).

1.7.4.6 Lamprey

Lamprey species *(Lampetra planeri, L. fluviatilis, Petromyzon marinus)* are an Annex II species under the EU Habitats Directive and QI species of the Lower River Shannon SAC.

Lamprey ammocoetes (*Lampetra* sp.) were recorded from six sites. The nearest site to the Proposed Development is the West Cloontra Stream (B7) and O'Neill's Stream (B8), both sites intersect with the IPP connection route. The remaining sites include Knockshanvo Stream (B9), River Blackwater (B16 & B17), and Island River (D16). With the exception of site B17 on the lower reaches of the Blackwater (12.8 per m^2), densities of ammocoetes were low (<1 per m^2) and habitats were sub-optimal for *Lampetra* sp. (see EIAR Chapter 7, Appendix D). Only single examples of *Lampetra* sp. Transformers were recorded at sites B9 and D16 (see EIAR Chapter 7, Appendix D).

1.7.4.7 White-clawed crayfish

No white-clawed crayfish were recorded via hand-searching or sweep netting of instream refugia during the survey of 56 sites.

1.7.4.8 eDNA analysis

White-clawed crayfish eDNA was detected in the composite water sample collected from the lower reaches of the River Blackwater (site B17) (three positive qPCR replicates out of 12) located 4.7 km southeast of the Proposed Development. This result was considered as evidence of the species' presence at and or upstream of the sampling location, and supports the historical records for the River Blackwater (NPWS & Triturus data). White-clawed crayfish were not detected in the Broadford River (A4), Owenogarney River (A11) or the Gourna River (D6), in keeping with the known distribution of the species in the wider survey area.

Sites on the Owengarney River (site A11), River Blackwater (site B17) and Gourna River (site D6) tested positive for crayfish plague (*Aphanomyces astaci*) (2, 1 & 11 positive qPCR replicates out of 12, respectively). No crayfish plague was detected in the Broadford River (site A4) (0 positive qPCR replicates out of 12).

No freshwater pearl mussel eDNA was detected at the three sampling locations. This result is in keeping with the known absence of records for the species from the respective catchments (Ross, 2017 and NPWS data).

Table 1- 5: eDNA results in the vicinity of the Proposed Development (positive qPCR replicates out of 12 in parentheses)

Site	Watercourse	Freshwater pearl mussel	White-clawed crayfish	Crayfish plague
A4	Broadford River	Negative (0/12)	Negative (0/12)	Negative (0/12)
A11	Owenogarney River	Negative (0/12)	Negative (0/12)	**Positive (2/12)**
B17	River Blackwater	Negative (0/12)	**Positive (3/12)**	**Positive (1/12)**
D6	Gourna River	Negative (0/12)	Negative (0/12)	**Positive (11/12)**

1.8 Identification of Potential Impacts

1.8.1 Potential Impacts on SAC Sites

1.8.1.1 Impact Sources

The Proposed Development has the potential to cause impacts via: excavations, earthworks and storage of overburden material; removal of vegetation; groundworks and reinstatement works; instream works and works in close proximity to watercourses; importation of aggregate (stone) and other materials; increase extent of built/artificial surfaces; use and movement of machinery; use of hydrocarbons and cementitious materials; noise and presence of humans, waste generation, maintenance works, operating turbines and the presence of wind turbines and met mast structures during the operational lifetime of the windfarm.

1.8.1.2 Connectivity Pathways to European Sites

Physical/direct contact, surface water and ground-water flow paths; movement of soils, vehicles, machinery and personnel; air, vibration and visibility.

1.8.1.3 Description of Potential Effects

SPA Effect A: Loss, degradation, fragmentation or reduction/loss of connectivity of suitable habitats for SCI species or their prey species, within or ex-situ of an SPA due to physical landcover change: habitat loss or degradation of suitable (positively selected) nesting or foraging habitat for SCI species within or ex-situ of an

SPA may reduce species numbers within an SPA through reduced breeding success or reductions in supporting source populations outside the SPA. Habitat loss or degradation may also reduce the availability of prey species causing secondary effects to foraging SCIs, where these prey species occur within any positively selected foraging habitat of the SCI. The potential for habitat effects as a result of physical landcover change is limited to the works locations associated with the Proposed Development.

SPA Effect B: Loss, degradation, fragmentation or reduction/loss of connectivity of suitable habitats for SCI species or their prey species, within or ex-situ of an SPA due to reductions in water quality or the spread of invasive species: the potential for habitat effects as a result of reductions in water quality have the potential to occur within downstream catchments associated with the Proposed Development. Habitat effects via the spread of invasive species has the potential to occur either downstream or upstream within a catchment, and via machinery/vehicle/personnel movements along transport routes.

SPA Effect C: Disturbance/displacement or mortality of SCI species within an SPA: direct effects via disturbance or displacement have the potential to occur within an SPA where SCI bird species may be present in close proximity to project works, activities or personnel occurring within or in close proximity to the SPA. Direct effects via mortality have the potential to occur within an SPA where SCI bird species may be present within the SPA boundary and exposed to potential mortality through contact with moving machinery, wind turbines and/or other built structures within the SPA.

SPA Effect D: Disturbance/displacement or mortality of SCI species ex-situ of an SPA: disturbance or displacement effects to SCI species (such as when foraging/migrating) outside SPAs may indirectly affect breeding success or general survival rates for these species once within SPA sites. Indirect effects via mortality of SCI species outside of an SPA could occur where works/ground clearance associated with the Proposed Development occur in suitable nesting, roosting or foraging habitat, or could occur inadvertently through contact with operational wind turbines and/or other built structures.

SPA Effect E: Disturbance/displacement or mortality of SCI prey species within or ex-situ of an SPA: mortality, disturbance or displacement of prey species for QI species may also reduce the availability of prey items for QI species which in turn can negatively affect QI species populations. Disturbance/displacement or mortality has the potential to occur at project works locations where watercourse crossing works are taking place.

1.8.2 Potential Impacts on SPA sites

1.8.2.1 Impact Sources

The Proposed Development has the potential to cause impacts via: excavations, earthworks and storage of overburden material; removal of vegetation; groundworks and reinstatement works; instream works and works in close proximity to watercourses; importation of aggregate (stone) and other materials; increase extent of built/artificial surfaces; use and movement of machinery; use of hydrocarbons and cementitious materials; noise and presence of humans, waste generation, maintenance works,

operating turbines and the presence of wind turbines and met mast structures during the operational lifetime of the windfarm.

1.8.2.2 Connectivity Pathways to European Sites

Air, visibility; surface water and groundwater flow paths; landcover to the Proposed Development site.

1.8.2.3 Description of Potential Effects

SPA Effect A: Loss, degradation, fragmentation or reduction/loss of connectivity of suitable habitats for SCI species or their prey species, within or ex-situ of an SPA due to physical landcover change: habitat loss or degradation of suitable (positively selected) nesting or foraging habitat for SCI species within or ex-situ of an SPA may reduce species numbers within an SPA through reduced breeding success or reductions in supporting source populations outside the SPA. Habitat loss or degradation may also reduce the availability of prey species causing secondary effects to foraging SCIs, where these prey species occur within any positively selected foraging habitat of the SCI. The potential for habitat effects as a result of physical landcover change is limited to the works locations associated with the Proposed Development.

SPA Effect B: Loss, degradation, fragmentation or reduction/loss of connectivity of suitable habitats for SCI species or their prey species, within or ex-situ of an SPA due to reductions in water quality or the spread of invasive species: the potential for habitat effects as a result of reductions in water quality have the potential to occur within downstream catchments associated with the Proposed Development. Habitat effects via the spread of invasive species has the potential to occur either downstream or upstream within a catchment, and via machinery/vehicle/personnel movements along transport routes.

SPA Effect C: Disturbance/displacement or mortality of SCI species within an SPA: direct effects via disturbance or displacement have the potential to occur within an SPA where SCI bird species may be present in close proximity to project works, activities or personnel occurring within or in close proximity to the SPA. Direct effects via mortality have the potential to occur within an SPA where SCI bird species may be present within the SPA boundary and exposed to potential mortality through contact with moving machinery, wind turbines and/or other built structures within the SPA.

SPA Effect D: Disturbance/displacement or mortality of SCI species ex-situ of an SPA: disturbance or displacement effects to SCI species (such as when foraging/migrating) outside SPAs may indirectly affect breeding success or general survival rates for these species once within SPA sites. Indirect effects via mortality of SCI species outside of an SPA could occur where works/ground clearance associated with the Proposed Development occur in suitable nesting, roosting or foraging habitat, or could occur inadvertently through contact with operational wind turbines and/or other built structures.

SPA Effect E: Disturbance/displacement or mortality of SCI prey species within or ex-situ of an SPA: mortality, disturbance or displacement of prey species for QI species may also reduce the availability of prey items for QI species which in turn can negatively

affect QI species populations. Disturbance/displacement or mortality has the potential to occur at project works locations where watercourse crossing works are taking place.

Note on SPA Impact A & B: mortality of SCI species due to collision with moving vehicles (road haulage) is considered extremely unlikely with no precedent in the literature for this resulting in population level/significant effects; therefore, this impact pathway (mortality due to collision with moving vehicles) is screened out.

1.9 Assessment of Effects

This section of the NIS report presents the assessment of effects from the Proposed Development on the six European sites that could not be screened out during Stage 1. Relevant embedded mitigation is described below.

1.9.1 Lower River Shannon SAC [002165]

Lower River Shannon SAC qualifies on account of various important habitats and species. Those potentially relevant to the Proposed Development comprise:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation;
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*);
- Freshwater Pearl Mussel;
- Sea Lamprey;
- Brook Lamprey;
- River Lamprey;
- Salmon; and
- Otter.

The Proposed Development is potentially linked to the Lower River Shannon SAC through hydrological connectivity via watercourses with drain works locations associated with the Proposed Development, connectivity via watercourse crossing works along the cabling routes, and connectivity via transport routes through or in close proximity to this SAC. In addition, field surveys undertaken to inform the Proposed Development identified evidence of the following relevant qualifying species of the SAC within the Proposed Development and/or its potential ZoI:

- Salmon: recorded at ten sites on the Owenogarney River, River Blackwater and associated tributaries, including high value spawning and nursery habitats within the ZoI;
- Lamprey species: lamprey ammocoetes (*Lampetra* sp.) were recorded from six sites within the ZoI. No Sea Lamprey were recorded; and

- Otter: evidence of Otter activity (e.g., spraints) was identified within the ZoI and in close proximity to the Proposed Development, and suitable terrestrial habitat (e.g., for dens) is present within the Proposed Development site.

As such, it is necessary to consider the potential for effects on SAC qualifying habitats and species:

- Within the SAC, due the hydrological connectivity between the Proposed Development site and the SAC; and
- Within the ZoI and in close proximity to the Proposed Development site, in the case of mobile species such as fish species and Otter which could also form part of QI populations for the SAC.

The most common pathway for impacts is via surface water, such as if a pollutant reaches a river and is carried downstream into a European site. Other potential pathways are groundwater, air (e.g., airborne dust or sound waves), or land (e.g., flow of liquids, vibration). Hydrological impacts can potentially occur at a distance of several kilometres through aquatic pathways, but are likely to occur at significantly shorter distances where they can only occur over land or by air.

During the Horizontal Directional Drilling (HDD) process for crossing watercourses (see EIAR Chapter 5 for further details), small quantities of greases known as 'drilling fluids' are commonly used to keep components of the drill rig cool and lubricated. These have the potential to pollute watercourses. Similarly, materials used on site, including concrete and fuel for the vehicles, could potentially spill into the watercourses.

The magnitude of a pollution event can depend on the size of the pollutant release (larger releases tend to disperse further). It is therefore important to consider the scale and impact of the Proposed Development. The Proposed Development will involve large scale works during the construction phase which have the potential (in the absence of mitigation) to cause significant effects on the aquatic interests within the Lower River Shannon SAC as a result of pollution of watercourses with suspended solids and other substances (fuels, waste, concrete, etc.). This is considered further below for the relevant features of the SAC for which potential impact pathways exist.

1.9.1.1 Fish

Artificial light can disrupt the natural behaviour of fish (e.g., Salmon) and can also attract them, making them more susceptible to predation.

Vibrations from drilling can induce stress to fish, leading to avoidance behaviour impacting their feeding, spawning, migration and overall immune functioning and health. This avoidance behaviour may result in shifts in distribution within the river system as the fish seek quieter areas. Fish rely on their lateral line to detect vibrations and changes in water pressure. Excessive vibrations could potentially interfere with their ability to use this sensory system effectively, which may affect their ability to navigate and find food, as well as detect predators. Additionally excessive vibrations may impact fish swim bladders, which could affect the fish's ability to maintain its position in the water column or control its buoyancy.

Low-frequency noise (5 – 10 Hz) can elicit awareness responses from juvenile Atlantic salmon, including decreased heart rate and breathing movement (Knudsen, Engger, and Sand, 1994). Therefore, even anthropogenic sounds at low levels, may lead to changes in behaviour and mask biologically important sounds, which could impact spawning, foraging and disrupt migrations and habitat selection.

Increased siltation from clear-felling and drilling works could have detrimental impacts on fish such as increased mortality, reduced suitable spawning areas, lower success rates for eggs/early life stages, gill irritation/trauma, altered blood chemistry, impaired movement/swimming ability, modified foraging behaviour, and diminished territoriality (Wildfish, 2017). Salmonid and Lamprey (Brook and River) eggs require a well-oxygenated environment during embryonic development, which is facilitated by permeable gravel beds with interstitial pore spaces. Excessive sediment can obstruct these pores, impeding the circulation of oxygenated water and thereby decreasing egg survival (Wildfish, 2017). Long-term consequences include habitat degradation and the potential for reduced genetic diversity.

Spilled oil may cover the water's surface and submerged objects, smothering critical habitats. Toxic chemicals in the oil and drilling fluids can harm fish by damaging their gills, liver, and other vital organs. Reduced oxygen levels resulting from the presence of oil can lead to hypoxia, posing a serious threat to fish survival. Additionally, the contamination disrupts fish feeding behaviour, as well as hindering the natural reproductive process and thus reducing successful reproduction rates.

In the absence of mitigation, impacts as discussed above could result in Likely Significant Effects on the fish populations associated with the Lower River Shannon SAC, resulting in an adverse effect on the integrity of the site in view of its conservation objectives. Mitigation is therefore proposed to avoid this, as outlined below in Section 1.9.2.3.

1.9.1.2 Otter

Artificial light pollution disrupts otters' natural nocturnal behaviour, leading to changes in foraging and feeding, as otters primarily rely on low light conditions to catch fish.

Oil spills and toxic drilling fluids can have detrimental effects on otters by contaminating the water, potentially entering the fur of otters during their activities such as swimming and foraging (NIEA, 2019). This can lead to serious health issues, as otters groom themselves to maintain insulation and waterproofing. Ingestion of oil-contaminated prey can also result in toxic effects, affecting their overall health and well-being. Additionally, the pollution of their aquatic habitats disrupts the otters' food sources, making it more challenging for them to find sufficient nutrition.

In the absence of mitigation, impacts as discussed above could result in Likely Significant Effects on the otter population associated with the Lower River Shannon SAC, resulting in an adverse effect on the integrity of the site in view of its conservation objectives. Mitigation is therefore proposed to avoid this, as outlined below in Section 1.9.2.3.

1.9.1.3 Mitigation

From the early design stages of the Proposed Development, an iterative process of a constraints-led design was employed, whereby ecological information was incorporated

into the design process to avoid impacting potentially important ecological features (notably these potentially relevant to nearby European sites) where possible. The Proposed Development design has incorporated the following embedded mitigation measures to minimise the potential for significant effects on ecological features including those relevant to the designation of Lower River Shannon SAC and other European sites (see Sections 1.9.2-1.9.6). Further information is provided in EIAR Chapter 5.

Best practice construction measures will be adopted to minimise potential construction and decommissioning impacts on relevant habitats and species. These are detailed within the Construction Environmental Management Plan (CEMP), appended to Chapter 5 of the EIAR, and include measures to minimise working areas to avoid unnecessary habitat removal/alteration and disturbance, and measures to avoid/minimise the generation of additional noise, dust, light spill and vibration. The CEMP also includes measures to avoid pollution of waterbodies within and adjacent to the Proposed Development. All plant and machinery will comply with specific noise legislation (Construction Plant and Equipment Permissible Noise Levels (Amendment) Regulations, 1996) and will be turned off when not in use. Works will avoid the use of artificial lighting in sensitive habitat (e.g., along watercourses).

Best practice methods described in relation to construction will also be adopted where they apply activities being carried out during operational maintenance. Specifically, operational maintenance will minimise the level of disturbance (e.g., through the generation of additional noise, dust, light and vibration). In particular, effects on watercourses will be avoided through the adoption of the measures described below.

An appropriately qualified and experienced Ecological Clerk of Works (ECoW) will be appointed to address issues relating to sensitive habitats and species (as detailed in EIAR Section 5.3.3.1). Their responsibilities will include (but not be limited to):

- Undertake a pre-construction walkover survey of works areas within the Proposed Development and appropriate buffers (in accordance with relevant best practice guidance) to ensure that significant effects on sensitive species will be avoided;
- Level of authority to suspend works in the event of a risk to a relevant qualifying species (e.g., Otter);
- Undertake pre-works checks of suitable habitat requiring removal or otherwise potentially affected by works (e.g., for Otter);
- Inform and educate site personnel of sensitive ecological features and how effects on these features could occur;
- Oversee management of ecological issues during all phases and advise on ecological issues as they arise;
- Provide guidance to contractors to ensure legal compliance with respect to relevant species; and
- Liaise with officers from consenting authorities and other relevant bodies and contractors with regular updates in relation to construction and/or decommissioning progress.

A buffer of at least 15 m will be maintained from minor watercourses and land drains (except where they are crossed by tracks, HDD is employed or, in the case of minor land drains, where a lesser buffer is applied or where the drain is re-directed). Therefore, habitat around watercourses will be maintained and there will be minimal reduction of shading on the watercourse.

Drilling fluids such as Clearbore (an environmentally friendly, High-Performance Water-Based Mud suitable for tunnelling and drilling operations) or fluids with similar environmental properties will be used in drilling operations. Where the proposed grid connection cable route encounters minor culverts, the ducts will be installed above or below the culvert in accordance with construction methodologies outlined in the CEMP.

Machinery refuelling will occur at designated locations at least 50 meters away from watercourses, utilizing a double-skinned fuel bowser towed by a spill-prevention-equipped 4x4, with authorization limited to designated personnel. The fuel bowser will be parked on a level area in the construction compound when not in use and a limited amount of fuel will be stored on-site in the temporary construction compound and bunded to at least 100% of the storage capacity of the fuels to be stored. For concrete usage, pre-mixed concrete will be the primary choice, with exceptions made for specific substation components and drainage culverts, which will utilize hollow core and pre-cast concrete, respectively. Concrete pours at turbine locations will be carefully scheduled. Spoil arisings will be stored at a maximum height of 2 m and located at least 25 m away from watercourses. Additionally, silt fences will be employed where required between spoil storage and water crossings to prevent silt runoff. Indirect pollution impacts on watercourses are unlikely when mitigation is implemented.

Excavated soil from access road construction will be reused on-site for berms, landscaping, and along road margins. Berms will be placed away from interceptor drains to avoid flow obstruction or siltation risk. Constructed drainage systems will manage runoff from various areas, reducing potential silt runoff during construction and operation. The Proposed Development will implement a Sustainable Drainage System (SuDS) with on-site flow retention, buffer zones, and silt removal techniques to promote environmentally responsible water management (see Chapter 5 for additional information regarding this)

1.9.1.4 Conclusion

Taking into consideration the mitigation outlined above, adverse effects on the integrity of the Lower River Shannon SAC will not occur as a result of the Proposed Development. These conclusions apply to all potential turbine options with no difference in adverse effects identified between them. These mitigation measures will prevent impacts on the SAC qualifying habitats and species by avoiding pollution incidents, significant light spill and disturbance/degradation of habitats that are associated with the SAC and its qualifying species.

1.9.2 Danes Hole, Poulnalecka SAC [000030]

Danes Hole, Poulnalecka SAC qualifies on account of its populations of Lesser Horseshoe Bat, containing an important winter hibernation roost, mating site, maternity roost and commuting routes between these sites. The ‘Caves not open to the public’

which support these roosts also form a qualifying habitat for the SAC, and the SAC contains the qualifying habitat 'Old sessile oak woods with Ilex and Blechnum in the British Isles'.

1.9.2.1 Lesser Horseshoe Bats: Hibernation Roost

Regarding potential effects on the integrity of Danes Hole, Poulnalecka SAC through effects on hibernating Lesser Horseshoe Bats, core foraging habitat for Lesser Horseshoe Bats in winter is considered to be within 1.2km of the hibernation roost[2]. As the Proposed Development is 2km from the SAC at its nearest point, the Proposed Development is significantly outside of the core winter foraging range for this species regarding this hibernation roost site. As such, habitat loss, degradation or fragmentation, or disturbance occurring within the Proposed Development site during construction, operation and decommissioning will not affect foraging habitat used by hibernating Lesser Horseshoe Bats. The Proposed Development design includes embedded mitigation to minimise disturbance, including the minimisation of noise, dust, light and vibration (see Section 1.9.1.3), which will be sufficient to avoid significant adverse effects on hibernating bats using the roost and adjacent foraging habitat during construction, operation or decommissioning.

1.9.2.2 Lesser Horseshoe Bats: Maternity Roost, Mating Site and Commuting Routes

Assessment of Lesser Horseshoe Bat SAC effects must take into consideration potential effects on the designated maternity roost, mating site and commuting routes used by this species, both within the SAC and where these Lesser Horseshoe Bats use habitat outside of the SAC boundary. According to best practice guidance provided in the Lesser Horseshoe Bat Species Action Plan 2022-2026 (NPWS & VWT, 2022), based on the known foraging ranges of this species, the presence of suitable commuting and foraging habitat within a radius of at least 2.5km from summer roosts is important to the integrity of the roost. In addition, linear landscape features should preferably be retained within a 5km radius of roosts with 20 or more Lesser Horseshoe Bats. As such, any developments with the potential to affect Lesser Horseshoe Bat commuting and foraging habitat within 5km of a known important roost should be subject to detailed consideration of potential effects on the integrity of the roost.

Detailed bat surveys were undertaken to inform the Proposed Development (as summarised in this NIS and reported in full in EIAR Chapter 7). Negligible to Low activity by Lesser Horseshoe Bats was recorded within and adjacent to the Proposed Development, with a total of 11 registrations recorded. No roosts of Lesser Horseshoe Bat were recorded within or adjacent to the Proposed Development, and no suitable roosting habitat for Lesser Horseshoe Bat was identified.

The Proposed Development design includes mitigation measures (see Section 1.9.1.3) to minimise the potential for effects on foraging Lesser Horseshoe bats during construction, operation and decommissioning. In particular, this includes measures to prevent light spill onto suitable foraging and commuting habitat (e.g., hedgerows,

[2] Back from the Brink: Species Information Guide – Lesser Horseshoe Bat. [Available at Species-info-sheet-for-lesser-horseshoe-bat-FINAL.pdf (bats.org.uk) – accessed 15/12/2023].

woodland edges, watercourses), avoid pollution of watercourses, and minimise the loss of suitable foraging and commuting habitat.

Considering the distance of the Proposed Development from the SAC (i.e., towards the outer limit of the core foraging area around the maternity roost), the Negligible to Low level of Lesser Horseshoe Bat foraging and commuting activity recorded during the field surveys of the Proposed Development, and the embedded mitigation measures within the Proposed Development design, significant effects on foraging and commuting Lesser Horseshoe Bats belonging to the SAC population are not anticipated. As Lesser Horseshoe Bat is deemed to be a species of low collision risk (NatureScot, 2021), considering the factors described above (notably the distance between the Proposed Development turbines and the SAC, and the level of Lesser Horseshoe Bat activity recorded during field surveys), no significant effects through turbine fatalities are anticipated.

1.9.2.3 Qualifying Habitats

As described above, the qualifying habitat 'Caves not open to the public' is designated due to it supporting Lesser Horseshoe Bat hibernation and maternity roosts. Due to the distance between this qualifying habitat (and therefore the important Lesser Horseshoe Bat roosts it supports), and the embedded mitigation measures to minimise disturbance, no significant adverse effects on 'Caves not open to the public' regarding their ability to support these important bat roosts are anticipated.

Considering the distance between the SAC and the Proposed Development, and the scope for impacts from the Proposed Development, there is no potential for significant adverse effects on the integrity of Danes Hole, Poulnalecka SAC through effects on qualifying oak woodland habitat. The embedded mitigation measures described above will be sufficient to ensure that no significant effects on qualifying oak woodland habitat occur.

1.9.2.4 Conclusion

Taking into consideration the mitigation outlined above, and the distance of the Proposed Development from the relevant qualifying features (notably in the context of known Lesser Horseshoe Bat movement patterns), adverse effects on the integrity of Danes Hole, Poulnalecka SAC will not occur as a result of the Proposed Development. These conclusions apply to all potential turbine options with no difference in adverse effects identified between them.

1.9.3 Ratty River Cave SAC [002316]

Ratty River Cave SAC qualifies on account of its populations of Lesser Horseshoe Bat, with a hibernation roost recorded in the caves and a maternity roost located nearby. Foraging areas for these Lesser Horseshoe Bats roosting within the SAC have not been confirmed. The 'Caves not open to the public' which support these roosts also form a qualifying habitat for the SAC.

1.9.3.1 *Lesser Horseshoe Bats: Hibernation Roost*

Regarding potential effects on the integrity of Ratty River Cave SAC through effects on hibernating Lesser Horseshoe Bats, core foraging habitat for Lesser Horseshoe Bats in winter is considered to be within approximately 1.2km of the core hibernation roost[3]. As the Proposed Development is 4.3km from the SAC at its nearest point, the Proposed Development is significantly outside of the core winter foraging range for this species. As such, habitat loss, degradation or fragmentation, or disturbance occurring within the Proposed Development during construction, operation and decommissioning will not affect foraging habitat used by hibernating Lesser Horseshoe Bats. In addition, considering this separation distance, the scale of impacts from the Proposed Development, and the mitigation within the Proposed Development design (see Section 1.9.1.3), there is no potential for significant disturbance of the Lesser Horseshoe Bat hibernation roost during construction, operation or decommissioning.

1.9.3.2 *Lesser Horseshoe Bats: Maternity Roost*

Ratty River Cave SAC is also designated for its Lesser Horseshoe Bat maternity roost. The conservation goals for this species are to preserve suitable commuting and foraging habitat within 2.5km of maternity roosts and commuting habitat within 2.5km (to an ideal range of 5km) from roost locations. As the Proposed Development is 4.3km from the SAC at its nearest point, and suitable foraging habitat (e.g., woodland, hedgerows, scrub) are present within and adjacent to the Proposed Development site, effects on foraging Lesser Horseshoe Bats associated with the SAC maternity roost need to be considered; notably effects through habitat loss, degradation and fragmentation, and disturbance. These effects need to be considered during the construction, operational and decommissioning phases.

Detailed bat surveys were undertaken to inform the Proposed Development (as summarised in this NIS and reported in full in EIAR Chapter 7). Negligible to Low activity of Lesser Horseshoe Bat was recorded within and adjacent to the Proposed Development, with a total of 11 registrations recorded. No roosts of Lesser Horseshoe Bat were recorded within or in close proximity to the Proposed Development, and no suitable roosting habitat for Lesser Horseshoe Bat was identified.

The Proposed Development design includes mitigation measures (see Section 1.9.1.3) to minimise the potential for effects on foraging Lesser Horseshoe bats during the construction, operation and decommissioning of the Proposed Development. In particular, this includes measures to prevent light spill onto suitable foraging and commuting habitat (e.g., hedgerows, woodland edges, watercourses), pollution of watercourses, and minimise the loss of suitable foraging and commuting habitat.

Considering the distance of the Proposed Development from the SAC (i.e., towards the outer limit of the core foraging area around the maternity roost), the Negligible to Low level of Lesser Horseshoe Bat foraging and commuting activity recorded during the field surveys of the Proposed Development, and the embedded mitigation measures within the Proposed Development design, significant effects on foraging and commuting Lesser Horseshoe Bats belonging to the SAC population are not anticipated. As Lesser

[3] Back from the Brink: Species Information Guide – Lesser Horseshoe Bat. [Available at Species-info-sheet-for-lesser-horseshoe-bat-FINAL.pdf (bats.org.uk) – accessed 15/12/2023].

Horseshoe Bat is deemed to be a species of low collision risk (NatureScot, 2021), considering the factors described above (notably the distance between the Proposed Development turbines and the SAC, and the level of Lesser Horseshoe Bat activity recorded during field surveys), no significant effects through turbine fatalities are anticipated.

1.9.3.3 Qualifying Habitats

As described above, the qualifying habitat 'Caves not open to the public' is designated due to it supporting roosting Lesser Horseshoe Bats. Due to the distance between this qualifying habitat (and therefore the important Lesser Horseshoe Bat roosts it supports) and the Proposed Development site, and the embedded mitigation measures to minimise disturbance, no significant adverse effects on 'Caves not open to the public' regarding their ability to support these important bat roosts are anticipated.

1.9.3.4 Conclusion

Taking into consideration the mitigation outlined above, and the distance of the Proposed Development from the relevant qualifying features (notably in the context of known Lesser Horseshoe Bat movement patterns), adverse effects on the integrity of Ratty River Cave SAC will not occur as a result of the Proposed Development. These conclusions apply to all potential Turbine options with no difference in adverse effects identified between them.

1.9.4 River Shannon and River Fergus Estuaries SPA [004077] and Shannon and Fergus IBA

The River Shannon and River Fergus Estuaries SPA provides one of the most important areas in Ireland for wintering wetland birds and supports internationally important populations of species including, amongst others, Golden Plover. The Proposed Development falls within the typical ranges for foraging and migration for many of the SCI bird species of the SPA and species including Golden Plover have been recorded within the vicinity of the Proposed Development site. As such, potential effects from habitat loss, disturbance/displacement and mortality as a result of potential collisions require detailed assessment to establish if there is any potential for adverse effects on the integrity of this European site in view of its conservation objectives.

River Shannon and River Fergus Estuaries SPA is approximately 6.4km from the Proposed Development turbines. SCI features for this European site are specified in Section 1.5. The detailed ornithological field surveys undertaken between 2021 and 2023 to inform the Proposed Development (as summarised in this NIS and reported in full in EIAR Chapter 8) recorded the following bird species which also form SCI features of the SPA: Cormorant, Whooper Swan, Wigeon, Golden Plover, Lapwing, Curlew, Redshank and Black-headed Gull. Whilst habitats within and adjacent to the Proposed Development are suitable for some of these species (e.g., Lapwing, Curlew), these habitats are relatively limited in extent and quality for these SCI species.

Seven of these eight species (i.e., all except Golden Plover) were recorded in very low numbers and distantly from the Proposed Development. As such, the Proposed Development and adjacent land is not considered to be of significant value to these species, either in isolation or with regard to River Shannon and River Fergus Estuaries

SPA. Similarly, field survey results indicated that land within and adjacent to the Proposed Development site was not used by significant numbers of waterbirds with regard to the designated waterbird assemblage of the SPA.

Considering the statuses of these seven species within and adjacent to the Proposed Development, and the embedded mitigation measures that will be adopted to minimise habitat loss and fragmentation and disturbance (see Section 1.9.1.3), there is no potential for adverse effects on the integrity of River Shannon and River Fergus Estuaries SPA through effects on populations of these qualifying species or the waterbird assemblage as a whole.

The one other qualifying species recorded during the field surveys, Golden Plover, was recorded within/adjacent to the Proposed Development in higher numbers, with the peak count of 146 Golden Plovers recorded equating to 2.58% of the cited SPA population for River Shannon and River Fergus Estuaries SPA. However, this species was only recorded during a single survey visit (10th October 2022), with no other individuals recorded within or in close proximity to the Proposed Development during the two years of surveys undertaken. Golden Plover activity was confined to flights over the Proposed Development site and adjacent land, with no use of the Proposed Development site for roosting or foraging recorded. As such, regular use of the Proposed Development site by significant numbers of Golden Plover has not been observed, and it is considered probable that the Proposed Development site is only visited infrequently by this species. Considering this, and the embedded mitigation within the Proposed Development design (see Section 1.9.1.3), there is no potential for adverse effects on the integrity of River Shannon and River Fergus Estuaries SPA through habitat loss, fragmentation or disturbance effects on Golden Plover.

Considering the flight activity recorded within/in close proximity to the Proposed Development by up to 146 Golden Plover (equating to 2.58% of the cited SPA population for River Shannon and River Fergus Estuaries SPA), collision risk modelling was undertaken on a precautionary basis to identify any potential for significant effects from collision fatalities (see EIAR Chapter 8 Ornithology Section 8.6.3.2.6). Based on the field data collected between 2021 and 2023 inclusive, modelled Golden Plover collision fatalities from Proposed Development turbines are estimated as 0.04 birds per year, equating to one Golden Plover collision every 24.46 to 27.63 years. Considering this figure in the context of the cited SPA population (5,664 Golden Plovers), and typical background mortality rates for this species (27% annually in the UK according to the BTO (2023)), this is not considered to represent sufficient collisions such that adverse effects on the SPA population are possible, even if all Golden Plovers flying over the Proposed Development form part of the SPA population. Similarly, considering the level of flight activity recorded (i.e., 146 birds during one survey visit over a two-year survey period), significant effects on Golden Plovers flying within/near the Proposed Development through other means (e.g., disturbance, displacement) are not considered to be significant. In conclusion, there is not considered to be a likelihood for adverse effects on the integrity of River Shannon and River Fergus Estuaries SPA through impacts (including potential collision injuries/fatalities) on Golden Plover from the Proposed Development. These conclusions apply to all potential turbine options with no difference in adverse effects identified between them.

Other Proposed Development elements extend nearer to River Shannon and River Fergus Estuaries SPA, with the nearest, the TDR, extending to 380m from the SPA. However, the scope for effects from these elements is low, involving no significant loss of suitable habitat for any species forming qualifying features for River Shannon and River Fergus Estuaries SPA. In addition, the embedded mitigation measures within the Proposed Development design will be adopted to minimise potential habitat loss and disturbance during all stages of the Proposed Development.

In summary, potential effects on the integrity of River Shannon and River Fergus Estuaries SPA, and any other European sites regarding their features of ornithological interest, from the Proposed Development are considered not significant.

1.9.5 Lough Derg (Shannon) SPA and Slievefelim to Silvermines Mountains SPA

Lough Derg (Shannon) SPA is designated for its important breeding and wintering waterbird populations: specifically breeding Cormorant and Common Tern (*Sterna hirundo*), wintering Goldeneye (*Bucephala clangula*) and Tufted Duck (*Aythya fuligula*), and its wintering waterbird aggregation. Lough Derg (Shannon) SPA is approximately 12.1km from the Proposed Development turbines, which is relatively distant in the context of typical movement patterns for relevant waterbird species (SNH, 2016). In addition, no significant use of the Proposed Development site or flight routes through the Proposed Development turbines by qualifying species were recorded during the detailed field surveys for breeding and wintering birds undertaken to inform this assessment. Whilst other Proposed Development elements extend nearer to Lough Derg (Shannon) SPA, with the nearest, the TDR, extending to 2.1km from the SPA at its nearest point, considering this distance and the scope for effects from the TDR, there is no potential for significant effects from the TDR on this designated site. As such, there is no potential for the Proposed Development to have any significant adverse effects on the integrity of Lough Derg (Shannon) SPA.

1.9.6 Slievefelim to Silvermines Mountains SPA

Slievefelim to Silvermines Mountains SPA is designated for its important breeding population of Hen Harrier. As Slievefelim to Silvermines Mountains SPA is over 15km from the Proposed Development turbines, based on best practice guidance (SNH, 2016), the Proposed Development turbines are outside of the likely foraging range (up to 10km) of any Hen Harriers associated with Slievefelim to Silvermines Mountains SPA. As such, there is no potential for significant effects on Slievefelim to Silvermines Mountains SPA as a result of the construction, operation and decommissioning phases of the Proposed Development turbines. Whilst other Proposed Development elements extend nearer to Slievefelim to Silvermines Mountains SPA, with the nearest, the TDR, extending to 3.8km from the SPA at its nearest point, considering this distance and the scope for effects from the TDR, there is no potential for significant effects from the TDR on this designated site. The potential for effects will be minimised further by the mitigation measures described in Section 1.9.1.3. As such, there is no potential for the Proposed Development to have any significant adverse effects on the integrity of Slievefelim to Silvermines Mountains SPA.

1.9.7 Cumulative Effects

As described in EIAR **Chapter 2 EIAR Methodology**, a planning search was carried out to identify permitted and constructed projects in the wider receiving environment which could potentially contribute to cumulate effects with the Proposed Development. Cumulative effects are defined by CIEEM (2018) as: *"Additional changes caused by a proposed development in conjunction with other developments or the combined effect of a set of developments taken together"*. This identified various windfarms and other development types with the potential for cumulative effects with the Proposed Development (see EIAR Chapters 7 and 8 for further information).

Other wind farms and proposed wind farms in the vicinity of the Proposed Development were considered for the potential to give rise to cumulative impacts, see Chapter 20 for further details. The proximity and status (i.e., operational, permitted or pending) these wind farms has been taken into consideration within this assessment.

Seven wind farm developments were identified as requiring assessment of cumulative effects in relation to the Proposed Development, as summarised in **Table 1- 6** below.

Table 1- 6: Wind farm developments considered for cumulative effects

Wind farm	Status	Distance from Proposed Development	No. of turbines	Blade tip height	Max. rotor diameter
Knockshanvo	Pre-planning	0.5 km N	9	179.5-185 m	149-163 m
Ballyclar	Pre-planning	4.7 km S	12	150-158 m	NA
Carrownagowan	Granted	5.1 km NE	19	169 m	136 m
Fahybeg Onshore Wind Farm	Planning (appealed)	6.0 km E	8	169-176.5 m	131-138 m
Lackareagh	Pre-planning	6.4 km NE	7	N/A	N/A
Parteen Turbine	Operational	9.4 km SE	1	N/A	53 m
Vision Care Turbine	Operational	13.7 km NE	1	N/A	Radius 40 m

Each additional turbine erected in the landscape can potentially increase the cumulative risk of collision for bats and birds foraging and commuting through a landscape. For many species (e.g., passerines), their ecology (particularly their movement patterns) mean that they will not experience an incremental increase in collision risk for each turbine erected. For species with larger home ranges and/or commuting long distances (e.g., raptors, waders), there is greater potential for individuals to experience a cumulative collision risk. Information from recovery of ringed and tagged birds indicates that losses associated with collision with road traffic and buildings, along with hunting and predation fatalities, are the most significant source of bird mortality (Wernham et al., 2002).

Other existing or proposed projects in the vicinity of the Proposed Development have the potential to cumulatively impact on ecological features; particularly through increased fragmentation of the landscape, increased habitat disturbance, barrier effects, and

intensification of collision or displacement impacts on sensitive species. Such developments include solar farms, quarries and residential developments. Existing, planned and proposed projects within 10km of the Proposed Development are detailed in Appendix F.

As described in Section 1.9, the scope for significant adverse effects from the Proposed Development on the six relevant European sites is relatively limited due to the following factors:

- The distance between the Proposed Development and these European sites;
- The likely sensitivities of the qualifying features of these European sites in the context of potential Proposed Development impacts; and
- The level of activity by relevant qualifying species within and/or in close proximity to the Proposed Development.

In addition, the Proposed Development includes mitigation measures (see Section 1.9.1.3) which will minimise the potential for impacts on qualifying habitats and species. Considering this, and the scope for impacts from nearby wind farms and other developments, cumulative effects from the Proposed Development are not considered to potentially have significant adverse effects on the integrities of these European sites or any other European sites.

1.10 Assessment of Residual Effects

Following the assessment of effects undertaken in Section 1.9, it has been concluded that, taking into consideration the mitigation which will be implemented in full for the Proposed Development, significant effects on the integrities of relevant European sites will not occur as a relevant of the Proposed Development, either independently or in combination with other plans and projects.

1.11 Conclusions

It has been objectively concluded that, following an examination, analysis and evaluation of relevant information, including in particular the nature of the predicted impacts from the Proposed Development and the implementation of mitigation measures, the Proposed Development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects.

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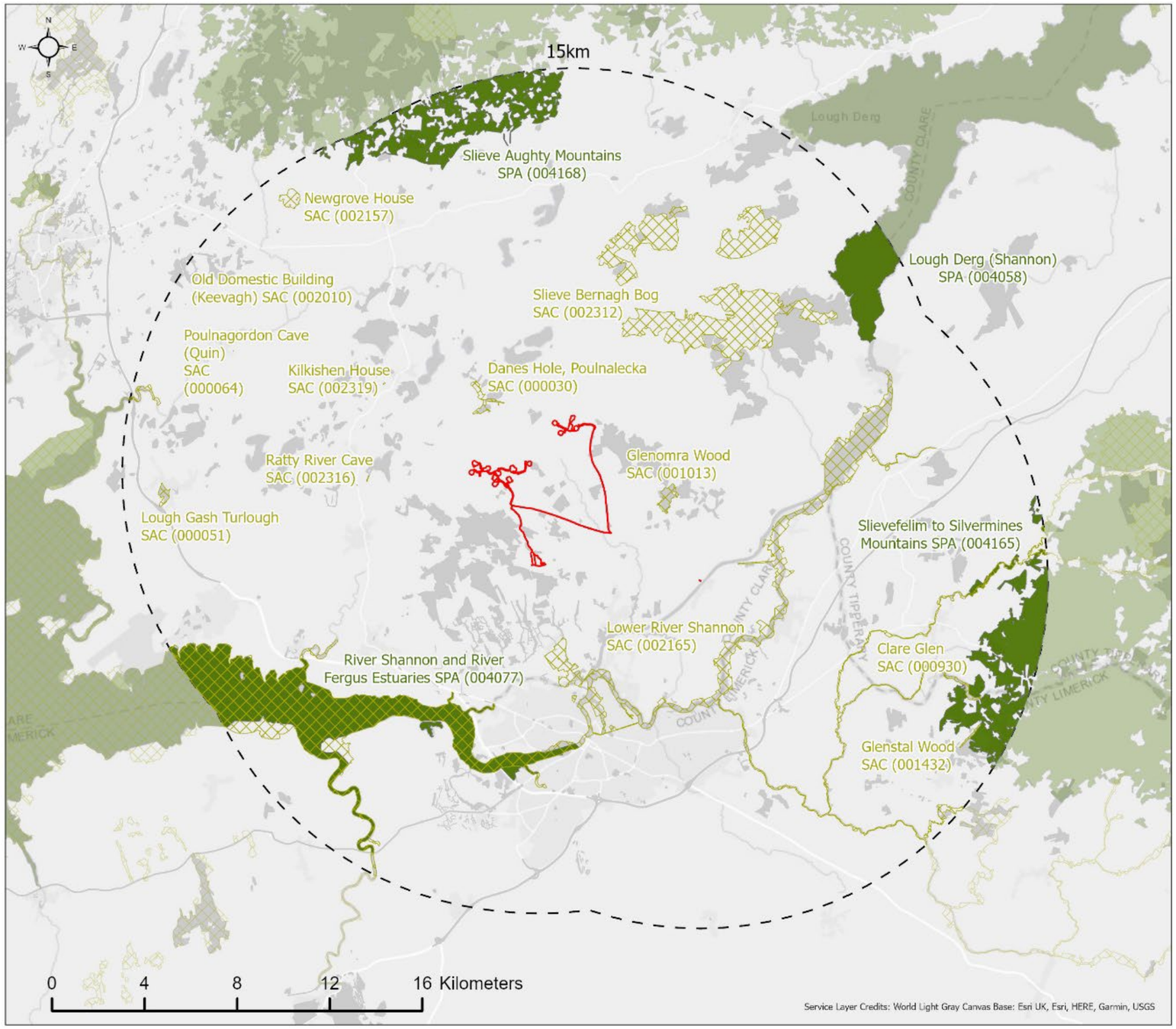
Appendix A: European Sites within 15 km of the Proposed Development



Client: Orsted

Project: Oatfield

Title: European Designated Sites

Legend:

- Proposed Development Boundary
- Special Area of Conservation*
- Special Protection Area**
- Zone of Influence

* NPWS (October 2023)
** NPWS (July 2023)

For illustrative purposes only. Map not to scale

Date:	Revision:	Drawn	Checked	Authorised
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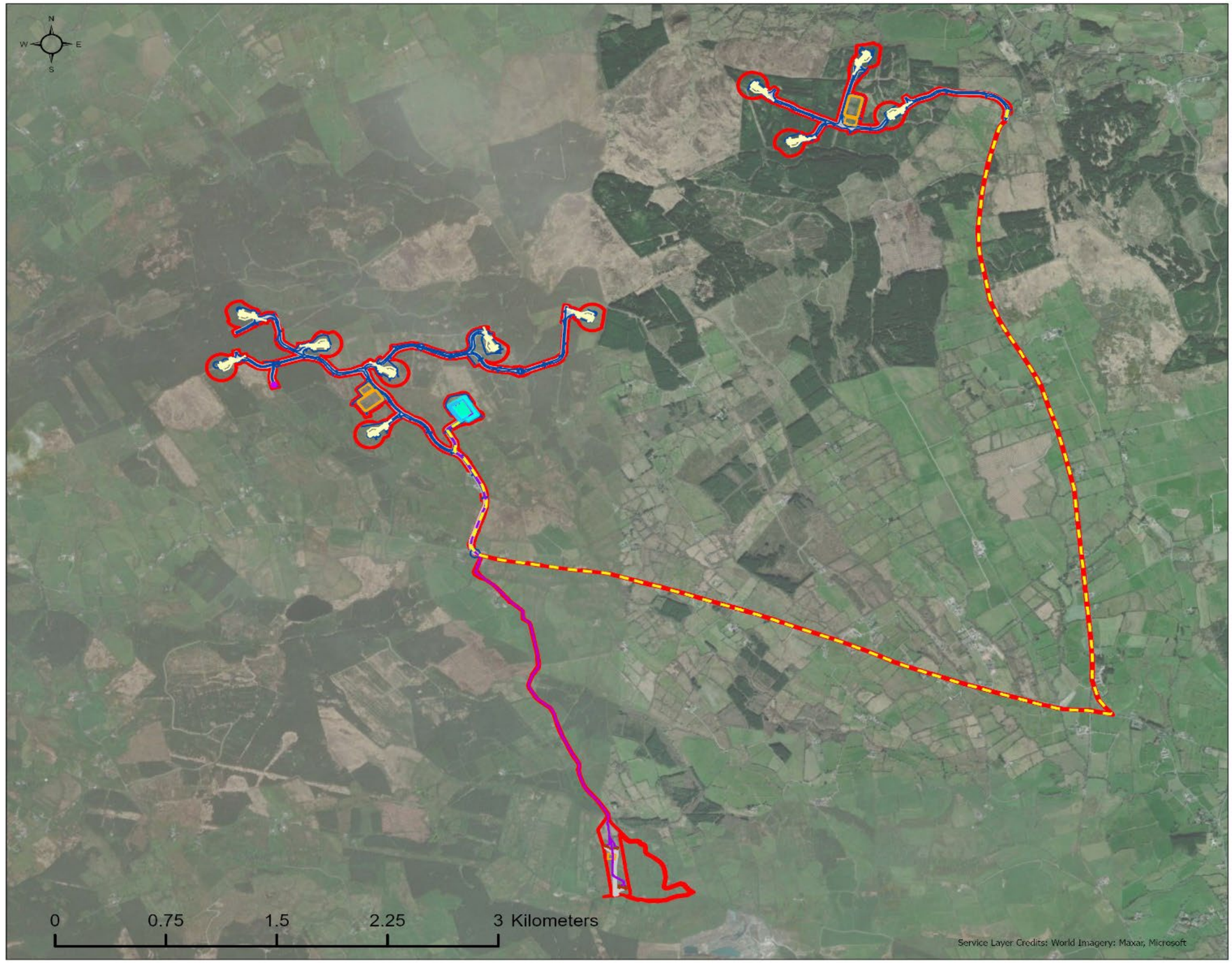
Appendix B: Site Maps

Appendix B-I: Oatfield Windfarm Project Location



Client: Orsted

Project: Oatfield

Title: Windfarm Layout Overview

Legend:

- Proposed Met Mast Polygon
- Proposed IPP Cable
- Turbine Hardstands
- GCR
- Onsite Substation Polygon
- Proposed CC Stockpile
- OHLMast Hardstands
- Drainage
- Access Tracks
- RLB+TDR RLB

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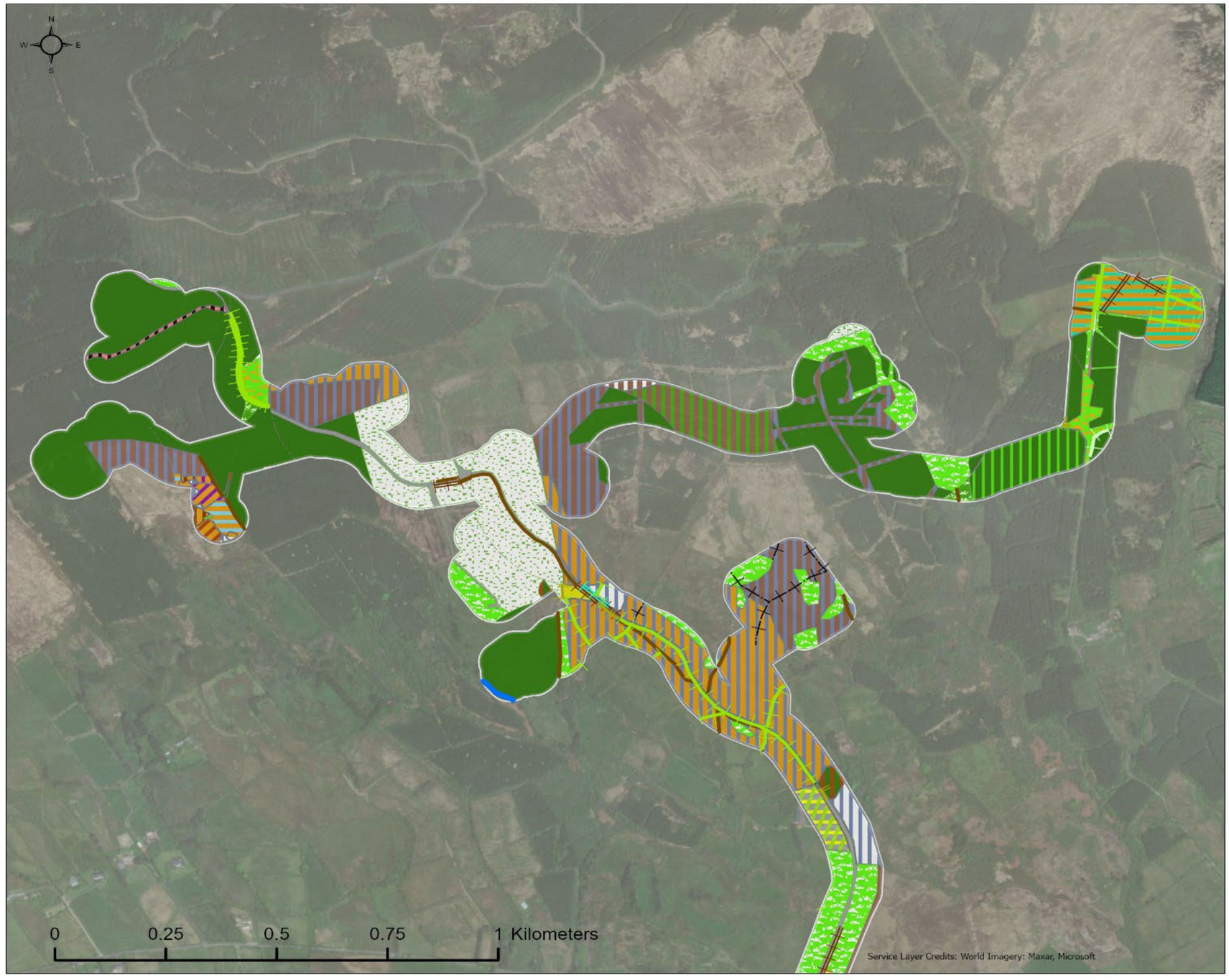
Appendix B-II: Habitat Maps



Client: Orsted

Project: Oatfield

Title: Habitats

Legend:

- BL1 Stone walls and other stonework
- BL2 Earth banks
- BL2/WL1 Earth banks/ Hedgerows
- FW1 Upland/croding rivers
- FW4 Drainage ditches
- WL1 Hedgerows
- WL1/WL2 Hedgerows/ Treelines
- WL2 Treelines
- BL3 Buildings and artificial surfaces
- BL3/GA2 Buildings and artificial surfaces/Amenity grassland
- ED2 Spoil and bare ground
- ED3 Recolonising bare ground
- GA1 Improved agricultural grassland
- GS1/GS3 Dry calcareous and neutral grassland
- GS3 Dry-humid acid grassland
- GS3/GS4 Dry-humid acid grassland/Wet grassland
- GS3/GS4/HH1 Dry-humid acid grassland/Wet grassland/Dry siliceous heath
- GS3/GS4/WS1 Dry-humid acid grassland/Wet grassland/Scrub
- GS3/WS1 Dry-humid acid grassland/Scrub
- GS4 Wet grassland
- GS4/HH2 Wet grassland/Dry calcareous heath
- GS4/HH3 Wet grassland/Wet heath
- GS4/HH3/PB2 Wet grassland/Wet heath/Upland blanket bog
- GS4/PB2 Wet grassland/ Upland blanket bog
- GS4/WS1 Wet grassland/ Scrub
- HH1 Dry siliceous heath
- HH3 Wet heath
- HH3/WD4 Wet heath/ Conifer plantation
- HH3/WS1 Wet heath/Scrub
- WD2 Mixed broadleaved/ conifer woodland
- WD4 Conifer plantation
- WD4/WS1 Conifer plantation/Scrub
- WS1 Scrub
- WS1/WD2 Scrub/Mixed broadleaved/conifer woodland
- WS1/WS2 Scrub/Immature woodland
- WS5 Recently-felled woodland
- Study Area

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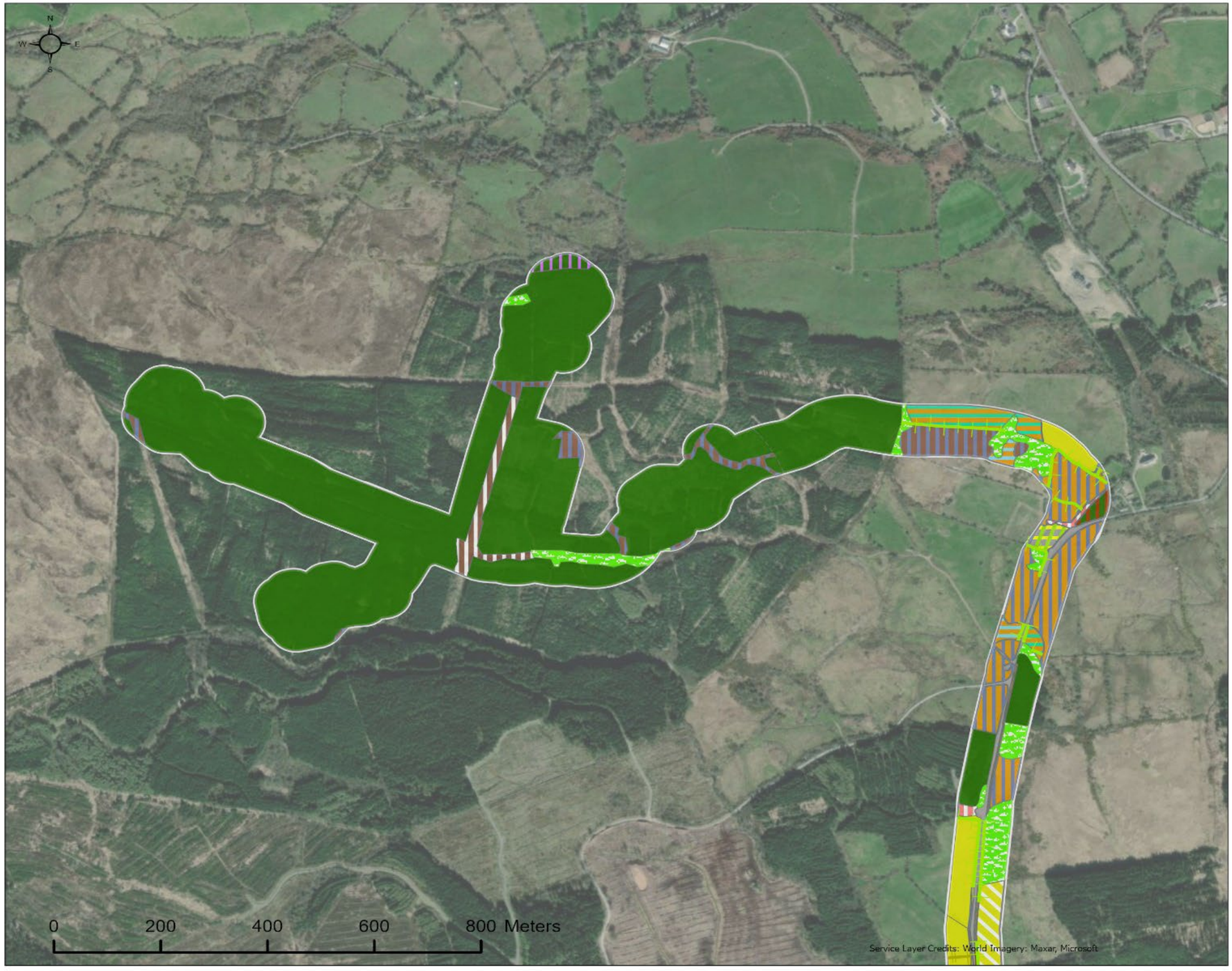

Client: Orsted

Project: Oatfield

Title: Habitats

Legend:

- FW4 Drainage ditches
- WL1 Hedgerows
- WL2 Treelines
- BL3 Buildings and artificial surfaces
- BL3/GA2 Buildings and artificial surfaces/Amenity grassland
- ED3 Recolonising bare ground
- GA1 Improved agricultural grassland
- GA1/WS1 Improved agricultural grassland/Scrub
- GS2 Dry meadows and grassy verges
- GS2/HD1 Dry meadows and grassy verges/Dense bracken
- GS3 Dry-humid acid grassland
- GS3/GS4 Dry-humid acid grassland/Wet grassland
- GS4 Wet grassland
- HD1 Dense bracken
- HH3 Wet heath
- HH3/WS1 Wet heath/Scrub
- WD1 Broadleaved woodland
- WD2 Mixed broadleaved/conifer woodland
- WD4 Conifer plantation
- WS1 Scrub
- Study Area

For illustrative purposes only. Map not to scale

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Client: Orsted

Project: Oatfield

Title: Habitats

Legend:

- BL1 Stone walls and other stonework
- BL2 Earth banks
- FW4 Drainage ditches
- WL1 Hedgerows
- WL1/WL2 Hedgerows/Treelines
- WL2 Treelines
- BL3 Buildings and artificial surfaces
- BL3/GA1 Buildings and artificial surfaces/Improved agricultural grassland
- BL3/GA2 Buildings and artificial surfaces/Amenity grassland
- BL3/GA2/WD5 Buildings and artificial surfaces/ Amenity grassland/ Scattered trees and parkland
- ED3 Recolonising bare ground
- GA1 Improved agricultural grassland
- GA1/WS1 Improved agricultural grassland/Scrub
- GS2 Dry meadows and grassy verges
- GS2/HD1 Dry meadows and grassy verges/Dense bracken
- GS3/HH1 Dry-humid acid grassland/Dry siliceous heath
- GS4 Wet grassland
- HD1 Dense bracken
- WD1 Broadleaved woodland
- WD2 Mixed broadleaved/conifer woodland
- WD4 Conifer plantation
- WS1 Scrub
- WS3 Ornamental/ non-native shrub
- Study Area

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Project: Oatfield

Title: Habitats

Legend:

- BL1 Stone walls and other stonework
- BL2 Earth banks
- WL1 Hedgerows
- WL1/WL2 Hedgerows/ Treelines
- WL2 Treelines
- BL3 Buildings and artificial surfaces
- BL3/GA1 Buildings and artificial surfaces/ Improved agricultural grassland
- BL3/GA2 Buildings and artificial surfaces/ Amenity grassland
- GA1 Improved agricultural grassland
- GA1/WS1 Improved agricultural grassland/Scrub
- GS2 Dry meadows and grassy verges
- GS4 Wet grassland
- GS4/WS1 Wet grassland/Scrub
- WD2 Mixed broadleaved/ conifer woodland
- Study Area

For illustrative purposes only. Map not to scale

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Client: Orsted

Project: Oatfield

Title: Habitats

Legend:

- BL2 Earth banks
- BL2/WL1 Earth banks/ Hedgerows
- BL2/WL2 Earth banks/Treelines
- WL1 Hedgerows
- WL1/WL2 Hedgerows/ Treelines
- WL2 Treelines
- BL3 Buildings and artificial surfaces
- BL3/GA2 Buildings and artificial surfaces/ Amenity grassland
- ED2 Spoil and bare ground
- GA1 Improved agricultural grassland
- GS3/WS1 Dry-humid acid grassland/Scrub
- GS4 Wet grassland
- GS4/WS1 Wet grassland/Scrub
- WD2 Mixed broadleaved/ conifer woodland
- WD3 Conifer woodland
- WS1 Scrub
- Study Area

For illustrative purposes only. Map not to scale

Date:	Revision:	Drawn	Checked	Authorised
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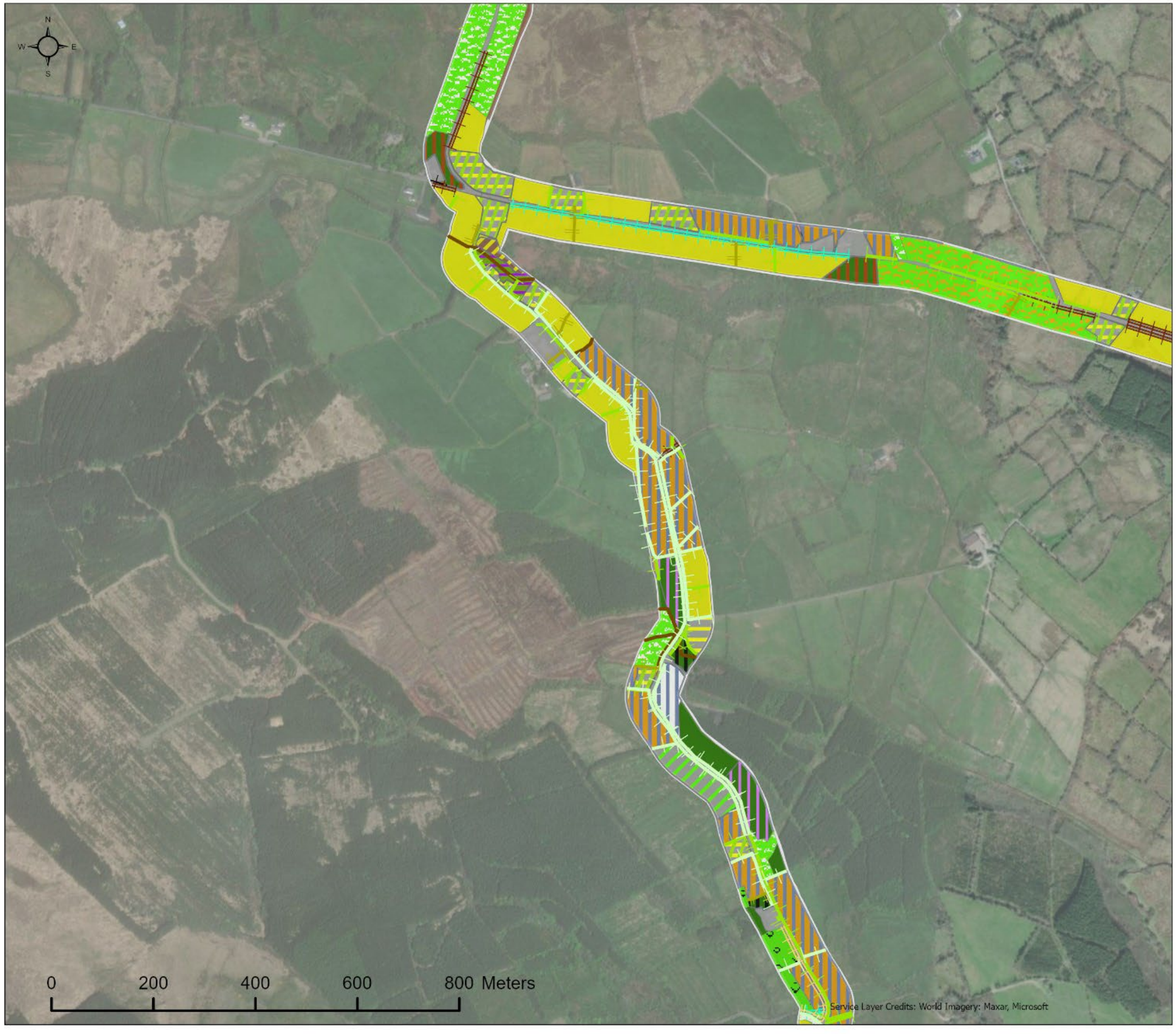

Client: Orsted

Project: Oatfield

Title: Habitats

Legend:

- BL1 Stone walls and other stonework
- BL2 Earth banks
- BL2/WL1 Earth banks/Hedgerows
- BL2/WL1/WL2 Earth banks/Hedgerows/ Treelines
- FW4 Drainage ditches
- WL1 Hedgerows
- WL1/WL2 Hedgerows/Treelines
- WL2 Treelines
- BL3 Buildings and artificial surfaces
- BL3/GA1 Buildings and artificial surfaces/Improved agricultural grassland
- BL3/GA2 Buildings and artificial surfaces/Amenity grassland
- BL3/WS2 Buildings and artificial surfaces/Immature woodland
- ED2 Spoil and bare ground
- GA1 Improved agricultural grassland
- GS3/WS1 Dry-humid acid grassland/Scrub
- GS4 Wet grassland
- GS4/WS1 Wet grassland/Scrub
- HD1/WS1 Dense bracken/scrub
- HH1 Dry siliceous heath
- WD1 Broadleaved woodland
- WD2 Mixed broadleaved/conifer woodland
- WD3 Conifer woodland
- WD4 Conifer plantation
- WL2 Treelines
- WN6 Wet willow-alder-ash woodland
- WS1 Scrub
- WS2 Immature woodland
- Study Area

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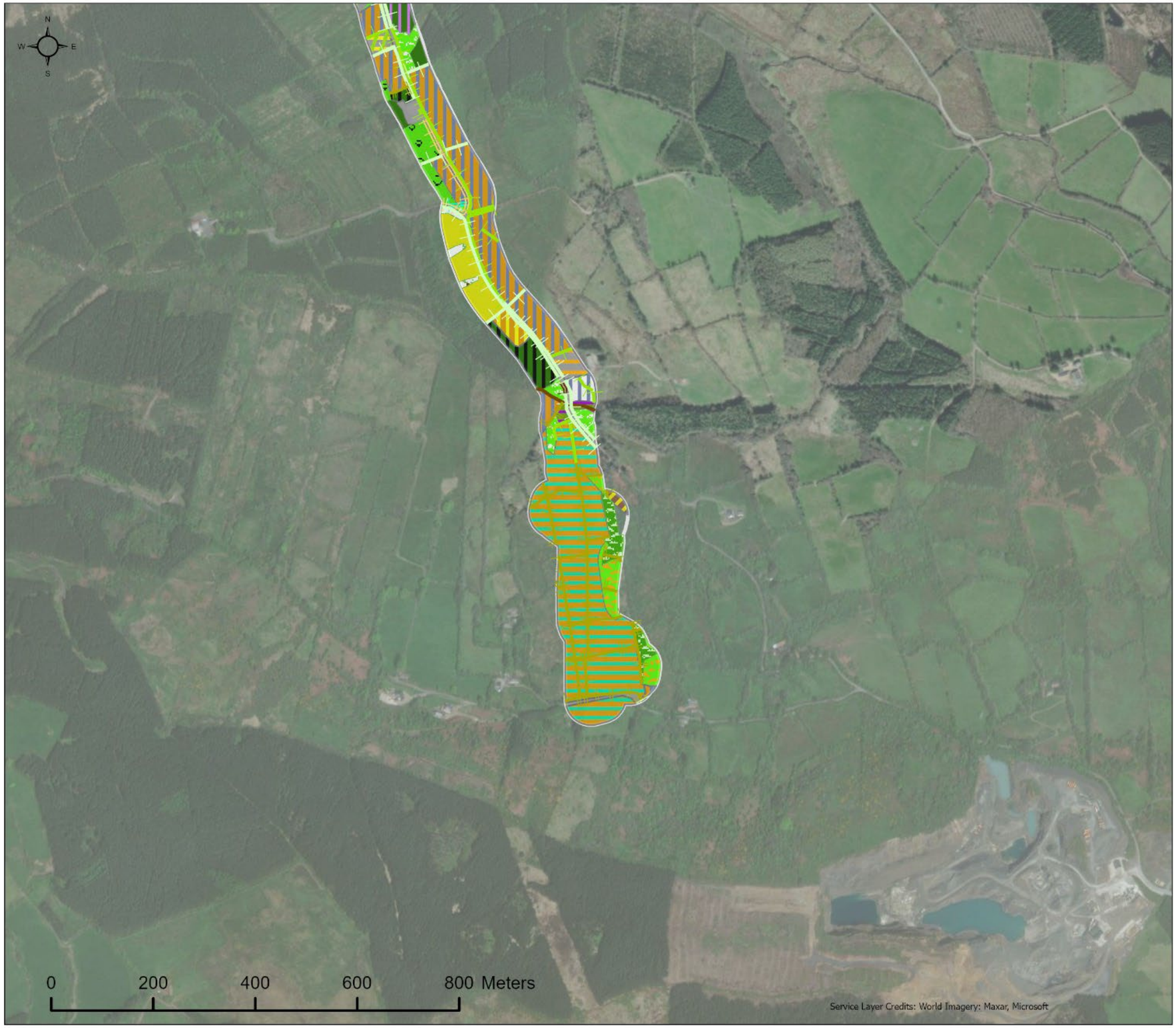

Client: Orsted

Project: Oatfield

Title: Habitats

Legend:

- BL2 Earth banks
- BL2/WL1 Earth banks/Hedgerows
- BL2/WL1/WL2 Earth banks/Hedgerows/ Treelines
- FW4 Drainage ditches
- WL1 Hedgerows
- WL1/WL2 Hedgerows/Treelines
- WL2 Treelines
- BL3 Buildings and artificial surfaces
- BL3/GA2 Buildings and artificial surfaces/Amenity grassland
- BL3/GS4 Buildings and artificial surfaces/Wet grassland
- BL3/WS2 Buildings and artificial surfaces/Immature woodland
- ED2 Spoil and bare ground
- GA1 Improved agricultural grassland
- GA1/GS4 Improved agricultural grassland/Wet grassland
- GS3 Dry-humid acid grassland
- GS3/WS1 Dry-humid acid grassland/Scrub
- GS4 Wet grassland
- GS4/WS1 Wet grassland/Scrub
- HD1/WS1 Dense bracken/scrub
- WD1 Broadleaved woodland
- WD3 Conifer woodland
- WD4 Conifer plantation
- WL2 Treelines
- WN6 Wet willow-alder-ash woodland
- WS1 Scrub
- WS1/WS2 Scrub/ Immature woodland
- WS2 Immature woodland
- Study Area

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Date:	Revision:	Drawn	Checked	Authorised
15/12/23	2230E- AP - 10_008	DMC	CB	AC
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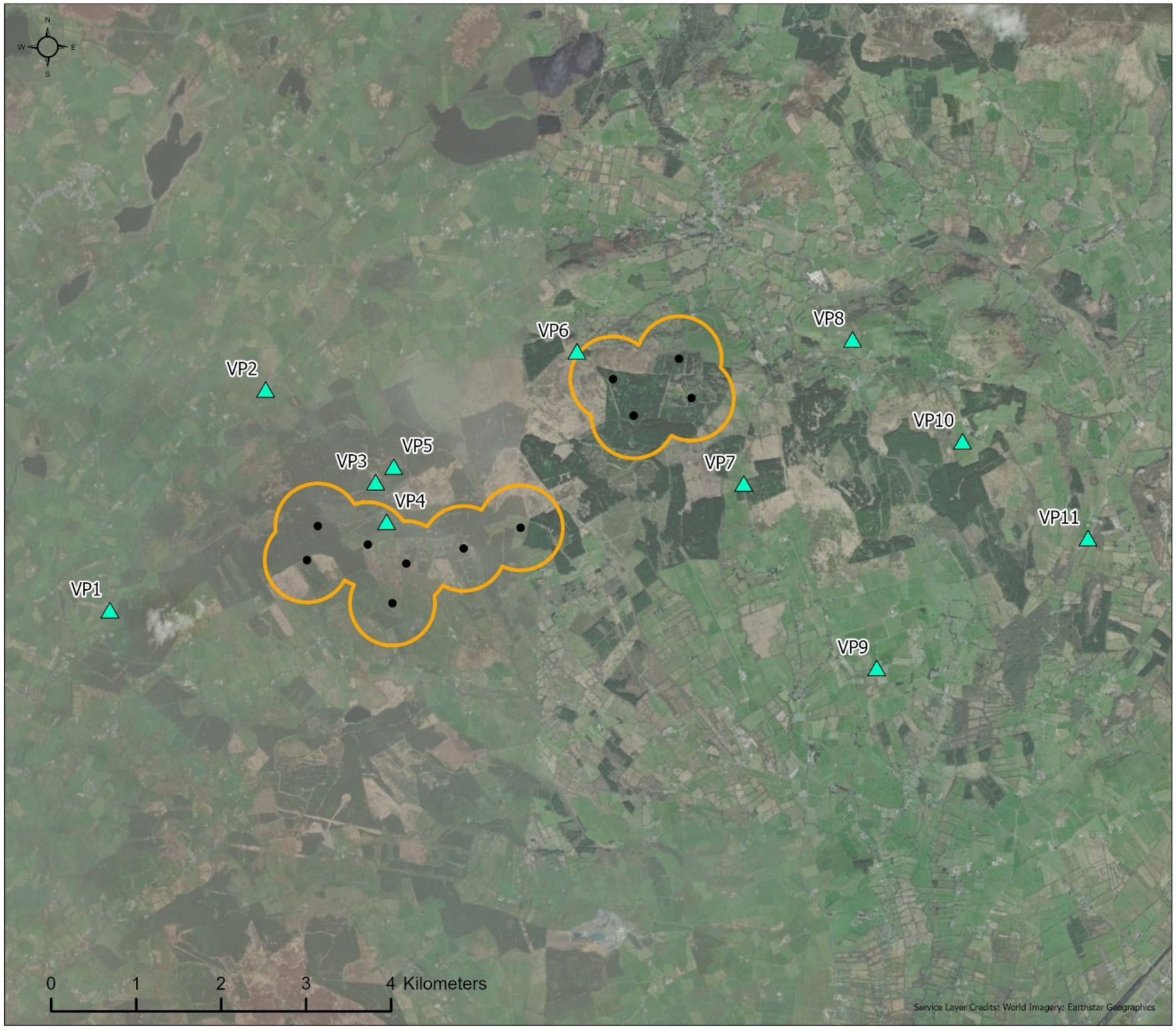
Appendix C: Avifauna Survey Data

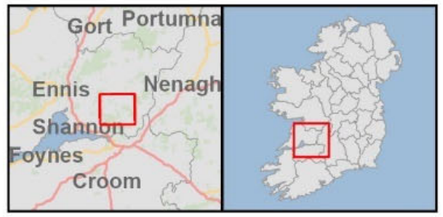
Appendix C-I: Vantage Point Survey



Client: Orsted

Project: Oatfield

Title: VP Locations Breeding 2022



Legend:

- VP Locations
- Proposed Turbine Layout
- Turbine 500m Buffer

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Date:	Revision:	Drawn	Checked	Authorised
06/11/23	2230E - AP - 02_006	DMC	CB	AC
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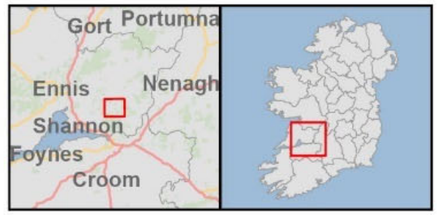
Project: Oatfield

Title: VP Locations Breeding 2023



Legend:

- VP Locations
- Proposed Turbine Layout
- Turbine 500m Buffer

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20/10/23	2230E - AP - 02_002	DMC	CB	AC
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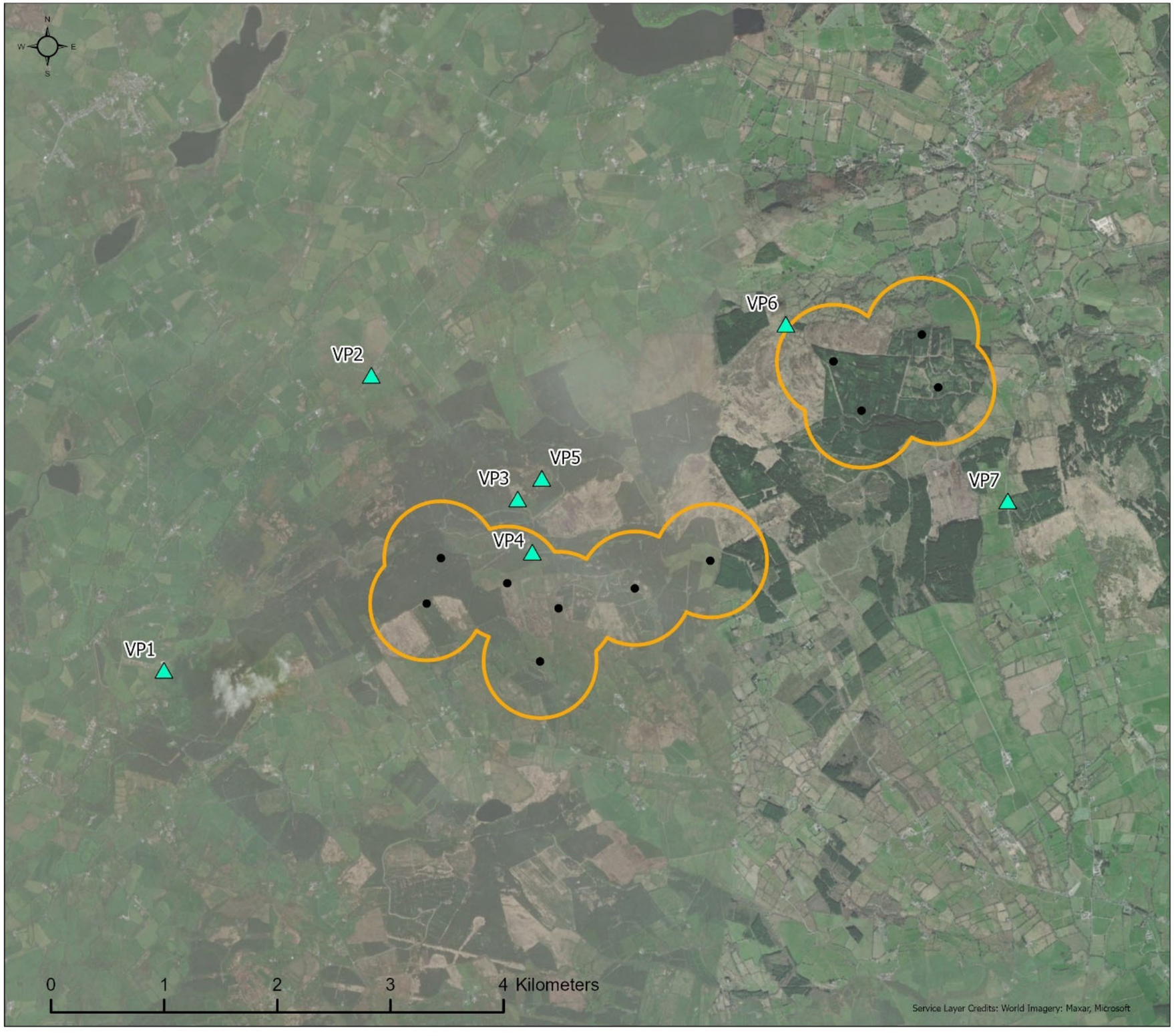
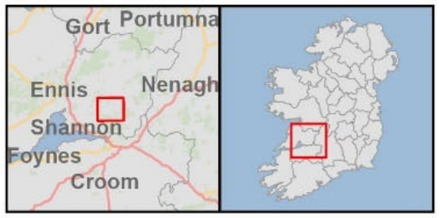


Client: Orsted

Project: Oatfield

Title: VP Locations Winter 2021-2022



Legend:

- VP Locations
- Proposed Turbine Layout
- Turbine 500m Buffer

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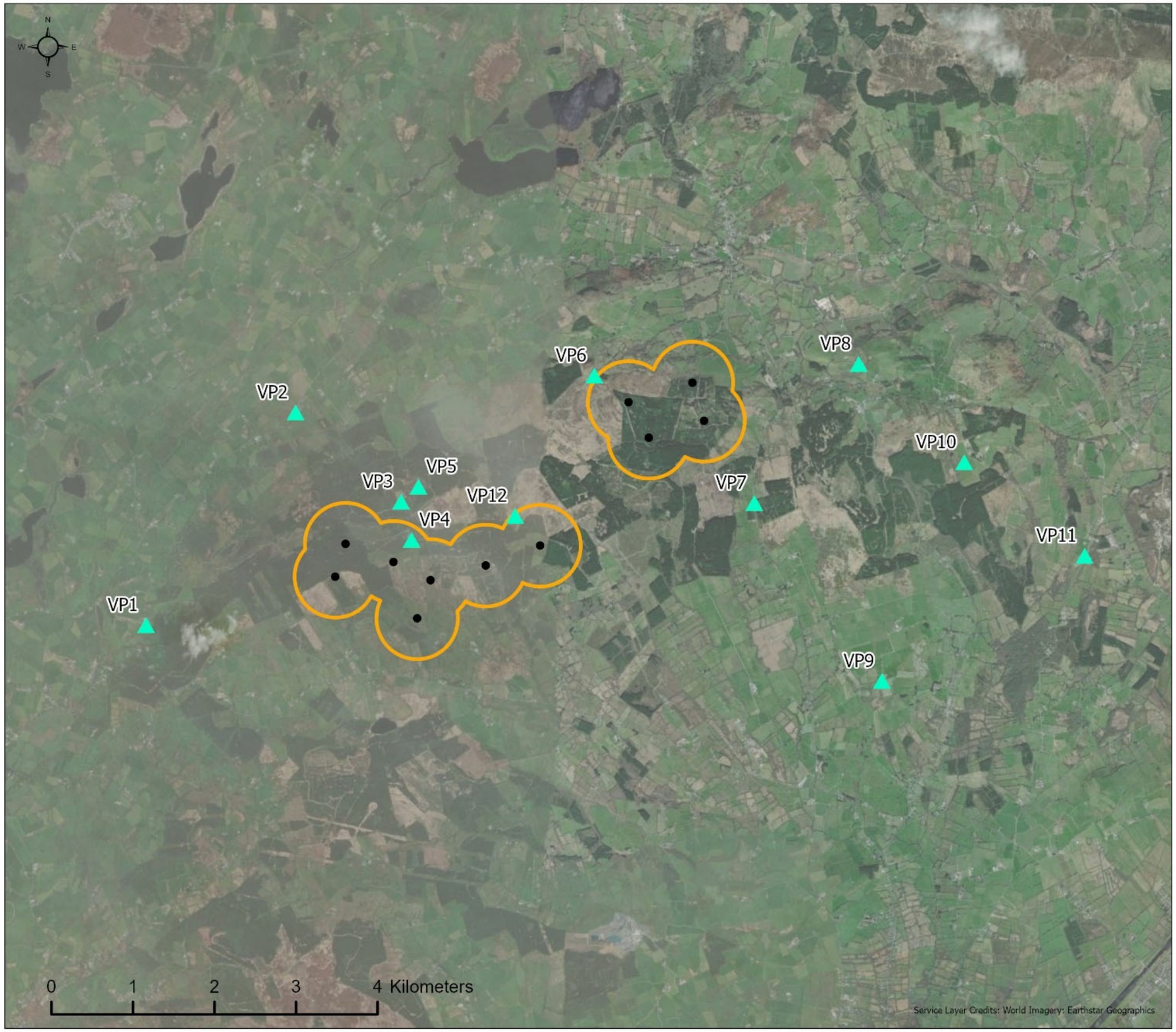
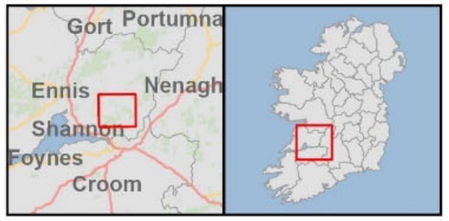


Client: Orsted

Project: Oatfield

Title: VP Locations Winter
Oct - Dec 22/23



Legend:

- Proposed Turbine Layout
- VPs October - December
- Turbine 500m Buffer

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Date:	Revision:	Drawn	Checked	Authorised
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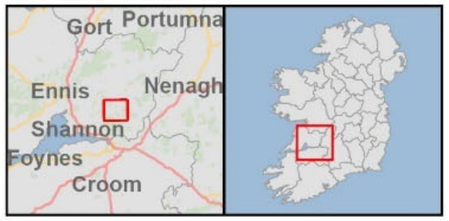
Project: Oatfield

Title: VP Locations Winter
Jan - Mar 22/23



Legend:

- Proposed Turbine Layout
- VPs January - March
- Turbine 500m Buffer

For illustrative purposes only. Map not to scale

Date:	Revision:	Drawn	Checked	Authorised
20/10/23	2230E - AP - 02_001	DMC	CB	AC
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Winter 2021/2022 VP Species and Height Band

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
03/11/2021	1	08:30:00	11:30:00	Raven_RN	1	08:50:00	On			50					50
03/11/2021	1	08:30:00	11:30:00	Raven_RN	1	09:10:00	On			45					45
03/11/2021	1	08:30:00	11:30:00	Kestrel_K.	1	10:45:00	On			35					35
03/11/2021	1	08:30:00	11:30:00	White-tailed Eagle_WE	1	11:05:00	On						160		160
03/11/2021	1	08:30:00	11:30:00	Kestrel_K.	1	11:10:00	On		75						75
03/11/2021	1	11:30:00	14:30:00	Kestrel_K.	1	11:45:00	On		120	100	100	100			420
03/11/2021	1	11:30:00	14:30:00	White-tailed Eagle_WE	1	12:00:00	On						620		620
03/11/2021	1	11:30:00	14:30:00	Kestrel_K.	1	12:50:00	On			130					130
03/11/2021	1	11:30:00	14:30:00	Kestrel_K.	1	13:50:00	On			260					260
04/11/2021	2	08:50:00	11:50:00	Raven_RN	2	11:30:00	On			25					25
04/11/2021	2	11:50:00	14:50:00	Kestrel_K.	1	12:25:00	On		130						130
04/11/2021	2	11:50:00	14:50:00	Kestrel_K.	1	12:40:00	On		400	180					580
04/11/2021	2	11:50:00	14:50:00	White-tailed Eagle_WE	2	13:25:00	On			70					70
04/11/2021	2	11:50:00	14:50:00	Hen Harrier_HH	1	13:30:00	On				70				70
04/11/2021	2	11:50:00	14:50:00	Kestrel_K.	1	14:10:00	On		600	90					690
19/11/2021	3	09:00:00	12:00:00	Nil Sightings											

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
19/11/2021	3	12:30:00	15:30:00	Raven_RN	1	02:38:00	On	10							10
19/11/2021	3	12:30:00	15:30:00	Raven_RN	1	15:05:00	On		40						40
01/11/2021	4	08:30:00	11:30:00	Nil Sightings											
01/11/2021	4	11:30:00	14:30:00	Hen Harrier_HH	1	11:40:00	On	10	40						50
01/11/2021	4	11:30:00	14:30:00	Kestrel_K.	1	11:50:00	On		75						75
01/11/2021	4	11:30:00	14:30:00	Raven_RN	1	12:55:00	On			40					40
01/11/2021	4	11:30:00	14:30:00	Kestrel_K.	1	13:25:00	On		35						35
02/11/2021	5	08:20:00	11:20:00	Raven_RN	2	08:40:00	On				35				35
02/11/2021	5	08:20:00	11:20:00	Raven_RN	1	09:05:00	On			25					25
02/11/2021	5	08:20:00	11:20:00	Raven_RN	2	09:35:00	On				25				25
02/11/2021	5	11:20:00	14:20:00	Raven_RN	2	13:50:00	On			20					20
10/11/2021	6	08:40:00	11:40:00	Nil Sightings											
10/11/2021	6	11:40:00	14:40:00	Raven_RN	1	11:50:00				65					65
10/11/2021	6	11:40:00	14:40:00	Snipe_SN	1	12:10:00		15							15
10/11/2021	6	11:40:00	14:40:00	Kestrel_K.	1	12:30:00				80					80
10/11/2021	6	11:40:00	14:40:00	Kestrel_K.	1	12:55:00							310		310
10/11/2021	6	11:40:00	14:40:00	Kestrel_K.	1	13:10:00					70				70

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
10/11/2021	6	11:40:00	14:40:00	Grey Heron_H.	1	13:15:00						80			80
10/11/2021	6	11:40:00	14:40:00	Kestrel_K.	1	14:05:00				180	180				360
10/11/2021	6	11:40:00	14:40:00	Kestrel_K.	2	14:15:00			130						10
05/11/2021	7	08:20:00	11:20:00	Nil Sightings											
05/11/2021	7	11:20:00	14:20:00	Merlin_ML	1	12:30:00	On	15							5
05/11/2021	7	11:20:00	14:20:00	Kestrel_K.	1	12:50:00	On		220						220
05/11/2021	7	11:20:00	14:20:00	Snipe_SN	9	13:50:00	On	5	5	5	5	50			70
19/11/2021	2	09:47:00	12:47:00	Raven_RN	2	12:39:00	Off/On	30	10	20					60
19/11/2021	2	12:47:00	15:47:00	Nil Sightings											
02/11/2021	3	08:30:00	11:30:00	Raven_RN	1	09:51:00	Off			30					30
02/11/2021	3	11:30:00	14:30:00	Raven_RN	2	11:42:00	Off					60			60
02/11/2021	3	11:30:00	14:30:00	Kestrel_K.	1	12:08:00	Off			100				20	120
02/11/2021	3	11:30:00	14:30:00	Kestrel_K.	1	12:14:00	Off					200			200
12/11/2021	4	08:48:00	11:48:00	Raven_RN	2	11:20:00	Off/On			60					60
12/11/2021	4	11:48:00	14:48:00	Raven_RN	2	12:36:00	Off/On			60					60
12/11/2021	4	11:48:00	14:48:00	Raven_RN	1	13:58:00	Off/On				120				120
15/12/2021	5	09:15:00	15:15:00	Raven_RN	2	09:58:00	On					10			10

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
15/12/2021	5	09:15:00	15:15:00	Raven_RN	1	10:14:00	Off				55				55
15/12/2021	5	09:15:00	15:15:00	Raven_RN	1	11:39:00	Off		20						20
15/12/2021	5	09:15:00	15:15:00	Sparrowhawk_SH	1	11:52:00	Off	20							20
15/12/2021	5	09:15:00	15:15:00	Kestrel_K.	1	12:36:00	Off			18					18
15/12/2021	5	09:15:00	15:15:00	Raven_RN	1	12:48:00	On					60			60
15/12/2021	5	09:15:00	15:15:00	Raven_RN	3	14:13:00	Off					120			120
15/12/2021	5	09:15:00	15:15:00	Kestrel_K.	1	14:17:00	On	5	5	5	5		60	400	480
22/11/2021	6	09:34:00	12:34:00	Buzzard_BZ	1	10:54:00	Off				30				30
22/11/2021	6	09:34:00	12:34:00	Hen Harrier_HH	1	11:07:00	Off		10	10					20
22/11/2021	6	09:34:00	12:34:00	Kestrel_K.	1	11:46:00	Off			40	20				60
22/11/2021	6	09:34:00	12:34:00	Raven_RN	2	12:26:00	Off					80			80
22/11/2021	6	12:34:00	15:34:00	Nil Sightings											
11/12/2021	7	09:38:00	12:38:00	Nil Sightings											
11/12/2021	7	12:38:00	15:38:00	Nil Sightings											
17/12/2021	2	09:29:00	15:29:00	Raven_RN	1	10:21:00	On	10	10	40					60
17/12/2021	2	09:29:00	15:29:00	Buzzard_BZ	2	11:49:00	On		15	10	10	10			45
17/12/2021	2	09:29:00	15:29:00	Raven_RN	1	11:49:00	On				15				15

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
01/12/2021	3	09:00:00	12:00:00	Raven_RN	1	09:40:00	Off			120					120
01/12/2021	3	09:00:00	12:00:00	Raven_RN	1	10:57:00	Off			35					35
01/12/2021	3	12:00:00	15:00:00	Nil Sightings											
02/12/2021	4	08:45:00	11:45:00	Kestrel_K.	1	10:11:00	On/off				30				30
02/12/2021	4	11:45:00	14:45:00	Kestrel_K.	1	11:45:00	On				25				25
02/12/2021	4	11:45:00	14:45:00	Kestrel_K.	1	13:03:00	On/off					60			60
02/12/2021	4	11:45:00	14:45:00	Kestrel_K.	1	14:12:00	Off/On				20				20
03/12/2021	7	09:00:00	12:00:00	Kestrel_K.	15	11:26:00	Off		15						15
03/12/2021	7	12:00:00	15:00:00	Raven_RN	20	14:32:00	On/off			20					20
11/02/2022	1	09:17:00	15:17:00	Raven_RN	1	10:20:00	On		20						20
11/02/2022	1	09:17:00	15:17:00	Raven_RN	2	12:01:00	On			5					5
28/01/2022	2	10:00:00	16:00:00	Nil Sightings											
31/01/2022	3	09:10:00	12:10:00	Raven_RN	1	10:23:00	Off		15						15
31/01/2022	3	12:10:00	15:10:00	Raven_RN	2	13:08:00	Off		20						20
31/01/2022	1	09:55:00	15:55:00	Raven_RN	1	10:46:00	On						20		20
31/01/2022	1	09:55:00	15:55:00	Raven_RN	2	11:08:00	On					30			30
31/01/2022	1	09:55:00	15:55:00	Raven_RN	2	14:32:00	On				10				10

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
07/02/2022	4	11:30:00	17:30:00	Buzzard_BZ	1	12:10:00	On		40	200					240
07/02/2022	4	11:30:00	17:30:00	Buzzard_BZ	2	12:15:00	On		60						60
07/02/2022	4	11:30:00	17:30:00	Buzzard_BZ	2	12:40:00	Off					120			120
07/02/2022	4	11:30:00	17:30:00	Raven_RN	1	13:20:00	Off			20					20
07/02/2022	4	11:30:00	17:30:00	Buzzard_BZ	2	14:34:00	On/off			10	10	20	200		240
07/02/2022	4	11:30:00	17:30:00	Buzzard_BZ	1	15:29:00	On	20	10	20	10	10	50		120
17/02/2022	5	09:20:00	15:20:00	Nil Sightings											
10/02/2022	6	09:20:00	15:20:00	Raven_RN	1	10:41:00	Off			5					5
10/02/2022	6	09:20:00	15:20:00	Raven_RN	1	10:45:00	Off					10			10
10/02/2022	6	09:20:00	15:20:00	Raven_RN	1	12:46:00	Off					30			30
10/02/2022	6	09:20:00	15:20:00	Sparrowhawk_SH	1	13:48:00	Off						30	90	120
07/02/2022	7	09:50:00	15:50:00	Raven_RN	2	13:02:00	On	14	22						36
07/02/2022	7	09:50:00	15:50:00	Raven_RN	3	15:26:00	On		25						25
02/02/2022	1	10:45:00	16:45:00	Raven_RN	3	14:59:00	On	28	39						67
14/03/2022	1	09:30:00	15:30:00	Nil Sightings											
21/02/2022	2	09:40:00	17:10:00	Kestrel_K.	1	10:40:00	Off			30	160				180
21/02/2022	2	09:40:00	17:10:00	Hen Harrier_HH	1	11:33:00	On/off		70						70

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
15/02/2022	3	10:50:00	16:50:00	Raven_RN	1	13:53:00	On		10	30					40
07/02/2022	4	11:30:00	17:30:00	Buzzard_BZ	1	12:10:00	On/off		40	200					240
07/02/2022	4	11:30:00	17:30:00	Buzzard_BZ	2	12:15:00	On		60						60
07/02/2022	4	11:30:00	17:30:00	Buzzard_BZ	2	12:40:00	On/off					120			120
07/02/2022	4	11:30:00	17:30:00	Raven_RN	1	13:20:00	Off			20					20
07/02/2022	4	11:30:00	17:30:00	Buzzard_BZ	2	14:34:00	On/off			10	10	20	200		240
07/02/2022	4	11:30:00	17:30:00	Buzzard_BZ	1	15:29:00	On	20	10	20	10	10	50		120
08/02/2022	5	9:00:00	15:00:00	Nil Sightings											
03/02/2022	6	08:45:00	14:45:00	Nil Sightings											
09/03/2022	5	09:45:00	16:15:00	Mallard_MA	1	12:09:00		10							10
09/03/2022	5	09:45:00	16:15:00	Mallard_MA	2	12:25:00			20						20
09/03/2022	5	09:45:00	16:15:00	Hen Harrier_HH	2	14:10:00			20	10					30
10/03/2022	6	09:15:00	15:45:00	Kestrel_K.	1	10:06:00		30	30	180	60				300
10/03/2022	6	09:15:00	15:45:00	Kestrel_K.	1	10:30:00			120						120
10/03/2022	6	09:15:00	15:45:00	Kestrel_K.	1	11:20:00		120							120
10/03/2022	6	09:15:00	15:45:00	Sparrowhawk_SH	1	12:10:00		10							10
10/03/2022	6	09:15:00	15:45:00	Kestrel_K.	1	13:36:00		45	20	35					100

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
10/03/2022	6	09:15:00	15:45:00	Kestrel_K.	1	13:55:00				50					50
30/03/2022	7	08:38:00	14:38:00	Buzzard_BZ	1	08:50:00						100			100
30/03/2022	7	08:38:00	14:38:00	Raven_RN	4	10:02:00				80					80
30/03/2022	7	08:38:00	14:38:00	Buzzard_BZ	1	10:40:00					50				50
30/03/2022	7	08:38:00	14:38:00	Kestrel_K.	1	13:13:00					120				120
30/03/2022	7	08:38:00	14:38:00	Hen Harrier_HH	1	14:20:00					50				50
25/03/2022	1	9:30:00	16:00:00	Buzzard_BZ	2	11:17:00							360		360
25/03/2022	1	9:30:00	16:00:00	Grey Heron_H.	1	12:06:00						10	10		20
25/03/2022	1	9:30:00	16:00:00	Hen Harrier_HH	1	12:35:00				90					90
25/03/2022	1	9:30:00	16:00:00	Buzzard_BZ	1	13:20:00					60	30	30		120
25/03/2022	1	9:30:00	16:00:00	Hen Harrier_HH	1	14:12:00		10							10
07/03/2022	2	09:47:00	12:47:00	Raven_RN	1	10:16:00	On			60					60
07/03/2022	2	12:47:00	15:47:00	Nil Sightings											
04/03/2022	3	09:17:00	12:17:00	Nil Sightings											
04/03/2022	3	12:17:00	15:17:00	Kestrel_K.	1	12:34:00	On	80	100						180
04/03/2022	3	12:17:00	15:17:00	Raven_RN	4	12:46:00	Off/On			80					80
04/03/2022	3	12:17:00	15:17:00	Raven_RN	1	13:49:00	Off/On		40						40

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
11/03/2022	4	09:30:00	12:30:00	Nil Sightings											
11/03/2022	4	12:30:00	15:30:00	Buzzard_BZ	1	15:02:00	On/off						240		240
28/03/2022	5	9:15:00	15:45:00	Hen Harrier_HH	1	10:13:00		30							30
28/03/2022	5	9:15:00	15:45:00	Buzzard_BZ	2	11:49:00							60	180	240
28/03/2022	5	9:15:00	15:45:00	Grey Heron_H.	1	11:49:00		20							20
28/03/2022	5	9:15:00	15:45:00	Buzzard_BZ	2	12:59:00							60		60
28/03/2022	5	9:15:00	15:45:00	Kestrel_K.	1	13:14:00		10	35						45
28/03/2022	5	9:15:00	15:45:00	Kestrel_K.	1	15:10:00			60	300					360
24/03/2022	6	09:00:00	15:30:00	Mallard_MA	1	10:24:00		10							10
11/03/2022	7	09:30:00	16:00:00	Kestrel_K.	1	12:00:00		10							10
11/03/2022	7	09:30:00	16:00:00	Grey Heron_H.	1	13:36:00							35		35
11/03/2022	7	09:30:00	16:00:00	Hen Harrier_HH	2	14:20:00				50	20	20	90		180

Winter 2021/22 VP Weather Data

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
11/1/2021	4	MGW	Dry	6/8	16	F2	W	9	11:30:00 AM	2:30:00 PM	3600
11/1/2021	4	MGW	Dry	6/8	16	F2	W	9	11:30:00 AM	2:30:00 PM	3600
11/1/2021	4	MGW	Dry	6/8	16	F2	W	9	11:30:00 AM	2:30:00 PM	3600

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
11/1/2021	4	MGW	Light	4/8	16	F2	SW	7	8:30:00 AM	11:30:00 AM	3600
11/1/2021	4	MGW	Dry	6/8	16	F2	W	9	11:30:00 AM	2:30:00 PM	3600
11/2/2021	5	MGW	Dry	3/8	14	F1	N	4	8:20:00 AM	11:20:00 AM	3600
11/2/2021	5	MGW	Dry	3/8	14	F1	N	4	8:20:00 AM	11:20:00 AM	3600
11/2/2021	5	MGW	Dry	3/8	14	F1	N	4	8:20:00 AM	11:20:00 AM	3600
11/2/2021	5	MGW	Single shower	3/8	16	F1	NW	8	11:20:00 AM	2:20:00 PM	3600
11/3/2021	1	MGW	None	4/8	16	F2	NW	6	8:30:00 AM	11:30:00 AM	3600
11/3/2021	1	MGW	None	4/8	16	F2	NW	6	8:30:00 AM	11:30:00 AM	3600
11/3/2021	1	MGW	Light	4/8	16	F3	N	9	11:30:00 AM	2:30:00 PM	3600
11/3/2021	1	MGW	Light	4/8	16	F3	N	9	11:30:00 AM	2:30:00 PM	3600
11/3/2021	1	MGW	Light	4/8	16	F3	N	9	11:30:00 AM	2:30:00 PM	3600
11/3/2021	1	MGW	None	4/8	16	F2	NW	6	8:30:00 AM	11:30:00 AM	3600
11/3/2021	1	MGW	None	4/8	16	F2	NW	6	8:30:00 AM	11:30:00 AM	3600
11/3/2021	1	MGW	None	4/8	16	F2	NW	6	8:30:00 AM	11:30:00 AM	3600
11/3/2021	1	MGW	Light	4/8	16	F3	N	9	11:30:00 AM	2:30:00 PM	3600
11/4/2021	2	MGW	Dry	7/8	16	F1	NW	8	11:50:00 AM	2:50:00 PM	3600
11/4/2021	2	MGW	Dry	7/8	16	F1	NW	8	11:50:00 AM	2:50:00 PM	3600
11/4/2021	2	MGW	Dry	7/8	16	F1	NW	8	11:50:00 AM	2:50:00 PM	3600

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
11/4/2021	2	MGW	Dry	7/8	16	F1	NW	8	11:50:00 AM	2:50:00 PM	3600
11/4/2021	2	MGW	Dry	2/8	16	F1	NW	3	8:50:00 AM	11:50:00 AM	3600
11/4/2021	2	MGW	Dry	7/8	16	F1	NW	8	11:50:00 AM	2:50:00 PM	3600
11/5/2021	7	MGW	Dry	7/8	16	F2	SW	9	11:20:00 AM	2:20:00 PM	3600
11/5/2021	7	MGW	Dry	7/8	16	F2	SW	9	11:20:00 AM	2:20:00 PM	3600
11/5/2021	7	MGW	Drizzle	8/8	16	F1	SW	7	8:20:00 AM	11:20:00 AM	3600
11/5/2021	7	MGW	Dry	7/8	16	F2	SW	9	11:20:00 AM	2:20:00 PM	3600
11/10/2021	6	MGW	Dry	8/8	16	F1	SE	11	11:40:00 AM	2:40:00 PM	3600
11/10/2021	6	MGW	Dry	8/8	16	F1	SE	11	11:40:00 AM	2:40:00 PM	3600
11/10/2021	6	MGW	Dry	8/8	16	F1	SE	11	11:40:00 AM	2:40:00 PM	3600
11/10/2021	6	MGW	Dry	8/8	16	F1	SE	11	11:40:00 AM	2:40:00 PM	3600
11/10/2021	6	MGW	Dry	8/8	16	F1	SE	11	11:40:00 AM	2:40:00 PM	3600
11/10/2021	6	MGW	Dry	8/8	16	F1	SE	11	11:40:00 AM	2:40:00 PM	3600
11/10/2021	6	MGW	Dry	7/8	10	F1	SE	8	8:40:00 AM	11:40:00 AM	3600
11/10/2021	6	MGW	Dry	8/8	16	F1	SE	11	11:40:00 AM	2:40:00 PM	3600
11/10/2021	6	MGW	Dry	8/8	16	F1	SE	11	11:40:00 AM	2:40:00 PM	3600
11/19/2021	3	MGW	Constant	8/8	2	F3	SW	10	9:00:00 AM	12:00:00 PM	3600
11/19/2021	3	MGW	Dry	8/8	10	F2	SW	11	12:30:00 PM	3:30:00 PM	3600

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
11/19/2021	3	MGW	Dry	8/8	10	F2	SW	11	12:30:00 PM	3:30:00 PM	3600
11/2/2021	3	RL	Heavy Showers	6/8	20	F2	W	10	11:30:00 AM	2:30:00 PM	10800
11/2/2021	3	RL	Heavy Showers	6/8	20	F2	W	10	11:30:00 AM	2:30:00 PM	10800
11/2/2021	3	RL	None	3/8	20	F1	W	5	8:30:00 AM	11:30:00 AM	10800
11/2/2021	3	RL	Heavy Showers	6/8	20	F2	W	10	11:30:00 AM	2:30:00 PM	10800
11/12/2021	4	CK	Occasional showers	8/8	5	F3	W	11	8:48:00 AM	11:48:00 AM	10800
11/12/2021	4	CK	Occasional showers	8/8	5	F3	W	11	11:48:00 AM	2:48:00 PM	10800
11/12/2021	4	CK	Occasional showers	8/8	5	F3	W	11	11:48:00 AM	2:48:00 PM	10800
11/19/2021	2	RL	None	8/8	5	F2	S	12	12:47:00 PM	3:47:00 PM	10800
11/19/2021	2	RL	Occasional showers	8/8	5	F2	S	12	9:47:00 AM	12:47:00 PM	10800
22/11/2021	6	CK	None	0/8	20	F1	NE	8	9:34:00 AM	12:34:00 PM	10800
22/11/2021	6	CK	None	0/8	20	F1	NE	8	9:34:00 AM	12:34:00 PM	10800
22/11/2021	6	CK	None	0/8	20	F1	NE	8	9:34:00 AM	12:34:00 PM	10800
22/11/2021	6	CK	None	0/8	20	F1	NE	8	12:34:00 PM	3:34:00 PM	10800
22/11/2021	6	CK	None	0/8	20	F1	NE	8	9:34:00 AM	12:34:00 PM	10800
12/11/2021	7	CK	None	5/8	20	F1	W	11	9:38:00 AM	12:38:00 PM	10800
12/11/2021	7	CK	None	5/8	20	F1	W	11	12:38:00 PM	3:38:00 PM	10800
12/15/2021	5	ML	None	3/8	15	F3	SW	7	9:15:00 AM	3:15:00 PM	21600

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
12/15/2021	5	ML	None	3/8	15	F3	SW	7	9:15:00 AM	3:15:00 PM	21600
12/15/2021	5	ML	None	3/8	15	F3	SW	7	9:15:00 AM	3:15:00 PM	21600
12/15/2021	5	ML	None	3/8	15	F3	SW	7	9:15:00 AM	3:15:00 PM	21600
12/15/2021	5	ML	None	3/8	15	F3	SW	7	9:15:00 AM	3:15:00 PM	21600
12/15/2021	5	ML	None	3/8	15	F3	SW	7	9:15:00 AM	3:15:00 PM	21600
12/15/2021	5	ML	None	3/8	15	F3	SW	7	9:15:00 AM	3:15:00 PM	21600
12/15/2021	5	ML	None	3/8	15	F3	SW	7	9:15:00 AM	3:15:00 PM	21600
1/31/2022	1	ML	Single shower	8/8	15	F2	NW	8	9:55:00 AM	3:55:00 PM	21600
1/31/2022	1	ML	Single shower	8/8	15	F2	NW	8	9:55:00 AM	3:55:00 PM	21600
1/31/2022	1	ML	Single shower	8/8	15	F2	NW	8	9:55:00 AM	3:55:00 PM	21600
12/1/2021	3	RL	None	4/8	20	F3	NW	7	9:00:00 AM	12:00:00 PM	10800
12/1/2021	3	RL	None	4/8	20	F3	NW	7	9:00:00 AM	12:00:00 PM	10800
12/1/2021	3	RL	None	4/8	20	F3	NW	7	12:00:00 PM	3:00:00 PM	10800
12/2/2021	4	RL	None	4/8	15	F1	E	6	8:45:00 AM	11:45:00 AM	10800
12/2/2021	4	RL	None	8/8	10	F1	E	7	11:45:00 AM	2:45:00 PM	10800
12/2/2021	4	RL	None	8/8	10	F1	E	7	11:45:00 AM	2:45:00 PM	10800
12/2/2021	4	RL	None	8/8	10	F1	E	7	11:45:00 AM	2:45:00 PM	10800
12/3/2021	7	RL	None	8/8	10	F1	NE	7	9:00:00 AM	12:00:00 PM	10800

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
12/3/2021	7	RL	Occasional showers	8/8	5	F1	NE	7	12:00:00 PM	3:00:00 PM	10800
12/17/2021	2	ML	None	3/8	15	F3	SE	7	9:29:00 AM	3:29:00 PM	21600
12/17/2021	2	ML	None	3/8	15	F3	SE	7	9:29:00 AM	3:29:00 PM	21600
12/17/2021	2	ML	None	3/8	15	F3	SE	7	9:29:00 AM	3:29:00 PM	21600
2/2/2022	1	CMCK	None	7/8	20	F2	SW	10	10:45:00 AM	4:45:00 PM	21600
2/3/2022	6	CMCK	Drizzle	7/8	15	F2	W	8	8:45:00 AM	2:45:00 PM	21600
08/02/2022	5	CMCK	Drizzle/rain	8/8	1	F1	W	10	9:00:00	15:00:00	21600
1/28/2022	2	ML	Occasional showers	8/8	5	F2	SSW	11	10:00:00 AM	4:00:00 PM	21600
1/31/2022	3	CK	Occasional showers	8/8	16	F4	WNW	6	9:10:00 AM	12:10:00 PM	10800
1/31/2022	3	CK	Occasional showers	8/8	16	F4	WNW	6	12:10:00 PM	3:10:00 PM	10800
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
2/7/2022	7	CMCK	Drizzle	8/8	5	F3	WSW	11	9:50:00 AM	3:50:00 PM	21600
2/7/2022	7	CMCK	Drizzle	8/8	5	F3	WSW	11	9:50:00 AM	3:50:00 PM	21600

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
10/02/2022	6	ML	None	2/8	15	F1	NW	4	9:20:00 AM	3:20:00 PM	21600
10/02/2022	6	ML	None	2/8	15	F1	NW	4	9:20:00 AM	3:20:00 PM	21600
10/02/2022	6	ML	None	2/8	15	F1	NW	4	9:20:00 AM	3:20:00 PM	21600
10/02/2022	6	ML	None	2/8	15	F1	NW	4	9:20:00 AM	3:20:00 PM	21600
11/02/2022	1	ML	None	5/8	15	F2	S	3	9:17:00 AM	3:17:00 PM	21600
11/02/2022	1	ML	None	5/8	15	F2	S	3	9:17:00 AM	3:17:00 PM	21600
2/17/2022	5	CMCK	Occasional showers	7/8	15	F3	SW	7	9:20:00 AM	3:20:00 PM	21600
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
07/02/2022	4	ML	Drizzle	8/8	15	F1	W	8	11:30:00 AM	5:30:00 PM	21600
2/15/2022	3	ML	Drizzle/rain	8/8	15	F2	W	10	10:50:00 AM	4:50:00 PM	21600
21/02/2022	2	ÉÓC	None	4/8	>26	F5	E	8	9:40:00 AM	5:10:00 PM	21600
21/02/2022	2	ÉÓC	None	4/8	>26	F5	E	8	9:40:00 AM	5:10:00 PM	21600
09/03/2022	5	JOC	Occasional showers	8/8	10	F2	NE	4	9:45:00 AM	4:15:00 PM	21600
09/03/2022	5	JOC	Occasional showers	8/8	10	F2	NE	4	9:45:00 AM	4:15:00 PM	21600

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
09/03/2022	5	JOC	Occasional showers	8/8	10	F2	NE	4	9:45:00 AM	4:15:00 PM	21600
10/03/2022	6	JOC	None	5/8	10	F5	S	8	9:15:00 AM	3:45:00 PM	21600
10/03/2022	6	JOC	None	5/8	10	F5	S	8	9:15:00 AM	3:45:00 PM	21600
10/03/2022	6	JOC	None	5/8	10	F5	S	8	9:15:00 AM	3:45:00 PM	21600
10/03/2022	6	JOC	None	5/8	10	F5	S	8	9:15:00 AM	3:45:00 PM	21600
10/03/2022	6	JOC	None	5/8	10	F5	S	8	9:15:00 AM	3:45:00 PM	21600
10/03/2022	6	JOC	None	5/8	10	F5	S	8	9:15:00 AM	3:45:00 PM	21600
14/03/2022	1	ROM	None	6/8	15	F2	NW	10	9:30:00 AM	3:30:00 PM	21600
30/03/2022	7	RD	Drizzle	7/8	15	F1	SE	11	8:38:00 AM	2:38:00 PM	21600
30/03/2022	7	RD	Drizzle	7/8	15	F1	SE	11	8:38:00 AM	2:38:00 PM	21600
30/03/2022	7	RD	Drizzle	7/8	15	F1	SE	11	8:38:00 AM	2:38:00 PM	21600
30/03/2022	7	RD	Drizzle	7/8	15	F1	SE	11	8:38:00 AM	2:38:00 PM	21600
30/03/2022	7	RD	Drizzle	7/8	15	F1	SE	11	8:38:00 AM	2:38:00 PM	21600
3/4/2022	3	CK	Dry	1/8	20	F1	N	7	12:17:00 PM	3:17:00 PM	10800
3/4/2022	3	CK	Dry	1/8	20	F1	N	7	9:17:00 AM	12:17:00 PM	10800
3/4/2022	3	CK	Dry	1/8	20	F1	N	7	12:17:00 PM	3:17:00 PM	10800
3/4/2022	3	CK	Dry	1/8	20	F1	N	7	12:17:00 PM	3:17:00 PM	10800
3/7/2022	2	CK	Dry	7/8	16	F3	SE	7	12:47:00 PM	3:47:00 PM	10800

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
3/7/2022	2	CK	Dry	7/8	16	F3	SE	7	9:47:00 AM	12:47:00 PM	10800
3/11/2022	4	CK	Occasional showers	8/8	16	F1	SE	9	12:30:00 PM	3:30:00 PM	10800
11/03/2022	7	JOC	Drizzle/rain	8/8	15	F3	SSW	9	9:30:00 AM	4:00:00 PM	21600
11/03/2022	7	JOC	Drizzle/rain	8/8	15	F3	SSW	9	9:30:00 AM	4:00:00 PM	21600
11/03/2022	7	JOC	Drizzle/rain	8/8	15	F3	SSW	9	9:30:00 AM	4:00:00 PM	21600
3/11/2022	4	CK	Occasional showers	8/8	8	F1	SE	9	9:30:00 AM	12:30:00 PM	10800
24/03/2022	6	JOC	None	8/8	5	F1	SW	11	9:00:00 AM	3:30:00 PM	21600
25/03/2022	1	JOC	None	5/8	15	F1	E	15	9:30:00	16:00:00	21600
25/03/2022	1	JOC	None	5/8	15	F1	E	15	9:30:00	16:00:00	21600
25/03/2022	1	JOC	None	5/8	15	F1	E	15	9:30:00	16:00:00	21600
25/03/2022	1	JOC	None	5/8	15	F1	E	15	9:30:00	16:00:00	21600
25/03/2022	1	JOC	None	5/8	15	F1	E	15	9:30:00	16:00:00	21600
28/03/2022	5	JOC	None	1/8	10	F1	SE	14	9:15:00	15:45:00	21600
28/03/2022	5	JOC	None	1/8	10	F1	SE	14	9:15:00	15:45:00	21600
28/03/2022	5	JOC	None	1/8	10	F1	SE	14	9:15:00	15:45:00	21600
28/03/2022	5	JOC	None	1/8	10	F1	SE	14	9:15:00	15:45:00	21600
28/03/2022	5	JOC	None	1/8	10	F1	SE	14	9:15:00	15:45:00	21600
28/03/2022	5	JOC	None	1/8	10	F1	SE	14	9:15:00	15:45:00	21600

Winter 2021/22 VP Species Count

Species	Oct	Nov	Dec	Jan	Feb	March	Total
Buzzard	-	1	2	8	10	8	29
Grey Heron	1	-	-	-	-	3	4
Hen Harrier	2	1	-	-	4	5	12
Kestrel	17	5	19	-	7	4	52
Mallard	-	-	-	-	3	1	4
Merlin	1	-	-	-	-	-	1
Raven	15	25	27	15	6	6	94
Sparrowhawk	-	1	-	1	1	-	3
Snipe	10	-	-	-	-	-	10
White-Tailed Eagle	4	-	-	-	-	-	4

Breeding 2022 VP Species Count

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
28/04/2022	1	08:33:00	14:33:00	Kestrel_K.	1	09:21:00	Off	10	20						30
28/04/2022	1	08:33:00	14:33:00	Kestrel_K.	1	09:45:00	Off	20	10						30
28/04/2022	1	08:33:00	14:33:00	Kestrel_K.	1	10:01:00	Off	20							20
28/04/2022	1	08:33:00	14:33:00	Raven_RN	4	10:34:00	Off				125				125
28/04/2022	1	08:33:00	14:33:00	Kestrel_K.	1	12:05:00	Off		40						40
28/04/2022	1	08:33:00	14:33:00	Kestrel_K.	1	12:45:00	Off	30	30						60
07/04/2022	2	10:20:00	16:20:00	Kestrel_K.	1	11:06:00	On					10			10
07/04/2022	2	10:20:00	16:20:00	Kestrel_K.	1	11:19:00	On						5		5
07/04/2022	2	10:20:00	16:20:00	Kestrel_K.	1	11:30:00	Off/On					60			60
07/04/2022	2	10:20:00	16:20:00	Kestrel_K.	1	11:36:00	Off/On					60	300		360
07/04/2022	2	10:20:00	16:20:00	Kestrel_K.	1	11:45:00	On					20	100		120
07/04/2022	2	10:20:00	16:20:00	Kestrel_K.	1	11:49:00	On					60			60
07/04/2022	2	10:20:00	16:20:00	Kestrel_K.	2	11:54:00	On/Off				20				20
07/04/2022	2	10:20:00	16:20:00	Kestrel_K.	1	12:30:00	On				10				10
07/04/2022	2	10:20:00	16:20:00	Buzzard_BZ	2	15:45:00	On			15					15

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
07/04/2022	2	10:20:00	16:20:00	Buzzard_BZ	1	15:54:00	On						10		10
12/04/2022	3	10:40:00	17:10:00	Hen Harrier_HH	1	12:25:00	On		15						15
22/04/2022	4	08:36:00	14:36:00	Buzzard_BZ	2	08:59:00	On					40			40
22/04/2022	4	08:36:00	14:36:00	Grey Heron_H.	1	09:14:00	On						20		30
22/04/2022	4	08:36:00	14:36:00	Mallard_MA	2	09:37:00	On					30	30		60
22/04/2022	4	08:36:00	14:36:00	Buzzard_BZ	1	09:45:00	On				100	100			200
22/04/2022	4	08:36:00	14:36:00	Buzzard_BZ	2	10:37:00	On					300	300		600
22/04/2022	4	08:36:00	14:36:00	Buzzard_BZ	1	11:22:00	On			50	20				70
22/04/2022	4	08:36:00	14:36:00	Grey Heron_H.	1	11:39:00	On			40	40	10			90
22/04/2022	4	08:36:00	14:36:00	Hen Harrier_HH	1	14:02:00	On				70				70
19/04/2022	5	10:10:00	16:20:00	Mallard_MA	3	10:26:00	-						74		74
19/04/2022	5	10:10:00	16:20:00	Buzzard_BZ	1	11:24:00	-						43		43
19/04/2022	5	10:10:00	16:20:00	Mallard_MA	1	11:44:00	-						30		30
19/04/2022	5	10:10:00	16:20:00	Peregrine_PE	1	14:25:00	-								69
19/04/2022	5	10:10:00	16:20:00	Raven_RN	1	14:27:00	-		20						20
19/04/2022	5	10:10:00	16:20:00	Peregrine_PE	1	14:40:00	-								130
19/04/2022	5	10:10:00	16:20:00	Raven_RN	1	14:43:00	-								40

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	1	10:59:00	-			180					180
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	1	11:06:00	-			30					30
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	1	11:08:00	-		80						80
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	1	11:10:00	-		40						40
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	1	11:11:00	-		35						35
25/04/2022	6	09:48:00	15:48:00	Buzzard_BZ	1	11:12:00	-		70						70
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	1	11:23:00	-		40						40
25/04/2022	6	09:48:00	15:48:00	Raven_RN	2	11:24:00	-		25						25
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	1	11:50:00	-		30						30
25/04/2022	6	09:48:00	15:48:00	Buzzard_BZ	1	11:51:00	-			20					20
25/04/2022	6	09:48:00	15:48:00	Buzzard_BZ	1	11:57:00	-			20					20
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	1	12:21:00	-		20						20
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	1	12:45:00	-		35	10					45
25/04/2022	6	09:48:00	15:48:00	Hen Harrier_HH	1	13:06:00	-	10	20						30
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	2	13:18:00	-			15					15
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	1	14:04:00	-		30						30
25/04/2022	6	09:48:00	15:48:00	Kestrel_K.	1	14:11:00	-			15		20			35

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
08/04/2022	7	10:30:00	17:15:00	Raven_RN	1	10:57:00	-		190						190
08/04/2022	7	10:30:00	17:15:00	Raven_RN	1	11:05:00	-			40					40
08/04/2022	7	10:30:00	17:15:00	Buzzard_BZ	1	12:00:00	-			45					45
08/04/2022	7	10:30:00	17:15:00	Buzzard_BZ	1	12:06:00	-	10	10	100					120
08/04/2022	7	10:30:00	17:15:00	Buzzard_BZ	1	12:45:00	-			35					35
08/04/2022	7	10:30:00	17:15:00	Merlin_ML	1	13:19:00	-		40						40
08/04/2022	7	10:30:00	17:15:00	Buzzard_BZ	1	15:18:00	-	20							20
08/04/2022	7	10:30:00	17:15:00	Grey Heron_H.	1	15:35:00	-		30						30
08/04/2022	7	10:30:00	17:15:00	Buzzard_BZ	1	15:40:00	-	15							15
26/04/2022	8	09:48:00	15:48:00	Peregrine_PE	1	10:55:00	-	5	5	10	30				50
26/04/2022	8	09:48:00	15:48:00	Kestrel_K.	1	11:05:00	-			52					52
26/04/2022	8	09:48:00	15:48:00	Kestrel_K.	1	12:29:00	-	5	45	20					70
26/04/2022	8	09:48:00	15:48:00	Buzzard_BZ	1	12:59:00	-					50	90		140
26/04/2022	8	09:48:00	15:48:00	Raven_RN	1	13:03:00	-				30				30
26/04/2022	8	09:48:00	15:48:00	Lesser Black-backed Gull_LB	1	14:37:00	-					123			123
26/04/2022	8	09:48:00	15:48:00	Kestrel_K.	1	15:03:00	-			65	20	10			95
29/04/2022	9	08:32:00	14:32:00	Raven_RN	6	10:20:00	Off/On		40	50					90

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
29/04/2022	9	08:32:00	14:32:00	Raven_RN	1	11:02:00	Off			90					90
13/04/2022	10	09:45:00	16:45:00	Nil Sightings	0	-	-	-	-	-	-	-	-	-	-
05/04/2022	11	10:10:00	16:10:00	Buzzard_Bz	1	11:09:00	Off/on					15	15		30
05/04/2022	11	10:10:00	16:10:00	Kestrel_K.	1	12:03:00	Off	105							105
05/04/2022	11	10:10:00	16:10:00	Kestrel_K.	1	12:11:00	Off		50	10					60
05/04/2022	11	10:10:00	16:10:00	Kestrel_K.	1	12:23:00	On/off					10	20	30	60
05/04/2022	11	10:10:00	16:10:00	Kestrel_K.	1	12:36:00	On							100	100
05/04/2022	11	10:10:00	16:10:00	Kestrel_K.	1	12:39:00	Off	20	100						120
05/04/2022	11	10:10:00	16:10:00	Kestrel_K.	1	15:25:00	Off	10	20				90		120
13/05/2022	1	08:25:00	14:25:00	Kestrel_K.	1	08:32:00	Off		30	30					60
13/05/2022	1	08:25:00	14:25:00	Kestrel_K.	1	08:40:00	Off	10							10
13/05/2022	1	08:25:00	14:25:00	Kestrel_K.	1	08:55:00	Off	5	5						10
13/05/2022	1	08:25:00	14:25:00	Kestrel_K.	1	09:22:00	Off			30					30
24/05/2022	2	08:50:00	15:00:00	Nil Sightings	0	-	-	-	-	-	-	-	-	-	-
07/06/2022	3	13:12:00	16:12:00	Hen Harrier_HH	1	13:25:00	On		30	30					60
07/06/2022	3	13:12:00	16:12:00	Hen Harrier_HH	1	13:42:00	On		60	60	60				180
07/06/2022	3	13:12:00	16:12:00	Hen Harrier_HH	1	13:51:00	On		30						30

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
07/06/2022	3	13:12:00	16:12:00	Hen Harrier_HH	1	14:02:00	On		1000	500					1500
07/06/2022	3	13:12:00	16:12:00	Buzzard_BZ	2	14:35:00	On			40					40
07/06/2022	3	13:12:00	16:12:00	Hen Harrier_HH	1	15:01:00	On		1200						1200
07/06/2022	3	13:12:00	16:12:00	Hen Harrier_HH	1	15:46:00	On		900						900
06/05/2022	3	08:36:00	11:36:00	Nil Sightings	0	-	-	-	-	-	-	-	-	-	-
20/05/2022	4	08:15:00	14:15:00	Buzzard_BZ	2	12:45:00	On					100	20	120	120
20/05/2022	4	08:15:00	14:15:00	Raven_RN	1	13:30:00	On				60			60	60
02/06/2022	5	16:37:00	22:37:00	Nil Sightings	-	-	-	-	-	-	-	-	-	-	-
18/05/2022	6	13:00:00	19:30:00	Nil Sightings	-	-	-	-	-	-	-	-	-	-	-
27/05/2022	7	08:15:00	14:15:00	Buzzard_BZ	2	08:45:00	On				50	150	100		300
27/05/2022	7	08:15:00	14:15:00	Buzzard_BZ	1	08:57:00	On					90			90
27/05/2022	7	08:15:00	14:15:00	Sparrowhawk_SH	1	09:40:00	On/off				50	50			100
27/05/2022	7	08:15:00	14:15:00	Raven_RN	4	11:26:00	On/off				60				60
27/05/2022	7	08:15:00	14:15:00	Buzzard_BZ	2	12:19:00	On/off				300	300			600
27/05/2022	7	08:15:00	14:15:00	Kestrel_K.	1	14:02:00	On	10	10	40					60
12/05/2022	8	09:21:00	15:51:00	Kestrel_K.	1	11:00:00	On		20	60					80
12/05/2022	8	09:21:00	15:51:00	Raven_RN	1	12:11:00	On		10						10

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
12/05/2022	8	09:21:00	15:51:00	Kestrel_K.	1	12:13:00	On	1	10	60					71
12/05/2022	8	09:21:00	15:51:00	Kestrel_K.	1	12:15:00	On		10						10
12/05/2022	8	09:21:00	15:51:00	Kestrel_K.	1	13:20:00	On		10	30					40
12/05/2022	8	09:21:00	15:51:00	Kestrel_K.	1	14:09:00	ON			65					65
12/05/2022	8	09:21:00	15:51:00	Raven_RN	1	14:37:00	On			30					30
12/05/2022	8	09:21:00	15:51:00	Kestrel_K.	1	14:46:00	On		20	60					80
12/05/2022	8	09:21:00	15:51:00	Kestrel_K.	1	15:36:00	On		10	50					60
23/05/2022	9	08:33:00	14:33:00	Raven_RN	1	10:04:00	Off/On		40	20	60				120
23/05/2022	9	08:33:00	14:33:00	Raven_RN	2	11:29:00	On/off			60					60
23/05/2022	10	09:45:00	16:00:00	Nil Sightings	-	-	-	-	-	-	-	-	-	-	-
30/05/2022	11	08:32:00	14:32:00	Kestrel_K.	1	08:48:00	Off/On	20	100	20	60				200
30/05/2022	11	08:32:00	14:32:00	Kestrel_K.	1	09:32:00	On	30	10	20					60
30/05/2022	11	08:32:00	14:32:00	Buzzard_BZ	4	09:56:00	On/off					300	300		600
30/05/2022	11	08:32:00	14:32:00	Kestrel_K.	1	11:09:00	On	40	60	20					120
30/05/2022	11	08:32:00	14:32:00	Mallard_MA	2	14:05:00	Off/On				60				60
30/05/2022	11	08:32:00	14:32:00	Grey Heron_H.	1	14:16:00	On/off						100		100
10/06/2022	1	08:16:00	14:16:00	Raven_RN	3	10:36:00	Off/On				50	50			100

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
10/06/2022	1	08:16:00	14:16:00	Kestrel_K.	1	12:02:00	Off	25	80	50	50				205
10/06/2022	1	08:16:00	14:16:00	Kestrel_K.	1	12:29:00	Off	10	50	50					110
29/06/2022	2	15:40:00	18:40:00	Kestrel_K.	1	16:31:00	Off		165						165
29/06/2022	2	15:40:00	18:40:00	Kestrel_K.	1	17:01:00	Off	22	90						112
29/06/2022	2	15:40:00	18:40:00	Kestrel_K.	2	17:17:00	Off			85	115	25			225
29/06/2022	2	15:40:00	18:40:00	Kestrel_K.	3	18:01:00	Off			120	130				250
29/06/2022	2	15:40:00	18:40:00	Kestrel_K.	1	18:19:00	Off			100	100	155			355
29/06/2022	2	15:40:00	18:40:00	Kestrel_K.	1	18:30:00	Off			200	50	310	50		610
29/06/2022	2	18:40:00	21:40:00	Kestrel_K.	1	19:05:00	Off		125	150	150	100			525
29/06/2022	2	18:40:00	21:40:00	Kestrel_K.	1	19:45:00	Off		150	75					225
03/06/2022	3	15:09:00	21:09:00	Nil Sightings	-	-	-	-	-	-	-	-	-	-	-
24/05/2022	4	06:48:00	09:48:00	Nil Sightings	-	-	-	-	-	-	-	-	-	-	-
09/06/2022	5	12:32:00	19:02:00	Hen Harrier_HH	1	12:40:00	On/off	30	10						40
09/06/2022	5	12:32:00	19:02:00	Hen Harrier_HH	1	12:58:00	On/off	35							35
09/06/2022	5	12:32:00	19:02:00	Cuckoo_CK	1	13:47:00	Off/On	20							20
09/06/2022	5	12:32:00	19:02:00	Hen Harrier_HH	1	13:56:00	Off/On	25	5						30
09/06/2022	5	12:32:00	19:02:00	Hen Harrier_HH	1	14:02:00	Off/On	130	20						150

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
09/06/2022	5	12:32:00	19:02:00	Hen Harrier_HH	1	14:14:00	On/off	15	5						20
09/06/2022	5	12:32:00	19:02:00	Hen Harrier_HH	1	14:15:00	On/off	50	10						60
09/06/2022	5	12:32:00	19:02:00	Hen Harrier_HH	1	15:04:00	Off/On	45	5						50
09/06/2022	5	12:32:00	19:02:00	Hen Harrier_HH	1	16:31:00	On	55	5						60
02/06/2022	6	16:30:00	22:30:00	Nil Sightings	-	-	-	-	-	-	-	-	-	-	-
17/06/2022	7	08:28:00	14:28:00	Mallard_MA	2	08:55:00	On/off				30	40			70
17/06/2022	7	08:28:00	14:28:00	Buzzard_BZ	1	10:04:00	On/off					100	80		180
17/06/2022	7	08:28:00	14:28:00	Raven_RN	1	10:19:00	On				60				60
17/06/2022	7	08:28:00	14:28:00	Buzzard_BZ	2	13:33:00	On/off					150	150		300
17/06/2022	7	08:28:00	14:28:00	Raven_RN	4	14:15:00	On/off			60	60				120
08/06/2022	8	09:30:00	12:30:00	Kestrel_K.	1	09:34:00	On		20						20
08/06/2022	8	09:30:00	12:30:00	Kestrel_K.	1	10:36:00	On		20	60					80
08/06/2022	8	09:30:00	12:30:00	Raven_RN	4	10:38:00	On			60					60
08/06/2022	8	09:30:00	12:30:00	Kestrel_K.	1	10:45:00	On		20	40					60
08/06/2022	8	09:30:00	12:30:00	Kestrel_K.	1	10:50:00	On	2	5						7
08/06/2022	8	09:30:00	12:30:00	Kestrel_K.	2	10:52:00	On		10						10
08/06/2022	8	09:30:00	12:30:00	Kestrel_K.	1	11:37:00	On		20	70					90

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
08/06/2022	8	09:30:00	12:30:00	Raven_RN	2	11:59:00	On		20						20
08/06/2022	8	09:30:00	12:30:00	Kestrel_K.	1	13:06:00	On		5						5
08/06/2022	8	13:00:00	16:00:00	Kestrel_K.	1	13:46:00	On		30	60					90
08/06/2022	8	13:00:00	16:00:00	Kestrel_K.	1	13:50:00	On		20	10					30
08/06/2022	8	13:00:00	16:00:00	Kestrel_K.	1	14:02:00	On		5	30					35
08/06/2022	8	13:00:00	16:00:00	Kestrel_K.	1	14:36:00	On			70					70
08/06/2022	8	13:00:00	16:00:00	Kestrel_K.	1	14:49:00	On		10	30					40
08/06/2022	8	13:00:00	16:00:00	Kestrel_K.	1	15:20:00	On		5	20					25
27/06/2022	9	07:30:00	10:30:00	Lesser Black-backed Gull_LB	32	10:15:00	Off			30	100	80			210
27/06/2022	9	07:30:00	10:30:00	Raven_RN	2	10:18:00	On/off			35					35
27/06/2022	9	10:30:00	13:30:00	Raven_RN	2	12:55:00	On			41					41
15/06/2022	10	11:22:00	17:22:00	Kestrel_K.	1	16:03:00	On		30						30
27/06/2022	11	13:45:00	16:45:00	Kestrel_K.	1	14:05:00	On		55						55
29/06/2022	11	12:25:00	15:25:00	Kestrel_K.	1	14:25:00	On		110	200					310
29/06/2022	11	12:25:00	15:25:00	Lesser Black-backed Gull_LB	2	14:30:00	Off			35					35
29/06/2022	11	12:25:00	15:25:00	Buzzard_BZ	1	14:31:00	On	20	35						55
29/06/2022	11	12:25:00	15:25:00	Kestrel_K.	1	14:35:00	On	135							135

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
29/06/2022	11	12:25:00	15:25:00	Kestrel_K.	1	14:41:00	On		125						125
29/06/2022	11	12:25:00	15:25:00	Kestrel_K.	1	14:52:00	On	110	200						310
29/06/2022	11	12:25:00	15:25:00	Kestrel_K.	1	15:01:00	On	120	215						355
29/06/2022	11	12:25:00	15:25:00	Kestrel_K.	1	15:15:00	On	110	115						225
22/07/2022	1	12:00:00	18:30:00	Black-headed Gull_ BH	4	12:17:00	On	30	10						40
22/07/2022	1	12:00:00	18:30:00	Black-headed Gull_ BH	1	13:43:00	Off/On	30							30
22/07/2022	1	12:00:00	18:30:00	Buzzard_BZ	1	14:32:00	On/Off						30	60	90
22/07/2022	1	12:00:00	18:30:00	Black-headed Gull_ BH	5	14:56:00	Off/On	60							60
22/07/2022	1	12:00:00	18:30:00	Lesser Black-backed Gull_LB	2	15:38:00	On	20	40						60
22/07/2022	1	12:00:00	18:30:00	Raven_RN	2	15:53:00	On	30	60	50	40				180
22/07/2022	1	12:00:00	18:30:00	Lesser Black-backed Gull_LB	1	17:07:00	On	20	10						30
22/07/2022	1	12:00:00	18:30:00	Kestrel_K.	1	17:59:00	On	180	120	60					360
19/07/2022	2	7:20	10:20	Raven_RN	1	7:46	Off					37			37
19/07/2022	2	7:20	10:20	Raven_RN	1	8:09	Off					45			45
19/07/2022	2	7:20	10:20	Raven_RN	1	8:16	Off						30		30
19/07/2022	2	7:20	10:20	Raven_RN	1	8:23	Off						54		54
19/07/2022	2	7:20	10:20	Raven_RN	1	10:10	Off/On						38		38

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
19/07/2022	2	7:20	10:20	Kestrel_K.	1	10:15	Off					53			57
19/07/2022	2	7:20	10:20	Buzzard_BZ	1	10:18	Off					31			31
19/07/2022	2	10:20	13:20	Raven_RN	1	12:54	Off					73			73
19/07/2022	2	10:20	13:20	Kestrel_K.	1	13:07	-				8				8
15/07/2022	3	8:00	14:30	Sparrowhawk_SH	1	8:40	Off/On	25							25
15/07/2022	3	8:00	14:30	Kestrel_K.	1	13:59	On	20	15						35
22/07/2022	4	12:10	18:40	Hen Harrier_HH	1	13:02	Off/On		15						15
22/07/2022	4	12:10	18:40	Hen Harrier_HH	1	13:02	Off/On		15						15
22/07/2022	4	12:10	18:40	Hen Harrier_HH	1	15:08	Off/On		10						10
22/07/2022	4	12:10	18:40	Raven_RN	1	15:17	Off/On		25						25
22/07/2022	4	12:10	18:40	Kestrel_K.	1	16:15	Off/On	20							20
22/07/2022	4	12:10	18:40	Buzzard_BZ	1	17:35	Off/On	30	5						35
22/07/2022	5	9:10	15:40	Kestrel_K.	1	11:46	On/off	25	25						50
25/07/2022	6	09:45	16:15	Kestrel_K.	1	10:18	On/off	30							30
25/07/2022	6	09:45	16:15	Sparrowhawk_SH	1	15:06	Off/On	15							15
04/07/2022	7	9:55	14:25	Buzzard_BZ	1	13:04	Off/On	20							20
04/07/2022	7	9:55	14:25	Buzzard_BZ	1	13:07	Off/On	40							40

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
04/07/2022	7	9:55	14:25	Hen Harrier_HH	1	13:24	Off/On	30	110						140
04/07/2022	7	9:55	14:25	Hen Harrier_HH	1	14:21	Off/On	30							30
21/07/2022	7	12:45	14:45	Buzzard_BZ	1	14:13	Off/On	22							22
11/07/2022	7	10:25	16:30	Grey Heron_H.	1	10:41	-				60				60
11/07/2022	7	10:25	16:30	Raven_RN	2	12:37	-				40				40
11/07/2022	7	10:25	16:30	Raven_RN	1	13:01	-		45						45
11/07/2022	7	10:25	16:30	Lesser Black-backed Gull_LB	1	14:41	-			30					30
11/07/2022	7	10:25	16:30	Kestrel_K.	1	15:23	-		25						25
11/07/2022	7	10:25	16:30	Kestrel_K.	1	16:02	-		30						30
11/07/2022	7	10:25	16:30	Lesser Black-backed Gull_LB	1	16:15	-		20						20
11/07/2022	7	10:25	16:30	Kestrel_K.	1	16:20	-		20						20
22/07/2022	8	10:00	16:00	Raven_RN	1	10:33	-		20						20
22/07/2022	8	10:00	16:00	Kestrel_K.	1	11:02	-					40			40
22/07/2022	8	10:00	16:00	Kestrel_K.	1	11:23	-		30	20	32				82
22/07/2022	8	10:00	16:00	Raven_RN	2	12:12	-		20						20
22/07/2022	8	10:00	16:00	Raven_RN	1	12:25	-							45	45
22/07/2022	8	10:00	16:00	Raven_RN	2	12:28	-						50		50

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
22/07/2022	8	10:00	16:00	Raven_RN	1	12:55	-					40			40
22/07/2022	8	10:00	16:00	Raven_RN	1	13:57	-				50				50
22/07/2022	8	10:00	16:00	Kestrel_K.	1	15:38	-		67						67
22/07/2022	8	10:00	16:00	Raven_RN	3	15:48	-			40					40
29/07/2022	9	9:06	15:36	Curlew_CU	2	10:51	On	10							10
29/07/2022	9	9:06	15:36	Herring GulL_HG	1	11:06	On	40							40
29/07/2022	9	9:06	15:36	Herring GulL_HG	1	12:10	On	15							15
29/07/2022	9	9:06	15:36	Buzzard_BZ	1	14:26	On		25	25					50
29/07/2022	9	9:06	15:36	Buzzard_BZ	1	14:37	On	60	180						240
29/07/2022	9	9:06	15:36	Kestrel_K.	1	14:48	On	15							15
29/07/2022	9	9:06	15:36	Kestrel_K.	1	14:53	On	30							30
29/07/2022	9	9:06	15:36	Buzzard_BZ	1	14:59	On	15	20						35
29/07/2022	9	9:06	15:36	Kestrel_K.	1	15:06	On	35	45						80
29/07/2022	10	11:25	17:50	Unidentified Raptor	1	13:53	Off/On	7							7
12/07/2022	11	10:10	16:10	Lesser Black-backed Gull_LB	1	10:49	-			30					30
12/07/2022	11	10:10	16:10	Lesser Black-backed Gull_LB	3	11:31	-						45		45
12/07/2022	11	10:10	16:10	Lesser Black-backed Gull_LB	1	13:37	-	10	20	20					50

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
12/07/2022	11	10:10	16:10	Buzzard_BZ	1	13:50	-	30							30
12/07/2022	11	10:10	16:10	Buzzard_BZ	1	13:52	-	20							20
12/07/2022	11	10:10	16:10	Buzzard_BZ	2	14:43	-						75		75
05/08/2022	1	09:30:00	16:00:00	Kestrel_K.	1	10:09:00	On	10	10	100					120
05/08/2022	1	09:30:00	16:00:00	Buzzard_BZ	1	11:58:00	On/Off	20	70						90
05/08/2022	1	09:30:00	16:00:00	Buzzard_BZ	1	13:29:00	On	5	5	20					30
05/08/2022	1	09:30:00	16:00:00	Kestrel_K.	1	13:53:00	On	15	10						25
05/08/2022	1	09:30:00	16:00:00	Buzzard_BZ	1	14:01:00	On					210			210
05/08/2022	1	09:30:00	16:00:00	Kestrel_K.	1	14:03:00	On	10	100	40					150
05/08/2022	1	09:30:00	16:00:00	Black-headed Gull_ BH	1	14:10:00	Off/On	35							35
05/08/2022	1	09:30:00	16:00:00	Black-headed Gull_ BH	1	14:15:00	On/Off	20							20
05/08/2022	1	09:30:00	16:00:00	Buzzard_BZ	1	14:20:00	On	60	60	180	60				360
05/08/2022	1	09:30:00	16:00:00	Buzzard_BZ	1	14:31:00	On/Off	120	100	200					420
05/08/2022	1	09:30:00	16:00:00	Kestrel_K.	1	14:46:00	On	15	30						45
05/08/2022	1	09:30:00	16:00:00	Kestrel_K.	1	15:15:00	On	20	15	100					135
05/08/2022	1	09:30:00	16:00:00	Buzzard_BZ	1	15:20:00	On/Off	20	60	180					260
11/08/2022	2	09:07:00	15:37:00	Buzzard_BZ	1	11:03:00	On		30	20	70				120

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
11/08/2022	2	09:07:00	15:37:00	Buzzard_BZ	1	13:34:00	On/Off	25	25						50
26/08/2022	2	09:45:00	12:45:00	Buzzard_BZ	2	11:31:00	-		20	300	60				380
26/08/2022	2	09:45:00	12:45:00	Kestrel_K.	1	11:35:00	On/Off	10	10						20
26/08/2022	2	09:45:00	12:45:00	Buzzard_BZ	1	12:10:00	On/Off				60				60
29/08/2022	3	10:13:00	16:43:00	Kestrel_K.	1	14:26:00	On		20	50	10				80
29/08/2022	3	10:13:00	16:43:00	Kestrel_K.	1	16:31:00	On	11							11
29/08/2022	3	10:13:00	16:43:00	Kestrel_K.	1	16:34:00	On		25						25
12/08/2022	4	07:45:00	14:15:00	Nil Sightings	0	-	-	-	-	-	-	-	-	-	-
18/08/2022	5	06:39:00	13:09:00	Nil Sightings	0	-	-	-	-	-	-	-	-	-	-
23/08/2022	6	09:00:00	15:30:00	Kestrel_K.	2	12:57:00	On	10	60	50					120
26/08/2022	7	06:20:00	09:20:00	Buzzard_BZ	1	08:51:00	Off/On		30	90	45				155
23/09/2022	8	09:20:00	15:50:00	Kestrel_K.	1	10:44:00	On	35	10						45
23/09/2022	8	09:20:00	15:50:00	Kestrel_K.	1	12:47:00	On/off	15							15
23/09/2022	8	09:20:00	15:50:00	Kestrel_K.	1	14:02:00	On	10	80						90
23/09/2022	8	09:20:00	15:50:00	Kestrel_K.	1	14:31:00	On	30	90						120
23/09/2022	8	09:20:00	15:50:00	Kestrel_K.	1	15:32:00	On	15	25						40
29/08/2022	9	14:10:00	20:10:00	Raven_RN	1	14:44:00	Off					31			31

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
29/08/2022	9	14:10:00	20:10:00	Kestrel_K.	1	14:51:00	On/Off						18		18
29/08/2022	9	14:10:00	20:10:00	Lesser Black-backed Gull_LB	3	15:55:00	Off						91		91
29/08/2022	9	14:10:00	20:10:00	Raven_RN	1	15:58:00	Off						39		39
29/08/2022	9	14:10:00	20:10:00	Lesser Black-backed Gull_LB	1	16:07:00	Off/On						60		60
29/08/2022	9	14:10:00	20:10:00	Lesser Black-backed Gull_LB	2	16:39:00	On/Off						60		60
29/08/2022	9	14:10:00	20:10:00	Raven_RN	1	17:22:00	Off/On					20			20
29/08/2022	9	14:10:00	20:10:00	Raven_RN	1	18:35:00	On						22		22
29/08/2022	9	14:10:00	20:10:00	Raven_RN	1	18:56:00	On						14		14
29/08/2022	9	14:10:00	20:10:00	Raven_RN	1	18:58:00	On						28		28
29/08/2022	9	14:10:00	20:10:00	Kestrel_K.	1	19:00:00	On						27		27
29/08/2022	9	14:10:00	20:10:00	Raven_RN	2	19:43:00	On					6	30		36
22/08/2022	10	11:15:00	17:45:00	Buzzard_BZ	1	16:01:00	Off/On	30							30
01/09/2022	11	10:40:00	13:40:00	Raven_RN	1	11:00:00	Off					11			11
01/09/2022	11	10:40:00	13:40:00	Raven_RN	2	11:55:00	Off						71		71
01/09/2022	11	10:40:00	13:40:00	Raven_RN	1	12:19:00	On					5			5
01/09/2022	11	10:40:00	13:40:00	Lesser Black-backed Gull_LB	1	12:53:00	Off	1	1	1	1	32			36
01/09/2022	11	10:40:00	13:40:00	Buzzard_BZ	1	13:31:00	On					10	168		178

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
01/09/2022	11	10:40:00	13:40:00	Buzzard_BZ	2	13:38:00	Off					20	52		72
01/09/2022	11	12:10:00	15:10:00	Kestrel_K.	1	12:54:00	Off					27			27
01/09/2022	11	12:10:00	15:10:00	Buzzard_BZ	1	13:07:00	Off						102		102
01/09/2022	11	12:10:00	15:10:00	Buzzard_BZ	1	13:58:00	Off						53		53
05/09/2022	1	09:45	16:15	Herring Gull_HG	1	10:23	Off/On		100						100
05/09/2022	1	09:45	16:15	Kestrel_K.	1	11:52	On/Off	15							15
05/09/2022	1	09:45	16:15	Buzzard_BZ	1	15:19	On	30	90	30					150
15/09/2022	2	14:00	17:00	Buzzard_BZ	1	14:09	On		20	20	80				120
15/09/2022	2	14:00	17:00	Kestrel_K.	1	15:18	On	10	50						60
15/09/2022	2	14:00	17:00	Kestrel_K.	1	16:39	On		10						10
12/09/2022	3	06:30	13:00	Buzzard_BZ	1	11:32	On	20	10						30
08/09/2022	4	09:23	15:53	Kestrel_K.	1	14:13	On	15	30	120	75				240
13/09/2022	5	10:20	16:50	Hen Harrier_HH	1	12:04	On	20	10						30
13/09/2022	5	10:20	16:50	Hen Harrier_HH	1	14:37	On	15	30	120	75				240
14/09/2022	6	06:54	13:24	Kestrel_K.	1	11:17	On/Off		120						120
14/09/2022	6	06:54	13:24	Kestrel_K.	1	12:32	On	35	565	120					720
14/09/2022	6	06:54	13:24	Kestrel_K.	1	12:46	On/Off		180						180

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160 m	>160 m	Total Duration (s)
14/09/2022	6	06:54	13:24	Hen Harrier_HH	1	13:01	On	120							120
09/09/2022	7	07:38	14:08	Sparrowhawk_SH	1	09:46	On	25	5						30
09/09/2022	7	07:38	14:08	Kestrel_K.	1	13:28	On/Off		5	20					25
15/09/2022	7	10:30	13:30	Buzzard_BZ	2	12:14	On/Off			30	30				60
01/09/2022	8	10:50	17:20	Raven_RN	1	13:19							10	40	50
06/09/2022	9	09:15	15:45	Nil Sightings	-	-	-	-	-	-	-	-	-	-	-
26/08/2022	10	08:57	15:27	Grey Heron_H.	1	11:15	On		20						20
07/09/2022	11	09:10	15:40	Herring Gull_HG	5	11:24	On	30	90	60					180

Breeding 2022 VP Weather Data

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
APRIL 22											
28/04/2022	1	RD	Dry	2/8	15	F1	NE	9	08:33:00	14:33:00	21600
07/04/2022	2	ML	Constant	8/8	3km	F2	SW	7	10:20:00	16:20:00	21600
12/04/2022	3	EC	Occasional showers	6/8	10	F2	ESE	11	10:40:00	17:10:00	21600
22/04/2022	4	RD	Dry	5/8	15	F2	NE	9	08:36:00	14:36:00	21600
19/04/2022	5	LP	None	8/8	5	F2	W	9	10:10:00	16:20:00	21600
25/04/2022	6	LP	none	0/8	3	F2	SE	14	09:48:00	15:48:00	21600
08/04/2022	7	LP	none	6/8	4	F2	SW	7	10:30:00	17:15:00	21600
26/04/2022	8	LP	none	0/8	8	F1	SW	14	09:48:00	15:48:00	21600
29/04/2022	9	RD	Dry	4/8	20	F1	NE	11	08:32:00	14:32:00	21600
13/04/2022	10	EC	Dry	4/8	15	F1	SSE	10	09:45:00	16:45:00	21600
05/04/2022	11	ML	None	8/8	15km	F1	SW	11	10:10:00	16:10:00	21600
MAY 22											
13/05/2022	1	RD	Dry	6/8	20	F2	SW	11	08:25:00	14:25:00	21600
24/05/2022	2	EC	Dry	5/8	20	F3	WNW	13	08:50:00	15:00:00	21600
07/06/2022	3	DMC	None	6/8	16	F2	SE	18	13:12:00	16:12:00	10800
06/05/2022	3	ML	Dry	6/8	15	F1	SW	9	08:36:00	11:36:00	10800
20/05/2022	4	RD	Heavy Showers	8/8	5	F3	W	10	08:15:00	14:15:00	21600
02/06/2022	5	ML	Drizzle	8/8	15	F1	S	11	16:37:00	22:37:00	21600
18/05/2022	6	EC	Occasional showers	7/8	8	F3	SSE	16	13:00:00	19:30:00	21600
27/05/2022	7	RD	Dry	3/8	20	F1	W	11	08:15:00	14:15:00	21600
12/05/2022	8	DMC	Occasional showers	8/8	16	F3	SW	13	09:21:00	15:51:00	21600
23/05/2022	9	RD	Occasional showers	7/8	15	F3	SW	15	08:33:00	14:33:00	21600

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
23/05/2022	10	EC	Occasional showers	6/8	15	F3	NNW	13	09:45:00	16:00:00	21600
30/05/2022	11	RD	Light drizzle	7/8	15	F2	NW	11	08:32:00	14:32:00	21600
JUNE 22											
10/06/2022	1	RD	Dry	3/8	20	F2	SW	15	08:16:00	14:16:00	21600
29/06/2022	2	MGW	Dry	6/8	10	F3	W	16	15:40:00	18:40:00	3600
29/06/2022	2	MGW	Dry	4/8	10	F3	W	16	18:40:00	21:40:00	3600
03/06/2022	3	ML	Dry	4/8	15	F1	NW	16	15:09:00	21:09:00	21600
24/05/2022	4	RD	Misty	8/8	2	F3	SW	11	06:48:00	09:48:00	10800
09/06/2022	5	EKL	None	7/8	5	F3	SSW	16	12:32:00	19:02:00	21600
02/06/2022	6	EKL	occasional showers	6/8	10	F2	NE	14	16:30:00	22:30:00	10800
17/06/2022	7	RD	Occasional showers	8/8	10	F2	S	13	08:28:00	14:28:00	21600
08/06/2022	8	DMC	Occasional showers	4/8	16	F4	WSW	16	09:30:00	12:30:00	21600
08/06/2022	8	DMC	Occasional showers	4/8	16	F4	WSW	16	13:00:00	16:00:00	21600
27/06/2022	9	MGW	Dry	2/8	16	F1	SW	9	07:30:00	10:30:00	3600
27/06/2022	9	MGW	Dry	8/8	16	F2	SW	14	10:30:00	13:30:00	3600
15/06/2022	10	ML	Dry	5/8	15	F1	S	13	11:22:00	17:22:00	21600
27/06/2022	11	MGW	Light drizzle	7/8	10	F1	SW	14	13:45:00	16:45:00	3600
29/06/2022	11	MGW	Occasional showers	8/8	11	F3	W	15	12:25:00	15:25:00	3600
JULY 22											
22/07/2022	1	EM	None	2/8	15	F2	SSE	21	12:00:00	18:30:00	21600
19/07/2022	2	NC	None	8/8	3	F1	NNW	16	7:20	10:20	10800
19/07/2022	2	NC	None	8/8	5	F1	NNW	17	10:20	13:20	10800
15/07/2022	3	CMCK	Occasional showers	8/8	3	F1	W	15	8:00	14:30	21600

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
22/07/2022	4	EKL	None	7/8	15	F2	SSW	20	12:10	18:40	21600
22/07/2022	5	CMCK	None	4/8	20	F1	NNW	19	9:10	15:40	21600
25/07/2022	6	CMCK	Occasional showers	8/8	5	F3	NW	17	09:45	16:15	21600
04/07/2022	7	EKL	None	6/8	15	F2	WNW	15	9:55	14:25	16200
21/07/2022	7	EKL	None	6/8	15	F2	SSW	17	12:45	14:45	7200
11/07/2022	7	LP	None	7/8	10	F4	SW	25	10:25	16:30	21600
22/07/2022	8	LP	None	4/8	10	F2	NE	21	10:00	16:00	21600
29/07/2022	9	CMCK	None	7/8	15	F1	SE	16	9:06	15:36	21600
29/07/2022	10	EKL	None	4/8	10	F2	SSW	18	11:25	17:50	21600
12/07/2022	11	LP	Light	8/8	8	F1	S	18	10:10	16:10	21600
AUG 22											
05/08/2022	1	CMCK	Single shower	7/8	10	F1	WNW	17	09:30:00	16:00:00	21600
05/08/2022	1	CMCK	Occasional showers	7/8	10	F1	WNW	17	09:30:00	16:00:00	21600
11/08/2022	2 (Part 1)	CMCK	None	0/8	10	F1	NNE	27	09:07:00	15:37:00	21600
26/08/2022	2 (Part 2)	CMCK	None	1/8	10	F1	NNW	13	09:45:00	12:45:00	10800
29/08/2022	3	CMCK	None	4/8	10	F1	S	17	10:13:00	16:43:00	21600
12/08/2022	4	CMCK	None	1/8	10	F1	N	25	07:45:00	14:15:00	21600
18/08/2022	5	CMCK	Drizzle	8/8	3	F2	S	15	06:39:00	13:09:00	21600
23/08/2022	6	CMCK/SS	Occasional showers	6/8	10	F2	WSW	15	09:00:00	15:30:00	21600
26/08/2022	7	CMCK	None	3/8	10	F1	WNW	12	06:20:00	09:20:00	10800
23/09/2022	8	CMCK	Single shower	1/8	10	F1	N	11	09:20:00	15:50:00	21600
29/08/2022	9	NC	None	6/8	10	F1	SE	23	14:10:00	20:10:00	21600
22/08/2022	10	EKL	Dry	6/8	15	F2	N	22	11:15:00	17:45:00	21600
01/09/2022	11	NC	None	7/8	>20	F1	ENE	16	10:40:00	13:40:00	10800
01/09/2022	11	NC	None	8/8	12	F1	SW	17	12:10:00	15:10:00	10800
SEP 22											

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
05/09/2022	1	CMCK	Occasional showers	1/8	10	F3	ESE	16	09:45	16:15	21600
15/09/2022	2	CMCK and Sid	None	4/8	20	F2	N	16	14:00	17:00	10800
12/09/2022	3	CMCK	Mist/light rain	8/8	2	F1	N	15	06:30	13:00	21600
08/09/2022	4	CMCK	Occasional showers	8/8	5	F3	N	13	09:23	15:53	21600
13/09/2022	5	CMCK	None	5/8	15	F2	NE	15	10:20	16:50	21600
14/09/2022	6	CMCK and Sid	Mist/light rain	8/8	5	F1	NNE	9	06:54	13:24	21600
09/09/2022	7	CMCK	Occasional showers	4/8	5	F2	WNW	13	07:38	14:08	21600
15/09/2022	7	CMCK and Sid	Light drizzle	8/8	10	F2	WNW	14	10:30	13:30	10800
01/09/2022	8	EM	None	2/8	30	F1	N	21	10:50	17:20	21600
06/09/2022	9	CMCK	Occasional showers	8/8	5	F3	ESE	16	09:15	15:45	21600
26/08/2022	10	DMC	None	6/8	16	F2	NW	17	08:57	15:27	21600
07/09/2022	11	CMCK	Occasional showers	7/8	5	F2	ESE	15	09:10	15:40	21600

Breeding 2022 VP Species Count

Species	Apr	May	Jun	Jul	Aug	Sep	Total
Buzzard	20	13	4	13	18	5	73
Grey Heron	3	1		1		1	6
Kestrel	36	15	35	16	19	8	129
Peregrine	3	-	-	-	-	-	3
Raven	18	10	18	23	12	1	82
Sparrowhawk	-	1		2		1	4
Hen Harrier	3	6	8	5		3	25
Merlin	1	-	-	-	-	-	1
Mallard	6	2	2		-	-	10
Lesser Black-Backed Gull	1		34	10	7		52
Cuckoo	-	-	1		-	-	1
Black-Headed Gull	-	-	-	10	2	-	12
Curlew	-	-	-	2	-		2
Herring Gull	-	-	-	2	-	6	8
Unidentified Raptor	-	-	-	1	-	-	1

Winter 22/23 VP Species and Height Band

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
04/10/22	1	12:45:00	15:45:00	Kestrel_K.	1	13:13:00	On		30						30
07/10/22	1	08:40:00	11:40:00	Kestrel_K.	1	10:06:00	On	15	45	60					120
07/10/22	1	08:40:00	11:40:00	Buzzard_BZ	1	10:12:00	On		60	65	40				165
07/10/22	1	08:40:00	11:40:00	Kestrel_K.	1	10:21:00	On		15	45					60
05/10/22	2	12:02:00	16:02:00	Hen Harrier_HH	1	12:36:00	On	15	15						30
05/10/22	2	12:02:00	16:02:00	Kestrel_K.	1	13:17:00	On	15	60	30					105
05/10/22	2	12:02:00	16:02:00	Kestrel_K.	1	13:33:00	On		60						60
05/10/22	2	12:02:00	16:02:00	Sparrowhawk_SH	1	13:37:00	Off/On	30							30
05/10/22	2	12:02:00	16:02:00	Kestrel_K.	1	13:41:00	On	5	15	10					30
05/10/22	2	12:02:00	16:02:00	Kestrel_K.	1	15:10:00	On		30						30
07/10/22	2	12:10:00	14:10:00	Kestrel_K.	1	12:39:00	On/Off	30							30
07/10/22	2	12:10:00	14:10:00	Kestrel_K.	1	13:06:00	On/Off	15							15
07/10/22	2	12:10:00	14:10:00	Kestrel_K.	1	13:17:00	On	15	15						30
07/10/22	2	12:10:00	14:10:00	Kestrel_K.	1	13:57:00	On		30	30					60
06/10/22	3	12:30:00	16:30:00	Nil Sightings	0	-	-	-	-	-	-	-	-	-	-

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
07/10/22	3	14:35:00	16:35:00	Nil Sightings	0	-	-	-	-	-	-	-	-	-	-
14/10/22	4	09:20:00	12:20:00	Nil Sightings	0	-	-	-	-	-	-	-	-	-	-
14/10/22	4	12:50:00	15:50:00	Kestrel_K.	1	13:28:00	On	15	30						45
14/10/22	4	12:50:00	15:50:00	Kestrel_K.	1	14:01:00	On	30	90	30					150
14/10/22	4	12:50:00	15:50:00	Kestrel_K.	1	14:38:00	On/Off	30	15						45
10/10/22	5	10:30:00	17:00:00	Nil Sightings	0	-	-	-	-	-	-	-	-	-	-
11/10/22	6	10:20:00	13:20:00	Kestrel_K.	1	10:26:00	On	20	40	60					120
11/10/22	6	10:20:00	13:20:00	Dunlin_DN	10	10:49:00	On	20	20	20					60
11/10/22	6	10:20:00	13:20:00	Ringed Plover_RP	1	11:10:00	On/Off			30					30
11/10/22	6	10:20:00	13:20:00	Kestrel_K.	1	11:18:00	On	30	30						60
11/10/22	6	10:20:00	13:20:00	Snipe_SN	1	11:20:00	On	20							20
11/10/22	6	10:20:00	13:20:00	Dunlin_DN	20	11:26:00	On	15	60	45					120
11/10/22	6	10:20:00	13:20:00	Dunlin_DN	30	12:58:00	On/Off			15					15
11/10/22	6	10:20:00	13:20:00	Ringed Plover_RP	25	13:03:00	On/Off			15					15
11/10/22	6	10:20:00	13:20:00	Dunlin_DN	15	13:12:00	On/Off		15						15
11/10/22	6	10:20:00	13:20:00	Ringed Plover_RP	30	13:13:00	On		60						60
11/10/22	6	10:20:00	13:20:00	Dunlin_DN	15	13:16:00	On		10						10
11/10/22	6	13:50:00	16:50:00	Kestrel_K.	1	14:08:00	Off/On	30	120	30					180

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
11/10/22	6	13:50:00	16:50:00	Kestrel_K.	1	15:41:00	On	15	60	30					105
11/10/22	6	13:50:00	16:50:00	Kestrel_K.	1	16:02:00	On	15	90	15					120
11/10/22	6	13:50:00	16:50:00	Kestrel_K.	1	16:22:00	On	30							30
12/10/22	7	10:20:00	13:20:00	Kestrel_K.	1	11:16:00	On/off		15						15
12/10/22	7	13:50:00	16:50:00	Sparrowhawk_SH	1	15:51:00	On	15							15
13/10/22	8	12:15:00	16:15:00	Kestrel_K.	1	13:31:00	On	60	90						150
13/10/22	8	12:15:00	16:15:00	Kestrel_K.	1	13:41:00	On/Off	15	20						35
13/10/22	8	12:15:00	16:15:00	Kestrel_K.	1	13:54:00	On/Off	10	5						15
13/10/22	8	12:15:00	16:15:00	Buzzard_BZ	1	14:01:00	On	15	30	15					60
13/10/22	8	12:15:00	16:15:00	Kestrel_K.	1	14:07:00	On	45	15						60
13/10/22	8	12:15:00	16:15:00	Kestrel_K.	1	14:12:00	On/Off	30							30
13/10/22	8	12:15:00	16:15:00	Kestrel_K.	1	14:36:00	On/Off	30							30
13/10/22	8	12:15:00	16:15:00	Kestrel_K.	2	14:40:00	On	15							15
13/10/22	8	12:15:00	16:15:00	Kestrel_K.	1	14:54:00	On	45	15						60
18/10/22	8	10:10:00	12:10:00	Nil Sightings	-	-	-	-	-	-	-	-	-	-	-
07/10/22	9	09:45:00	16:15:00	Buzzard_BZ	1	12:15:00	On	16							16
07/10/22	9	09:45:00	16:15:00	Buzzard_BZ	1	15:12:00	On	8							8
21/10/22	10	11:00:00	14:00:00	Kestrel_K.	1	12:17:00	On	20	220						240

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
21/10/22	10	11:00:00	14:00:00	Whooper Swan_WS	3	13:25:00	On/Off		180						180
30/11/22	10	09:55:00	12:55:00	Nil Sightings	-	-	-	-	-	-	-	-	-	-	-
11/10/22	11	09:20:00	15:50:00	Nil Sightings	-	-	-	-	-	-	-	-	-	-	-
30/11/22	12	10:08:00	16:38:00	Sparrowhawk_SH	1	11:47:00	On	5							5
11/11/22	1	10:30:00	15:00:00	Nil Sightings											
18/11/22	1	09:00:00	11:00:00	Little Egret_ET	1	09:17:00	On				45				45
18/11/22	1	09:00:00	11:00:00	Mallard_MA	7	10:57:00	On/Off	15							15
03/11/22	2	12:50:00	16:20:00	Kestrel_K.	1	13:34:00	On		30						30
03/11/22	2	12:50:00	16:20:00	Kestrel_K.	1	16:09:00	On		50						50
18/11/22	2	11:20:00	13:20:00	Buzzard_BZ	1	13:03:00	On		30	120	30				180
17/11/22	3	10:10:00	14:10:00	Nil Sightings											
18/11/22	3	1:45:00 pm	3:45:00 pm	Nil Sightings											
09/12/22	4	11:30:00 am	13:30:00 PM	Kestrel_K.	1	12:19	On	60	150						210
07/11/22	4	12:00:00	16:00:00	Nil Sightings											
04/11/22	5	07:00:00	13:30:00	Nil Sightings											
16/11/22	6	09:55:00	12:55:00	Kestrel_K.	1	11:40:00	On/Off		30						30
16/11/22	6	13:25:00	16:25:00	Kestrel_K.	1	16:21:00	On/Off		30						30
04/11/22	7	07:07:00	13:37:00	Lesser Black-backed Gull_LB	1	08:46:00	On	5							5

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
10/11/22	8	09:30:00	16:00:00	Nil Sightings											
19/12/22	9	10:10:00	13:10:00 PM	Buzzard_BZ	1	12:30:00	On	15	45	60					120
14/11/22	9	10:00:00	13:00:00	Nil Sightings											
15/11/22	10	10:05:00	14:35:00	Kestrel_K.	1	12:17:00	On/Off	15	30						45
15/11/22	10	10:05:00	14:35:00	Kestrel_K.	1	14:10:00	On	30	30						60
30/11/22	10	13:25:00	15:25:00	Nil Sightings											
28/11/22	11	10:00:00	16:30:00	Buzzard_BZ	1	10:45:00		10							10
28/11/22	11	10:00:00	16:30:00	Kestrel_K.	1	11:12:00		6							6
28/11/22	11	10:00:00	16:30:00	Kestrel_K.	1	13:05:00		3							3
28/11/22	11	10:00:00	16:30:00	Kestrel_K.	2	13:49:00		12							12
28/11/22	11	10:00:00	16:30:00	Kestrel_K.	1	13:59:00		13							13
22/12/22	12	09:15:00	15:45:00	Nil Sightings											
11/01/23	1	09:40:00	12:40:00	Buzzard_BZ	1	10:27:00						120			120
11/01/23	1	09:40:00	12:40:00	Buzzard_BZ	2	10:28:00						60			60
11/01/23	1	09:40:00	12:40:00	Buzzard_BZ	1	10:33:00						3			3
11/01/23	1	09:40:00	12:40:00	Buzzard_BZ	3	10:34:00						150			150
11/01/23	1	09:40:00	12:40:00	Sparrowhawk_SH	1	11:30:00					10	80			90
11/01/23	1	09:40:00	12:40:00	Sparrowhawk_SH	1	11:50:00			30		90				120

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
11/01/23	1	09:40:00	12:40:00	Kestrel_K.	1	12:15:00						30			30
11/01/23	1	09:40:00	12:40:00	Buzzard_BZ	1	12:25:00						180			180
11/01/23	1	13:10:00	16:10:00	Buzzard_BZ	1	13:31:00				5	60				65
11/01/23	1	13:10:00	16:10:00	Kestrel_K.	1	14:54:00					30				30
08/12/22	2	08:00	11:00	Nil Sightings											
20/12/22	2	09:45	12:45	Kestrel_K.	1	11:19	On		45						45
08/12/22	3	11:30	14:30	Kestrel_K.	1	14:03	On/Off	15	45						60
21/12/22	3	11:20	14:20	Nil Sightings											
09/12/22	4	08:00	11:00	Sparrowhawk_SH	1	10:36	On	15							15
22/12/22	4	10:10	13:10	Nil Sightings											
16/12/22	5	09:30	16:00	Nil Sightings											
30/11/22	6	10:00	13:00	Snipe_SN	4	12:20	On		15	15					30
30/11/22	6	10:00	13:00	Kestrel_K.	1	12:34	On	5	10						15
30/11/22	6	13:30	16:30	Hen Harrier_HH	1	14:08	On	30							30
05/12/22	7	10:00	13:00	Sparrowhawk_SH	1	10:56	On	45	15						60
05/12/22	7	13:30	16:30	Nil Sightings											
07/12/22	8	08:00	14:30	Sparrowhawk_SH	1	12:09	On	15							15
07/12/22	8	08:00	14:30	Sparrowhawk_SH	1	12:19	On/Off	15							15

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
07/12/22	8	08:00	14:30	Grey Heron_H.	1	13:11	On			120					120
07/12/22	8	08:00	14:30	Sparrowhawk_SH	1	13:22	On/Off	15							15
22/12/22	9	10:00:00	16:00:00	Kestrel_K.	1	10:12:00		6	94						100
22/12/22	9	10:00:00	16:00:00	Buzzard_BZ	1	13:13:00		20							20
21/12/22	10	10:30:00	17:00:00	Nil Sightings											
11/01/23	11	09:51:00	12:51:00	Kestrel_K.	1	10:31:00	On/off	5	25						30
11/01/23	11	09:51:00	12:51:00	Kestrel_K.	1	10:55:00	On			20					20
11/01/23	11	09:51:00	12:51:00	Kestrel_K.	1	11:20:00	On/off		15						15
11/01/23	11	09:51:00	12:51:00	Kestrel_K.	1	11:39:00	On	20	40	30	20				110
11/01/23	11	13:24:00	16:24:00	Buzzard_BZ	1	13:27:00	On			30	40				70
11/01/23	11	13:24:00	16:24:00	Kestrel_K.	1	13:35:00	On/off		10						10
11/01/23	11	13:24:00	16:24:00	Kestrel_K.	1	13:55:00	Off/On	10	10	40	20				80
09/01/23	12	09:32:00	12:32:00	Kestrel_K.	1	09:57:00		15							15
09/01/23	12	13:02:00	16:02:00	Nil Sightings											
03/01/23	1	9:45:00	12:45:00	Buzzard_BZ	1	10:59:00	On	30	30	30					30
03/01/23	1	15:15:00	15:15:00	Nil Sightings											
10/01/23	2	9:30:00	12:30:00	Buzzard_BZ	1	9:55:00		3							3
10/01/23	2	9:30:00	12:30:00	Sparrowhawk_SH	1	10:05:00			10	20					30

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
10/01/23	2	9:30:00	12:30:00	Buzzard_BZ	1	10:34:00		3							3
10/01/23	2	9:30:00	12:30:00	Buzzard_BZ	1	11:45:00		2							2
08/02/23	2	13:40:00	16:40:00	Nil Sightings											
04/01/23	3	9:30:00	16:00:00	Nil Sightings											
09/01/23	4	10:20:00	13:20:00	Nil Sightings											
10/01/23	4	9:40:00	12:40:00	Kestrel_K.	1	11:24:00	On/Off	15	15	15					45
13/01/23	5	8:45:00	15:15:00	Raven_RN	1	10:37:00						55	70		125
13/01/23	5	8:45:00	15:15:00	Raven_RN	1	14:36:00		10	20	40	40				110
13/01/23	6	10:40:00	13:40:00	Nil Sightings											
13/01/23	6	14:00:00	16:00:00	Nil Sightings											
21/02/23	6	08:50:00	09:50:00	Raven_RN	1	09:13:00	On		10	20	10				40
21/02/23	6	08:50:00	09:50:00	Buzzard_BZ	2	09:46:00	On/off				10	10	10	30	60
07/02/23	7	10:30:00	13:30:00	Kestrel_K.	1	12:46:00				3					3
07/02/23	7	10:30:00	13:30:00	Kestrel_K.	1	12:47:00					30				30
07/02/23	7	14:00:00	17:00:00	Buzzard_BZ	1	15:32:00					60				60
09/02/23	8	08:30:00	15:00:00	Nil Sightings											
06/01/23	9	9:42:00	12:42:00	Nil Sightings											
06/01/23	9	13:11:00	16:11:00	Kestrel_K.	1	14:13:00	On/off	5	5						10

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
06/01/23	9	13:11:00	16:11:00	Kestrel_K.	1	15:23:00	On			20	10				30
06/01/23	9	13:11:00	16:11:00	Buzzard_BZ	1	15:31:00	On		20	60	10				90
06/01/23	9	13:11:00	16:11:00	Kestrel_K.	1	15:35:00	On	2	8						10
06/01/23	9	13:11:00	16:11:00	Kestrel_K.	1	16:04:00	On		30	140	10				180
10/01/23	10	9:37:00	12:37:00	Nil Sightings											
22/02/23	10	10:30:00	13:30:00	Raven_RN	1	10:39:00	On				20	20			40
22/02/23	10	10:30:00	13:30:00	Buzzard_BZ	1	11:12:00	On/off		30	60	30				120
22/02/23	10	10:30:00	13:30:00	Raven_RN	2	12:06:00	On			10	30	30	60	50	180
22/02/23	10	10:30:00	13:30:00	Kestrel_K.	1	13:14:00	On			20	30	250			300
16/03/23	11	10:18	13:18	Buzzard_BZ	2	11:39	On/Off	30	60	210					300
16/03/23	11	10:18	13:18	Buzzard_BZ	2	12:00	On		30	30	60				120
16/03/23	11	10:18	13:18	Buzzard_BZ	2	12:00	On/Off	30	90	30					150
16/03/23	11	13:48	16:48	Buzzard_BZ	2	14:20	On/Off	30	210	60					300
16/03/23	11	13:48	16:48	Buzzard_BZ	1	16:06	On	15	30	45					90
16/03/23	11	13:48	16:48	Buzzard_BZ	2	16:14	On/Off	30	300	30	60				420
12/01/23	12	10:12:00	13:12:00	Nil Sightings											
12/01/23	12	13:50:00	16:50:00	Kestrel_K.	1	13:58:00	On/off			40	20				60
12/01/23	12	13:50:00	16:50:00	Kestrel_K.	1	16:40:00	Off/On			50					50

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
09/02/23	1	7:34:00	10:34:00	Nil Sightings											
09/02/23	1	11:14:00	14:14:00	Sparrowhawk_SH	1	12:37:00				20					20
09/02/23	1	11:14:00	14:14:00	Sparrowhawk_SH	1	12:41:00				60					60
09/02/23	1	11:14:00	14:14:00	Buzzard_BZ	1	13:00:00							600		600
09/02/23	1	11:14:00	14:14:00	Buzzard_BZ	1	13:34:00							60		60
20/02/23	2	10:30	13:30	Nil Sightings											
21/02/23	2	11:25	14:25	Buzzard_BZ	2	14:03	On			240	60	60			360
22/02/23	3	11:55	14:55	Sparrowhawk_SH	1	13:50	On/Off	15							15
23/02/23	3	12:45	15:45	Nil Sightings											
23/02/23	4	09:30:00	16:00:00	Nil Sightings											
08/02/23	5	10:40:00	17:10:00	Nil Sightings											
07/02/23	6	11:20:00	17:50:00	Nil Sightings											
10/02/23	7	10:20:00	14:20:00	Nil Sightings											
13/03/23	7	13:10	15:40	Hen Harrier_HH	1	15:04	Off/On		30						30
22/02/23	8	12:00:00	18:30:00	Kestrel_K.	1	13:35:00			51	20					71
22/02/23	8	12:00:00	18:30:00	Kestrel_K.	1	13:50:00			54						54
22/02/23	8	12:00:00	18:30:00	Kestrel_K.	1	14:04:00			118						118
22/02/23	8	12:00:00	18:30:00	Kestrel_K.	1	14:26:00		20	162						182

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
22/02/23	8	12:00:00	18:30:00	Grey Heron_H.	1	14:40:00			15						15
14/03/23	9	10:40	13:40	Hen Harrier_HH	1	10:46	On/Off	30	30						60
14/03/23	9	10:40	13:40	Kestrel_K.	1	11:22	On	15	120	15					150
14/03/23	9	10:40	13:40	Snipe_SN	6	11:46	On	15	15						30
14/03/23	9	10:40	13:40	Lesser Black-backed Gull_LB	2	11:48	On/Off	15	15	90					120
14/03/23	9	14:10	17:10	Buzzard_BZ	1	14:38	On	30	60	60	30				180
22/02/23	10	13:50:00	16:50:00	Kestrel_K.	1	14:23:00					30	30	60		120
22/02/23	10	13:50:00	16:50:00	Sparrowhawk_SH	1	16:11:00		5							5
22/02/23	10	13:50:00	16:50:00	Buzzard_BZ	1	16:31:00			10	30	10				50
22/02/23	10	13:50:00	16:50:00	Buzzard_BZ	1	16:34:00			10	20	40	20	30		120
22/02/23	10	13:50:00	16:50:00	Great Spotted Woodpecker_GS	1	16:44:00		5	5						10
23/02/23	10	07:40:00	10:40:00	Raven_RN	2	08:31:00	On/off			20	20	20			60
23/02/23	10	07:40:00	10:40:00	Sparrowhawk_SH	1	10:17:00	On	10							10
23/02/23	10	07:40:00	10:40:00	Buzzard_BZ	1	10:32:00	On	20							20
22/03/23	11	08:58:00	15:30:00	Buzzard_BZ	2	09:36:00	Off			60					60
22/03/23	11	08:58:00	15:30:00	Buzzard_BZ	2	09:47:00	Off			120	60				180
22/03/23	11	08:58:00	15:30:00	Buzzard_BZ	1	10:34:00	Off			60					60
28/02/23	12	10:45:00	17:15:00	Nil Sightings											

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
06/03/23	1	10:15	14:45	Buzzard_BZ	1	11:48	On	30	30						60
06/03/23	1	10:15	14:45	Kestrel_K.	1	14:24	On	30	60	90					180
09/03/23	1	11:20	13:20	Nil Sightings											
07/03/23	2	11:40	16:10	Sparrowhawk_SH	1	12:20	On	20							20
07/03/23	2	11:40	16:10	Buzzard_BZ	2	14:26	On		30	30	240	120			420
09/03/23	2	13:35	15:35	Kestrel_K.	1	14:48	Off/On	15							15
08/03/23	3	11:45	16:15	Kestrel_K.	1	14:12	On		15						15
20/02/23	3	13:00:00	15:00:00	Raven_RN	1	13:13:00	Off/On		10	20					30
20/02/23	3	13:00:00	15:00:00	Raven_RN	2	13:46:00	On/off		20	20					40
13/04/23	4	12.10pm	15.10pm	Sparrowhawk_SH	1	13.07pm					20	20	20		60
13/04/23	4	12.10pm	15.10pm	Hen harrier_HH	1	14.30pm			10						10
03/05/23	4	12:44	15:44	Nil Sightings											
12/04/23	5	10:30	12:45	Nil Sightings											
04/05/23	5	15.20	17.20	Nil Sightings											
04/05/23	5	17.50	18.10	Nil Sightings											
05/05/23	5	15.10	16.35	Kestrel_K.	1	15.24			60	60					120
05/05/23	5	15.10	16.35	Kestrel_K.	1	15.32						10	60		70
05/05/23	5	15.10	16.35	Kestrel_K.	1	02:38:24						80			80

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10 m	10-20m	20-30m	30-40m	40-50m	50-160m	>160 m	Total Duration (s)
13/04/23	6	08:30	11:30	Kestrel_K.	1	10:33:00	On/off	20	10	35					65
13/04/23	6	12:00	15:00	Jay_J.	2	12:56:00	On/off	35							35
13/04/23	6	12:00	15:00	Kestrel_K.	1	13:03:00	On		5						5
13/04/23	6	12:00	15:00	Mallard_MA	1	13:05:00	On			15					15
13/04/23	6	12:00	15:00	Kestrel_K.	1	13:26:00	On/off		10	35	45				90
16/03/23	7	09:45:00	16:15:00	Buzzard_BZ	1	13:30:00				35					35
16/03/23	7	09:45:00	16:15:00	Kestrel_K.	1	13:44:00			70						70
16/03/23	7	09:45:00	16:15:00	Buzzard_BZ	2	14:20:00				100	30				130
16/03/23	7	09:45:00	16:15:00	Sparrowhawk_SH	1	15:45:00			150	70					220
13/01/23	8	09:05:00	10:05:00	Nil Sightings											
03/05/23	8	09:13	12:13	Nil Sightings											
23/03/23	9	08:49:00	15:19:00	Buzzard_BZ	1	10:20:00	On			120					120
13/04/23	10	09:25:00	15:40:00	Nil Sightings											
22/03/23	11	08:58:00	15:30:00	Buzzard_BZ	2	09:36:00	Off			60					60
22/03/23	11	08:58:00	15:30:00	Buzzard_BZ	2	09:47:00	Off			120	60				180
22/03/23	11	08:58:00	15:30:00	Buzzard_BZ	1	10:34:00	Off			60					60
21/03/23	12	09:15:00	15:15:00	Nil Sightings											

Winter 2022/23 Weather Data

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
04/10/22	1	CMCK	Occasional showers	8/8	10	F1	N	16	12:45:00	15:45:00	10800
07/10/22	1	CMCK	Occasional showers	5/8	5	F2	WSW	12	08:40:00	11:40:00	10800
05/10/22	2	CMCK	Occasional showers	5/8	10	F3	WSW	11	12:02:00	16:02:00	14400
07/10/22	2	CMCK	None	5/8	10	F3	WSW	15	12:10:00	14:10:00	7200
06/10/22	3	CMCK	Occasional showers	7/8	5	F3	SW	14	12:30:00	16:30:00	14400
07/10/22	3	CMCK	Single shower	4/8	10	F3	WSW	15	14:35:00	16:35:00	7200
14/10/22	4	CMCK	Mist/light rain	8/8	2	F2	SW	11	09:20:00	12:20:00	10800
14/10/22	4	CMCK	Occasional showers	6/8	5	F2	SW	14	12:50:00	15:50:00	10800
10/10/22	5	CMCK	None	1/8	20	F2	NW	7	10:30:00	17:00:00	21600
11/10/22	6	CMCK/KME	None	8/8	10	F3	S	10	10:20:00	13:20:00	10800
11/10/22	6	CMCK/KME	None	8/8	10	F3	S	10	13:50:00	16:50:00	10800
12/10/22	7	CMCK	Light drizzle	8/8	5	F2	WSW	13	10:20:00	13:20:00	10800
12/10/22	7	CMCK	None	8/8	5	F2	WSW	13	13:50:00	16:50:00	10800
13/10/22	8	CMCK	Occasional showers	6/8	10	F2	SE	13	12:15:00	16:15:00	14400
18/10/22	8	CMCK	None	3/8	10	F2	N	12	10:10:00	12:10:00	7200
07/10/22	9	SS	Occasional showers	4/8	15	F4	WSW	12	09:45:00	16:15:00	21600
21/10/22	10	SS	Heavy Showers	8/8	8	F4	E	15	11:00:00	14:00:00	10800
30/11/22	10	EC	Dry	5/8	15	F2	SE	10	09:55:00	12:55:00	10800
11/10/22	11	EC	Dry	7/8	12	F2	WSW	13	09:20:00	15:50:00	21600
30/11/22	12	ML	Dry	8/8	15	F2	SSE	10	10:08:00	16:38:00	21600

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
11/11/22	1	EC	Dry	6/8	15	F4	S	13	10:30:00	15:00:00	14400
18/11/22	1	CMCK	Occasional showers	7/8	5	F1	W	5	09:00:00	11:00:00	7200
03/11/22	2	ML	Dry	4/8	15	F1	NNW	9	12:50:00	16:20:00	10800
18/11/22	2	CMCK	Single shower	2/8	10	F1	W	7	11:20:00	13:20:00	7200
17/11/22	3	CMCK	Single shower	7/8	5	F1	WNW	3	10:10:00	14:10:00	14400
18/11/22	3	CMCK	None	3/8	10	F1	W	7	1:45:00 pm	3:45:00 pm	7200
09/12/22	4	CMCK	None	0/8	10	F1	NNE	-3	11:30:00 am	13:30:00 PM	7200
07/11/22	4	SS	Constant	8/8	4	F5	SSE	12	12:00:00	16:00:00	14400
04/11/22	5	LK	None	4/8	20	F2	W	5	07:00:00	13:30:00	21600
16/11/22	6	CMCK	None	2/8	10	F2	SE	6	09:55:00	12:55:00	10800
16/11/22	6	CMCK	None	3/8	10	F2	SE	6	13:25:00	16:25:00	10800
04/11/22	7	ML	Dry	3/8	15	F1	SW	4	07:07:00	13:37:00	21600
10/11/22	8	EC	Dry	3/8	10	F3	S	12	09:30:00	16:00:00	21600
19/12/22	9	CMCK	Drizzle/rain	8/8	5	F3	SSE	13	10:10:00	13:10:00 PM	10800
14/11/22	9	SS	Dry	1/8	16	F3	SSE	9	10:00:00	13:00:00	10800
15/11/22	10	CMCK	None	6/8	10	F1	SE	9	10:05:00	14:35:00	14400
30/11/22	10	EC	Drizzle	5/8	15	F2	SE	10	13:25:00	15:25:00	7200
28/11/22	11	LK	None	1/8	20	F1	WSW	8	10:00:00	16:30:00	21600
22/12/22	12	LK	None	8/8	15	F1	NNW	6	09:15:00	15:45:00	21600
08/12/22	2	CMCK	Mist/light rain	8/8	3	F1	NE	-1	08:00	11:00	10800
20/12/22	2	CMCK	None	3/8	10	F3	SSW	6	09:45	12:45	10800
08/12/22	3	CMCK	Mist/light rain	3/8	3	F1	NE	0	11:30	14:30	10800

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
21/12/22	3	CMCK	None	1/8	10	F3	SW	8	11:20	14:20	10800
09/12/22	4	CMCK	None	1/8	10	F1	NNE	-3	08:00	11:00	10800
22/12/22	4	CMCK	Mist/light rain	7/8	2	F2	N	6	10:10	13:10	10800
16/12/22	5	CMCK	None	1/8	15	F2	S	-5	09:30	16:00	21600
30/11/22	6	CMCK	Light Showers	8/8	10	F3	SE	10	10:00	13:00	10800
30/11/22	6	CMCK	Light drizzle	8/8	2	F3	SE	10	13:30	16:30	10800
05/12/22	7	CMCK	None	5/8	10	F2	NNE	5	10:00	13:00	10800
05/12/22	7	CMCK	Single shower	7/8	10	F2	NNE	5	13:30	16:30	10800
07/12/22	8	CMCK	None	1/8	10	F1	NNW	-1	08:00	14:30	21600
22/12/22	9	SS	Light drizzle	7/8	16	F2	WNW	9	10:00:00	16:00:00	21600
21/12/22	10	LK	None	2/8	10	F2	SW	6	10:30:00	17:00:00	23400
11/01/23	11	JOH	Constant	7/8	5	F5	WSW	8	09:51:00	12:51:00	10800
11/01/23	11	JOH	Occasional showers	8/8	5	F5	WSW	9	13:24:00	16:24:00	10800
09/01/23	12	HM	Light drizzle	7/8	5	F1	SW	6	09:32:00	12:32:00	10800
09/01/23	12	HM	Occasional showers	3/8	5	F2	SW	6	13:02:00	16:02:00	10800
03/01/23	1	CMCK	Occasional showers	8/8	5	F4	SSE	10	9:45:00	12:45:00	10800
03/01/23	1	CMCK	Occasional showers	8/8	5	F2	SSE	10	15:15:00	15:15:00	10800
10/01/23	2	HM	Occasional showers	8/8	2	F4	NW	12	9:30:00	12:30:00	10800
08/02/23	2	HM	Dry	8/8	2	F2	SW	9	13:40:00	16:40:00	10800
04/01/23	3	CMCK	Occasional showers	7/8	5	F3	WSW	10	9:30:00	16:00:00	21600
09/01/23	4	CMCK and JOH	Occasional showers	5/8	5	F3	W	5	10:20:00	13:20:00	10800

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
10/01/23	4	CMCK	Drizzle/rain	8/8	3	F3	SSW	11	9:40:00	12:40:00	10800
11/01/23	1	HM	Occasional showers	7/8	2	F5	SW	6	09:40:00	12:40:00	10800
11/01/23	1	HM	Occasional showers	8/8	2	F4	SW	5	13:10:00	16:10:00	10800
13/01/23	5	JOC	Occasional showers	6/8	15	F3	SW	8	8:45:00	15:15:00	21600
13/01/23	8	JOH	None	5/8	5	F5	W	10	09:05:00	10:05:00	3600
13/01/23	6	JOH	None	5/8	2	F1	WSW	8	10:40:00	13:40:00	10800
13/01/23	6	JOH	Occasional showers	8/8	5	F5	WSW	10	14:00:00	16:00:00	7200
06/01/23	9	JOH	Dry	6/8	10	F4	SE	7	9:42:00	12:42:00	10800
06/01/23	9	JOH	Occasional showers	8/8	5	F5	SE	10	13:11:00	16:11:00	10800
10/01/23	10	JOH	Constant	8/8	5	F5	SSW	13	9:37:00	12:37:00	10800
22/02/23	10	EM	Occasional showers	7/8	15	F4	NW	7	10:30:00	13:30:00	10800
16/03/23	11	CMCK	Occasional showers	7/8	5	F3	S	13	10:18	13:18	10800
16/03/23	11	CMCK	Occasional showers	3/8	15	F3	S	13	13:48	16:48	10800
12/01/23	12	JOH	Occasional showers	6/8	5	F5	WSW	8	10:12:00	13:12:00	10800
12/01/23	12	JOH	Occasional showers	5/8	5	F5	WSW	7	13:50:00	16:50:00	10800
09/02/23	1	HM	Dry	8/8	2	F1	SW	2	7:34:00	10:34:00	10800
09/02/23	1	HM	Dry	8/8	2	F1	SW	6	11:14:00	14:14:00	10800
20/02/23	2	CMCK	Occasional showers	8/8	5	F2	WSW	11	10:30	13:30	10800
21/02/23	2	CMCK	None	6/8	10	F3	SSE	11	11:25	14:25	10800
21/02/23	6	EM	None	8/8	20	F3	SE	10	08:50:00	09:50:00	3600

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
07/02/23	7	HM	Dry	5/8	2	F1	SE	7	10:30:00	13:30:00	10800
07/02/23	7	HM	Dry	6/8	2	F1	SE	8	14:00:00	17:00:00	10800
09/02/23	8	NL	None	3/8	2	F1	SSE	7	08:30:00	15:00:00	21600
22/02/23	3	CMCK	Light Showers	7/8	5	F3	NW	8	11:55	14:55	10800
23/02/23	3	CMCK	None	4/8	15	F2	NNE	8	12:45	15:45	10800
23/02/23	4	LK	None	2/8	20	F1	NNW	9	09:30:00	16:00:00	21600
08/02/23	5	NL	None	3/8	4	F2	SSW	4	10:40:00	17:10:00	21600
07/02/23	6	NL	None	4/8	6	F1	SSW	8	11:20:00	17:50:00	21600
10/02/23	7	NL	Drizzle/rain	7/8	2	F2	WSW	8	10:20:00	14:20:00	12600
22/02/23	8	LK	Heavy Showers	8/8	15	F3	NW	8	12:00:00	18:30:00	21600
14/03/23	9	CMCK	Occasional showers	5/8	10	F3	WSW	6	10:40	13:40	10800
14/03/23	9	CMCK	Occasional showers	5/8	10	F3	WSW	6	14:10	17:10	10800
22/02/23	10	EM	Heavy Showers	6/8	15	F4	NW	8	13:50:00	16:50:00	10800
23/02/23	10	EM	None	2/8	15	F2	N	2	07:40:00	10:40:00	10800
22/03/23	11	EC	Dry	2/8	15	F4	S	10	08:58:00	15:30:00	21600
28/02/23	12	EC	Dry	5/8	15	F2	ESE	8	10:45:00	17:15:00	21600
06/03/23	1	CMCK	Occasional showers	8/8	5	F2	WSW	8	10:15	14:45	14400
09/03/23	1	CMCK	Drizzle/rain	8/8	5	F2	ENE	2	11:20	13:20	7200
07/03/23	2	CMCK	None	5/8	15	F1	NE	3	11:40	16:10	14400
09/03/23	2	CMCK	Drizzle/rain	8/8	2	F3	ENE	6	13:35	15:35	7200
08/03/23	3	CMCK	None	7/8	5	F3	ENE	5	11:45	16:15	14400
20/02/23	3	EM	Drizzle	6/8	15	F4	SW	11	13:00:00	15:00:00	7200

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
13/03/23	7	CMCK	Occasional showers	7/8	3	F3	WSW	12	13:10	15:40	9000
16/03/23	7	LK	Occasional showers	8/8	10	F2	SSE	11	09:45:00	16:15:00	21600
23/03/23	9	EC	Dry	4/8	15	F3	SSE	8	08:49:00	15:19:00	21600
22/03/23	11	EC	Dry	2/8	15	F4	S	10	08:58:00	15:30:00	21600
21/03/23	12	EC	Dry	3/8	15	F2	S	8	09:15:00	15:15:00	21600
12/04/23	5	JOH	Drizzle/rain	8/8	3	F5	WNW	4	10:30	12:45	8100
13/04/23	4	HM	Dry	4/8	2	F1	W	10	12.10pm	15.10pm	10800
13/04/23	6	JOH	None	4/8	5	F5	W	9	12:00	15:00	10800
13/04/23	6	JOH	Single shower	3/8	4	F5	WSW	3	08:30	11:30	10800
03/05/23	4	EC	Dry	6/8	15	F3	ESE	15	12:44	15:44	10800
03/05/23	8	EC	Dry	7/8	10	F3	ESE	13	09:13	12:13	10800
04/05/23	5	NA	Light	8/8	8	F4	E	13	15.20	17.20	7200
05/05/23	5	NA	None	6/8	12	F2	SW	14	15.10	16.35	5100

Winter 2022/23 VP Species Count

Species	Oct	Nov	Dec	Jan	Feb	March	Total
Buzzard	4	3	11	20	13	12	63
Dunlin	90	0	0	0	0	0	90
Great Spotted Woodpecker	0	0	0	0	1	0	1
Grey Heron	0	0	1	0	1	0	2
Hen Harrier	0	0	1	0	2	1	4
Jay	0	0	0	0	0	2	2
Kestrel	31	12	13	10	6	10	82
Lesser Black-Backed Gull	0	1	0	0	2	0	3
Little Egret	0	1	0	0	0	0	1
Mallard	0	7	0	0	0	1	8
Raven	0	0	0	6	2	3	11
Ringed Plover	56	0	0	0	0	0	56
Snipe	1	0	4	0	6	0	11
Sparrowhawk	3	0	7	1	5	3	19
Whooper Swan	3	0	0	0	0	0	3

Breeding 2023 VP Species and Height Band

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10m	10-20m	20-30m	30-40m	40-50m	50-200m	>200m	Total Duration (s)
03/05/2023	4	12:10	15:10	Hen Harrier_HH	1	12:33	-		8						8
03/05/2023	4	12:10	15:10	Kestrel_K.	1	12:51	-	60	100	300	100	40			600
03/05/2023	4	12:10	15:10	Hen Harrier_HH	1	13:06	-	100							100
03/05/2023	4	12:10	15:10	Kestrel_K.	1	13:35	-	5	5	50	80	120			260
03/05/2023	4	12:10	15:10	Hen Harrier_HH	1	14:00	-	10	40						50
03/05/2023	4	12:10	15:10	Kestrel_K.	1	14:24	-	20	200	280	160				660
03/05/2023	4	12:10	15:10	Kestrel_K.	1	14:45	-	120	80	130					330
03/05/2023	4	15.41	18.41	Kestrel_K.	1	15:45	-	10	330	240	200				780
03/05/2023	4	15:41	18:41	Buzzard_BZ	1	16:34	-			50	20				70
03/05/2023	4	15:41	18:41	Kestrel_K.	1	16:46	-	10	50	90	30				180
03/05/2023	4	15:41	18:41	Kestrel_K.	1	17:07	-	20	30	40	60				150
03/05/2023	4	15:41	18:41	Kestrel_K.	1	17:13	-	40	200	300	200	40			780
03/05/2023	4	15:41	18:41	Hen Harrier_HH	1	17:21	-				5	10			15
03/05/2023	4	15:41	18:41	Hen Harrier_HH	1	17:26	-	45	5						50
03/05/2023	4	15:41	18:41	Hen Harrier_HH	1	17:30	-	85	5						90
03/05/2023	4	15:41	18:41	Kestrel_K.	1	17:45	-	5	30	65					100
03/05/2023	4	15:41	18:41	Kestrel_K.	1	18:25	-	50	150	300	150	70			720
23/05/2023	3	08:53	15:23	Nil Sightings	0		-								
23/05/2023	3	08:53	15:23	Raven_RN	1	14:14	Off		20						20
24/05/2023	7	08:59	15:29	Nil Sightings	0		-								
25/05/2023	6	08:52	15:18	Nil Sightings	0	11:24	-	60							60
07/05/2023	VP6	9:10	13:40	Hen Harrier_HH	1	11:44		5							5
07/05/2023	VP6	9:10	13:40	Hen Harrier_HH	1	11:59			10		30	60	20		120
07/05/2023	VP6	9:10	13:40	Kestrel_K.	1	12:58		10							10
07/05/2023	VP6	9:10	13:40	Sparrowhawk_SH	1	12:58		10							10
07/05/2023	VP6	9:10	13:40	Sparrowhawk_SH	1	13:21		10							10

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10m	10-20m	20-30m	30-40m	40-50m	50-200m	>200m	Total Duration (s)
07/05/2023	VP6	9:10	13:40	Hen Harrier_HH	1	10:30					60	60	60		180
16/05/2023	VP4	14:00	18:30	Raven_RN	2	17:07	On			30					30
16/05/2023	VP4	14:00	18:30	Kestrel_K.	1	17:24	On			30	60	30			120
16/05/2023	VP3	14:00	18:30	Kestrel_K.	1	18:03				30	20				50
18/05/2023	VP7	08:40	11:40	Buzzard_BZ	1	10:11	On		30	180	90				300
18/05/2023	VP7	08:40	11:40	Hen Harrier_HH	1	10:21	On/Off	45							45
18/05/2023	VP7	08:40	11:40	Hen Harrier_HH	1	10:59	On	45	15						60
18/05/2023	VP7	12:10	15:10	Buzzard_BZ	1	12:51	On	60	60	300					420
13/06/2023	VP7	8:00	14:30	Black-headed Gull_BH	1	9:51			60						60
13/06/2023	VP7	8:00	14:30	Buzzard_BZ	1	9:54			60	60					120
13/06/2023	VP7	8:00	14:30	Buzzard_BZ	1	9:54			120	120	120				360
13/06/2023	VP7	8:00	14:30	Buzzard_BZ	1	10:19		10	20	30	30				90
13/06/2023	VP7	8:00	14:30	Buzzard_BZ	1	10:33		10	10	100					120
14/06/2023	VP3	15:00	18:00	Nil Sightings	1										
16/06/2023	VP3	14:13	16:18	Nil Sightings											
16/06/2023	VP4	12:10	14:10	Nil Sightings	1										
05/07/2023	VP3	15:00	19:30	Kestrel_K.	1	16:22				90					90
06/07/2023	VP4	14:00	18:30	Nil Sightings	1										
06/07/2023	VP7	13:30	18:00	Hen Harrier_HH	1	14:28					20				20
06/07/2023	VP7	13:30	18:00	Lesser Black-backed Gull_LB	1	14:50						20			20
06/07/2023	VP7	13:30	18:00	Hen Harrier_HH		15:39						40	20		60
06/07/2023	VP7	13:30	18:00	Buzzard_BZ		16:25					30				30
06/07/2023	VP7	13:30	18:00	Buzzard_BZ	1	17:36					20	10	30		60
11/07/2023	VP4	17:09	20:09	Nil Sightings											
11/07/2023	VP4	17:09	20:09	Kestrel_K.	1	18:33				120					120
12/07/2023	VP3	16:09	18:09	Nil Sightings											

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10m	10-20m	20-30m	30-40m	40-50m	50-200m	>200m	Total Duration (s)
12/07/2023	VP3	16:09	18:09	Kestrel_K.	1	16:29				30					30
12/07/2023	VP4	18:26	20:26	Nil Sightings											
19/07/2023	VP6	17:00	19:00	Nil Sightings											
19/07/2023	VP7	19:20	21:20	Nil Sightings	1										
28/07/2023	VP6	08:50	11:50	Sparrowhawk_SH	1	10:57								10	10
28/07/2023	VP6	12:20	15:20	Nil Sightings											
02/08/2023	VP3	17:30	20:30	Nil Sightings											
03/08/2023	VP3	9:00	12:00	Nil Sightings											
03/08/2023	VP7	12:40	14:20	Buzzard_BZ	1	12:28				20					20
03/08/2023	VP7	12:40	14:20	Buzzard_BZ	1	13:17					50	60	150		260
03/08/2023	VP7	12:40	14:20	Buzzard_BZ	1	14:07		10	20	40	10				80
03/08/2023	VP7	12:40	14:20	Hen Harrier_HH	1	14:16			10	10	50	20			90
08/08/2023	VP4	14:15	15:15	Kestrel_K.	1	15:11	On				50	180			230
09/08/2023	VP6	17:00	20:00	Hen Harrier_HH	1	18:56	On	10	5						15
09/08/2023	VP6	17:00	20:00	Hen Harrier_HH	1	19:07	On	65							65
24/08/2023	VP7	11:43	13:43	Kestrel_K.	1	15:11					50	180			230
24/08/2023	VP7	11:43	13:43	Hen Harrier_HH	1	11:51				30					30
24/08/2023	VP7	11:43	13:43	Kestrel_K.	1	11:53				40	20				60
24/08/2023	VP7	11:43	13:43	Kestrel_K.	1	12:01				40					40
24/08/2023	VP7	11:43	13:43	Kestrel_K.	1	12:06			60	60					120
24/08/2023	VP7	11:43	13:43	Kestrel_K.	1	12:17					120	120			240
24/08/2023	VP7	11:43	13:43	Kestrel_K.	1	12:28					100				100
24/08/2023	VP7	11:43	13:43	Kestrel_K.	2	12:57					60				60
24/08/2023	VP7	11:43	13:43	Kestrel_K.	1	13:11			10	30					40
25/08/2023	VP6	9:20	12:20	Buzzard_BZ	1	10:12		30	15						45
25/08/2023	VP6	9:20	12:20	Kestrel_K.	1	10:25		15							15
25/08/2023	VP6	12:50	15:50	Kestrel_K.	1	13:13		20							20

Date	VP Name	Start Time	End Time	Species	Number	Time of sighting	On/Off Site	<10m	10-20m	20-30m	30-40m	40-50m	50-200m	>200m	Total Duration (s)
25/08/2023	VP6	12:50	15:50	Kestrel_K.	1	14:46		40	20						60
25/08/2023	VP6	12:50	15:50	Kestrel_K.	1	14:54		60	100	70	20				250
30/08/2023	VP6	16:25	19:25	Kestrel_K.	1	18:50				35					35
01/09/2023	VP3	12:25:00	14:25	Sparrowhawk_SH	1	13:54							180	35	215
01/09/2023	VP4	08:00	12:15	Nil Sightings											
08/09/2023	VP3	15:00	16:00	Nil Sightings											
08/09/2023	VP7	16:35	17:35	Buzzard_BZ	1	17:26	Off		34						34
08/09/2023	VP7	16:35	17:35	Buzzard_BZ	1	17:26	Off/On		34						34

Breeding 2023 VP Weather Data

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
03/05/2023	4	NA	None	7/8	16	F4	SE	13	12:10	15:10	10800
03/05/2023	4	NA	None	7/8	16	F4	SE	13	12:10	15:10	10800
03/05/2023	4	NA	None	7/8	16	F4	SE	13	12:10	15:10	10800
03/05/2023	4	NA	None	7/8	16	F4	SE	13	12:10	15:10	10800
03/05/2023	4	NA	None	7/8	16	F4	SE	13	12:10	15:10	10800
03/05/2023	4	NA	None	7/8	16	F4	SE	13	12:10	15:10	10800
03/05/2023	4	NA	None	7/8	16	F4	SE	13	12:10	15:10	10800
03/05/2023	4	NA	None	8/8	16	F4	SE	16	15:41	18:41	10800
03/05/2023	4	NA	None	8/8	16	F4	SE	16	15:41	18:41	10800
03/05/2023	4	NA	None	8/8	16	F4	SE	16	15:41	18:41	10800
03/05/2023	4	NA	None	8/8	16	F4	SE	16	15:41	18:41	10800
03/05/2023	4	NA	None	8/8	16	F4	SE	16	15:41	18:41	10800
03/05/2023	4	NA	None	8/8	16	F4	SE	16	15:41	18:41	10800
03/05/2023	4	NA	None	8/8	16	F4	SE	16	15:41	18:41	10800
03/05/2023	4	NA	None	8/8	16	F4	SE	16	15:41	18:41	10800
03/05/2023	4	NA	None	8/8	16	F4	SE	16	15:41	18:41	10800
03/05/2023	4	NA	None	8/8	16	F4	SE	16	15:41	18:41	10800
07/05/2023	VP6	HM	Light	8/8	2	F2	W	14	9:10	13:40	14400
07/05/2023	VP6	HM	Light	8/8	2	F2	W	14	9:10	13:40	14400
07/05/2023	VP6	HM	Light	8/8	2	F2	W	14	9:10	13:40	14400
07/05/2023	VP6	HM	Light	8/8	2	F2	W	14	9:10	13:40	14400
07/05/2023	VP6	HM	Light	8/8	2	F2	W	14	9:10	13:40	14400
07/05/2023	VP6	HM	Light	8/8	2	F2	W	14	9:10	13:40	14400

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
16/05/2023	VP3	KWP	None	6/8	15	F1	S	12	10:15	14:22	14400
16/05/2023	VP3	KWP	None	6/8	15	F1	S	12	10:15	14:22	14400
16/05/2023	VP3	ML	Drizzle	8/8	15	F1	NW	13	12:10	14:10	10800
18/05/2023	VP7	CMCK	None	3/8	15	F2	S	11	08:40	11:40	10800
18/05/2023	VP7	CMCK	None	3/8	15	F2	S	11	08:40	11:40	10800
18/05/2023	VP7	CMCK	None	3/8	15	F2	S	11	08:40	11:40	10800
18/05/2023	VP7	CMCK	None	6/8	15	F2	S	16	12:10	15:10	10800
23/05/2023	3	EC	None	4/8	15	F1	NNW	10	08:53	15:23	21600
23/05/2023	3	EC	None	4/8	15	F1	NNW	16	08:53	15:23	21600
24/05/2023	7	EC	None	2/8	15	F2	N	13	08:52	15:18	21600
25/05/2023	6	EC	None	3/8	15	F2	NW	11	08:59	15:29	21600
13/06/2023	VP7	NL	None	8/8	2	F1	N	17	8:00	14:30	21600
13/06/2023	VP7	NL	None	8/8	2	F1	N	17	8:00	14:30	21600
13/06/2023	VP7	NL	None	8/8	2	F1	N	17	8:00	14:30	21600
13/06/2023	VP7	NL	None	8/8	2	F1	N	17	8:00	14:30	21600
13/06/2023	VP7	NL	None	8/8	2	F1	N	17	8:00	14:30	21600
14/06/2023	VP3	NL	Occasional showers	6/8	2	F1	NW	25	15:00	18:00	10800
16/06/2023	VP3	ML	Drizzle	8/8	15	F1	NW	13	14:13	16:18	7200
16/06/2023	VP4	ML	Drizzle	8/8	15	F1	NW	13	12:10	14:10	10800
05/07/2023	VP3	NL	Occasional showers	8/8	4	F2	E	16	15:00	19:30	14400
06/07/2023	VP4	NL	Constant	8/8	2	F3	NW	15	14:00	18:30	14400
06/07/2023	VP7	HM	HM	Misty	8/8	2	F4	S	14	13:30	18:00
06/07/2023	VP7	HM	HM	Misty	8/8	2	F4	S	14	13:30	18:00
06/07/2023	VP7	HM	HM	Misty	8/8	2	F4	S	14	13:30	18:00

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
06/07/2023	VP7	HM	HM	Misty	8/8	2	F4	S	14	13:30	18:00
06/07/2023	VP7	HM	HM	Misty	8/8	2	F4	S	14	13:30	18:00
11/07/2023	VP4	EC	Drizzle/rain	4/8	15	F3	W	16	17:09	20:09	10800
11/07/2023	VP4	EC	Drizzle/rain	4/8	15	F3	W	15	17:09	20:09	10800
12/07/2023	VP3	EC	None	4/8	15	F3	W	14	18:26	20:26	7200
12/07/2023	VP3	EC	None	3/8	15	F3	W	16	16:09	18:09	7200
12/07/2023	VP4	EC	None	3/8	15	F3	W	16	16:09	18:09	7200
19/07/2023	VP6	JOH	None	3/8	10	F4	WNW	16	19:20	21:20	7200
19/07/2023	VP7	JOH	None	4/8	10	F5	WNW	17	17:00	19:00	7200
28/07/2023	VP6	JOC	None	7/8	10	F3	SW	16	08:50	11:50	10800
28/07/2023	VP6	JOC	None	8/8	10	F3	SW	18	12:20	15:20	10800
02/08/2023	VP3	JOH	Occasional showers	7/8	10	F5	NNW	18	17:30	20:30	10800
03/08/2023	VP3	JOH	None	8/8	10	F5	NNE	16	12:40	14:20	7200
03/08/2023	VP7	JOH	None	8/8	10	F5	NNE	16	12:40	14:20	7200
03/08/2023	VP7	JOH	None	8/8	10	F5	NNE	16	12:40	14:20	7200
03/08/2023	VP7	JOH	None	8/8	10	F5	NNE	16	12:40	14:20	7200
03/08/2023	VP7	JOH	None	8/8	10	F5	NNE	16	12:40	14:20	7200
08/08/2023	VP4	JOH	None	0/8	15	F2	SSE	25	13:05	14:05	3600
09/08/2023	VP6	NC	None	0/8	20	F2	SSW	26	15:00	16:00	3600
09/08/2023	VP6	JOH	None	1/8	12	F2	SSE	28	16:00	19:00	10800
24/08/2023	VP7	NL	None	4/8	4	F2	SW	15	11:43	13:43	7200
24/08/2023	VP7	NL	None	4/8	4	F2	SW	15	11:43	13:43	7200
24/08/2023	VP7	NL	None	4/8	4	F2	SW	15	11:43	13:43	7200
24/08/2023	VP7	NL	None	4/8	4	F2	SW	15	11:43	13:43	7200

Date	VP Name	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
24/08/2023	VP7	NL	None	4/8	4	F2	SW	15	11:43	13:43	7200
24/08/2023	VP7	NL	None	4/8	4	F2	SW	15	11:43	13:43	7200
24/08/2023	VP7	NL	None	4/8	4	F2	SW	15	11:43	13:43	7200
24/08/2023	VP7	NL	None	4/8	4	F2	SW	15	11:43	13:43	7200
24/08/2023	VP7	NL	None	4/8	4	F2	SW	15	11:43	13:43	7200
25/08/2023	VP6	CG	Occasional showers	4/8	20	F2	NW	13	9:20	12:20	10800
25/08/2023	VP6	CG	Occasional showers	4/8	20	F2	NW	13	9:20	12:20	10800
25/08/2023	VP6	CG	Heavy Showers	6/8	12	F3	NW	16	12:50	15:50	10800
25/08/2023	VP6	CG	Heavy Showers	6/8	12	F3	NW	16	12:50	15:50	10800
25/08/2023	VP6	CG	Heavy Showers	6/8	12	F3	NW	16	12:50	15:50	10800
30/08/2023	VP6	HM	Occasional showers	8/8	2	F1	W	16	18:25	20:25	7200
01/09/2023	VP3	CG	Drizzle	7/8	15	F1	E	17	12:25:00	14:25	7200
01/09/2023	VP4	CG	Drizzle	8/8	2	F1	SE	12	08:00	12:15:00	10800
08/09/2023	VP3	JOH	None	0/8	15	F2	SSE	25	13:05	14:05	3600
08/09/2023	VP3	NC	None	0/8	20	F2	SSW	26	15:00	16:00	3600
08/09/2023	VP7	NC	None	4/8	20	F2	SSW	25	16:35	17:35	3600
08/09/2023	VP7	NC	None	4/8	20	F2	SSW	25	16:35	17:35	3600

Breeding 2023 VP Species Count

Species	May	Jun	July	Aug	Sep	Total
Black-headed Gull	0	1	0	0	0	1
Buzzard	3	4	2	4	3	16
Hen Harrier	11	0	2	4	1	18
Kestrel	13	3	3	15	1	35
Lesser Black-Backed Gull	0	0	1	0	0	1
Raven	3	1	0	0	3	7
Sparrowhawk	3		1		1	4

Appendix C-II: Countryside Bird Surveys

CBS Transect Results Breeding 2022

Date	Breeding 2022						
	May			Jun			
Transect	T1	T2	T4	T1	T2	T3	T4
Blackbird	8	-	4	5	7	6	7
Blackcap	-	-	4	-	-	-	-
Blue Tit	2	-	-	2	1	1	1
Bullfinch	-	-	1	-	-	2	-
Chaffinch	3	-	-	6	5	1	1
Chiffchaff	-	-	-	3	1	-	1
Coal Tit	-	-	-	-	6	-	-
Cuckoo	-	-	-	-	-	1	-
Dunnock	-	-	-	-	-	1	1
Goldcrest	1	-	-	3	5	-	1
Hen Harrier	-	-	-	-	-	-	1
Jackdaw	-	-	-	-	-	1	-
Kestrel	-	-	-	1	-	-	-
Magpie	-	-	-	1	1	-	-
Mallard	1	-	-	-	-	-	-
Meadow Pipit	4	-	-	-	-	-	6
Pheasant	3	-	-	-	5	1	-
Pied Wagtail	-	-	-	1	-	-	-
Robin	4	-	1	1	2	4	3
Rook	-	-	-	1	41	-	-
Skylark	-	-	-	-	1	-	-
Song Thrush	1	-	2	3	-	1	-
Starling	13	-	-	-	1	-	-
Swallow	1	-	-	-	-	1	-

Whitethroat	-	-	-	-	-	-	1
Willow Warbler	5	-	2	3	3	4	2
Woodpigeon	1	-	-	6	13	4	1
Wren	8	-	4	9	14	6	12

Transects Survey Weather Breeding Season 2022

Date	Transect	Cloud	Rain	Wind Speed	Visibility (km)	Start Time	End Time	Duration of survey (sec)
12/05/2022	1	3	1	1	1	08:42:00	09:03:00	1260
06/05/2022	2	3	3	3	3	07:50:00	08:23:00	1800
24/05/2022	4	2	1	1	1	07:50:00	08:30:00	2400
03/06/2022	1	3	1	1	1	07:17:00	07:35:00	1080
03/06/2022	2	3	1	1	1	07:45:00	08:01:00	960
02/06/2022	3	3	1	1	1	07:45:00	08:00:00	900
02/06/2022	4	3	1	1	1	08:18:00	08:33:00	900

CBS Transect Results Winter 2022/2023

Date	Winter 2022 – 2023															
	Nov				Dec				Jan				Feb			
Transect	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
Blackbird	2	-	-	-	12	3	8	2	5	3	5	3	16	5	6	4
Blue Tit	-	-	-	-	2	1	-	-	1	1	1	3	1	1	3	1
Bullfinch	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Buzzard	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Chaffinch	-	-	2	-	-	-	29	-	5	8	1	-	48	1	14	-
Coal Tit	-	-	-	-	-	2	-	4	1	-	-	11	1	12	-	7
Collard Dove	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Dunnock	-	-	1	1	-	-	-	-	-	1	3	-	-	-	4	-
Fieldfare	-	-	-	-	14	-	-	-	64	-	-	-	-	-	-	-
Goldcrest	-	-	-	-	-	-	-	-	-	1	-	-	-	3	-	1
Goldfinch	1	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-
Great Tit	-	-	-	-	2	2	-	1	5	-	-	1	7	6	5	6
Greenfinch	-	-	-	-	-	-	20	-	-	-	-	-	-	-	-	-
Hooded Crow	-	-	3	-	2	6	22	2	2	-	1	-	2	4	17	2
House Sparrow	-	-	3	-	-	4	25	-	-	-	-	-	-	-	7	-
Jackdaw	1	-	-	-	1	-	3	-	1	-	-	-	-	-	11	-
Jay	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
Long-Tailed Tit	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magpie	-	-	-	-	5	-	-	-	2	-	-	-	1	2	-	-
Meadow Pipit	-	-	5	-	-	-	7	1	-	-	8	3	1	2	31	-
Mistle Thrush	-	-	-	-	6	-	-	-	-	-	-	-	2	3	-	-
Pheasant	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
Pied Wagtail	-	-	-	-	-	-	1	-	1	-	-	-	6	-	-	-
Raven	-	-	-	-	-	-	2	3	-	-	-	-	-	-	-	1

Redwing	-	-	1	-	12	-	57	-	41	-	1	-	14	-	-	-
Reed Bunting	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Robin	2	-	2	2	6	3	3	2	-	2	-	1	12	8	9	5
Rook	2	1	2	-	2	-	25	-	1	-	13	-	-	-	7	-
Snipe	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Song Thrush	-	-	-	-	4	-	2	-	1	4	1	-	8	2	4	2
Sparrowhawk	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Starling	-	-	-	-	-	-	14	-	51	-	-	-	23	-	38	
Woodpigeon	5	-	-	-	3	1	-	-	-	-	1	1	2	1	6	5
Wren	-	1	-	-	3	1	1	3	1	1	-	2	3	-	2	3

Transects Survey Weather Winter 22/23

Date	Transect	Cloud	Rain	Wind Speed	Visibility (km)	Start Time	End Time	Duration of survey (sec)
04/11/2022	1	3	2	1	1	14:18:00	14:38:00	1200
04/11/2022	2	3	3	1	2	13:45:00	14:15:00	1800
04/11/2022	3	3	2	1	2	15:00:00	16:00:00	3600
04/11/2022	4	3	2	1	2	13:30:00	14:00:00	1800
19/12/2022	1	2	2	3	1	13:33:00	14:05:00	1920
20/12/2022	2	1	1	2	1	13:26:00	13:45:00	1140
21/12/2022	3	2	1	2	1	10:23:00	10:51:00	1680
22/12/2022	4	1	1	1	1	13:40:00	14:15:00	2100

Date	Transect	Cloud	Rain	Wind Speed	Visibility (km)	Start Time	End Time	Duration of survey (sec)
09/01/2023	1	3	2	2	2	14:30:00	14:57:00	1620
07/02/2023	2	2	1	1	2	9:49:00	10:20:00	1860
13/01/23	3	3	1	2	1	15:53:00	16:24:00	1860
04/01/2023	4	3	2	2	2	9:00:00	9:25:00	1500
21/02/2023	1	1	1	1	1	15:13:00	15:39:00	1560
20/02/2023	2	3	2	2	1	14:25:00	14:50:00	1500
23/02/2023	3	1	1	1	1	11:35:00	11:57:00	1320
22/02/2023	4	3	2	2	1	15:35:00	16:02:00	1620

CBS Transect Results 2023

Date	Breeding 2023							
	April				May			
Transect	T1	T2	T3	T4	T1	T2	T3	T4
Blackbird	11	9	-		-	2	-	11
Blue Tit	2	-	-	2	-	4	-	-
Bullfinch	-	-	-	1	-	-	-	-
Chaffinch	3	-	-	7	-	4	-	-
Coal Tit	-	-	-	2	-	-	1	-
Collard Dove			-	1	-	-	-	-
Cuckoo	-	-	-	2	-	-	3	-
Dunnock	-	-	-	5	-	-	1	-
Goldcrest	1	-	-	1	-	-	-	-
Goldfinch			-	1	-	-	-	-
Great Tit			-	1	-	-	1	-
Hooded Crow			-	11	7	-	3	-
Jackdaw	-	-	-	2	1	-	-	-
Magpie			-	1	2	-	-	-
Meadow Pipit	4	-	-	4	6	-	-	-
Mistle Thrush			-	-	6	-	-	-
Reed Bunting			-	1	-	-	-	-
Pheasant	3	-	-	1	9	-	-	-
Pied Wagtail	-	-	-	-	3	-	-	-
Raven	-	-	-	-	1	-	-	-
Robin	4	-	-	30	18	-	-	-
Rook	-	-	-	2	2	-	-	-
Skylark	-	-	1	3	2	-	-	-
Song Thrush	1	-	14	-	6	-	-	-

Starling	13	-	8	-	1	-	-	-
Swallow	1	-	-	-	-	-	-	-
Whitethroat	-	-	2	-	2	-	-	-
Willow Warbler	5	-	49	-	7	-	-	-
Woodpigeon	1	-	25	-	17	-	-	-
Wren	8	-	33		18	-	-	-

Transects Survey Weather Breeding Season 2023

Date	Transect	Cloud	Rain	Wind Speed	Visibility (km)	Start Time	End Time	Duration of survey (sec)
13/04/2023	1	1/8	Dry	F2	WSW	09:10:00	09:23:00	780
13/04/2023	2	1/8	Dry	F2	WSW	08:45:00	09:00:00	900
26/04/2023	3	7/8	Dry	F2	ESE	08:59:00	09:24:00	1500
25/04/2023	4	2/8	None	F2	NE	09:20:00	10:00:00	2400
18/05/2023	1	3/8	Dry	F2	S	07:55:00	08:21:00	1560
29/05/2023	2	3/8	Dry	F2	NW	08:55:00	09:15:00	1200
29/05/2023	3	3/8	Dry	F2	NW	08:18:00	08:40:00	1200
23/05/2023	4	4/8	Dry	F1	NNW	8:10	8:40	1800

Appendix C-III: Breeding Wader Surveys

Breeding Waders 2022

Location	Date	Species	Coordinates (ITM)	
			X	Y
Oatfield	25/04/2022	Nil Sightings	-	-
Oatfield	26/04/2022	Nil Sightings	-	-
Oatfield	11/05/2022	Nil Sightings	-	-
Oatfield	07/06/2022	Nil Sightings	-	-
Oatfield	28/06/2022	Nil Sightings	-	-

Breeding Wader Survey Weather 2022

Date	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time	Duration of survey (sec)
25/04/2022	Dry	0/8	20	F1	W	9	08:30:00	11:30:00	10800
26/04/2022	Dry	1/4	15	F1	W	10	08:30:00	11:30:00	10800
11/05/2022	Occasional showers	4/8	16	F2	WNW	13	09:00:00	15:06:00	21960
07/06/2022	None	3/8	16	F2	SE	16	09:30:00	13:02:00	3360
28/06/2022	Showers	6/8	15	F1	SSW	13	06:50:00	12:50:00	10800

Breeding Wader Species Count 2022

Species	Apr	May	Jun	Jul	Aug	Sep	Total
Snipe	0	0	0	0	0	0	0
Curlew	0	0	0	0	0	0	0
Golden Plover	0	0	0	0	0	0	0

Breeding Wader Results 2023

Date	Surveyor	Start Time	End Time	Duration (s)	Species	Time of sighting	Number	Observations
14/04/2023	DP	09:31:00	15:50:00	21600	Snipe_SN	10:41	1	Individual disturbed from area of heather.
14/04/2023	DP	09:31:00	15:50:00	21600	Snipe_SN	10:51	1	Individual disturbed from area of heather.
14/04/2023	DMC	09:31:00	15:50:00	21600	Nil Sightings	10:44	0	-
14/04/2023	DMC	09:39:00	17:07:00	1800	Nil Sightings	13:56	0	-
14/04/2023	DMC	09:39:00	17:07:00	21600	Snipe_SN	15:40	1	-
14/04/2023	HM	09:31:00	15:50:00	23400	Snipe_SN	10:44	1	SN flushed from heather
14/04/2023	HM	09:31:00	15:50:00	23400	Nil Sightings	10:02:00	0	Low flying, <1m and landed in a grassy tussoock
21/04/2023	JOC	08:46:00	15:38:00	22500	Nil Sightings	08:45	0	-
21/04/2023	JOC	08:46:00	15:38:00	22500	Nil Sightings	11:00	0	-
21/04/2023	JOC	08:46:00	15:38:00	22500	Nil Sightings	15:30	0	-
03/05/2023	DMC & EM	13:00:00	16:00:00	10800	Nil Sightings	13:03:00	0	-
03/05/2023	DMC & EM	13:00:00	16:00:00	10800	Nil Sightings	15:51	0	-
05/05/2023	DMC & EM	08:49:00	15:24:00	25200	Nil Sightings	09:16:42	0	-
05/05/2023	DMC & EM	08:49:00	15:24:00	25200	Nil Sightings	09:38:52	0	-
05/05/2023	DMC & EM	08:49:00	15:24:00	25200	Nil Sightings	11:16:47	0	-
05/05/2023	DMC & EM	08:49:00	15:24:00	25200	Nil Sightings	11:50:08	0	-
05/05/2023	DMC & EM	08:49:00	15:24:00	25200	Nil Sightings	13:37:11	0	-
05/05/2023	DMC & EM	08:49:00	15:24:00	25200	Nil Sightings	14:45:46	0	-

Date	Surveyor	Start Time	End Time	Duration (s)	Species	Time of sighting	Number	Observations
05/05/2023	DMC & EM	08:49:00	15:24:00	25200	Nil Sightings	15:30:08	0	-
05/05/2023	DMC & EM	08:49:00	15:24:00	25200	Nil Sightings	15:37:01	0	-
30/05/2023	DMC	09:10:00	15:05:00	21600	Nil Sightings	10:30	0	-
30/05/2023	DMC	09:10:00	15:05:00	21600	Nil Sightings	11:34	0	-
30/05/2023	DMC	09:10:00	15:05:00	21600	Nil Sightings	12:56	0	-
30/05/2023	DMC	09:10:00	15:05:00	21600	Nil Sightings	14:47	0	-
31/05/2023	DMC	9.10	15.05	14400	Nil Sightings	10:45	0	Male K. Hunting and carrying prey 09.45 headed SSW
31/05/2023	DMC	08:30:00	12:30:00	14400	Nil Sightings	10:45	0	-
31/05/2023	DMC	08:30:00	12:30:00	14400	Nil Sightings	11:15	0	-
31/05/2023	DMC	08:30:00	12:30:00	14400	Nil Sightings	12:15	0	-
20/06/2023	DMC	09:55:00	17:05:00	21600	Nil Sightings	12:16	0	-
20/06/2023	DMC	09:55:00	17:05:00	21600	Nil Sightings	13:45	0	-
20/06/2023	DMC	09:55:00	17:05:00	21600	Nil Sightings	14:04	0	-
20/06/2023	DMC	09:55:00	17:05:00	21600	Nil Sightings	14:59	0	-
20/06/2023	DMC	09:55:00	17:05:00	21600	Nil Sightings	15:10	0	-
20/06/2023	DMC	09:55:00	17:05:00	21600	Nil Sightings	15:14	0	-
20/06/2023	DMC	09:55:00	17:05:00	21600	Nil Sightings	15:26	0	-

Date	Surveyor	Start Time	End Time	Duration (s)	Species	Time of sighting	Number	Observations
20/06/2023	DMC	09:55:00	17:05:00	21600	Snipe_SN	10:06	1	-

Appendix C-IV: Wintering Wetland Bird Surveys (IWeBS)

Winter 2022/23 IWeBS

Species	Oct	Nov	Dec	Jan	Feb	March	Total
Buzzard	4	3	11	20	13	12	63
Great Spotted Woodpecker	0	0	0	0	1	0	1
Grey Heron	0	0	1	0	1	0	2
Hen Harrier	0	0	1	0	2	1	4
Jay	0	0	0	0	0	2	2
Kestrel	31	12	13	10	6	10	82
Lesser Black-Backed Gull	0	1	0	0	2	0	3
Little Egret	0	1	0	0	0	0	1
Mallard	0	7	0	0	0	1	8
Raven	0	0	0	6	2	3	11
Golden Plover	146	0	0	0	0	0	146
Snipe	1	0	4	0	6	0	11
Sparrowhawk	3	0	7	1	5	3	19
Whooper Swan	3	0	0	0	0	0	3

Date	Surveyor	Start Time	End Time	Duration (s)	Species	Time of sighting	Number	Observations
Oct 22								
17/10/2022	CMCK	11:25:00	2:33:00	11400	Grey Heron_H.	11:25	1	Hunting on shore
17/10/2022	CMCK	11:25:00	2:33:00	11400	Mute Swan_MS	11:25	2	Foraging in lake
17/10/2022	CMCK	11:25:00	2:33:00	11400	Cormorant_CA	11:40	1	Resting on lake shore
17/10/2022	CMCK	11:25:00	2:33:00	11400	Mute Swan_MS	11:40	1	Resting on lake shore
17/10/2022	CMCK	11:25:00	2:33:00	11400	Mallard_MA	12:10	3	Foraging in lake
17/10/2022	CMCK	11:25:00	2:33:00	11400	Nil Sightings			
17/10/2022	CMCK	11:25:00	2:33:00	11400	Nil Sightings			
17/10/2022	CMCK	11:25:00	2:33:00	11400	Mallard_MA	12:48	2	Foraging in lake
17/10/2022	CMCK	11:25:00	2:33:00	11400	Grey Heron_H.	12:48	1	Hunting on shore
17/10/2022	CMCK	11:25:00	2:33:00	11400	Mute Swan_MS	12:59	2	
17/10/2022	CMCK	11:25:00	2:33:00	11400	Kestrel_K.	12:59	3	
17/10/2022	CMCK	11:25:00	2:33:00	11400	Mallard_MA	13:12	5	
17/10/2022	CMCK	11:25:00	2:33:00	11400	Buzzard_BZ	13:12	2	
17/10/2022	CMCK	11:25:00	2:33:00	11400	Nil Sightings			
17/10/2022	CMCK	11:25:00	2:33:00	11400	Nil Sightings			
17/10/2022	CMCK	11:25:00	2:33:00	11400	Redshank_RK	14:25	1	Foraging on shore
17/10/2022	CMCK	11:25:00	2:33:00	11400	Mute Swan_MS	14:25	1	Swimming in river.
17/10/2022	CMCK	11:25:00	2:33:00	11400	Black-headed Gull_ BH	14:25	2	Flying over river
18/10/2022	CMCK	12:26:00	15:50:00	13800	Mute Swan_MS	12:27	1	On lake
18/10/2022	CMCK	12:26:00	15:50:00	13800	Cormorant_CA	12:27	1	On shore
18/10/2022	CMCK	12:26:00	15:50:00	13800	Grey Heron_H.	12:27	1	On shore

Date	Surveyor	Start Time	End Time	Duration (s)	Species	Time of sighting	Number	Observations
18/10/2022	CMCK	12:26:00	15:50:00	13800	Nil Sightings			
18/10/2022	CMCK	12:26:00	15:50:00	13800	Cormorant_CA		1	On shore
18/10/2022	CMCK	12:26:00	15:50:00	13800	Mallard_MA		4	On lake
18/10/2022	CMCK	12:26:00	15:50:00	13800	Cormorant_CA		1	Hunting on lake
18/10/2022	CMCK	12:26:00	15:50:00	13800	Nil Sightings			
18/10/2022	CMCK	12:26:00	15:50:00	13800	Nil Sightings			
18/10/2022	CMCK	12:26:00	15:50:00	13800	Nil Sightings			
18/10/2022	CMCK	12:26:00	15:50:00	13800	Buzzard_BZ	14.09	1	
18/10/2022	CMCK	12:26:00	15:50:00	13800	Nil Sightings			
18/10/2022	CMCK	12:26:00	15:50:00	13800	Mallard_MA	14.31	3	Foraging on lake
18/10/2022	CMCK	12:26:00	15:50:00	13800	Mute Swan_MS	14:42	1	on lake
18/10/2022	CMCK	12:26:00	15:50:00	13800	Mute Swan_MS	14:42	1	on shore
18/10/2022	CMCK	12:26:00	15:50:00	13800	Grey Heron_H.	15.01	1	on shore
18/10/2022	CMCK	12:26:00	15:50:00	13800	Mallard_MA	15.01	2	on lake
18/10/2022	CMCK	12:26:00	15:50:00	13800	Nil Sightings			
18/10/2022	CMCK	12:26:00	15:50:00	13800	Mute Swan_MS	15.45	1	on river
18/10/2022	CMCK	12:26:00	15:50:00	13800	Mallard_MA	15.45	6	on river
18/10/2022	CMCK	12:26:00	15:50:00	13800	Black-headed Gull_ BH	15.45	4	on bank

Date	Surveyor	Start Time	End Time	Duration (s)	Species	Time of sighting	Number	Observations
Nov 22								
14/11/2022	CMCK	11:00:00	2:00:00	10800	Wigeon_WN	11:00	4	Resting on lake shore
14/11/2022	CMCK	11:00:00	2:00:00	10800	Mute Swan_MS	11:00	8	Resting on lake shore
14/11/2022	CMCK	11:00:00	2:00:00	10800	Cormorant_CA	11:00	8	Hunting
14/11/2022	CMCK	11:00:00	2:00:00	10800	Cormorant_CA	11:18	1	Resting on lake shore
14/11/2022	CMCK	11:00:00	2:00:00	10800	Mute Swan_MS	11:18	3	Foraging in lake
14/11/2022	CMCK	11:00:00	2:00:00	10800	Cormorant_CA	11:30	4	Roosting
14/11/2022	CMCK	11:00:00	2:00:00	10800	Lesser Black-backed Gull_LB	11:30	2	Flying over lake
14/11/2022	CMCK	11:00:00	2:00:00	10800	Moorhen_MH	11:30	1	Foraging
14/11/2022	CMCK	11:00:00	2:00:00	10800	Mute Swan_MS	11:30	2	Resting on lake shore
14/11/2022	CMCK	11:00:00	2:00:00	10800	Nil Sightings			
14/11/2022	CMCK	11:00:00	2:00:00	10800	Cormorant_CA	11:54	1	Foraging in lake
14/11/2022	CMCK	11:00:00	2:00:00	10800	Mallard_MA	11:54	5	3 resting, 2 foraging
14/11/2022	CMCK	11:00:00	2:00:00	10800	Kestrel_K.	12:10	1	Hunting near shore
14/11/2022	CMCK	11:00:00	2:00:00	10800	Nil Sightings			
14/11/2022	CMCK	11:00:00	2:00:00	10800	Mute Swan_MS	12:31	2	Foraging in lake
14/11/2022	CMCK	11:00:00	2:00:00	10800	Lesser Black-backed Gull_LB	12:42	4	Resting in lake
14/11/2022	CMCK	11:00:00	2:00:00	10800	Black-headed Gull_ BH	12:42	5	Resting in lake
14/11/2022	CMCK	11:00:00	2:00:00	10800	Nil Sightings			
14/11/2022	CMCK	11:00:00	2:00:00	10800	Grey Heron_H.	13:17	1	Foraging on shore
14/11/2022	CMCK	11:00:00	2:00:00	10800	Little Egret_ET	13:30	2	Foraging on shore

Date	Surveyor	Start Time	End Time	Duration (s)	Species	Time of sighting	Number	Observations
14/11/2022	CMCK	11:00:00	2:00:00	10800	Mallard_MA	13:30	14	Resting on lake shore
14/11/2022	CMCK	11:00:00	2:00:00	10800	Black-headed Gull_ BH	13:30	6	Swimming in river
14/11/2022	CMCK	11:00:00	2:00:00	10800	Nil Sightings			Resting on lake shore
Jan 23								
05/01/2023	CMCK	10:30:00	13:40:00	11400	Whooper Swan_WS	10:30	7	resting on shore
05/01/2023	CMCK	10:30:00	13:40:00	11400	Nil Sightings			
05/01/2023	CMCK	10:30:00	13:40:00	11400	Mute Swan_MS	10:52	2	on lake
05/01/2023	CMCK	10:30:00	13:40:00	11400	Cormorant_CA	10:52	3	roosting
05/01/2023	CMCK	10:30:00	13:40:00	11400	Great Crested Grebe_GG	10:52	1	foraging
05/01/2023	CMCK	10:30:00	13:40:00	11400	Grey Heron_H.	11:19	1	flying
05/01/2023	CMCK	10:30:00	13:40:00	11400	Lapwing_L.	11:19	47	flying
05/01/2023	CMCK	10:30:00	13:40:00	11400	Great Crested Grebe_GG	11:19	1	foraging
05/01/2023	CMCK	10:30:00	13:40:00	11400	Whooper Swan_WS	11:19	4	foraging
05/01/2023	CMCK	10:30:00	13:40:00	11400	Great Crested Grebe_GG	11:32	1	foraging
05/01/2023	CMCK	10:30:00	13:40:00	11400	Mallard_MA	11:45	2	flying
05/01/2023	CMCK	10:30:00	13:40:00	11400	Moorhen_MH	11:45	1	foraging
05/01/2023	CMCK	10:30:00	13:40:00	11400	Mute Swan_MS	11:45	1	foraging
05/01/2023	CMCK	10:30:00	13:40:00	11400	Mute Swan_MS	12:00	1	foraging

Date	Surveyor	Start Time	End Time	Duration (s)	Species	Time of sighting	Number	Observations
05/01/2023	CMCK	10:30:00	13:40:00	11400	Mallard_MA	12:00	2	foraging
05/01/2023	CMCK	10:30:00	13:40:00	11400	Mute Swan_MS	12:14	1	foraging
05/01/2023	CMCK	10:30:00	13:40:00	11400	Mute Swan_MS	12:23	2	foraging
05/01/2023	CMCK	10:30:00	13:40:00	11400	Cormorant_CA	12:37	4	roosting
05/01/2023	CMCK	10:30:00	13:40:00	11400	Nil Sightings	13:05		
05/01/2023	CMCK	10:30:00	13:40:00	11400	Mallard_MA	13:20	6	resting on shore
05/01/2023	CMCK	10:30:00	13:40:00	11400	Black-headed Gull_ BH	13:20	3	1 flying 2 resting
05/01/2023	CMCK	10:30:00	13:40:00	11400	Nil Sightings	13:40		
10/01/23	HM	13:00:00	15:00:00	7200	Nil Sightings	10:30		
10/01/23	HM	13:00:00	15:00:00	7200	Grey Heron_H.		1	
10/01/23	HM	13:00:00	15:00:00	7200	Nil Sightings	10:52		
10/01/23	HM	13:00:00	15:00:00	7200	Nil Sightings	10:52		
10/01/23	HM	13:00:00	15:00:00	7200	Mute Swan_MS	10:52	2	
10/01/23	HM	13:00:00	15:00:00	7200	Mute Swan_MS	11:19	1	
10/01/23	HM	13:00:00	15:00:00	7200	Mute Swan_MS	11:19	1	
10/01/23	HM	13:00:00	15:00:00	7200	Cormorant_CA	11:19	1	
10/01/23	HM	13:00:00	15:00:00	7200	Nil Sightings	11:19		
Feb 23								

Date	Surveyor	Start Time	End Time	Duration (s)	Species	Time of sighting	Number	Observations
27/02/2023	EC	10:50:00	14:00:00	11400	Nil Sightings		0	-
27/02/2023	EC	10:50:00	14:00:00	11400	Nil Sightings		0	-
27/02/2023	EC	10:50:00	14:00:00	11400	Mute Swan_MS	11:10	10	-
27/02/2023	EC	10:50:00	14:00:00	11400	Mute Swan_MS	11:40	4	-
27/02/2023	EC	10:50:00	14:00:00	11400	Mallard_MA	11:40	4	-
27/02/2023	EC	10:50:00	14:00:00	11400	Mute Swan_MS	12:05	2	-
27/02/2023	EC	10:50:00	14:00:00	11400	Mute Swan_MS	12:30	2	-
27/02/2023	EC	10:50:00	14:00:00	11400	Nil Sightings		0	-
27/02/2023	EC	10:50:00	14:00:00	11400	Nil Sightings	13:00	0	-
27/02/2023	EC	10:50:00	14:00:00	11400	Nil Sightings		0	-
27/02/2023	EC	10:50:00	14:00:00	11400	Nil Sightings		0	-
27/02/2023	EC	10:50:00	14:00:00	11400	Mute Swan_MS	13:30	4	-
27/02/2023	EC	10:50:00	14:00:00	11400	Cormorant_CA	13:30	1	-
27/02/2023	EC	10:50:00	14:00:00	11400	Coot_CO	13:30	6	-
27/02/2023	EC	10:50:00	14:00:00	11400	Mallard_MA	13:30	2	-
Mar 23								
15/03/2023	CMCK	12:15	14:46	9000	Mute Swan_MS	12:15	3	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Great Crested Grebe_GG	12:15	1	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Cormorant_CA	12:15	1	Roosting

Date	Surveyor	Start Time	End Time	Duration (s)	Species	Time of sighting	Number	Observations
15/03/2023	CMCK	12:15	14:46	9000	Nil Sightings	12:25		
15/03/2023	CMCK	12:15	14:46	9000	Cormorant_CA	12:31	1	Roosting
15/03/2023	CMCK	12:15	14:46	9000	Great Crested Grebe_GG	12:32	2	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Great Crested Grebe_GG	12:32	2	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Cormorant_CA	12:45	2	Roosting
15/03/2023	CMCK	12:15	14:46	9000	Mute Swan_MS	12:45	4	Swimming
15/03/2023	CMCK	12:15	14:46	9000	Coot_CO	12:45	1	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Mute Swan_MS	12:45	2	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Tufted Duck_TU	13:00	4	Swimming
15/03/2023	CMCK	12:15	14:46	9000	Mute Swan_MS	13:00	2	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Mallard_MA	13:15	6	Swimming
15/03/2023	CMCK	12:15	14:46	9000	Mute Swan_MS	13:15	2	Preening
15/03/2023	CMCK	12:15	14:46	9000	Cormorant_CA	13:23	2	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Mute Swan_MS	13:30	2	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Mallard_MA	13:31	3	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Mallard_MA	13:39	8	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Mute Swan_MS	13:39	1	Resting
15/03/2023	CMCK	12:15	14:46	9000	Kestrel_K.	13:39	1	Hunting
15/03/2023	CMCK	12:15	14:46	9000	Nil Sightings	13:55		
15/03/2023	CMCK	12:15	14:46	9000	Grey Heron_H.	14:04	1	Hunting
15/03/2023	CMCK	12:15	14:46	9000	Mute Swan_MS	14:16	1	Foraging
15/03/2023	CMCK	12:15	14:46	9000	Grey Heron_H.	14:16	1	Flying
15/03/2023	CMCK	12:15	14:46	9000	Nil Sightings	14:45		

Winter 2022/23 IWeBS Weather Data

Date	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time
Oct 22									
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
17/10/2022	CMCK	Dry	4/8	10	F2	WSW	12	11:25:00	2:33:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00

Date	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
18/10/2022	CMCK	Occasional showers	7/8	10	F2	N	12	12:26:00	15:50:00
Nov 22									
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00

Date	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
14/11/2022	CMCK	Dry	0/8	10	F1	SE	9	11:00:00	2:00:00
Jan 23									
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023		Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00

Date	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	10:30:00	13:40:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	13:00:00	15:00:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	13:00:00	15:00:00
05/01/2023	CMCK	Showers	7/8	5	F4	S	12	13:00:00	15:00:00
10/01/2023	HM	Showers	7/8	5	F4	S	12	13:00:00	15:00:00
10/01/2023	HM	Showers	7/8	5	F4	S	12	13:00:00	15:00:00
10/01/2023	HM	Showers	7/8	5	F4	S	12	13:00:00	15:00:00
10/01/2023	HM	Showers	7/8	5	F4	S	12	13:00:00	15:00:00
10/01/2023	HM	Showers	7/8	5	F4	S	12	13:00:00	15:00:00

Date	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time
10/01/2023	HM	Showers	7/8	5	F4	S	12	13:00:00	15:00:00
Feb 23									
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
27/02/2023	EC	Dry	6/8	15	F3	ESE	5	10:50:00	14:00:00
Mar 23									
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-

Date	Observer	Rain	Cloud	Visibility (km)	Wind Speed	Wind Direction	Temp.	Start Time	End Time
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-
15/03/2023	CMCK	Constant Rain	8/8	2	F3	SE	9	-	-

Winter 22/23 IWeBS Species Count

Species	Oct	Nov	Jan	Feb	March	Total
Black-headed Gull	6	11	3	0	0	20
Buzzard	2	0	0	0	0	2
Coot	0	0	0	6	1	7
Cormorant	9	14	8	1	6	38
Great Crested Grebe	0	0	3	0	5	8
Grey Heron	10	1	49	0	2	62
Kestrel	1	1	0	0	1	3
Lapwing	0	0	2	0	0	2
Lesser Black-backed Gull	0	6	0	0	0	6
Little Egret	0	2	0	0	0	2
Mallard	10	19	9	6	17	61
Moorhen	0	1	1	0	0	2
Mute Swan	14	15	18	22	17	86
Redshank	1	0	0	0	0	1
Tufted Duck	0	0	0	0	4	4
Whooper Swan	0	0	2	0	0	2
Wigeon	0	4	0	0	0	4

Winter 2022 & 2023 IWeBS Hours

Winter 2022/2023					Total Hours
Oct	Nov	Jan	Feb	Mar	
134	69	84	43	65	395

Appendix D: Terrestrial Mammals

Mammal Camera Trap Deployment Results 2023

Surveyor	Date Collected	Trap No.	Camera Coordinates (WSG)	Species	No. of individuals
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1

JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Field mouse	1
JOC	06/09/23	19062	52.771576, -8.666814	Fox	1
JOC	06/09/23	19062	52.771576, -8.666814	Fox	1
JOC	06/09/23	19062	52.771576, -8.666814	Fox	1
JOC	06/09/23	19062	52.771576, -8.666814	Fox	1
JOC	06/09/23	19062	52.771576, -8.666814	Fox	1
JOC	06/09/23	19062	52.771576, -8.666814	Fox	1
JOC	06/09/23	19062	52.771576, -8.666814	Fox	1
JOC	06/09/23	19062	52.771576, -8.666814	Fox	1
JOC	06/09/23	19062	52.771576, -8.666814	Fox	1
JOC	06/09/23	19062	52.771576, -8.666814	Hare	1
JOC	06/09/23	19062	52.771576, -8.666814	Hare	1
JOC	06/09/23	19062	52.771576, -8.666814	Hare	1
JOC	06/09/23	19065	52.779863, -8.634696	Nil Sightings	
JOC	06/09/23	19075	52.782148, -8.646693	Nil Sightings	
JOC	06/09/23	19072	52.769305, -8.692065	Nil Sightings	

JOC	06/09/23	19062	52.771576, -8.666814	Pine Martin	1
JOC	06/09/23	19062	52.771576, -8.666814	Pine Martin	1
JOC	06/09/23	19062	52.771576, -8.666814	Pine Martin	1
JOC	06/09/23	19062	52.771576, -8.666814	Pine Martin	1
JOC	06/09/23	19062	52.771576, -8.666814	Pine Martin	1
JOC	06/09/23	19062	52.771576, -8.666814	Pine Martin	1
JOC	01/11/23	19066	557184.9, 670191.57	Brown rat	1
JOC	01/11/23	19066	557184.9, 670191.57	Brown rat	1
JOC	01/11/23	19066	557184.9, 670191.57	Wood mouse	1
JOC	01/11/23	19066	557184.9, 670191.57	Wood mouse	1
JOC	01/11/23	19066	557184.9, 670191.57	Wood mouse	1
JOC	01/11/23	19066	557184.9, 670191.57	Wood mouse	1
JOC	01/11/23	19066	557184.9, 670191.57	Wood mouse	1
JOC	01/11/23	19065	555940.19, 670455.9	Nil Sightings	
JOC	01/11/23	19063	552741.48, 669087.07	Hare	1
JOC	01/11/23	19063	552741.48, 669087.07	Hare	1
JOC	01/11/23	19063	552741.48, 669087.07	Hare	1
JOC	01/11/23	19062	554797.42, 668817.3	Squirrel	1
JOC	01/11/23	19062	554797.42, 668817.3	Squirrel	1
JOC	01/11/23	19062	554797.42, 668817.3	Squirrel	1
JOC	01/11/23	19062	554797.42, 668817.3	Squirrel	1
JOC	01/11/23	19062	554797.42, 668817.3	Squirrel	1
JOC	01/11/23	19064	557004.36, 670550.72	Nil Sightings	

Mammal Camera Trap Deployment Weather Data

Date Deployed	Date Collected	Surveyor	Rain	Wind Speed	Wind Direction	Temp.
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16

24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16

24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
24/08/23	06/09/23	JOC	None	F3	W	16
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10
01/11/23	10/11/23	JOC	None	F2	WSW	10

Otter Survey Results 2023

Date	Survey	Surveyor	Species	ITM	
AUG 23					
25-08-2023	Otter	JOC	Nil Sightings	558037.18, 662064.51	Mammal crossing
25-08-2023	Otter	JOC	Nil Sightings	554986.75, 665363.36	Mammal Crossing

25-08-2023	Otter	JOC	Nil Sightings	558067.08, 668055.59	Mammal crossing
28-08-2023	Otter	CMCK	Nil Sightings	542387.22, 663426.67	-
28-08-2023	Otter	CMCK	Nil Sightings	545205.26, 664073.32	-
28-08-2023	Otter	CMCK	Nil Sightings	545126.13, 663271.7	-
28-08-2023	Otter	CMCK	Nil Sightings	546145.2, 663561.55	-
28-08-2023	Otter	CMCK	Nil Sightings	547147.01, 662879.5	-
28-08-2023	Otter	CMCK	Nil Sightings	547363.56, 663386.26	-
28-08-2023	Otter	CMCK	Nil Sightings	554532.49, 668416.81	-
28-08-2023	Otter	CMCK	Nil Sightings	554532.49, 668416.81	-
31-08-2023	Otter	CMCK	Nil Sightings	547329.16, 662913.05	-
31-08-2023	Otter	CMCK	Nil Sightings	547412.81, 662846.61	-
31-08-2023	Otter	CMCK	Nil Sightings	547597.6, 662682.2	-
31-08-2023	Otter	CMCK	Nil Sightings	547662.6, 662657.26	-
31-08-2023	Otter	CMCK	Nil Sightings	547669.15, 662649.59	-
31-08-2023	Otter	CMCK	Nil Sightings	548333.9, 662879.91	-
31-08-2023	Otter	CMCK	Nil Sightings	549061.93, 663662.16	-
31-08-2023	Otter	CMCK	Nil Sightings	549545.54, 664087.57	-
31-08-2023	Otter	CMCK	Nil Sightings	549718.4, 664153.22	-
31-08-2023	Otter	CMCK	Nil Sightings	549861.7, 664264.88	-
31-08-2023	Otter	CMCK	Otter	549884.17, 664276.66	Potential trail into stream.
31-08-2023	Otter	CMCK	Nil Sightings	549893.12, 664288	
31-08-2023	Otter	CMCK	Nil Sightings	547792.95, 665930.71	
31-08-2023	Otter	CMCK	Otter	547750.05, 666201.46	Potential couch/rest spot
31-08-2023	Otter	CMCK	Nil Sightings	552347.77, 667471.78	-
31/08/23	Otter	HM	Nil Sightings	-	-
31/08/23	Otter	HM	Nil Sightings	-	-
31/08/23	Otter	HM	Nil Sightings	-	-
31/08/23	Otter	HM	Nil Sightings	-	-
31/08/23	Otter	HM	Nil Sightings	-	-
31/08/23	Otter	HM	Nil Sightings	-	-
31/08/23	Otter	HM	Nil Sightings	-	-

31/08/23	Otter	HM	Nil Sightings	-	-
OCT 23					
09-10-2023	Otter	JOC	Nil Sightings	545146.67, 663525.57	
09-10-2023	Otter	JOC	Nil Sightings	545252.28, 663813.67	
09-10-2023	Otter	JOC	Nil Sightings	546149.38, 663552.8	
09-10-2023	Badger	JOC	Badger	547143.23, 663342.27	Foraging
09-10-2023	Otter	JOC	Nil Sightings	547111.26, 663315.04	
09-10-2023	Otter	JOC	Otter	547393.14, 663108.99	Mammal run
09-10-2023	Otter	JOC	Otter	547371.25, 663063.38	Mammal run
09-10-2023	Otter	JOC	Nil Sightings	547413.3, 662840.1	
09-10-2023	Otter	JOC	Nil Sightings	551012.2, 665076.29	
09-10-2023	Otter	JOC	Nil Sightings	549891.86, 664290.04	
09-10-2023	Otter	JOC	Nil Sightings	549868, 664261.17	
09-10-2023	Otter	JOC	Nil Sightings	549712.96, 664155	
09-10-2023	Otter	JOC	Nil Sightings	549541.45, 664089.95	
09-10-2023	Otter	JOC	Nil Sightings	549022.83, 663831.71	
10-10-2023	Otter	JOC	Nil Sightings	551436.7, 667044.85	
10-10-2023	Otter	JOC	Nil Sightings	551465.63, 666970.43	
10-10-2023	Otter	JOC	Nil Sightings	551627.9, 666714.08	
10-10-2023	Otter	JOC	Nil Sightings	552352.63, 667477.82	
10-10-2023	Otter	JOC	Nil Sightings	553623.88, 667458.47	
10-10-2023	Otter	JOC	Otter	554161.51, 667247.74	Spraint
10-10-2023	Otter	JOC	Nil Sightings	555061.29, 667185.73	
10-10-2023	Otter	JOC	Nil Sightings	556666.53, 666676.6	
10-10-2023	Otter	JOC	Nil Sightings	557519.02, 666347.14	
10-10-2023	Otter	JOC	Nil Sightings	558151.1, 668229.41	
10-10-2023	Otter	JOC	Nil Sightings	558309.13, 667279.29	
10-10-2023	Otter	JOC	Nil Sightings	558026.13, 662022.73	
11-10-2023	Otter	JOC	Nil Sightings	542401.63, 663384.48	
11-10-2023	Otter	JOC	Nil Sightings	547599.12, 662686.36	
11-10-2023	Otter	JOC	Nil Sightings	547666.01, 662653.96	
11-10-2023	Otter	JOC	Nil Sightings	548332.42, 662883.8	

11-10-2023	Otter	JOC	Nil Sightings	550835.01, 664952.27	
11-10-2023	Otter	JOC	Nil Sightings	555095.3, 665328.07	
11-10-2023	Otter	JOC	Nil Sightings	556510.8, 663151.79	
11-10-2023	Otter	JOC	Nil Sightings	557350.88, 661784.55	
11-10-2023	Otter	JOC	Nil Sightings	558162.35, 666154.6	
11-10-2023	Otter	JOC	Nil Sightings	557908.82, 666226.9	
11-10-2023	Otter	JOC	Nil Sightings	547793.2, 665935.17	
13-10-2023	Otter	CMCK	Spraint	554508.95, 668772.26	

Otter Survey Weather Data 2023

Date	Rain	Temperature	Wind Speed	Wind Direction
25-08-2023	None	17	F2	NW
25-08-2023	None	17	F2	NW
25-08-2023	Occasional showers	17	F2	NW
28-08-2023	Occasional showers	16	F2	WNW
28-08-2023	Occasional showers	16	F2	WNW
28-08-2023	Occasional showers	16	F2	WNW
28-08-2023	Occasional showers	16	F2	WNW
28-08-2023	Occasional showers	16	F2	WNW
28-08-2023	Occasional showers	16	F2	WNW
28-08-2023	Occasional showers	16	F2	WNW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW

31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31-08-2023	Mist/light rain	16	F3	SW
31/08/23	Occasional showers	17	F2	W
31/08/23	Occasional showers	17	F2	W
31/08/23	Occasional showers	17	F2	W
31/08/23	Occasional showers	17	F2	W
31/08/23	Occasional showers	17	F2	W
31/08/23	Occasional showers	17	F2	W
31/08/23	Occasional showers	17	F2	W
31/08/23	Occasional showers	17	F2	W
09-10-2023	None	15	F2	S
09-10-2023	None	15	F2	S
09-10-2023	None	15	F2	S
09-10-2023	None	15	F2	S
09-10-2023	None	15	F2	S
09-10-2023	None	15	F2	S
09-10-2023	None	15	F2	S
09-10-2023	None	15	F2	S

09-10-2023	None	18	F2	S
09-10-2023	None	18	F2	S
09-10-2023	None	18	F2	S
09-10-2023	None	18	F2	S
09-10-2023	None	18	F2	S
09-10-2023	None	15	F2	S
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
10-10-2023	None	19	F3	SW
11-10-2023	Constant Rain	12	F2	NE
11-10-2023	Constant Rain	12	F2	NE
11-10-2023	Constant Rain	12	F2	NE
11-10-2023	Constant Rain	12	F2	NE
11-10-2023	Constant Rain	12	F2	NE
11-10-2023	Constant Rain	12	F2	NE
11-10-2023	Constant Rain	12	F2	NE
11-10-2023	Constant Rain	12	F2	NE
11-10-2023	Drizzle/rain	12	F2	NE
11-10-2023	Drizzle/rain	12	F2	NE
11-10-2023	Drizzle/rain	12	F2	NE
13-10-2023	Mist/light rain	9	F1	NW

General Mammal Walkover Survey Results 2023

Date	Survey	Surveyor	Species	Field Sign	ITM
24-08-2023	General	JOC	Red Deer	Footprints	557225.92, 670596.94
24-08-2023	General	JOC	Red Deer	Mammal run	556924.07, 670947.16
24-08-2023	General	JOC	Red Deer	Mammal run	556843.43, 670914.02
24-08-2023	General	JOC	Fox	Footprint	554985.56, 669219.09
24-08-2023	General	JOC	Fox	Footprints	554948.56, 669004.49
24-08-2023	General	JOC	Nil Sightings	Mammal run	553369.93, 668748.36
24-08-2023	General	JOC	Nil Sightings	Mammal run	553319.86, 668918.28
24-08-2023	General	JOC	Nil Sightings	Mammal run	553302.94, 668918.54
24-08-2023	General	JOC	Nil Sightings	Mammal run	553272.09, 668935.37
24-08-2023	General	JOC	Nil Sightings	Mammal run	553337.9, 668707
24-08-2023	General	JOC	Nil Sightings	Foraging	553347.97, 668713.33

General Mammal Walkover Survey Weather Data 2023

Date	Rain	Temperature	Wind Speed	Wind Direction
24-08-2023	None	16	F3	W
24-08-2023	None	16	F3	W
24-08-2023	None	16	F3	W
24-08-2023	None	16	F3	W
24-08-2023	None	16	F3	W
24-08-2023	None	16	F3	W
24-08-2023	None	16	F3	W
24-08-2023	None	16	F3	W
24-08-2023	None	16	F3	W
24-08-2023	None	16	F3	W
24-08-2023	None	16	F3	W

Appendix E: Bats

Static Detector Survey Results

Season	Turbine Location	Bat Species	Average Bat activity levels
Spring Deployment	T1A	Common Pipistrelle	High
		Soprano Pipistrelle	Low
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Moderate
		Myotis Species	Low
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Low
	T1	Common Pipistrelle	High
		Soprano Pipistrelle	Low
		Nathusius' Pipistrelle	Negligible
		Leisler's Bat	Moderate
		Myotis Species	Nil
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Negligible
	T2	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Moderate
		Leisler's Bat	High
		Myotis Species	High
		Brown Long Eared Bat	Moderate
		Lesser Horseshoe Bat	Low
	T3	Common Pipistrelle	High
		Soprano Pipistrelle	Low
		Nathusius' Pipistrelle	Negligible
		Leisler's Bat	Low
		Myotis Species	Negligible
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Nil
	T4	Common Pipistrelle	High
		Soprano Pipistrelle	Low

Season	Turbine Location	Bat Species	Average Bat activity levels
		Nathusius' Pipistrelle	Moderate
		Leisler's Bat	High
		Myotis Species	Low
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Negligible
	T5	Common Pipistrelle	Low
		Soprano Pipistrelle	Negligible
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Negligible
		Myotis Species	Nil
		Brown Long Eared Bat	Nil
		Lesser Horseshoe Bat	Negligible
	T6	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Low
		Myotis Species	Negligible
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Negligible
	T7	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Moderate
		Myotis Species	Moderate
		Brown Long Eared Bat	Low
		Lesser Horseshoe Bat	Negligible
	T8	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Low
		Myotis Species	Low
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Negligible
	T9	Common Pipistrelle	High

Season	Turbine Location	Bat Species	Average Bat activity levels
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Low
		Myotis Species	Moderate
		Brown Long Eared Bat	Moderate
		Lesser Horseshoe Bat	Low
	T10	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Moderate
		Myotis Species	Low
		Brown Long Eared Bat	Low
		Lesser Horseshoe Bat	Negligible
	T11	Common Pipistrelle	High
		Soprano Pipistrelle	Low
		Nathusius' Pipistrelle	Negligible
		Leisler's Bat	Low
		Myotis Species	Low
		Brown Long Eared Bat	Nil
		Lesser Horseshoe Bat	Negligible
Summer Deployment	T1A	Common Pipistrelle	High
		Soprano Pipistrelle	Negligible
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Negligible
		Myotis Species	Low
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Nil
	T1	Common Pipistrelle	High
		Soprano Pipistrelle	Low
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Nil
		Myotis Species	Nil
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Nil

Season	Turbine Location	Bat Species	Average Bat activity levels
	T2	Common Pipistrelle	High
		Soprano Pipistrelle	Moderate
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Low
		Myotis Species	Negligible
		Brown Long Eared Bat	Low
		Lesser Horseshoe Bat	Nil
	T3 No data recorded	Common Pipistrelle	Nil
		Soprano Pipistrelle	Nil
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Nil
		Myotis Species	Nil
		Brown Long Eared Bat	Nil
		Lesser Horseshoe Bat	Nil
	T4	Common Pipistrelle	Moderate
		Soprano Pipistrelle	Negligible
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Moderate
		Myotis Species	Low
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Nil
	T5	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Low
		Myotis Species	Low
		Brown Long Eared Bat	Low
		Lesser Horseshoe Bat	Nil
	T6	Common Pipistrelle	High
		Soprano Pipistrelle	Low

Season	Turbine Location	Bat Species	Average Bat activity levels
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Negligible
		Myotis Species	Low
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Negligible
	T7	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Negligible
		Leisler's Bat	Low
		Myotis Species	Low
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Nil
	T8	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Low
		Myotis Species	Negligible
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Nil
	T9	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Negligible
		Myotis Species	Low
		Brown Long Eared Bat	Low
		Lesser Horseshoe Bat	Nil
	T10	Common Pipistrelle	High
		Soprano Pipistrelle	Moderate
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Negligible
		Myotis Species	Negligible
		Brown Long Eared Bat	Nil
		Lesser Horseshoe Bat	Nil
	T11	Common Pipistrelle	High

Season	Turbine Location	Bat Species	Average Bat activity levels
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Low
		Myotis Species	Moderate
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Negligible
Autumn Deployment	T1A	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Negligible
		Leisler's Bat	Low
		Myotis Species	Low
		Brown Long Eared Bat	Low
		Lesser Horseshoe Bat	Negligible
	T1	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Low
		Leisler's Bat	High
		Myotis Species	High
		Brown Long Eared Bat	High
		Lesser Horseshoe Bat	Low
	T2	Common Pipistrelle	High
		Soprano Pipistrelle	Moderate
		Nathusius' Pipistrelle	Low
		Leisler's Bat	Low

Season	Turbine Location	Bat Species	Average Bat activity levels
		Myotis Species	Low
		Brown Long Eared Bat	Nil
		Lesser Horseshoe Bat	Nil
	T3	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	High
		Leisler’s Bat	Low
		Myotis Species	High
		Brown Long Eared Bat	Nil
		Lesser Horseshoe Bat	Low
	T4	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler’s Bat	Low
		Myotis Species	Moderate
		Brown Long Eared Bat	Low
		Lesser Horseshoe Bat	Negligible
	T5	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler’s Bat	Low
		Myotis Species	Negligible
		Brown Long Eared Bat	Negligible
		Lesser Horseshoe Bat	Nil
	T6	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Moderate
		Leisler’s Bat	Moderate
		Myotis Species	High
		Brown Long Eared Bat	Nil
		Lesser Horseshoe Bat	Negligible
	T7	Common Pipistrelle	High
		Soprano Pipistrelle	Low
		Nathusius' Pipistrelle	Negligible

Season	Turbine Location	Bat Species	Average Bat activity levels
		Leisler's Bat	Negligible
		Myotis Species	Nil
		Brown Long Eared Bat	Nil
		Lesser Horseshoe Bat	Nil
	T8	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Negligible
		Leisler's Bat	Low
		Myotis Species	Low
		Brown Long Eared Bat	Nil
		Lesser Horseshoe Bat	Negligible
	T9	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Low
		Myotis Species	Low
		Brown Long Eared Bat	High
		Lesser Horseshoe Bat	Negligible
	T10	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	Low
		Myotis Species	Low
		Brown Long Eared Bat	Nil
		Lesser Horseshoe Bat	Negligible
	T11	Common Pipistrelle	High
		Soprano Pipistrelle	High
		Nathusius' Pipistrelle	Nil
		Leisler's Bat	High
		Myotis Species	Low
		Brown Long Eared Bat	Low
		Lesser Horseshoe Bat	Negligible

Appendix F: Other projects, plans and developments considered in the cumulative effects assessment

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
Within 10km from the Proposed Development				
Solar Farm	2360249 Clare County Council	Approximately 4.5km West from the proposed windfarm site	A solar farm on a site of 70 hectares consisting of the following: 309,008 sq. m. of solar photovoltaic panels on ground mounted steel frames; a 38 kV electrical substation with electrical control building and associated compound with palisade fence; the installation of 21 electrical skids within 7 no. electrical compounds (with acoustic barrier fencing); underground power and communication cables and ducts, including underground cabling along the L3056 public road; new and upgraded internal access tracks (including stream crossings as required); 3 no. upgraded site entrances to the public road (one entrance to L-3054 (Lackyle Heights), and 2 no. entrances to L-30541); boundary fencing (including 607m of acoustic barrier fencing on the eastern boundary); landscaping and biodiversity enhancement measures; and all associated ancillary development, site works and services. The solar farm will be operational for 40 years. A Natura Impact Statement (NIS) has been prepared in respect of the proposed development and will be submitted to the planning authority with the application.	Permission was granted on the 10th of October 2023 with 14 No. conditions. From examination of the online planning file, it is our understanding that this project has not yet commenced. This development is scoped in for cumulative assessment due to its proximity to the Proposed Development.

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			Permission was granted on the 10th of October 2023.	
Quarry	18818 Clare County Council	Approximately 4km South from the proposed wind farm site	For development which will consist of an expansion to an existing quarry consisting of 10 hectares located adjacent to the existing working quarry including extraction of rock by blasting means down to 150mOD; Extracted rock will be processed at the existing working quarry; Landscaping of the quarry during the operational phase and restoration of the quarry on completion of extraction; All associated ancillary facilities / works; The applicant is seeking a 16 year permission as part of the application. The application is accompanied by an Environmental Impact Assessment Report (EIAR) Application was submitted on the 17th of October 2018 and was granted on the 13th of December 2019.	Clare County Council issued notification to grant planning permission subject to nineteen conditions on the 13th of December 2019. The facility is currently operational. This operational quarry, which is identified as a source of materials for construction of the Proposed Development, is scoped in for cumulative assessment due to its proximity to the Proposed Development.
Residential Development	2023065 EIAR Portal Reference 22959 Limerick County Council	Approximately 8.8km South from the proposed windfarm site	Proposed development of 98 no. residential units and a significant Biodiversity area, on a site of 9.45 hectares, which comprises Phase 3 of an overall Masterplan site.	Granted permission with 27 No. Conditions on the 28th of June 2023. An appeal was submitted on the 24th of July 2023. This development, which is yet to be determined, is scoped in for cumulative assessment due to its proximity to the Proposed Development.
Restoration of Old Quarry Site	18995 Clare County Council	Approximately 6km East from the proposed windfarm site	For the restoration of 3.76 hectares of an extant sand and gravel quarry to agricultural grassland. The development is necessary to comply with condition no.	Permission was granted on the 9th of March 2023.

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			4 of substitute consent 03.SU.0127 and will include importation of inert material and all associated development works. Permission was granted on the 9th of March 2023.	Condition 2b states that the maximum annual rate of intake shall not exceed 18,000 metric tonnes. This development is scoped in for cumulative assessment due to its proximity to the Proposed Development.
Residential Development	2023143 EIAR Portal Reference 221114 Limerick County Council	Approximately 8.8km South from the proposed windfarm site	Proposed development of 54 no. residential units which comprises Phase 4 of an overall Masterplan site	Permission was granted on the 11th of October 2023 with 30 No. Conditions. From examination of the online planning file, it is our understanding that this project has not yet commenced. This development is scoped in for cumulative assessment due to its proximity to the Proposed Development.
Solar Farm	22591 Clare County Council	Approximately 5km Southeast from the proposed windfarm site and within 350m of TDR	For a 10-year planning permission for a solar array at Ballyglass, Coolderry, Dromintobin North, Reanabrone, and Oakfield (townlands) Ardnacrusha, Co Clare. The development will consist of c265,000 m2 of solar panels on ground mounted frames, 8 no. single storey control cabins with associated electrical transformer units and hardstand areas, 2 no. ring main units, underground cabling within the solar array site and within the L70382 public road to connect solar array field parcels, security fencing, CCTV, access tracks (upgrade of existing and new), upgrades to four existing agricultural field entrances on the R463,	The application was submitted on the 4th of July 2022 and was granted on the 17th of February 2023 with 13 conditions. This development is scoped in for cumulative assessment due to its proximity to the Proposed Development.

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			l3046 and L70382 and creation of new entrance on L70382, temporary construction compound, landscaping and all associated ancillary apparatus and development works. The solar array will connect to the national grid and will have an operational lifespan of 35 years. A Natura Impact Statement (NIS) has been prepared in respect of the proposed development and will be submitted to the planning authority with the application. The application was submitted on the 4th of July 2022 and was granted on the 17th of February 2023 with 13 conditions.	
Solar Farm	16368 Clare County Council	Approximately 9km Southwest from the proposed windfarm site	For a 10-year permission for the development of a solar PV panel array consisting of up to 29,225.37 sq.m of solar panels on ground mounted steel frames, 1 No. substation, 3 No. inverter cabins, underground cable ducts, a temporary site compound area and ancillary facilities, boundary security fencing, site landscaping, a site entrance and access track, CCTV and all associated site works located in the townland of Ballymorris. The application was granted on the 24th of April 2017 with 17 conditions.	The application was granted on the 24th of April 2017 with 17 conditions. This development is scoped in for cumulative assessment due to its proximity to the Proposed Development.
Solar Farm	1731 Clare County Council	Approximately 9.1km South West from the proposed windfarm site	For a 10-year permission for the development of a solar PV farm consisting of up to 34,334 sq.m of solar panels on ground mounted steel frames,	"Construction on the Terra project is expected to commence mid next year, creating 60 jobs during the 12-week

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			1 no. substation, 2 no. inverter cabins, a battery storage container, underground cable ducts, a temporary site compound area and ancillary facilities, boundary security fencing, site landscaping, upgrade to existing farm track and new internal access track, CCTV and all associated site works. The development includes the demolition of the existing ruined cottage on site. The proposed solar farm will be connected to the National Grid. Permission was granted by Clare County Council on 11th of August 2017.	build." – Clare Champion reports on July 14th, 2017. From examination of the online article, it is our understanding that this project has commenced construction as of mid-2018. This development is scoped in for cumulative assessment due to its proximity to the Proposed Development.
Ballymorris South Solar Farm	17411 Clare County Council	Approximately 9.8km Southwest	The development will consist of a 10-year permission for the construction of a Solar PV Energy development within a total site area of up to 9.4 hA, to include one single storey electrical substation building, electrical transformer/inverter station modules, solar PV ground mounted on steel support structures, access roads, fencing, CCTV, and associated electrical cabling, ducting and ancillary infrastructure. Permission was granted as of 22nd of June 2018.	From examination of the online planning file, it is our understanding that this project has commenced construction as of Q1 2021. This development is scoped in for cumulative assessment due to its proximity to the Proposed Development.
Within 350m of TDR and GCR				
Road Works	198000 Limerick County Council	Within 350m of TDR	The proposed improvement works will be carried out within the existing 60kph speed limit zone over a length of 750m between L6135 Curraghchase Junction and the L6125 Junction. The improvement works proposed comprise	The improvement works are planned along the N69, which is a large part of the Proposed Development's TDR. This development is therefore scoped in for cumulative assessment.

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			a reduction of the N69 carriageway width to 6.5m over the 750m length of the scheme with a footway installed on the southern side (school side) and kerbing and a grass verge on the northern side of the carriageway. The proposed works also include for the installation of LED public lighting on the northern side of the carriageway, road lining and signage as well as surface water drainage along both sides of the N69 carriageway and pavement improvement works. Accommodation works will be undertaken as required including improvement works in and around the community hub of the national school and GAA club grounds. The implementation of the works proposed will result in a rearrangement of the existing road network in the vicinity of the scheme. Changes to the existing road network will include the reduction of road width to 6.5m over a 750m length and the installation of a kerbed footway abutting the westbound carriageway and kerbing and a verge abutting the eastbound carriageway over the scheme length. The application for planning permission was submitted on 31st of January 2019.	
Residential Development	201114 and 211328 Limerick County Council	Within 350m of TDR	Construction on Site 1 of 96no. residential units: 2no. 4-bedroom detached units, 20no. 4 bedroom semi-detached units, 8no. 3 bedroom semi-detached units, 32no. 3 bedroom terraced units, 13no. 2 bedroom terraced	From examination of the online planning file, it is our understanding that this project has commenced construction as of 21st of February 2022.

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			units, 17no. 2 bedroom duplex units, 4no. 1 bedroom duplex units. Provision of Creche and Community Building including external play area (Gross Floor Area - 787 sq.m, Creche 610 sq.m & Community Building 177 sq.m). Provision of shared communal and private open space, car parking, bicycle storage, bin storage, vehicular and pedestrian access, public lighting, site landscaping, services, signage, ESB substation and all associated site development works. Development to include access onto the Mungret Road(R859). The planning application is accompanied by a Natura Impact Statement. Planning permission was granted on the 27th of May 2021.	This development is scoped in for cumulative assessment based on its proximity to the TDR.
Residential Development	211152 Limerick County Council	Within 350m of TDR	A residential development comprising 89 no. residential units, (9 no. detached houses, 36 no. semi-detached houses, 20 no. terraced houses, 24 no. duplex units), demolition of existing farm buildings, additional parallel parking along the Castletroy College road, accessed via a new entrance onto the Castletroy College road and all ancillary site development works. Ancillary site development works include a new connection to the public water main, foul and surface water drainage, access roads, footpaths, vehicle parking, landscaping, boundary treatments and site development works above and below	From examination of the online planning file, it is our understanding that this project has not yet commenced. This development is scoped in for cumulative assessment based on its proximity to the TDR.

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			ground. The planning application is accompanied by an EIAR (Environmental Impact Assessment Report) and an NIS (Natura Impact Statement). Planning permission was granted on the 20th of April 2022.	
Residential Development	191236 Limerick County Council	Within 350m of TDR	A residential development comprising 92 no. residential units, (60 no. houses, 32 apartments) This includes 1 no block of 32 apartments specifically intended to accommodate independent living for older persons. The planning application is accompanied by an EIAR and NIS. There is also additional parallel parking along the Castletroy College road, accessed via a new entrance onto the Castletroy College road and all ancillary site development works. Ancillary site development works include a new connection to the public water main, foul and surface water drainage, access roads, footpaths, vehicle parking, landscaping, boundary treatments and site development works above and below ground. Planning permission was granted on the 4th of March 2021 by Limerick County Council.	From examination of the online planning file construction is ongoing. This development is scoped in for cumulative assessment based on its proximity to the TDR.
Residential Development	19547 Limerick County Council	Within 350m of TDR	A residential development comprising 70 no. residential units, (16 no. semi-detached houses, 6 no. terrace houses, 4 no. duplex units, 1 no. 4 storey apartment block over basement), 2	From examination of the online planning file construction is ongoing.

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			storey Creche and community playing pitch, accessed via the Castletroy College road and all ancillary site development works. Planning permission was granted on 28th of May 2020 by Limerick County Council.	This development is scoped in for cumulative assessment based on its proximity to the TDR.
Road Works	306146 An Bord Pleanála (ABP)	Within 350m of TDR	Foynes to Limerick Road (including the Adare Bypass) including all ancillary and consequential works. The application was approved with conditions on the 30th of August 2022 by ABP.	The improvement works are planned along the N69, which is a large part of the Proposed Development's TDR. This development is therefore scoped in for cumulative assessment.
Road Works	306199 ABP	Within 350m of TDR	Foynes to Rathkeale Protected Road Scheme 2019, Rathkeale to Attyflin Motorway Scheme 2019 and Foynes Service Area Scheme 2019 (forming the Foynes to Limerick Road (including Adare Bypass)). The application was approved with modifications on the 30th of August 2022 by ABP.	The improvement works are planned along the N69, which is a large part of the Proposed Development's TDR. This development is therefore scoped in for cumulative assessment.
Residential Development	20256 Limerick County Council	Within 350m of TDR	A residential development comprising 57units (comprising 21 no. semi-detached houses, 3 no terrace, 2 duplex units) and 1 four storey apartment block over basement comprised of 31 apartments revisions to development granted under planning 18/698 consisting of alteration to a portion of the open space area, all accessed via existing entrance onto the Kilmurry Road and all ancillary site development works including connections to the public water main, foul and surface water drainage,	From examination of the online planning file construction commenced in May 2021 and was completed as of February 2022. The construction phase of the residential is complete and should therefore have no interaction with the Proposed Development. This development is therefore scoped out of the cumulative assessment.

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			access roads, footpaths, vehicle parking, landscaping, boundary treatments and site development works above and below ground. The planning application is accompanied by a Natura Impact Statement. Planning permission was granted on 8th of December 2020.	
Residential Development	211400 Limerick County Council	Within 350m of TDR	A residential development comprising 96 no. residential units, (16 no. semi-detached houses, 6 no. terrace houses, 2 detached units along with 2 no. 5 storey apartment blocks over basement, comprised of 72 no. apartments and basement parking), bin & bike stores, demolition of existing farm buildings, additional parallel parking along the Castletroy College road, accessed via a new entrance onto the Castletroy College road and all ancillary development works. Ancillary site development works include a new connection to the public water main, foul and surface water drainage, access roads, footpaths, vehicle parking, landscaping, boundary treatments and site development works above and below ground. The planning application is accompanied by a NIS (Natura Impact Statement). Planning permission was granted on the 9th of June 2022.	From examination of the online planning file, it is our understanding that this project has not yet commenced. This development is scoped in for cumulative assessment based on its proximity to the TDR.

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
Residential Development	21311588 Limerick County Council	Within 350m of TDR	Application - Construction of 371 residential units, proposed access road and two storey childcare facility. Planning permission was granted on the 26th of May 2022.	From examination of the online planning file, it is our understanding that this project has commenced as of February 2023. This development is scoped in for cumulative assessment based on its proximity to the TDR.
Residential Development	21350 Limerick County Council	Within 350m of TDR	A residential development comprising 62no. residential units(14no. semi-detached house, 10no. terrace houses, 4no. duplex units, 2no. 5 storey apartment blocks over basement, comprised of 34no. apartments and basement parking), revisions to development granted under planning reference 20/256 consisting of alteration of portion of the open space area and alterations to the visitor drop off area, all accessed via existing entrance onto the Kilmurry Road and all ancillary site development works on lands at Newtown, Castletroy, Co. Limerick. Ancillary site development works include connections to the public water main, foul and surface water drainage, access roads, footpaths, vehicle parking, landscaping, bin & bike store, boundary treatments and site development works above and below ground. The planning application is accompanied by an EIAR (Environmental Impact Assessment Report) and an NIS(Natura Impact Statement).	From examination of the online planning file, it is our understanding that this project has not yet commenced. This development is scoped in for cumulative assessment based on its proximity to the TDR.

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			Planning permission was granted on the 3rd of December 2021.	
Road Works	218001 Limerick County Council	Within 350m of TDR	The construction of an overflow channel and new culvert under the N69 in the vicinity of Marine Cove Road.	The improvement works are planned under the N69, which is a large part of the Proposed Development's TDR. This development is therefore scoped in for cumulative assessment.
Residential Development	22313124 Limerick County Council	Within 350m of TDR	A 10-year permission for the construction of 384no. residential units (202 no. houses, 182 no. apartments), creche and associated site works. The application was submitted for planning on the 31st of March 2022.	This development, which is yet to be determined, is scoped in for cumulative assessment based on its proximity to the TDR.
Road Works	228018 Limerick County Council	Within 350m of TDR	Development works that will consist of upgrades/reconstruction works commencing on the R526 (north-east of Ballykeefe Roundabout), along South Circular Rd, Henry St and terminating at Mill Lane in Limerick City Centre.	The R526 is a fly over which runs over the N18 (along the Turbine Delivery Route of the Proposed Development). The works associated with this road development should not interact with the N18 road and is therefore scoped out of the cumulative assessment.
Quarry	23294 Limerick County Council	Within 350m of TDR	The development will consist of the restoration and infilling of the existing and future void over an area of (c. 17.2 ha) of existing permitted quarry (05/7029 and ABP 13.QC.2098) using approximately 2,464,000m3 or 4,435,200 tonnes of inert soil and stone material or stone by-product, or river dredge spoil. The application was submitted for planning on the 6th of June 2023.	This development is scoped in for cumulative assessment based on its proximity to the TDR.
Land Disturbance	2337 Clare County Council	Within 350m of TDR	To fill land with topsoil, subsoil, stone and inorganic construction material to raise the level of the land for agricultural	The principal road used is to be the R465 from Limerick City. Material will also be

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			purposes. A Natura Impact Statement is included with the application. The application was submitted for planning on the 25th of January 2023.	brought from Killaloe via the R471 and R463. The TDR of the Proposed Development runs along the R471 which intersects with R463. This development is scoped in for cumulative assessment based on its use of common roads and proximity to the Proposed Development site.
Road Works	238002 Limerick County Council	Within 350m of TDR	The development works will consist of and extension of the existing embankment on the landowner's side and various other road upgrade works including a shared raised footpath and cycleway and footway with fencing. The application was submitted for planning on the 27th of February 2023.	This development is therefore scoped in for cumulative assessment due to its proximity to the TDR of the Proposed Development.
Road Works	238004 Limerick County Council	Within 350m of TDR	The proposed improvement works that comprise of 550m of revised road layout on the N69 and 90m of realigned side road L1403 and will provide for various additional road upgrade features including a footway, signal-controlled pedestrian crossings, kerbing and hardscaping, etc. The application was submitted for planning on the 20th of April 2023.	The improvement works are planned along the N69, which is a large part of the Proposed Development's TDR. This development is therefore scoped in for cumulative assessment.
Residential Development	314013 ABP	Within 350m of TDR	The construction of 21 no. dwellings and all associated site works. The application is accompanied by a Natura Impact Statement (NIS). The application was submitted to ABP on the 6th of July 2022 and the case was due	This development, which is yet to be determined, is scoped in for cumulative assessment due to its proximity to the TDR of the Proposed Development.

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			to be decided on the 8th of November 2022.	
Port Works	2018007 EIAR Portal Reference 301561 ABP	Within 350m of TDR	Port capacity extension to consist of modifications to the existing jetties and quays, phased expansion of the port estate and all associated site development works. The application was granted permission on the 21st of December 2018 by ABP.	This development is scoped out for cumulative assessment on the basis that the indicative construction schedule in the planning file was ca. 3 years (assumed to end in early 2022) and that this development will therefore have no interactions with the Proposed Development.
Road Works	2019214 EIAR Portal Reference 306146 ABP	Within 350m of TDR	Approximately 15.6km of Type 2 dual carriageway express road extending from Foynes to Rathkeale, approx. 17.5km of dual carriageway motorway from Rathkeale to Attyflin and a service area for Heavy Goods Vehicles approximately 5ha in size near Foynes. The application was approved on the 30th of August 2022.	The improvement works will have potential interactions with a section of the N69, which is a part of the Proposed Development's TDR. This development is therefore scoped in for cumulative assessment.
Port Works	2020031 EIAR Portal Reference	Within 350m of TDR	Jetty Extension between East Jetty and West Quay of area 0.361ha. Pontoon relocation and landing structures with access to West Quay of area 0.0071ha. The foreshore lease was granted on the 11th of January 2022 Foreshore Ref: FS006837.	This development is scoped out for cumulative assessment on the basis that it is a foreshore application and will therefore have no interactions with the Proposed Development.
Solar Farm	248066 ABP	Within 350m of TDR	10-year permission. for the development. of a solar PV farm consisting of up to 35,582m^2 of solar panels on mounted steel frames, 1 no. substation; 3 no. inverter cables, underground cable ducts and all associated works.	This development is scoped out for cumulative assessment on the basis that its construction schedule will not coincide with that of the Proposed development, having been granted planning permission in April 2018. It is assumed that this development will therefore have

Project	Planning / Project Ref.	Nearest Distance to the Proposed Development Site	Description	Scoped in / out for cumulative assessment
			Planning permission was granted on the 5th of April 2018 by ABP.	no interactions with the Proposed Development.