Validation Checklist

Lodgement Number : **LDG-068713-23**
Case Number: **ABP-318689-23**
Customer: **Carrig Renewable Energy Limited**
Lodgement Date: **13/12/2023 15:42:00**
Validation Officer: **Daniel O'Connor**
PA Name: **Tipperary County Council**
PA Reg Ref: **2360763**
Case Type: **Normal Planning Appeal PDA2000**
Lodgement Type: **Appeal**

Validation Checklist	Value
Confirm Classification	Confirmed - Correct
Confirm PA Case Link	Confirmed-Correct
Confirm ABP Case Link	Confirmed-Correct
Fee/Payment	Valid – Correct
Name and Address available	Yes
Agent Name and Address available (if engaged)	Yes
Subject Matter available	Yes
Grounds	Yes
Sufficient Fee Received	Yes
Received On time	Yes
3rd Party Acknowledgement	Yes
Eligible to make lodgement	Yes
Completeness Check of Documentation	Yes
Valid Lodgement Channel	Yes

BP01 to applicant with receipt enclosed

Digital BP07 to PA with copy of appeal

PA notified

Run at: 14/12/2023 09:24

Run by: Daniel O'Connor

Da[redacted] l O'Connor

From:	Microsoft Outlook
To:	planning@tipperarycoco.ie
Sent:	Thursday 14 December 2023 09:33
Subject:	Relayed: Appeal 318689-23

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

planning@tipperarycoco.ie (planning@tipperarycoco.ie)

Subject: Appeal 318689-23

Lodgement Cover Sheet - LDG-068713-23

ABP - 318689-23

DD - 017857-23

An Bord Pleanála

Details

Lodgement Date	13/12/2023
Customer	Carrig Renewable Energy Limited
Lodgement Channel	In Person
Lodgement by Agent	Yes
Agent Name	John Wiloughby
Correspondence Primarily Sent to	Agent
Registered Post Reference	

Lodgement ID	LDG-068713-23
Map ID	
Created By	Saoirse Smith
Physical Items included	No
Generate Acknowledgement Letter	
Customer Ref. No.	
PA Reg Ref	2360763

Categorisation

Lodgement Type	Appeal
Section	Processing

PA Name	Tipperary County Council
Case Type (3rd Level Category)	

Fee and Payments

Specified Body	No
Oral Hearing	No
Fee Calculation Method	System
Currency	Euro
Fee Value	0.00
Refund Amount	0.00

Observation/Objection Allowed?	
Payment	PMT-053369-23
Related Payment Details Record	PD-053242-23

Decision - refused

Decision date - 16/11/23

Last day - 13/12/23

Appeal

Run at: 13/12/2023 15:59

Run by: Saoirse Smith

PA Case Details Manual	
PA Case Number	
PA Decision	
PA Decision Date	
Lodgement Deadline	
Development Description	
Development Address	

Appeals Type	

Run at: 13/12/2023 15:59

Run by: Saoirse Smith

An Bord Pleanála

Planning Appeal Form

Your details

1. Appellant's details (person making the appeal)

Your full details:

(a) Name — Carrig Renewable Energy Limited

(b) Address — 98 Henry Street, Limerick, Co. Limerick

Agent's details

2. Agent's details (if applicable)

If an agent is acting for you, please **also** provide their details below. If you are not using an agent, please write "Not applicable" below.

(a) Agent's name — John Willoughby

(b) Agent's address — MKO, Tuam Road, Galway, H91 VW84

Postal address for letters

3. During the appeal we will post information and items to you **or** to your agent. For this appeal, who should we write to? (Please tick ✓ one box only.)

You (the appellant) at the address in Part 1	☐	**The agent at the address in Part 2**	✓

Details about the proposed development

4. Please provide details about the planning authority decision you wish to appeal. If you want, you can include a copy of the planning authority's decision as the appeal details.

(a) Planning authority

(for example: Ballytown City Council)

Tipperary County Council

(b) Planning authority register reference number

(for example: 18/0123)

23/60763

(c) Location of proposed development

(for example: 1 Main Street, Baile Fearainn, Co Ballytown)

In the Townlands of Croghan,Clohaskin, Caherhoereigh, Ballykinash, Tinnakilly, Arragh More, Ballyloughnane, Faddan Beg, Coolderry, Tinlough,

Sharragh, Doughkill, Ballaghgar, Faddan More, Cloncorig, Killeen, and Cornhill, Co. Tipperary.

Appeal details

5. Please describe the grounds of your appeal (planning reasons and arguments). You can type or write them in the space below or you can attach them separately.

See First Party Appeal document (including Grounds of Appeal) enclosed with this Appeal form.

Supporting material

6. If you wish you can include supporting materials with your appeal. Supporting materials include:

   - photographs,
   - plans,
   - surveys,
   - drawings,
   - digital videos or DVDs,
   - technical guidance, or
   - other supporting materials.

Acknowledgement from planning authority (third party appeals)

7. If you are making a third party appeal, you **must** include the acknowledgment document that the planning authority gave to you to confirm you made a submission to it.

Fee

8. You **must** make sure that the correct fee is included with your appeal. You can find out the correct fee to include in our Fees and Charges Guide on our website.

Oral hearing request

9. If you wish to request the Board to hold an oral hearing on your appeal, please tick the "yes, I wish to request an oral hearing" box below.

Please note you will have to pay an **additional non-refundable fee** of €50. You can find information on how to make this request on our website or by contacting us.

If you do not wish to request an oral hearing, please tick the "No, I do not wish to request an oral hearing" box.

Yes, I wish to request an oral hearing	☐
No, I do not wish to request an oral hearing	✓

NALA has awarded this document its Plain English Mark

Last updated: April 2019.

Plain English
Approved by NALA

An Bord Pleanála,
64 Marlborough St,
Dublin 1,
D01 V902

Our ref: 211016
Your ref: N/A

Date: 13th December 2023

Re: First Party Appeal Against Refusal of Permission– Tipperary County Council Pl. Ref. 23/60763

Dear Sir/Madam,

MKO of Tuam Road, Galway, H91 VW84 have been instructed on behalf of our client, **Carrig Renewable Energy Limited of 98 Henry Street, Limerick, Co Limerick**, to prepare and lodge this First Party Appeal against the decision by Tipperary County Council made on the 16th of November 2023 to refuse permission on Pl. Ref. 23/60763. Under this application, permission was sought for a 7 no. turbine wind farm and associated works in County Tipperary.

Please find enclosed the completed Planning Appeal Form, along with the First Party Appeal Report, which sets out the Applicant's Grounds of Appeal against each of the reasons for refusal given by Tipperary County Council in their decision to refuse permission.

The description of the development in question, as set out on the public notices is as follows:

> *"We, Carrig Renewable Energy Limited, intend to apply for a ten-year planning permission for development at this site in the townlands of Croghan, Clohaskin, Caherhoereigh, Ballykinash, Tinnakilly, Arragh More, Ballyloughnane, Faddan Beg, Coolderry, Tinlough, Sharragh, Doughkill, Ballaghgar, Faddan More, Cloncorig, Killeen, and Cornhill, Co. Tipperary.*
> *The development will consist of:*
> *(i) The construction of 7 no. wind turbines and associated hardstand areas with the following parameters:*
> *a. Total tip height range of 179.5m – 185m,*
> *b. Rotor diameter range of 149m – 163m,*
> *c. Hub height range of 103.5m to 110.5m;*
> *(ii) 1 no. permanent 38kV electrical substation which will be constructed in the townland of Faddan Beg. The proposed electrical substation consists of a single storey control building with welfare facilities, all associated electrical plant and equipment, battery energy storage system, security fencing, all associated underground cabling, wastewater holding tank and all ancillary works and equipment;*

(iii) *All works (within County Tipperary) associated with the connection of the proposed wind farm to the national electricity grid, via the provision of underground electrical cabling (38kV) to the existing Dallow 110kV substation in the townland of Clondallow, Co. Offaly;*

(iv) *Provision of 10 no. joint bays, communication chambers and earth sheath links along the underground electrical cabling route;*

(v) *Reinstatement of the road or track surface above the proposed cabling trench along existing roads and tracks;*

(vi) *All associated underground electrical and communications cabling connecting the turbines to the proposed wind farm substation;*

(vii) *1 no. meteorological mast with a height of 107m above ground and associated foundation and hard-standing area;*

(viii) *Upgrade of existing tracks and roads and the provision of new site access roads;*

(ix) *All works associated with the provision of a new permanent site entrance off the L5040 local road;*

(x) *Provision of 5 no. new access and egress points along the L5041 local road in the townlands of Cloncorig, Faddan More and Coolderry;*

(xi) *Provision of 4 no. peat repository areas and 3 no. spoil repository areas;*

(xii) *2 no. temporary construction compounds with temporary site offices and staff facilities;*

(xiii) *Accommodation works along the public road network along the N52 national secondary road in the townland of Ballyloughnane to facilitate the delivery of turbine components and other abnormal sized loads;*

(xiv) *Site Drainage;*

(xv) *Tree Felling;*

(xvi) *Operational stage site signage; and,*

(xvii) *All associated site development works, ancillary works and apparatus.*

A 10-year planning permission and 35-year operational life of the wind farm from the date of commissioning of the entire wind farm is sought.

A concurrent planning application in relation to the 38kV underground grid connection to the existing Dallow 110kV substation will also be lodged to Offaly County Council.

The proposed development includes accommodation works within the curtilage of Protected Structure RPS Ref. TRPS336 (Ballyloughnane Bridge) and underground cabling works located within the public road corridor within the curtilage of Protected Structure RPS Ref. TRPS336 (Ballyloughnane Bridge) and Protected Structure RPS Ref. TRPS519 (Croghan Bridge).

An Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) has been prepared in respect of the planning application and will be submitted to the planning authority with the application."

The First Party Appeal Report is enclosed which also includes the following appendices:

- **Appendix 1** – TCC Notification of Decision to Refuse Permission
- **Appendix 2** – Submission by the DAU, Department of Housing, Planning and Local Government
- **Appendix 3** – April to September 2023 Bird Survey Results
- **Appendix 4** – Collision Risk Analysis
- **Appendix 5** – Road Safety Audit, carried out by Traffico

The sum of €3,000 (the application included an EIAR and NIS) will be paid by card upon submission of this appeal.

Yours faithfully,

John Willoughby

John Willoughby, BA, MSc, MIPI
Project Planner
MKO

Enclosed

- Completed Appeal Form
- First Party Appeal Report

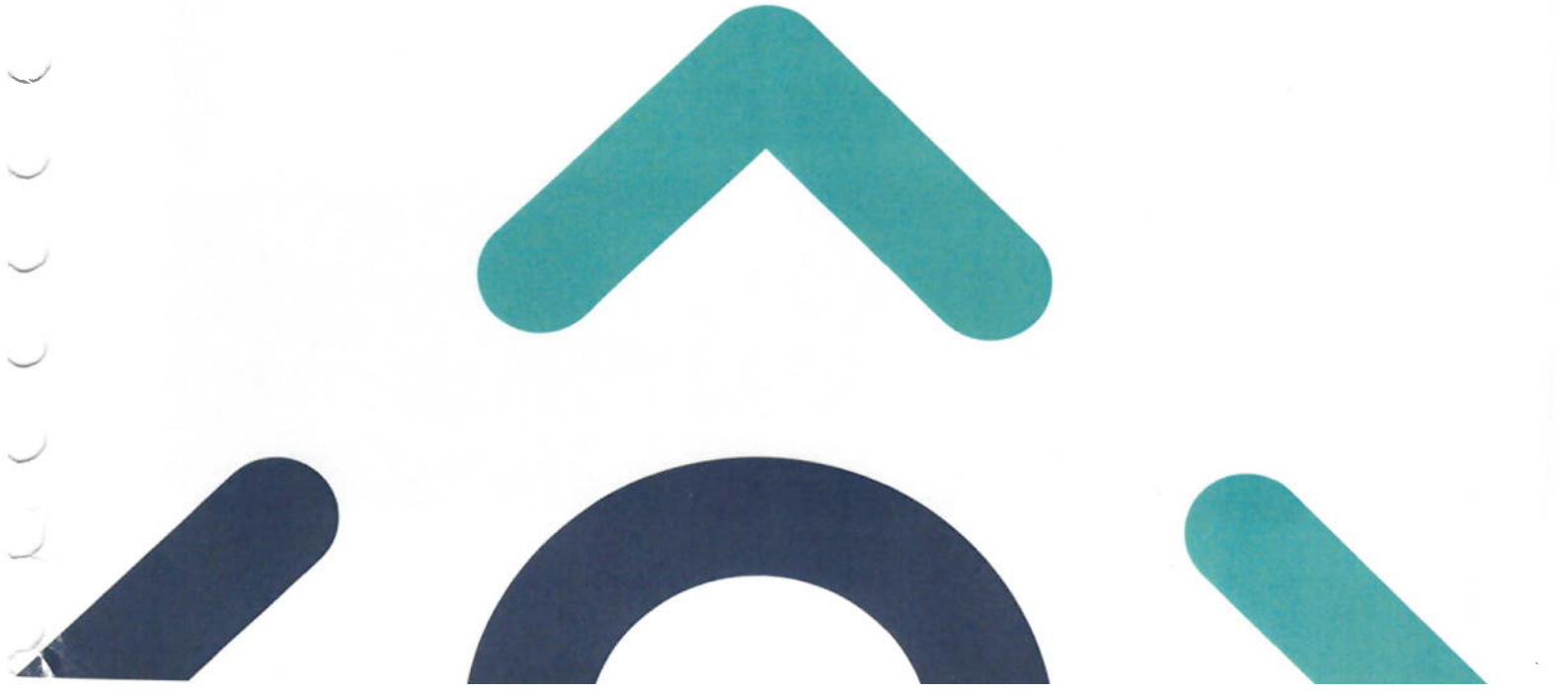
MKO, Tuam Road, Galway, H91 VW84
+353 (0)91 735 611 | mkoireland.ie | info@mkoireland.ie

Dublin - MKO, 9C Beckett Way, Park West Business Park, Dublin, D12 XN9W

Planning and Environmental Consultants

First Party Appeal

Carrig Renewables Wind Farm



DOCUMENT DETAILS

Client:	Carrig Renewable Energy Ltd
Project Title:	Carrig Renewables Wind Farm
Project Number:	211016
Document Title:	First Party Appeal
Document File Name:	211016 - Carrig Renewables First Party Appeal F -2023.12.13
Prepared By:	MKO Tuam Road Galway Ireland H91 VW84

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Draft	05/12/2023	RD	JW
02	Final	12/12/2023	RD, JW,	CR, BK

Table of Contents

APPENDICES

TABLE OF TABLES

TABLE OF FIGURES

1. INTRODUCTION

1.1 Background

MKO have been appointed by Carrig Renewable Energy Limited of 98 Henry Street, Limerick, Co. Limerick to prepare and lodge this First-Party appeal against the decision by Tipperary County Council (the Planning Authority) to refuse permission for a 7 no. turbine wind energy development and associated works (the Proposed Development) at Sharragh and surrounding townlands, c. 6.4km south-west of Birr, Co Offaly. Tipperary County Council refused permission on the 16th of November 2023. The deadline for the submission of this appeal to An Bord Pleanála is the 13th of December 2023.

The planning application was lodged with Tipperary County Council on the 22nd of September 2023 and was assigned the planning reference Pl. Ref. 23/60763. A concurrent application was lodged with Offaly County Council in relation to the development of those elements of infrastructure for the project which were proposed within the functional area of Offaly County Council (a portion of the grid connection) – (Offaly Pl. Ref 23/60140). Both planning applications were accompanied by an Environmental Impact Assessment Report (EIAR), Natura Impact Statement (NIS) along with all required statutory planning application documentation. Offaly County Council issued a Further Information Request on the 30th November 2023 (Pl. Ref 23/60140).

1.2 Proposed Development

The Proposed Development remains that as set out in the public notices as follows:

> *"We, Carrig Renewable Energy Limited, intend to apply for a ten-year planning permission for development at this site in the townlands of Croghan, Clohaskin, Caherhoereigh, Ballykinash, Tinnakilly, Arragh More, Ballyloughnane, Faddan Beg, Coolderry, Tinlough, Sharragh, Doughkill, Ballaghgar, Faddan More, Cloncorig, Killeen, and Cornhill, Co. Tipperary.*
>
> *The development will consist of:*
>
> *(i) The construction of 7 no. wind turbines and associated hardstand areas with the following parameters:*
>
> *a. Total tip height range of 179.5m – 185m,*
> *b. Rotor diameter range of 149m – 163m,*
> *c. Hub height range of 103.5m to 110.5m;*
>
> *(ii) 1 no. permanent 38kV electrical substation which will be constructed in the townland of Faddan Beg. The proposed electrical substation consists of a single storey control building with welfare facilities, all associated electrical plant and equipment, battery energy storage system, security fencing, all associated underground cabling, wastewater holding tank and all ancillary works and equipment;*
>
> *(iii) All works (within County Tipperary) associated with the connection of the proposed wind farm to the national electricity grid, via the provision of underground electrical cabling (38kV) to the existing Dallow 110kV substation in the townland of Clondallow, Co. Offaly;*
>
> *(iv) Provision of 10 no. joint bays, communication chambers and earth sheath links along the underground electrical cabling route;*
>
> *(v) Reinstatement of the road or track surface above the proposed cabling trench along existing roads and tracks;*
>
> *(vi) All associated underground electrical and communications cabling connecting the turbines to the proposed wind farm substation;*
>
> *(vii) 1 no. meteorological mast with a height of 107m above ground and associated*

foundation and hard-standing area;

(viii) *Upgrade of existing tracks and roads and the provision of new site access roads;*

(ix) *All works associated with the provision of a new permanent site entrance off the L5040 local road;*

(x) *Provision of 5 no. new access and egress points along the L5041 local road in the townlands of Cloncorig, Faddan More and Coolderry;*

(xi) *Provision of 4 no. peat repository areas and 3 no. spoil repository areas;*

(xii) *2 no. temporary construction compounds with temporary site offices and staff facilities;*

(xiii) *Accommodation works along the public road network along the N52 national secondary road in the townland of Ballyloughnane to facilitate the delivery of turbine components and other abnormal sized loads;*

(xiv) *Site Drainage;*

(xv) *Tree Felling;*

(xvi) *Operational stage site signage; and,*

(xvii) *All associated site development works, ancillary works and apparatus.*

A 10-year planning permission and 35-year operational life of the wind farm from the date of commissioning of the entire wind farm is sought.

A concurrent planning application in relation to the 38kV underground grid connection to the existing Dallow 110kV substation will also be lodged to Offaly County Council.

The proposed development includes accommodation works within the curtilage of Protected Structure RPS Ref. TRPS336 (Ballyloughnane Bridge) and underground cabling works located within the public road corridor within the curtilage of Protected Structure RPS Ref. TRPS336 (Ballyloughnane Bridge) and Protected Structure RPS Ref. TRPS519 (Croghan Bridge).

An Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) has been prepared in respect of the planning application and will be submitted to the planning authority with the application."

This First Party Appeal document sets out the background to the project, the planning policy context relevant to the Proposed Development, each reason for refusal issued by Tipperary County Council and subsequently sets out the Applicant's Grounds of Appeal (GOA). The GOA provides a response and rebuttal to each reason for refusal, demonstrating that the Proposed Development is appropriate in terms of proper planning and sustainable development, and therefore Tipperary County Council's decision should be overturned, and planning permission granted by An Bord Pleanála. The refusal issued by the Planning Authority is attached to this Grounds of Appeal in **Appendix 1** for reference.

13 Policy Overview

The following section provides a summary of the planning, renewable energy and climate policy context relevant to the Proposed Development. It is clear from the policies outlined below that the Proposed Development is strongly supported in principle by policy at all levels, with the exception of the unfavourable wind energy zoning that applies to the subject site. The following section contains a synopsis of the current policies in place and their relevance to the Proposed Development. Further detailed discussions on these policies are included in the GOA (section 4) and in this regard the planning rationale report submitted as part of the planning application is also relevant.

The Proposed Development sits within a policy framework characterised by several recent crises, which have significantly influenced policy changes in recent years. These crises have heightened the

imperative to transition towards a renewable energy-focused electricity grid and have emphasised the necessity for diversifying our energy sources.

Figure 1: Main climate and renewable energy policy drivers

Paris Agreement

On an international level, Ireland is a signatory of the Paris Agreement, a global initiative adopted in 2015 that aims to address climate change by limiting global warming to well below 2 degrees Celsius above pre-industrial levels, with efforts to limit the increase to 1.5 degrees Celsius. Under the Paris Agreement, countries submit Nationally Determined Contributions (NDCs), outlining their individual climate action plans and commitments. Ireland's contribution comes under the European Union's (EU) NDCs targets and is based on the European Union's 2030 emissions reductions targets.

Sustainable Development Goals

Also in 2015, Ireland became a signatory to the United Nations Sustainable Development Goals (SDGs), which frame national agendas and policies to 2030. The SDGs inform the strategic outcomes of Irish policy documents, such as Project Ireland 2040: National Planning Framework. SDG 7 seeks to achieve *'Affordable and Clean Energy'*.

European Green Deal

On a European level, the European Green Deal, initially introduced by the European Commission in December 2019, sets out the 'blueprint' for a transformational change of the 27-country bloc from a high- to a low-carbon economy. The European Green Deal is intended to work through a framework of regulation and legislation setting clear overarching targets, e.g. a bloc-wide goal of net zero carbon emissions by 2050 and a 55% cut in emissions by 2030 (compared with 1990 levels). This is a substantial increase compared to the existing target, upwards from the previous target of at least 40% (2030 Climate & Energy Framework), and furthermore, these targets demonstrate the ambition necessary to keep the global temperature increase to well below 2°C and pursue efforts to keep it to 1.5°C as per the Paris Agreement.

The EU Fit for 55

The EU Fit for 55 package was published in late 2021 with the aim of reducing EU emissions by at least 55% by 2030 compared to 1990 levels and making the EU carbon-neutral by 2050. This EU package is a set of proposals to revise all existing EU acts on climate and energy and increase the EU target for renewables in the overall energy mix from 32% in 2030 to 40%.

Renewable Energy Directive & REPowerEU

In November 2023, a revision of the Renewable Energy Directive[1] (RED III), came into force. RED III increases the EU wide renewable energy target from 32% set under the previous revision of the directive to at 42.5%, with an ambition to reach 45% by 2030. This increase comes following the Russian invasion of Ukraine and the publication of REPowerEU plan in May 2022. REPowerEU aims to make Europe independent from Russian fossil fuels including oil and gas by rapidly transitioning to renewable energy. The plan aims to accelerate the scale up of renewables by speeding up the permitting process and placing renewable energy developments in the category of overriding public interest.

Climate Action and Low Carbon Development Act 2015 (as amended)

At a national level, the Climate Action and Low Carbon Development Act 2015 (as amended) brought into law for the first time the requirement for the State to reduce its carbon emissions by 51% by 2030 and climate neutrality by 2050. Under Section 15 of the Climate Action and Low Carbon Development Act 2015 (as amended), public bodies are required to, in so far as practical, perform its functions in a manner consistent with the Climate Action Plan 2023, the National Energy & Climate Plan 2021 – 2030 and other national climate mitigation and adaptation plans.

Climate Action Plan

Originally published in 2019 and subsequently revised in 2021 and 2023, the Climate Action Plan (CAP) underscores the growing imperative to increase the presence of renewable energy generators on the national grid. Under CAP 23, the state has committed to achieving 6 GW of onshore wind energy by 2025 and 9GW by 2030.

Project Ireland 2040

'Project Ireland 2040' comprises the National Planning Framework (NPF) and the National Development Plan (NDP) 2021 – 2030, both of which stress the urgency required to decarbonise Irish society. This is reflected in the NPF through National Strategic Outcome 8: *"Transition to a low carbon and climate resilient economy"*. The NDP emphasises the importance of addressing climate change, stating *"The next 10 years are critical if we are to address the climate crisis and ensure a safe and bright future for the planet, and all of us on it"*. The NDP sets out a Renewable Electricity Share (RES-E) target of 80% by 2030, calling for an "*unprecedented commitment to the decarbonisation of electricity supplies*".

National Energy Security Framework

The National Energy Security Framework (NESF), adopted in 2022, and implements many of the aims and objectives of REPowerEU on a national level, reinforcing the State's requirement to urgently diversify away from imported fossil fuels and accelerate the roll out of renewables. The NESF is supported by the recently published Energy Security Package 'Energy Security in Ireland to 2030'. The Energy Security Package provides further long-term energy security measures which includes the prioritisation of achieving a renewables-led energy system.

Regional and Economic Spatial Strategy for the Southern Region

On a regional level, the Regional and Economic Spatial Strategy (RSES) for the Southern Region, supports the implementation of the national plans and policies outlined above. The RSES recognises the need for and the benefits of renewable energy for the climate and for the economic development of the region. The RSES advocates for the development of wind energy at appropriate locations in the region.

---

[1] *Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast)*

Tipperary County Development Plan 2022-2028

The Tipperary County Development Plan 2022-2028 (the Development Plan) came into effect in August 2022 and incorporates the aims, objectives, policies and guidelines to provide for the proper planning and sustainable development of County Tipperary. The Development Plan sets a target of **600MW of total installed wind energy** to be constructed and operational in the County by 2028 while stating that the county currently has 475MW of wind energy installed. This essentially sets a target of 125MW of additional wind energy by 2028. Chapter 10 of the Development Plan sets out the policies and objectives relating to Renewable Energy and Bioeconomy and it is clear that the Development Plan strongly supports the development of renewable energy in principle.

The Tipperary Renewable Energy Strategy (RES), published in 2016, is incorporated as an appendix to the 2022-2028 Development Plan. The RES includes a Wind Energy Strategy (WES) which identifies areas where wind energy development is 'open for consideration' and where wind energy developments are considered 'unsuitable'. While the WES contains strong policy support for wind energy in principle, the Proposed Development site is located in an area deemed to be 'unsuitable for further wind energy development'.

It is noted, however, that the target set by Tipperary County Council for new wind energy for the duration of the Plan, up until 2028, being a mere 125MW, is miniscule for one of the largest counties in Ireland, and in the context of the climate crisis.

In this regard, and further discussed in Section 4.2, it is submitted that there is an inconsistency in the Development Plan, which on the one hand supports renewable energy development and climate action but has a target of only 125MW of additional wind energy by 2028.

The key national energy, climate and planning policies that have changed in the intervening seven years since the WES was first adopted are shown table 2 below. The WES has remained unchanged in the intervening period. Despite having been incorporated into the Tipperary County Development Plan 2022 – 2028, the 2016 RES has not kept pace with the more recent key national energy, climate and planning policies and is therefore outdated, out-of-step and obsolete as a planning policy document.

This has resulted in a scenario where the RES is at odds with international and national policy including inter alia the Climate Action Plan, REPowerEU and the National Energy Security Framework.

It is considered that while the WES provides appropriate guidance for the siting of new renewable energy development at a high level, it does not take into account many of the project level constraints that need to be considered as part of a project such as the Proposed Development.

A project level constraints mapping exercise, provided in Section 3 of the Planning Rationale Report submitted with the planning application, demonstrates that much of the area deemed 'Open to Consideration' is in fact **not viable** for wind energy development. It is considered that the RES does not provide sufficient favourably zoned land to accommodate the additional wind energy required to meet Tipperary's renewable energy target. In light of this, it is essential that all viable areas capable of accommodating wind energy development are considered.

Furthermore, the RES was published in 2016, prior to the adoption of a significant quantum of climate, energy and planning policy that has been adopted in recent years and therefore does not reflect the targets and urgency currently in place at a national level. The growing need to rapidly decarbonise our society is evident in the new policy and revision of targets outlined above at a European and national level. The climate and energy policy landscape has altered significantly since the RES has been adopted and it should be seen in this context. A summary list of the policy documents and instruments and the corresponding targets implemented since the adoption of the RES in 2016 are provided in Table 1 below.

Table 1: Evolution of the policy landscape following the publication of the RES

Policy Document / Instrument	Year	Relevant Target
Tipperary Renewable Energy Strategy	**2016**	**40% renewable energy electricity by 2020**
Project Ireland 2040: National Planning Framework	2018	80% reduction in GHG emissions in energy sector by 2050
Project Ireland 2040: National Development Plan	2018	8 GW of onshore wind by 2030
Renewable Energy Directive (revision)	2018	32% Renewable Energy by 2030 (EU wide)
Climate Action Plan 2019	2019	70% renewable energy electricity by 2030, including 8.2GW of onshore wind.
Regional Spatial and Economic Strategy for the Southern Region	2020	70% renewable energy electricity by 2030, including 8.2GW of onshore wind.
Climate Action and Low Carbon Development (Amendment) Act 2021	2021	51% reduction in GHG emissions by 2030 & climate neutrality by 2050
European Climate Law	2021	55% reduction in GHG emissions by 2030 (EU wide) Climate neutrality by 2050 (EU Wide)
Climate Action Plan 2021	2021	80% renewable energy electricity by 2030 including 8GW of onshore wind
Renewable Energy Directive (revision)	2021	32% Renewable Energy by 2030 (EU wide)
Renewable Energy Directive (revision) ('EU Fit for 55')	2021	Proposal for 40 % Renewable energy by 2030 55% reduction in GHG emissions by 2030 (EU Wide)
Tipperary County Development plan 2022-2028	2022	600MW wind energy by 2028 for the County (475MW currently installed)
Climate Action Plan 2023	2023	80% renewable energy electricity by 2030 including 9GW of onshore wind
RePowerEU	2022	Proposal for 45% renewable energy by 2030 (EU wide)
National Energy Security Framework	2022	51% reduction in GHG emissions by 2030 & climate neutrality by 2050
Renewable Energy Directive (revision)	2023	42.5% (aiming for 45) renewable energy by 2030 (EU wide)

LOCAL PLANNING AUTHORITY DECISION

The planning application was refused by Tipperary County Council on three grounds which are as follows:

1. Notwithstanding the general Planning Policy support for wind energy generation at national, regional and local policy level, including:

*Policy 3-1 which seeks to '**promote and facilitate renewable energy development, in accordance with the policies and objectives of the Tipperary Renewable Energy Strategy 2016 (and any review thereof), and the Tipperary Climate Adaptation Strategy 2019**', the proposed development is located on lands identified as an area unsuitable for new wind energy development within the Tipperary Renewable Energy Strategy. Furthermore, it is considered that the proposed development would not, come within the limited circumstances provided for in policy TWIND 4.14. of the Wind Energy Strategy in the Renewable Energy Strategy.*
Accordingly, it is considered that the proposed development would contravene materially the policies and objectives of the Tipperary County Development Plan 2022 - 2028, specifically Volume 3, Appendix 2, Tipperary Renewable Energy Strategy, Wind Energy Strategy, Policy TWIND 4. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area.

2. Policy11-16 of the Tipperary County Development Plan 2022 - 2028 states that
"In assessing proposals for new development to balance the need for new development with the protection and enhancement of the natural environment and human health. In line with the provisions of Article 6(3) and Article 6 (4) of the Habitats Directive, no plans, programmes, etc. or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects1)".

Having regard to the proximity to a number of European Sites with conservation objective to maintain or restore the favourable conservation conditions of a number of bird species. Having regard to the EIAR and NIS submitted with the applications and submissions made on the applications, and notwithstanding mitigation measures proposed, the Planning Authority is not satisfied that the likelihood of significant effects on the environment can be excluded. The applicant has failed to demonstrate that the development on the site would not have an adverse impact on the site integrity of the local sites within the Natura 2000 network. The Planning Authority considers that the proposed development would result in a loss of habitat, disturbance and displacement for Annex I bird species, and in this context, the proposed development would, therefore, be contrary to the proper planning and sustainable development of the area, development would adversely affect bird species or their habitat specified in Article 4 of the Birds Directive, which forms the basis of the classification of that site.

3. Policy 12-4 of the Tipperary County Development Plan, 2022 - 2028 seeks to maintain and protect the safety, capacity and efficiency of Tipperary's road network and associated junctions in accordance with the Spatial Planning and National Roads Guidelines for Planning Authorities, (DECLG, 2012) and the TransEuropean Networks Regulations. The Planning Authority considers that the applicants' have failed to demonstrate that the proposed development would not have a significant detrimental impact on the capacity and operation of such road network. Accordingly, it is considered that the proposed development would materially contravene 12-4 of the Tipperary County Development Plan 2022 - 2028 and would be contrary to the proper planning and sustainable development of the area.

2.1 Tipperary County Council's Planners Report

Tipperary County Council Planner's Report provides an assessment of the proposed development and includes the following headings; site location and description, proposed development, relevant planning history, summary of public participation process and consultations, internal and prescribed bodies, observations and submissions, representations, planning policy overview, planning appraisal, appropriate assessment and conclusions and recommendation. The planning appraisal included an assessment of compliance with policy review, an evaluation of the Environmental Impact Assessment Report (EIAR) and the Natura Impact Statement (NIS).

Policy Conclusions

The Planners Report, in its assessment of the application against the provisions of the Tipperary County Development Plan 2022-2028, makes the following observations:

- The Proposed Development is located in an area deemed to be 'unsuitable' for new wind energy development and therefore policy TWIND 4.14 applies. The Proposed Development does not fall under the 3 scenarios (repowering, extensions to existing wind farms, sites where wind energy has been previously granted but not constructed) listed under policy TWIND 4.14 where wind farm projects will be assessed on a case-by-case basis.
- The planning rationale report provided with the application does not factor in the exemptions under TWIND4.14.
- The Renewable Energy Strategy will remain in force until 2028. The formal review process of the CDP will take place in Q3 of 2026.

EIAR Conclusions

The Planners Report, in its assessment of the EIAR submitted as part of the application, makes the following observations:

- It is considered that the proposed development will not give rise to water pollution in the water courses, ground water or surface waters within the site, in the drainage catchment of the site or in the aquifer underlying the application site and it is concluded that significant water quality impacts are not likely to arise. Significant environmental effects on waters post construction are not anticipated.
- Having regard to the existing windfarms and the existence of mature forest is considered that the landscape has the capacity to accommodate the development without adversely affecting the landscape character of the area.
- It is considered that any adverse impacts on population and human health will be mitigated by the measures to reduce impacts from noise & vibration and shadow flicker to acceptable levels.
- Impacts on cultural heritage including archaeology and protected structures have been mitigated through the development design where the proposed layout avoid impacts on known archaeology or protected structures etc. Further mitigation on unknown archaeology would be undertaken through archaeological supervision of groundworks etc associated with the development.
- Significant negative Impacts on biodiversity in particular ornithology on the windfarm site will arise during both the construction and operation phases.
- Significant negative Impacts on material assets, in particular roads are likely to arise during construction.

NIS Conclusions

The Planners Report, in its assessment of the NIS submitted as part of the application and through completing the appropriate assessment, makes the following observations:

- The assessment concluded that 2 no. sites have the potential for direct effects from the proposed development, namely the River Little Brosna Callows SPA and the Middle Shannon Callows SPA. As a result of collision risk with the wind turbines, displacement and barrier effect during operation of the proposed development, particularly in relation to the following species: Teal, Lapwing, Black-Headed Gull and Golden Plover.
- The potential for direct effects during construction would result from habitat loss/ex-situ disturbance, air quality impacts during construction as a result of emissions, dust and surface water deterioration.
- The potential for direct effects during operation would result from hydrological impacts, air quality impacts during construction as a result of emissions, dust and water quality deterioration.

It has been comprehensively demonstrated in section 4.3 of this report that the Proposed Development will not significantly impact avian populations of importance in the area and does not therefore, run contrary to the proper planning and sustainable development of the area. The additional information provided within this appeal adequately addresses any perceived deficiencies that have been identified in Tipperary County Council's assessment.

Furthermore, Tipperary County Council's concerns in relation to the potential impact on the road network arising from traffic have been comprehensively addressed in section 4.4 of this report. The clarification provided in section 4.6 illustrates that there will be no significant detrimental impacts on the road network when the proposed traffic management measures are fully implemented. An independent stage 1 Road Safety Audit on the N52 / L-5040 junction and the proposed traffic management measures on the L-5040, confirms that the junction will operate safely during the construction of the Proposed Development.

In robustly addressing the ornithology and traffic related issues raised in the Planners Report, the Proposed Development site is considered to be a suitable site for wind energy development, given that it can be concluded that the Proposed Development will not have a significant impact on residential amenity (noise & shadow flicker), hydrology, ornithology, biodiversity, landscape, cultural heritage and material assets.

It is considered that the only issue precluding the permitting of the Proposed Development is the 2016 wind energy classification map and its associated policy TWIND 4.14. In light of this fact and considering the seriousness of the climate and energy security crises and the urgency in which they must be addressed, there is an obligation on the Board to carry out their functions in a manner consistent with the Climate Action Plan and national climate policy, in making their decision on this Appeal, notwithstanding any material contravention of the CDP.

AN BORD PLEANÁLA'S LEGAL OBLIGATIONS

An Bord Pleanála will be aware of certain legal obligations in respect of the processing of certain planning applications and appeals for renewable wind energy developments, in particular:

- *Certain obligations under the Climate Action and Low Carbon Development Act 2015 (as amended) (the "Climate Act") imposed on An Bord Pleanála (the "Board") when exercising its decision-making functions in relation to planning applications for renewable wind energy developments;*
- *Certain discretionary powers under the Planning and Development Act 2000 (as amended) (the "Planning Act") which must be exercised subject to the mandatory obligations set out in the Climate Act when the Board is exercising its decision-making functions in relation to planning applications for renewable wind energy developments;*
- *The specific circumstances in which the Board has a discretion to grant permission for a renewable wind farm development which materially contravenes a development plan, which discretion must be exercised subject to the mandatory obligations set out in the Climate Act.*

The Government's Climate Action Plan 2023 requires an increase in the proportion of renewable electricity in Ireland to 80% by 2030. For onshore wind energy, a target of 6GW – from the current installed capacity of 4.5 GW – has been set for 2025, and a target of 9GW for 2030. More broadly, Ireland's Long-term Strategy on Greenhouse Gas Emissions Reductions emphasises the importance of decarbonising the electricity sector by taking advantage of Ireland's significant renewable energy resources while ensuring affordability and security in the national energy supply. Significant numbers of onshore wind farm developments such as the Proposed Development, are required to meet these targets and objectives.

In this context, Tipperary County Council's Development Plan sets a target of a mere 125MW up until 2028.

Obligations under the Climate Act and the Planning Act

When exercising its decision-making powers under the Planning Act, the Board is obliged to perform its decision-making function (in so far as practicable) in a manner consistent with:

- the most recent approved climate action plan,
- the most recent approved national long term climate action strategy,
- the most recent approved national adaptation framework and approved sectoral adaptation plans,
- the furtherance of the national climate objective, and
- the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State.

Specifically, Section 15(1) of the Climate Act provides that:

> *"A relevant body shall, in so far as practicable, perform its functions in a manner consistent with–*
>
> *a) the most recent approved climate action plan,*
> *b) the most recent approved national long term climate action strategy,*
> *c) the most recent approved national adaptation framework and approved sectoral adaptation plans,*
> *d) the furtherance of the national climate objective, and*

c) *the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State." (the "National Climate Policies and Objectives")*

The above requirement is a mandatory obligation.

The National Climate Policies and Objectives all support the development, and by implication the consenting, subject to proper planning, of wind farm developments.

The mandatory obligation on the Board to exercise its decision-making functions *"in a manner consistent with"* National Climate Policies and Objectives takes precedence over the lessor obligation to merely *"have regard to"* the policies and objectives set out under Section 143(1) of the Planning Act.

Section 143(1) of the Planning Act provides that:

> *"The Board shall, in the performance of its functions (other than functions conferred by Chapter III of Part XXI), have regard to–*
>
> *(a) the policies and objectives for the time being of the Government, a State authority, the Minister, planning authorities and any other body which is a public authority whose functions have, or may have, a bearing on the proper planning and sustainable development of cities, towns or other areas, whether urban or rural,*
>
> *(b) the national interest and any effect the performance of the Board's functions may have on issues of strategic economic or social importance to the State, and*
>
> *(c) the National Planning Framework and any regional spatial and economic strategy for the time being in force."*

Further, the mandatory obligation on the Board to exercise its decision-making functions *"in a manner consistent with"* the National Climate Policies and Objectives also takes precedence over the lessor obligation to merely *"have regard to"* inter alia the *"policies and objectives for the time being of planning authorities"*[2]. These policies and objectives are set out in their development plans. In effect, this means that the Climate Act requires the National Climate Policies and Objectives set out therein to take precedence over the policies and objectives of planning authorities set out in development plans.

In practical terms, this means that where the Board is determining whether or not to grant consent to a wind farm development, it is obliged to make its decision in a way in which is consistent with the National Climate Policies and Objectives where a wind farm development complies with these policies but materially contravenes a development plan.

This is in a context where a development plan is mandated by the Planning Act to be consistent with such national plans, policies or strategies as the Minister determines relate to proper planning and sustainable development (insofar as is practicable)[3] and where local authorities have an obligation under the Climate Act to exercise their development-plan making functions *"in a manner consistent with"* the National Climate Policies and Objectives (as far as practicable).

More broadly, the Board is obliged to have regard to the national interest and any effect the performance of its decision-making functions may have on issues of strategic economic or social importance to the State[4]. The accelerated deployment of renewable energy developments is precisely such an issue of strategic economic and social importance to the State. Farm

[2] *Section 143(1)(a) of the Planning Acts.*
[3] *Section 9(6) of the Planning Acts.*
[4] *Section 143(1)(b) of the Planning Acts.*

Where an appeal is before the Board, it has the discretion to grant permission for a project that materially contravenes a development plan in certain specific circumstances. This is notwithstanding a planning authority having decided to refuse permission because a development materially contravenes the development plan.

In this regard, Section 37(2)(a) of the Planning Act provides that: *"... the Board may in determining an appeal under this section decide to grant a permission even if the proposed development contravenes materially the development plan relating to the area of the planning authority to whose decision the appeal relates."*

The specific circumstances where permission may be granted notwithstanding a material contravention are set out in section 37(2)(b), which provides that:

> *"Where a planning authority has decided to refuse permission on the grounds that a proposed development materially contravenes the development plan, the Board may only grant permission in accordance with paragraph (a) where it considers that–*
>
> > *(i) the proposed development is of strategic or national importance,*
> >
> > *(ii) there are conflicting objectives in the development plan or the objectives are not clearly stated, insofar as the proposed development is concerned, or*
> >
> > *(iii) permission for the proposed development should be granted having regard to regional spatial and economic strategy for the area, guidelines under section 28, policy directives under section 29, the statutory obligations of any local authority in the area, and any relevant policy of the Government, the Minister or any Minister of the Government, or*
> >
> > *(iv) permission for the proposed development should be granted having regard to the pattern of development, and permissions granted, in the area since the making of the development plan."*

When the Board is deciding whether or not it considers that notwithstanding a material contravention it should grant permission, it is under a mandatory obligation to make its decision in a manner consistent with the National Climate Policies and Objectives.

Unlike other types of development, renewable wind farm developments as a matter of principle are supported by, and support, all of the National Climate Policies and Objectives.

Therefore, in light of the following:

a) The mandatory obligation imposed on the Board to exercise its decision-making functions in a manner consistent with National Climate Policies and Objectives under Section 15 of the Climate Act;

b) The mandatory obligation on the Board to have regard to the national interest and any effect the performance of its decision-making functions may have on issues of strategic economic or social importance to the State, such as achievement of the State's National Climate Policies and Objectives, under section 143(1)(b) of the Planning Act;

c) The mandatory obligation on the Board to exercise its decision-making functions *"in a manner consistent with"* the National Climate Policies and Objectives taking precedence over the lessor obligation to merely *"have regard to"* inter alia the *"policies and objectives for the time being of planning authorities"*;

d) The mandatory obligation on local authorities to exercise their development-plan making functions *"in a manner consistent with"* the National Climate Policies and Objectives (as far as practicable);

e) The mandatory requirement that a development plan be consistent with such national plans, policies or strategies as the Minister determines relate to proper planning and sustainable development (insofar as is practicable); and

f) The compliance in principle of renewable wind farm developments with the National Climate Policies and Objectives;

subject to the consideration by the Board of what constitutes proper planning and sustainable development in light of the above, it is entitled to exercise its discretion to afford a presumption in favour of granting permission for wind energy developments such as the Proposed Development, notwithstanding any material contravention of a local development plan.

Section 37(2)(b)(i)

As set out in national policy, and discussed further in Section 4.2, wind farm developments such as the Proposed Development, are of strategic importance for Ireland to meet its binding renewable energy targets.

A wind farm development need not be considered a Strategic Infrastructure Development (SID) under the thresholds established in the 7th Schedule of the Planning Act (i.e. those for wind farm developments with fewer than 25 turbines or an output less than 50MW) to fully meet the requirements under this provision.). It is sufficient that the project be strategic insofar as it contributes to Ireland meeting its climate, renewable energy and energy security targets.

This is particularly the case, where land, environmental and grid constraints dictate that in certain areas onshore wind farm developments with a relatively small number of turbines are required to meet the targets.

Section 37(2)(b)(iii)

Under Section 37(2)(b)(iii) the Board may consider that permission should be granted notwithstanding a material contravention of a local development plan having regard to:

a) *regional spatial and economic strategy for the area,*
b) *guidelines under section 28,*
c) *policy directives under section 29,*
d) *the statutory obligations of any local authority in the area, and*
e) *any relevant policy of the Government, the Minister or any Minister of the Government.*

In relation to (d) above, it should be noted that statutory obligations of any local authority in the area are inter alia to:

a) *Exercise their development-plan making functions "in a manner consistent with" the National Climate Policies and Objectives (as far as practicable);*
b) *Make their development plans consistent with such national plans, policies or strategies as the Minister determines relate to proper planning and sustainable development (insofar as is practicable); and*

In relation to (e) above, it should be noted that wind farm developments in principle comply with National Climate Policies and Objectives.

Discretion to refuse permission

The Board also has the discretion to refuse permission. However, in exercising its discretion it must weigh the competing interests where a project is supported by and supports the achievement of the National Climate Policies and Objective but materially contravenes the policies and objectives of a local development plan.

In weighing those competing interests, it must have regard to *inter alia*:

- the key findings in Ireland's Greenhouse Emissions Projections 2022 - 2040[5] inter alia that Ireland is not on track to meet the 51% emissions reduction target by 2030 based on these projections which include most 2023 Climate Action Plan measures;
- the Renewable Energy Directive III published in the Official Journal of the EU on 31 October 2023;
- the fact that it took on average, 85 weeks for the Board to determine the 12 planning appeals on onshore wind farms determinations made from January 2022 to November 2023 inclusive;
- that wind farms can only enter an "enduring connection process" (ECP) to apply for a grid connection after planning permission has been granted, and since 2018, the opportunity to make applications in the ECP process has only opened for a one month period each year; and
- the typical 18 – 24 months period it takes for a wind farm development to be built and energised.

Should the Board be minded to exercise its discretion to refuse permission, in doing so, it must in light of its obligations under the Climate Act in particular, first consider whether inviting further information and / or modified plans from the applicant would enable permission to be granted and if it considers that it would not, provide its reasons as to why it is of that opinion. In this regard, the Board has the discretion to require an applicant to submit further information.[6] The Board may make such requests *"in its absolute discretion."*[7]

Should the Board be minded to exercise its discretion to refuse permission having arrived at the opinion that further information and / or modified plans would not enable permission to be granted, in doing so, it must in light of its obligations under the Climate Act in particular, provide its reasons as to why it considers that a refusal would not be in breach of the National Climate Policies and Objectives, including in particular, the Climate Action Plan 2023 target of delivering 6MW of onshore renewable wind energy by 2025 and 9GW by 2030.

---

[5] https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-greenhouse-gas-emissions-projections-2022-2040.php *This report provides an updated assessment of Ireland's total projected greenhouse gas emissions out to 2040 which includes an assessment of progress towards achieving its National ambitions under the Climate Action and Low Carbon Development (Amendment) Act 2021 and EU emission reduction targets for 2030 as set under the EU Effort Sharing Regulation (Regulation (EU) 2018/842).*

[6] *Section 132 of the Planning Act.*

[7] *Section 132 of the Planning Act.*

4. GROUNDS OF APPEAL

4.1 Introduction

The first-party grounds of appeal, which our client wishes to raise in respect of the refusal by Tipperary County Council are set out in this section below. The Grounds of Appeal are set out against each of the reasons for refusal which can be summarised as follows:

- Refusal Reason 1: Wind Energy Planning Policy
- Refusal Reason 2: Impact on Ornithology
- Refusal Reason 3: Traffic and Transport

4.1.1 Why this wind Farm is needed

The world is on fire!

To combat the effects of climate change, Ireland must decarbonise its economy by 2050. There is no "silver bullet" or magic solution to do so. It will take hundreds, if not thousands, of individual renewable energy projects to decarbonise the Irish economy. The scale of the challenge we face to decarbonise the Irish economy is enormous, but the climate change implications of not doing so are even greater. There is no other way to decarbonise a modern society except through renewable energy projects such as the Proposed Development.

In 2020, Ireland was confirmed as a world leader in onshore wind energy, with no other country providing a greater share of its electricity from onshore wind[8], when a total of 40.23% of the country's electricity was generated from renewable sources, the vast majority of which came from onshore wind. As a country, we only became world leaders by consenting and building one wind farm at a time. Now, with the Government's 2023 Climate Action Plan requiring the amount of onshore wind energy to increase from just over 4,000MW to 9,000GW by 2030 (just seven years away), hundreds of additional wind farms will have to be connected to the national grid over the rest of this decade. In the same way we only achieved our 2020 target of 40% renewable electricity target one wind farm at a time, we will only get to our new target of 9,000MW of onshore wind energy by 2030, one wind farm at a time.

Every wind farm project counts.

Carrig Renewables Wind Farm will count. The Proposed Development will contribute towards the Government's Climate Action Plan's 9,000MW target for installed onshore wind energy and target of 80% renewable electricity. The 80% renewable electricity target must be achieved by 2030. Not 2040. Not 2050. By 2030.

Why is the Proposed Development needed? Why do we need to decarbonise the Irish economy?

The global climate is breaking down as a result of greenhouse gas emissions from the burning of fossil fuels. News stories of climate change-related extreme weather events are now a constant in the daily news cycle. On the back of unprecedented extremes experience in summer 2023, UN Secretary-General, in September 2023 issued the following statement[9]:

---

[8] https://www.ren21.net/wp-content/uploads/2019/05/gsr_2020_full_report_en.pdf

[9] https://www.un.org/sg/en/content/sg/statement/2023-09-06/secretary-generals-message-the-hottest-summer-record?_gl=1*1ofsg1o*_ga*MTYwNzQ1MzU1Ljc3MDE4NDg3NTI.*_ga_S5EKZKSB78*MTcwMTg4NzgwNS4xLjAuMTcwMTg4NzgwOS41Ni4wLjA.*_ga_TK9BQL5X7Z*MTcwMTg4NzQwMS4yLjEuMTcwMTg4NzgwNS4wLjAuMA..

"The dog days of summer are not just barking, they are biting.

Our planet has just endured a season of simmering – the hottest summer on record. ***Climate breakdown has begun.***

Scientists have long warned what our fossil fuel addiction will unleash. ***Our climate is imploding faster*** *than we can cope with extreme weather events hitting every corner of the planet.*

Surging temperatures demand a surge in action.

Leaders must turn up the heat now for climate solutions.

We can still avoid the worst of climate chaos – and ***we don't have a moment to lose."***

According to the World Meteorological Organisation's 30th November 2023 report[10]:

- Based on the data to October, it is virtually certain that 2023 will be the warmest year in the 174-year observational record, surpassing the previous joint warmest years, 2016 and 2020.
- June, July, August, September and October 2023 each surpassed the previous record for the respective month by a wide margin in all datasets used by WMO for the climate report.
- July 2023 became the all-time warmest month on record.
- Global average sea-surface temperatures (SSTs) were at a record observed high for the time of year, starting in the late Northern Hemisphere spring. For April through September 2023 (the latest month for which we have data), SSTs were all at a record warm high, and the records for July, August and September were each broken by a large margin (around 0.21 to 0.27 °C).
- In 2023, global mean sea level reached a record high in the satellite record (since 1993), reflecting continued ocean warming as well as the melting of glaciers and ice sheets. The rate of global mean sea level rise in the past ten years (2013–2022) is more than twice the rate of sea level rise in the first decade of the satellite record (1993–2002).

Extreme weather and climate events are having major impacts on all continents, as documented in the World Meteorological Organisation's 30th November 2023 report:

- Flooding associated with extreme rainfall from Mediterranean Cyclone Daniel affected Greece, Bulgaria, Türkiye, and Libya with particularly heavy loss of life in Libya in September 2023.
- Tropical Cyclone Freddy in February and March 2023 was one of the world's longest-lived tropical cyclones with major impacts on Madagascar, Mozambique and Malawi. Tropical Cyclone Mocha, in May, was one of the most intense cyclones ever observed in the Bay of Bengal.
- Extreme heat affected many parts of the world. Some of the most significant were in southern Europe and North Africa, especially in the second half of July where severe and exceptionally persistent heat occurred. Temperatures in Italy reached 48.2 °C, and record-high temperatures were reported in Tunis (Tunisia) 49.0 °C, Agadir (Morocco) 50.4 °C and Algiers (Algeria) 49.2 °C.

[10] https://wmo.int/resources/publications/provisional-state-of-global-climate-2023

- Canada's wildfire season was well beyond any previously recorded. The total area burned nationally as of 15 October was 18.5 million hectares, more than six times the 10-year average (2013–2022). The fires also led to severe smoke pollution, particularly in the heavily populated areas of eastern Canada and the north-eastern United States.

In Ireland, extreme weather and climate events driven by climate change are also having major impacts:

- March 2023 was the wettest March on record at four stations in Ireland.
- June 2023 was the hottest June on record in Ireland, with average day and night temperatures above 16 degrees.
- July 2023 brought flash floods in Donegal after 76mm of rain fell on a single day.
- July 2023 was the wettest July on record at 12 weather stations across Ireland.
- September 2023 saw all-time temperatures records broken fourteen Irish weather stations.

There is now a widespread consensus amongst scientific and political leaders on the need for rapid, dramatic and systemic change to combat the effects of climate change and decarbonise the global and Irish economies through the use of renewable energy. This is highlighted in the following comments and report extracts.

> *"Leaders must act now to save humanity from the worst impacts of climate chaos, and profit from the extraordinary benefits of renewable energy. That means ending our fossil fuel addiction by shrinking supply, driving down demand, and accelerating the renewables revolution, as part of a just transition."*
> António Guterres, United Nations Secretary-General – November 2023

> *"Never before have the alarm bells been ringing so loudly. We must rise to this challenge. I believe we can. We cannot prevent climate change, we're well past that point, but by acting urgently now, we can limit its extent and mitigate its worst effects."*
> Taoiseach Leo Varadkar, in his address to COP 28, 2nd December 2023

> *Ireland is not on track to meet the 51 per cent emissions reduction target (by 2030 compared to 2018) based on these projections which include most 2023 Climate Action Plan measures. Further measures still need to be identified and implemented to achieve this goal.*
>
> *The first two carbon budgets (2021-2030), which aim to support achievement of the 51 per cent emissions reduction goal, are projected to be exceeded by a significant margin of between 24 and 34 per cent.*
>
> *Sectoral emissions ceilings for 2025 and 2030 are projected to be exceeded in almost all cases, including Agriculture, Electricity, Industry, and Transport.*
> Ireland's Greenhouse Gas Emissions Projections. Environmental Protection Agency – June 2023[11]

> *"We need faster progress on the actions set out in national climate action plans to decarbonise and transform all sectors of Ireland's economy, to stay within National Carbon Budgets and reduce our Greenhouse Gas emissions by 51 per cent by 2030."*

[11] https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-greenhouse-gas-emissions-projections-2022-2040.php

Laura Burke, Director General, EPA, launching the Greenhouse Gas Emission Inventory 1990-2022 Report[12]

Ireland will not meet the targets set in the first and second carbon budget periods unless urgent action is taken immediately and emissions begin to fall much more rapidly.
Climate Change Advisory Council – Annual Review 2023[13]

The world is on a disastrous trajectory. Crossing one harmful tipping point could trigger others, causing a domino effect of accelerating and unmanageable change to our life-support systems.
The Global Tipping Points Report 2023. University of Exeter, Exeter, UK[14].

Every wind farm project counts.

Carrig Renewables Wind Farm will count.

[12] https://www.epa.ie/news-releases/news-releases-2023/irelands-2022-greenhouse-gas-emissions-show-a-welcome-decrease-but-much-work-remains-to-be-done.php
[13] https://www.climatecouncil.ie/councilpublications/annualreviewandreport/CCAC_AR_2023_FINAL%20Compressed%20web.pdf
[14] https://global-tipping-points.org/download/4608/

4.2 Reason for Refusal 1 - Policy

Tipperary County Council's first reason for refusal is stated as follows:

"Notwithstanding the general Planning Policy support for wind energy generation at national, regional and local policy level, including:
Policy 3-1 which seeks to ***'promote and facilitate renewable energy development, in accordance with the policies and objectives of the Tipperary Renewable Energy Strategy 2016 (and any review thereof), and the Tipperary Climate Adaptation Strategy 2019'****, the proposed development is located on lands identified as an area unsuitable for new wind energy development within the Tipperary Renewable Energy Strategy. Furthermore, it is considered that the proposed development would not, come within the limited circumstances provided for in policy TWIND 4.14. of the Wind Energy Strategy in the Renewable Energy Strategy.*
Accordingly, it is considered that the proposed development would contravene materially the policies and objectives of the Tipperary County Development Plan 2022 - 2028, specifically Volume 3, Appendix 2, Tipperary Renewable Energy Strategy, Wind Energy Strategy, Policy TWIND 4. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area."

4.2.1 Grounds of Appeal against Reason for Refusal 1

It is acknowledged that the Proposed Development is located on lands identified as an area unsuitable for new wind energy development within the Tipperary Renewable Energy Strategy (RES). It is considered by Tipperary County Council that the proposed development would materially contravene the policy and objectives of the Tipperary County Development Plan 2022-2028, specifically Volume 3, Appendix 2, Tipperary Renewable Energy Strategy, Wind Energy Strategy, Policy TWIND 4.

The strategic and national policy framework on which the RES was based has now changed significantly, and there is now an increased urgency for the accelerated delivery of renewable energy, in order to meet international and national renewable energy targets, that was not present when the current RES for Tipperary was adopted in 2016. For example, three Climate Action Plans (2019, 2021, 2023) have now been published by the Irish Government since the adoption of the RES in 2016 committing the State to achieving 9GW of onshore wind and 80% RES-E by 2030.

Given that Tipperary is the sixth largest county in Ireland and has a population density of 39 per km^2, considerably lower than the national average of 73 persons per km^2, the county's 600MW overall target a with 125 MW target for new wind farms is noticeably low. The lifetime of the CDP (2022 – 2028), is arguably the most critical period in which mitigation measures must be taken to avoid the catastrophic impacts and to keep global heating to less than 1.5 °C[15]. It is possible for Tipperary to deliver more than 125MW of wind energy over the lifetime of the CDP. When considering this fact alongside the urgency of the transition to a low carbon society, it is clear that this target is too low and should not hinder development of wind energy in the County.

The key national energy, climate and planning policies that have changed in the intervening seven years since the WES was first adopted are shown in timeline format in Figure 2 below. The WES has remained unchanged in the intervening period. Despite having been incorporated into the Tipperary County Development Plan 2022 – 2028, the 2016 RES has not kept pace with the more recent key national energy, climate and planning policies and is therefore outdated, out-of-step and obsolete as a planning policy document.

[15] https://www.ipcc.ch/sr15/

This has resulted in a scenario where the RES is at odds with international and national policy including inter alia the Climate Action Plan, REPowerEU and the National Energy Security Framework. The unfavourable policy classification that applies to the subject site, conflicts with, and hinders the achievement of, the Council's target of delivering 600MW of wind energy by 2028.

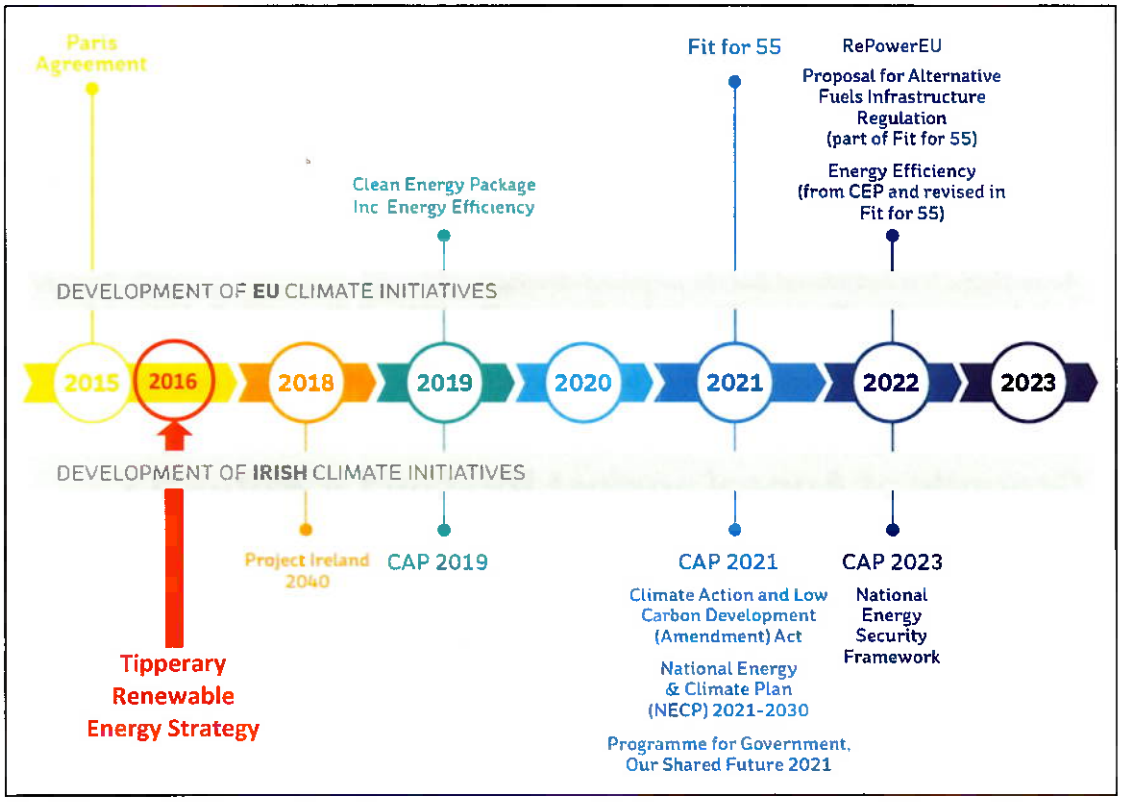


Figure 2: Timeline of publication of key national energy, climate and planning policy documents, since Tipperary RES was first adopted in 2016.

The misalignment between Local and International/National/Regional policy is further emphasised following the Wind Energy Capacity Assessment for the County that was carried out by MKO on behalf of the Applicant and which was submitted with the Application (refer to Section 3 of the Planning Policy Rationale Report). The Wind Energy Capacity Assessment specifically analyses the capability of the existing RES to meet the relevant renewable energy targets throughout this document. By conducting this capacity exercise, the assessment evaluated the extent to which the local policy can effectively contribute towards achieving the renewable energy targets set at both the local and national levels.

This capacity assessment shows that 0.52% (22.45km^2) of the lands classified in the RES as 'open for consideration' in the County are viable, and these lands would not be capable of delivering a sufficient quantum of wind energy to meet the relevant national targets and potentially the County's own renewable energy targets. Operational wind farms typically accommodate installed generating capacities of approximately 10 megawatts per square kilometre of viable area. Therefore, the 22.45km^2 of areas in Co. Tipperary that could viably accommodate a wind farm, could only deliver a theoretical maximum of approximately 225MW of installed capacity. However this is before technical constraints are considered such as land availability, planning and legal risk and grid capacity etc.

Upon review of the sieve mapping analysis undertaken as part of the wind energy zoning map process, it appears that the classifications of the site of the proposed development is based on two factors; the presence of Peat-based Quaternary Sediments and the presence of Designated Sites. While it is not conclusive, the wind energy zoning in the area of the county in which the Proposed Development is

located broadly aligns with these constraints, shown on map 7 and 8 in the RES. Considering the presence of peat, Tipperary County Council, in the Planner's Report, were satisfied that the impact on land, soils and geology are localised and that significant cumulative impacts are not anticipated. The impact of the Proposed Development on Designated sites is detailed in the NIS and clarified further in section 4.4 of this report.

Notwithstanding the above, it is noted that under Section 37(2)(a) of the Planning Act, An Bord Pleanála may grant permission even if the proposed development contravenes materially the development plan relating to the area of the planning authority to whose decision the appeal relates. Where planning permission has been refused on the basis of a material contravention, An Bord Pleanála may only grant permission where it considers the proposed development falls within the circumstances set out in Section 37(2)(b), which are as follows:

> *(i) the proposed development is of strategic or national importance,*
>
> *(ii) there are conflicting objectives in the development plan or the objectives are not clearly stated, insofar as the proposed development is concerned,*
>
> *or*
>
> *(iii) permission for the proposed development should be granted having regard to regional spatial and economic strategy for the area, guidelines under section 28, policy directives under section 29, the statutory obligations of any local authority in the area, and any relevant policy of the Government, the Minister or any Minister of the Government,*
>
> *or*
>
> *(iv) permission for the proposed development should be granted having regard to the pattern of development, and permissions granted, in the area since the making of the development plan.*

Having regard to the provisions of Section 37(2)(b) of the Planning Act, it is considered that a grant of permission would be justified in this instance under sub sections (i), (ii) and (iii) of the Planning Act based on the following reasons and considerations set out below.

4.2.1.1 The Proposed Development is of strategic or national importance

It is submitted that the Proposed Development is of strategic and national importance based on the following reasons which are set out in detail below.

- Energy Security
- Contribution to National Renewable Energy Targets
- Contribution to legally binding National Climate Targets
- Economic and Social Importance

It is noted that, although carried out under a separate section of the Planning Act, the Board frequently considers wind energy developments of similar scale to that of the Proposed Development, to be of '*strategic economic or social importance to the State*'. For a wind energy project to be considered SID under Section 37A (2) of the Planning Act, the development must be considered to be either:

- The development must be of strategic economic or social importance to the State or the Region in which it would be situate;

- The development would contribute substantially to the fulfilment of any of the objectives in the National Planning Framework or in any regional spatial and economic strategy in force in respect of the area in which it would be situate;
- The development would have a significant effect on the area of more than one planning authority.

The Board, in determining a wind energy project to meet the SID criteria, often consider wind energy developments to be '*of strategic economic or social importance to the State*' due to their economic contribution and their assistance in meeting national renewable energy and climate targets (see for example case ref: ABP-315851-23, ABP-307058-20, ABP-312224-21). It is submitted that this also applies in this instance to the Proposed Development.

Energy Security

In 2022, a substantial 82% of Ireland's energy needs were met through imports, marking an increase from the 77% recorded in the previous year of 2021[16]. Among the imported energy sources, 48% was derived from oil, while nearly 31% was sourced from natural gas. This heavy reliance on imported energy places Ireland as one of the most import dependent countries in the EU. This leaves Ireland critically exposed to the significant risks associated with being heavily reliant on other nations to supply our energy needs. The main risks associated with high energy importation are outlined below:

Economic vulnerability: A high dependence on imported energy makes Ireland economically vulnerable to fluctuations in global energy prices. Sudden spikes or disruptions in the supply chain can lead to increased costs, negatively impacting the overall economy.

Trade Imbalances: Importing a significant portion of energy can contribute to trade imbalances. The money spent on energy imports represents a substantial outflow of capital from the country. Ireland currently spends 1 million euro an hour importing fossil fuels[17].

Geopolitical Risks: Relying on energy imports exposes Ireland to geopolitical risks. Political tensions, conflicts or natural disasters in the regions from which energy is sourced can disrupt the supply chain and lead to uncertainty in meeting domestic energy needs. This is evident by the impact of the war in Ukraine on the country's energy supply.

Environmental Impacts: The vast majority of Ireland's imported energy is fossil fuels. This increases Ireland's carbon emissions and hinders the country's ability to the meet climate targets set out in national legislation and policy such as the Climate Action Plan 2023 and the Climate Action and Low Carbon Development (Amendment) Act 2021.

In light of the overarching imperative to secure Ireland's energy needs in response to the war in Ukraine, the National Energy Security Framework (NESF) was published by the Department of the Environment, Climate and Communications in April 2022. The framework sets out a wide range of responses aimed at reducing our dependence on fossil fuels and speeding up the transition to renewables. The NESF includes 31 actions to enhance Ireland's energy security, the majority of which have been completed since the framework was introduced. Theme 3 of the NESF aims to reduce the country's dependency on imported fossil fuels. This involves replacing fossil fuels with indigenous renewable energy sources, such as wind energy. Response 25, brought into aid in achieving the aforementioned goal, seeks to *'Align all elements of the planning system to fully support accelerated renewable energy development'.*

The NESF fully supports the actions called for in the European Commission's REPowerEU plan. Under REPowerEU, the Commission has called on EU member states to speed up the permitting process and

[16] https://www.gov.ie/pdf/?file=https://assets.gov.ie/278173/4919d4e2-44ea-451a-855a-0229eeda4f4f.pdf#page=null
[17] https://windenergyireland.com/policy/electrifying-ireland

to view renewable energy generation projects and associated infrastructure are to be considered as in the 'overriding public interest'.

Following on from the NESF, the Department of the Environment, Climate and Communications recently published the policy document *'Energy Security in Ireland to 2030'*, which underscores the significance of safeguarding Ireland's energy supply. The energy security package aims to reduce Ireland's import dependency through energy efficiency measures and investment in a diverse number of renewable energy sources. This will be achieved by a set of short and medium-term actions, set out in the policy document, which prioritises the following

1. Reduced and Responsive Demand.
2. Renewables-Led System.
3. More Resilient Systems.
4. Robust Risk Governance.

A key finding from the technical analysis conducted as part of the energy security package states that '*energy security is systemically linked and dependent upon the twin pillars of harnessing our indigenous renewable energy resources at speed and at scale and the rapid electrification of energy demand*'[18]. As such, the energy security package provides additional measures to supplement the existing measures introduced under previously published government policy documents. Those additional measures most relevant to the Proposed Development are as follows:

> *'Action 10: To implement Planning and Consenting System Reforms and provide greater certainty to the sector.'*

The energy security package aims to ensure that the planning system is fully aligned and resourced to fully support accelerated renewable energy development. It also aims to ensure renewable energy projects are prioritised in line with the recast Renewable Energy Directive and RePowerEU.

The Proposed Development will meaningfully contribute towards the achievement of the aforementioned government policy relating to securing the State's energy security. The Proposed Development represents an indigenous renewable energy generating asset that can supply clean electricity to the national electricity grid. In the interest of securing the country's energy supply, the Proposed Development should be considered of strategic and national importance for these reasons.

National Renewable Energy Targets

The Climate Action Plan 2023 ('CAP23') launched in December 2022, sets out an updated roadmap to delivery on Ireland's climate ambition. It aligns with the legally binding economy-wide carbon budgets and sectoral ceilings that were agreed by Government in July 2022 following the Climate Action and Low Carbon Development (Amendment) Act 2021 (the Climate Act). The Climate Act commits Ireland to a legally binding target of net-zero greenhouse gas emissions no later than 2050, and a reduction of 51% by 2030.

The CAP23 further emphasised the continued role of onshore wind in addressing the decarbonisation of the electricity sector. Under the CAP23, **onshore wind targets are increased with a target of 6GW by 2025 and 9GW by 2030 is set out.** An increase in the deployment of renewable energy generation, transformational policies, measures and actions are all called for in the CAP23. Achieving further emissions reductions between now and 2030 requires a "*major step up*" across three key measures as follows:

- Accelerate and increase the deployment of renewable energy to replace fossil fuels;
- Deliver a flexible system to support renewables and demand;

[18] Energy Security in Ireland to 2030, Department of the Environment, Climate and Communications, pg 20

- Manage electricity demand.

In relation to the scale of the challenge, the CAP calls for *"a major acceleration and increase in onshore wind turbines across the country."* To accelerate renewable electricity generation a target of 9GW by 2030 of onshore wind is set, framed in the context of ensuring that renewable energy generation projects and associated infrastructure are considered to be "*in the overriding public interest*".

As of April 2023, the State has c. 4,700 MW of installed onshore wind capacity in Ireland and requires an additional 4,300 MW to be built to achieve the 9GW target set out in the CAP23[19]. This effectively means that Ireland needs to almost double its installed wind energy capacity over the next 6 years. This equates to installing an average of approximately 670 MW of onshore wind energy every year until 2030. For context, Ireland's wind energy capacity increased at an average rate of approximately 300MW per year between 2009 and 2019[20]. Since then, the installation rate has slowed, with 180MW added in 2020, 32 MW in 2021 and approximately 270 MW in 2022[21]. If Ireland continues to increase our MW capacity at our current rate, we will fall significantly short of the target of 9GW set out in the CAP 23. In order to achieve this target, every viable site brought forward for wind energy development must be systematically evaluated based on its individual merit and appropriateness for wind energy development.

Ireland is also bound by renewable energy targets at a European level. The 2018 revision of the Renewable Energy Directive (RED II) introduced a binding EU-wide target for overall RES of 32% in 2030 and requires Member States to set their national contributions to the EU-wide target. In accordance with RED II the Department of Communications, Climate Action & Environment (DCCAE) prepared the National Energy and Climate Plan (NECP) 2021-2030. Within this plan, Ireland's overall renewable energy share (RES) target is 34.1% by 2030. The NECP also set a target of reaching a 70% share of renewable electricity (RES-E) by 2030. This target was subsequently increased under the National Development Plan 2021 – 2030 to 80% by 2030. Table 2 below outlines the progress to date on RES and RES-E targets.

Table 2: National Renewable Energy & Electricity Progress

	2020	RES 2020 Note	2021*	Note	New 2030 Target
Overall RES	13.6%	Ireland failed to meet its target of 16%	12.5%	Drop is almost entirely due to the shift in the REDII methodology	34.1%
RES-E (Electricity from renewable energy sources)	39.1%	Ireland failed to meet its target of 40%	36.4%	RES-E fell by 2.6% to 36.4% with over half this drop due to the shift in the REDII methodology and exclusion of some biomass; the remaining drop was due to reduced renewable electricity generation due to less wind in 2021.	80%

[19] https://windenergyireland.com/images/files/wind-energy-ireland-pre-budget-2024-submission.pdf
[20] https://www.seai.ie/publications/Energy-in-Ireland-2022.pdf
[21] https://www.independent.ie/business/irish/we-need-more-wind-farms-quickly-if-we-want-to-hit-climate-action-targets-by-2030-warn-industry-leaders/42347050.html

Given the current status of our RES-E target, it is unsurprising to find that 95% of industry experts believe that Ireland will not reach its RES-E target of 80% by 2030, according to a study undertaken by KPMG in 2023[22].

The third revision of the European Commission's Renewable Energy Directive (RED III) entered into force on 20 November 2023. The RED III sets an overall renewable energy target of at least 42.5% binding at EU level by 2030 - but aiming for 45%. Most of the provisions in RED III will need to be transposed into Irish over the next 18 months. Irish RES targets will therefore likely be set for an increase in line with the updated EU target under RED III.

The decarbonisation of the electricity sector is crucial for achieving broader decarbonisation targets across sectors such as transport, heating and industry. Electricity will serve as the primary energy source for these sectors. By decarbonising the electricity sector, it will indirectly reduce the carbon emissions of other sectors by enabling them to transition to electric-powered technologies. For example, the roll out of electric vehicles (EVs) relies on a clean, renewable energy supply. The environmental benefits of EVs are drastically reduced if they are powered by a primarily fossil fuel powered electricity grid. For this reason, all of our energy targets, including transport and heat, hinge on the successful decarbonisation of the electricity sector.

Ireland needs to scale up onshore wind energy development at an unprecedented rate to achieve our 9GW target and 80% RES-E target. The reality of achieving these targets is the installation of over 600MWs per year until 2030. If permitted, the Proposed Development will be installed and operational before the end of the decade, adding approximately 43.4 MWs of renewable, clean energy to our national wind energy capacity. This will not only contribute to the decarbonisation of the electricity sector but will play a role in the decarbonisation of the other sectors and the transition to a low carbon, climate resilient economy. Thus, projects such as the Proposed Development are of strategic importance to the State.

National Climate Targets

The Climate Ac was signed into law on the 23rd of July 2021. The legislation legally binds Ireland to achieve net-zero emissions no later than 2050, and to a 51% reduction in emissions by 2030. The legislation also requires public bodies to, in so far as practical, perform its functions in a manner consistent with the national climate action plan, national long term climate action strategies, and other national climate adaption and mitigation objectives.

The Climate Action Plan 2021 sets an interim target to achieve a reduction of 51% in total carbon emissions over the period of 2018 to 2030 to ensure Ireland is on the right trajectory to meet the 2050 reduction in emissions targets. The latest research undertaken by the Environmental Protection Agency (EPA), projects a number of scenarios based on the implementation of existing policies and with additional measures being taken. The EPA projections show that in the *'With Existing Measures'* (WEM) scenario, Ireland can deliver an 11% reduction in greenhouse gas emissions by 2030 compared to the 2018 level. The *'With Additional Measures'* (WAM) scenario, including the provisions of the CAP 23, is projected to deliver a 29% reduction in emissions. The EPA conclude that under both scenarios, **even with the CAP 23 measures fully implemented, Ireland will not meet the 51% emissions target by 2030**[23].

[22] https://windenergyireland.com/images/files/act-now-accelerating-onshore-renewable-energy-in-ireland.pdf
[23] https://www.epa.ie/publications/monitoring-assessment/climate-change/air-emissions/EPA-GHG-Projections-2022-2040_Finalv2.pdf

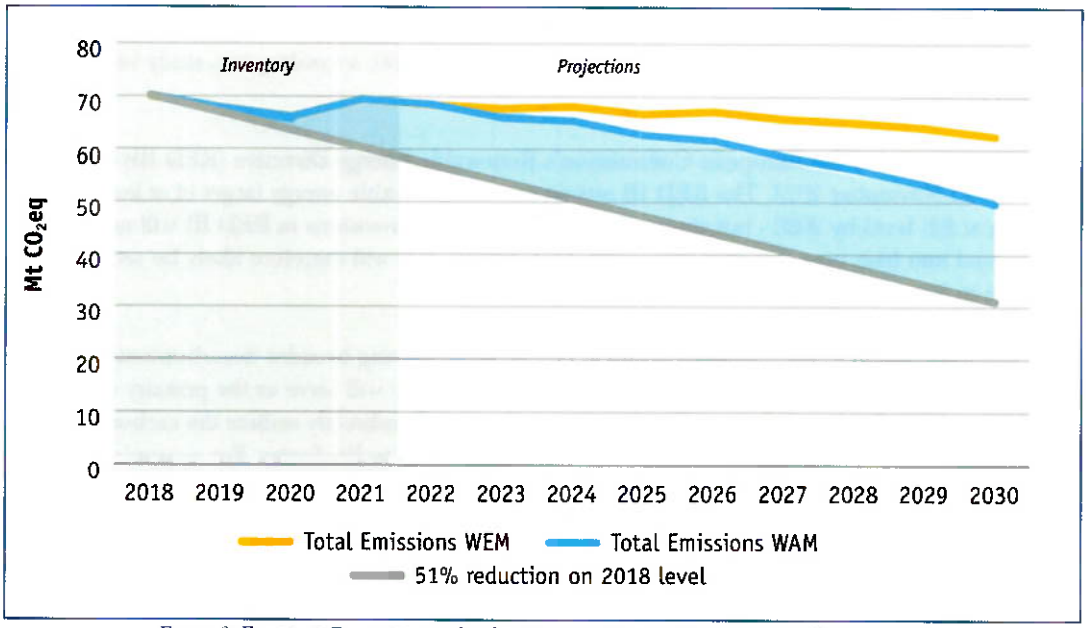


Figure 3: Emissions Projections under the EPA's WEM and WAM scenarios (source: EPA)

To achieve the 51% emissions reduction target, the Climate Act, requires the Climate Change Advisory Council (CCAC) to recommend a proposed programme of economy-wide 5-year Carbon Budgets to the Minister for the Environment, Climate and Communications. The first national carbon budget programme proposed by the Climate Change Advisory Council, approved by Government and adopted by both Houses of the Oireachtas in April 2022 comprises three successive 5-year carbon budgets[24]. The total emissions allowed under each budget are shown in Table 3 below.

Table 3: Carbon Budgets of the Climate Change Advisory Council

	2021 – 2025 Carbon Budget 1	2026 – 2030 Carbon Budget 2	2031 – 2035 Provisional Carbon Budget 3
	All Gases		
Carbon Budget (Mt CO_2eq)	295	200	151
Annual Average Percentage Change in Emissions	-4.8%	-8.3%	-3.5%
The figures are consistent with emissions in 2018 of 68.3 Mt CO_2eq reducing to 33.5 Mt CO_2eq in 2030, thus allowing compliance with the 51% emissions reduction target by 2030.			

Based on the EPA's WEM and WAM projections the following exceedances are predicted across the budget periods:

- Budget 1 from 2021-2025 has been proposed at 295 Mt CO2 eq. In the WEM scenario this is projected to be **exceeded** by 45 Mt CO2 eq and in the WAM scenario by 37 Mt CO2 eq.
- Budget 2 from 2026-2030 has been proposed at 200 Mt CO2 eq. In the WEM scenario this is projected to be **exceeded** by 125 Mt CO2 eq and in the WAM scenario by 80 Mt CO2 eq.

[24] *Climate Change Advisory Council Carbon Budget Technical Report (October 2021)* https://www.gov.ie/en/publication/9af1b-carbon-budgets/

- Budget 3 from 2031-2035 has been proposed at 151 Mt CO2 eq. In the WEM scenario this is projected to be **exceeded** by 160 Mt CO2 eq and in the WAM scenario by 93 Mt CO2 eq.

Section 6C of the Climate Act provides that the Minister shall prepare, within the limits of the carbon budget, the Sectoral Emissions Ceilings. These ceilings set out the maximum amount of greenhouse gas emissions that are permitted in each sector. The Government approved Sectoral Emissions Ceilings on 28 July 2022. The electricity sector is allocated a sectoral ceiling of 40 Mt CO2 eq for the first budget (2021-2025) and a sectoral ceiling of 20 Mt CO2 eq for the second budget period (2026-2030). The electricity is projected to have high (percentage) exceedances, with 45.2 Mt CO2 eq projected for the first budget period and 28.2 Mt CO2 eq projected for the second budget period under the WAM scenario. In 2022, the electricity sector emissions were 10.1 Mt CO2 eq.

As outlined in the previous section, the electricity sector is central to wider societal decarbonisation. Onshore wind energy is and will continue to be the main driver of decarbonisation in the electricity sector. It is therefore imperative that wind energy projects are delivered to achieve critical climate targets. In this context, it is submitted that the Proposed Development is of strategic and national importance given the fact that wind energy developments are crucial to the achievement of legally binding European and national climate targets.

Economic and Social Importance

Wind energy developments provide both economic and social benefits to Irish society. Social benefits include supports for local communities, investment in rural areas, mitigation of climate impacts on future generation and cleaner, less polluted air . Economic benefits include increased economic activity, employment generation, local rates and financial contributions to Local Authorities, taxes and capital investment. Wind Energy developments provide social and economic benefits to the locality in which they are situated, often rural areas in need of economic revitalisation, as well as making a significant contribution to the Irish economy as a whole.

Capital investment expenditure associated with wind energy development provides an injection of income into both the industry supply chain and the wider economy. The wind energy economic value chain starts at the project design stage with employment across planning, environmental, engineering, legal, geotechnical and other professional sectors. The installation process of wind turbines is a labour-intensive process which provides high-skilled construction and electrical engineering employment. The Proposed Development will employ up to 70 employees during the project's construction phase. The operational phase of a wind energy development is less labour intensive, nonetheless repair and maintenance work provide stable employment across the communities in which they are located. This value chain includes major international and local wind energy developers, operating alongside a host of local businesses and suppliers. The direct, indirect and induced impacts of the wind energy supply chain make a significant contribution to the Irish economy. A report published by KPMG in 2021 estimates that if onshore wind energy targets are reached by 2030 (based on CAP19 target of 8.2 GW by 2030), the total economic impact arising from the required level of capital investments would be nearly €2.7 billion through to 2030[25].

The Proposed Development represents a significant investment of c. €92 million euro in a rural area, in the renewable energy industry which is essential for diversifying the energy sector, contributing to innovation in the rural economy and delivering on climate and energy targets. National Planning Objective 21 of the NPF aims to *'Enhance the competitiveness of rural areas by supporting innovation in rural economic development and enterprise through the diversification of the rural economy into new sectors and services, including ICT-based industries and those addressing climate change and sustainability'*. The Proposed Development is directly supporting economic growth in rural north Tipperary while also contributing to national, regional and local climate and renewable energy targets.

[25] https://windenergyireland.com/images/files/economic-impact-of-onshore-wind-in-ireland.pdf

The Renewable Energy Support Scheme (RESS) is a key driver of renewable energy projects in Ireland. The RESS supports the development of renewable energy generation, replacing fossil fuels on the electricity grid. A key aspect of the RESS is that the communities in which renewable energy developments are located should benefit directly from the energy being produced. A community benefit fund must be established to ensure that this takes place. Community benefit funds are used to enhance the wider economic, environmental, social and cultural well-being of the local community. Under the RESS, electricity generators must contribute €2 to the fund per MWh of electricity produced. 40% of the community benefit fund is reserved for projects which contribute to the achievement of the United Nation's Sustainable Development Goals. The community benefit fund is also distributed to not-for-profits clubs and societies and to households in close proximity to the renewable energy developments. Community benefit funds represent a vital source of economic revitalisation for rural communities across Ireland who have long suffered from outward migration and economic decline. If permitted and constructed, the Proposed Development will contribute an estimated €265,000 per year to the community benefit fund, assuming it becomes a RESS project.

Climate change will have an economic and social impact globally and in Ireland. The impact of climate change will be seen on public finances. Climate change will cause more extreme weather events, the severity and frequency of such will increase if climate targets are missed. Historically, Ireland has been relatively unaffected by extreme weather events, however, as global temperatures rise it is likely that Ireland will face extreme weather events more frequently. A recent study published by the Irish Fiscal Advisory Council, estimates that as extreme weather events become more frequent, the cost associated with them will double from 0.1% of Gross National Income (GNI) to 0.2% of GNI[26]. Taking flooding as an example, the DCCAE estimate that by 2050 flood damages will cost €1.15 billion per year. Costs will also arise from the development of adaptation measures. Under the National Development Plan 2021–2030, a total of €1.3 billion was allocated to flood defences.

As detailed in the previous section, Ireland is legally bound to achieve carbon neutrality by 2050. If Ireland fails to meet climate targets, as predicted by the EPA under current policy measures, there will be a fiscal cost incurred. A publication prepared as part of the Government's spending review 2023 estimated that based on current plans, the cumulative cost of non-compliance with climate targets by 2030 could be up to €3.5 billion[27]. While it is acknowledged that the energy transition will be costly, it is predicted that the cost of inaction could be far greater if it results in a more catastrophic climate change impact.

Considering all the above, it is clear that wind energy developments, such as the Proposed Development, contribute significantly to economic and social development. Investment in wind energy infrastructure generates employment, stimulates local and regional economies, and fosters community growth through community benefit funds. Wind energy developments are an integral part of Ireland's plan to decarbonise our economy and society, mitigating against the negative impacts and financial burden of climate change on future generations. In conclusion, the Proposed Development contributes to long-term economic sustainability and the transition to a low carbon and climate resilient society. For all the reasons outlined above, the Proposed Development should be considered to be of strategic and national importance due to its contribution to the sustainable social and economic growth of the Region and the State.

---

[26] *https://www.fiscalcouncil.ie/wp-content/uploads/2023/10/What-climate-change-means-for-Irelands-public-finances-Casey-and-Carroll-2023-Irish-Fiscal-Advisory-Council.pdf*

[27] *https://www.gov.ie/pdf/?file=https://assets.gov.ie/246850/5982d0ec-1590-4caf-8c40-ce8bf178f5fc.pdf#page=null*

4.2.1.2 Conflicting Objectives in the Development Plan

It is submitted that there are conflicting objectives in the development plan or the objectives are not clearly stated, insofar as the proposed development is concerned.

4.2.1.2.1 *Introduction*

There are clear and obvious conflicting objectives in the Tipperary County Development Plan 2022 – 2028 (2022 – 2028 CDP) insofar as it relates to climate change, renewable energy ambition and specifically wind farm developments such as the Proposed Development.

The Tipperary Renewable Energy Strategy (RES) has remained unchanged since it was first prepared in 2016, despite having been incorporated into the 2022–2028 CDP. The 2016 RES is outdated, out-of-step and effectively obsolete as a planning policy document to guide wind farm development because it is no longer fit-for-purpose in light of the significantly increased Government ambition and significant more onerous national climate policies and legislation which have been adopted and enacted since 2016. The climate change, renewable energy and low-carbon Government policies and legislation of today bear no resemblance to the policies of 2016. The 2016 Tipperary RES may as well be from another era.

The 2016 Tipperary RES cannot deliver on the other objectives and policies of the 2022–2028 CDP, despite the RES being included as Appendix 2 to the 2022–2028 CDP.

The 2022–2028 CDP refers to the relevant recent national climate change, renewable energy and strategic planning policy documents. The 2022–2028 CDP is ambitious in the statements it makes in relation to climate action, decarbonisation and the need for much greater focus on renewable energy. However, the 2016 RES is a millstone around the neck of the 2022–2028 CDP. The 2016 RES will singularly prevent the 2022–2028 CDP from delivering on the policies and objectives of the 2022–2028 CDP, rather than facilitating them. The 2016 RES was a good strategy in its day, when it was produced over the course of 2015 and 2016 before being adopted in September 2016. It is no longer fit-for-purpose, for the reasons that will be outlined further below.

4.2.1.2.2 *Relevant Policies of the Tipperary County Development Plan 2022 – 2028*

Section 1.3.4 of the 2022–2028 CDP states:

> *"This Plan has embedded the duel principles of climate adaptation and climate mitigation through its core strategy, and policies and objectives with a climate resilient, sustainable and low-carbon county vision are specifically addressed in Chapter 3 Low-Carbon Society and Climate Action. The Council will seek to support the emissions reductions targets as set out in the Programme for Government and prepare a Climate Action Plan for Tipperary."*

Tipperary County Council cannot support the emissions reductions targets as set out in the Programme for Government with a RES that was adopted in 2016 before the Programme for Government was prepared, before any of the three Climate Action Plans published to-date became Government policy, and before the enactment of the Climate Action and Low Carbon Development (Amendment) Act 2021.

Section 2.4 of the 2022–2028 CDP recognises the changing policy environment relating to climate change as follows:

> *"The Government through the Climate Action and Low Carbon Development (Amendment) Act 2021 (DECC, 2021), and its own Programme for Government, has set a legally binding*

target of net-zero emissions by 2050, with an ambition to more than halve carbon emissions over the course of the decade to 2030. This target will require transformative change in planning for homes, transport, employment and infrastructure and the years to 2030 are critical in making this change. This target is underpinned by the core ambitions of this Plan.

The Plan, as a spatial planning strategy, addresses international, national and regional policy relating to climate action, including the need to plan for compact growth, better building energy efficiency, much greater focus on renewable energy, the decarbonisation of transport, opportunities for active travel, urban greening, nature-based surface water management etc. Climate action is specifically addressed in Chapter 3 Low Carbon Society and Climate Action, (including a summary in Table 3.1 of how climate adaptation and mitigation measures have been included)."

The legally binding targets of the Climate Action and Low Carbon Development (Amendment) Act 2021, as underpinned by the core ambitions of the 2022–2028 CDP, are incompatible with the 2016 RES. The 2022-2028 CDP does indeed attempt to address international, national and regional policy relating to climate action, including the need for much greater focus on renewable energy, but the 2022-2028 CDP will be prevented from actually addressing the requirements of those international, national and regional climate action policies by the outdated 2016 RES which takes no account of the climate action policies that have emerged in the intervening seven years since the 2016 RES was first published.

Within the 2022-2028 CDP, specific policies and objectives are misaligned and incompatible where they depend on the 2016 RES, as illustrated in the following extracts from the 2022-2028 CDP:

"Policy 3-1	*Promote and facilitate renewable energy development, in accordance with the policies and objectives of the Tipperary Renewable Energy Strategy 2016 (and any review thereof), and the Tipperary Climate Adaptation Strategy 2019."*
"Objective 3-A	*Support and facilitate the implementation of European and National objectives for climate adaptation and mitigation, and to prepare a Climate Action Plan for Tipperary in compliance with the Climate Action and Low Carbon Development (Amendment) Bill (DECC, 2020) and any review thereof."*

The achievement of the objective *to "support and facilitate the implementation of European and National objectives for climate adaptation and mitigation"*, will actually be hindered by the policy to *"promote and facilitate renewable energy development, in accordance with the policies and objectives of the Tipperary Renewable Energy Strategy 2016..."*, for the reasons that will be elaborated on further below in this section.

Section 10.2 of the 2022-2028 CDP outlines the policy context for renewable energy, by referencing *"recent national and regional and emerging policy considerations"*, including as detailed in Section 10.2.1 of the 2022-2028 CDP, the Climate Action Plan 2019 (CAP19) as published by the Department of the Environment, Climate and Communications. Section 10.2 of the 2022-2028 CDP also states that *"the policy context for renewable energy is set out in the Renewable Energy Strategy, Volume 3 Appendix 2"* (of the 2022-2028 CDP). However, the 2016 RES, and by extension the 2022-2028 CDP do nothing to take account of the recent international, national and regional policy that emerged since 2016 when the RES was first adopted, by increasing the ambition of Tipperary County Council to accommodate more wind energy development required by the more recent policy.

The first bullet point under Section 10.2.1 of the 2022-2028 CDP references the key provisions of the CAP19, including:

- *"To increase reliance on electricity from renewable sources from 30% to 80%."*

In actual fact, the CAP19 only had a target to increase reliance on electricity from renewable sources from 30% to 70% by 2030, with the specific objective of having 6,500MW of onshore wind connected by 2025 and 8,200MW of onshore wind energy connected by 2030, as evidenced in Figures 4 and 5 below.

	Technology	NDP 2030	Uptake to meet 2030 targets (Based on MACC analysis) 2025	2030
Electricity	Total RES in Generation mix[4], %	55	52	70
	• Onshore wind, GW	~7	~6.5	~8.2
	• Offshore wind, GW	1.8	~1.0	~3.5
	• Solar PV, GW	1.5	~0.2	~0.4

Figure 4 Extract from Figure 4.4 of the Climate Action Plan 2019 (extensively referenced in the Tipperary County Development Plan 2022-2028) showing onshore wind energy targets to 2025 and 2030.

7.2 Targets

To meet the required level of emissions reduction, by 2030 we will:

- Reduce CO_2 eq. emissions from the sector by 50–55% relative to 2030 Pre-NDP projections
- Deliver an early and complete phase-out of coal- and peat-fired electricity generation
- Increase electricity generated from renewable sources to 70%, indicatively comprised of :*
  - at least 3.5 GW of offshore renewable energy
  - up to 1.5 GW of grid-scale solar energy
  - up to 8.2 GW total of increased onshore wind capacity
- Meet 15% of electricity demand by renewable sources contracted under Corporate PPAs

*[*The exact level of offshore wind, onshore wind, solar and other renewable technology will be determined by a new system of competitive auctions where the lowest cost technology will be determined, see box below.]*

Figure 5 Extract from Section 7.2 of the Climate Action Plan 2019 (extensively referenced in the Tipperary County Development Plan 2022-2028) showing onshore wind energy targets to 2030.

Well before the 2022-2028 CDP was adopted in August 2022, the more recent 2021 version of the Climate Action Plan (CAP21) was published by Government in November 2021, which was not even mentioned in the 2022-2028 CDP. Notwithstanding the error in the 2022-2028 CDP relating to the CAP19 onshore wind target, and the omission of any reference to the CAP21, the Section 10.2.1 of the 2022-2028 CDP states:

> *"The Council will support the Climate Action Plan (DECC, 2019) as it relates to renewable energy production, having consideration to the strategic importance and potential benefits of renewable energy investment to rural communities, and to small and medium enterprises in Tipperary."*

Having not reviewed the 2016 RES to take account of the CAP19 or CAP21 requirements in adopting the 2022-2028 CDP, Tipperary County Council can not support the Government's Climate Action Plan targets relating to renewable energy, and specifically onshore wind energy.

When the 2022-2028 CDP was adopted in August 2022, approximately 4,500MW of onshore wind was connected to the Irish electricity grid, and so the scale of the challenge that lay ahead to add another 3,700MW to the Irish electricity grid in the following eight years of the decade out to 2030, would and

should have been obvious. Considering it took over 29 years to install the first 4,500MW of onshore wind in Ireland since the first wind farm was constructed in Co. Mayo in 1993, for Tipperary as the sixth largest county in Ireland, not to increase its ambition for onshore wind beyond a target set in the 2016 RES, shows how inconsistent the 2022-2028 CDP was and is with national policy. When the installed capacity of onshore wind had to increase by 77% nationally by 2030, Tipperary carried forward its 2016 target of adding only a paltry 125MW, or 26%, to its 2016 existing installed capacity of 475MW.

The 2022–2028 CDP claims that the legally binding targets of the Climate Action and Low Carbon Development (Amendment) Act 2021 underpin by the core ambitions of the 2022–2028 CDP.

The 2022-2028 CDP claims Tipperary County Council will support the Climate Action Plan (DECC, 2019) as it relates to renewable energy production.

The 2022-2028 CDP can neither deliver on the requirements of the Climate Action and Low Carbon Development (Amendment) Act 2021, nor the 2019, 2021 or 2023 Climate Action Plans, because it relies on an outdated 2016 Renewable Energy Strategy, whose objectives and ambitions conflict with the requirements of more recent national policies and legislation.

4.2.1.2.3 *Conflicting objectives highlighted by Wind Energy Capacity Assessment*

The Climate Action Plan 2019 (CAP19) is referenced extensively and repeatedly in the 2022-2028 CDP, with the entirety of Section 10.2.1 of the CDP dedicated to it, and commitments made to adhere to, comply with and facilitate it. However, no effort was made by Tipperary County Council to review its RES when preparing the 2022-2028 CDP. Such a review would have ensured the RES could have facilitated the achievement of the CAP19's objectives and ambitions at a county level in Tipperary. The 2022-2028 CDP states its intention to facilitate the CAP19's objectives and ambitions, but attempts to do so with a tool that was six years out of date when the CDP was adopted, and therefore is simply unable to do the job required. Instead of the RES being a facilitator to help achieve the objectives of the CAP19 (and later CAPs), it will instead be an inhibitor because it was not updated to account for the new, expanded and more ambitious requirements of the CAP19.

This section will highlight the clear and obvious conflict in the objectives of the 2022-2028 CDP, based on the inability of the 2016 RES, and by extension the 2022-2028 CDP, to deliver on some of the written objectives and policies elsewhere in the CDP.

The planning application submitted to Tipperary County Council included a 'Planning Policy Rational Report', prepared by MKO. Section 3 of that report consisted of a Wind Energy Capacity Assessment, which sought to establish whether or not the county's Wind Energy Strategy is capable of supporting national ambitions and targets for additional onshore wind energy capacity, or in the first case, the other objectives of the 2022-2028 CDP around facilitating and contributing to those national targets and policies.

It is not intended to repeat the methodology of the Wind Energy Capacity Assessment in full, as the Board will have the benefit of full Planning Policy Rational Report as part of the planning application documentation.

The key findings of the Wind Energy Capacity Assessment are outlined below.

- The area of County Tipperary is 4,305 km^2
- 62.4% of County Tipperary (2,865 km^2) is classified as 'Open To Consideration' (OTC) for wind energy development in the 2016 RES
- 37.6% of County Tipperary (1,618 km^2) is classified as 'Unsuitable' for wind energy development in the 2016 RES

- When a 700-metre setback buffer zone is applied to every house and property that would represent a sensitive receptor in a wind farm design exercise and would require any turbine to be located x4 the turbine tip height from the properties, the 2,865 km^2 classified as OTC for wind energy development reduces to 91.9 km^2, a 96.8% reduction in the OTC area.

- When industry-standard wind farm design constraints are applied to electricity transmission lines and road transport corridors, the remaining 91.1 km^2 classified as OTC for wind energy development is further reduced to 85.8 km^2, a 97.01% reduction in the original OTC area.

- When a 75-metre buffer zone is applied to surface watercourses and waterbodies, the remaining 85.8 km^2 classified as OTC for wind energy development is further reduced to 71.6 km^2, a 97.5% reduction in the original OTC area.

- When a 100-metre buffer zone is applied to SACs, SPA, NHAs and pNHAs designated for the protection of ecological habitats and species, the remaining 71.6 km^2 classified as OTC for wind energy development is further reduced to 69.7 km^2, a 97.57% reduction in the original OTC area.

- When existing wind farms are removed from the remaining 69.7 km^2 area, the area classified as OTC for wind energy development is further reduced to 66.9 km^2, a 97.66% reduction in the original OTC area.

- When small isolated pockets of unconstrained land less than 1km2 in area are removed, simply because they are not large enough to accommodate a wind farm of scale that could be developed economically, the area classified as OTC for wind energy development is further reduced to 22.45 km^2, a 99.22% reduction in the original OTC area.

- The 2016 RES identifies 2,865 km^2 as OTC for wind energy development, but when project-level design constraints are applied to this OTC area, the actual quantum of land that could actually accommodate wind farm development reduces to 22.45%, which represents just 0.52% of Co. Tipperary.

The methodology used in the Wind Energy Capacity Assessment is clearly outlined in the Planning Policy Rational Report to ensure transparency and allow the assessment to be replicated by An Bord Pleanála, Tipperary County Council, or any other interested party.

On first appearance, with 62.4% and 2,865km^2 deemed OTC for wind energy development in the 2016 RES and 2022-2028 CDP, there appears to be ample area to accommodate a significant quantum of wind energy development. Having completed the Wind Energy Capacity Assessment, the remaining 22.45 km^2 of OTC areas and 99.22% reduction in the original OTC area, presents a fundamentally different picture of what the future wind energy development potential of Co. Tipperary is under the policy of the 2016 RES.

Project attrition is an inevitable factor in the course of standard wind farm development. Put simply, it means any "potential" wind farm site faces a series of other hurdles in the course of the typical project development lifecycle, which prevent the potential of the site being realised as an operational wind farm. The graphic provided in Figure 6 below is intended to illustrate the concept of project attrition, where 80% of potential sites successfully pass through each stage in the wind farm development cycle.

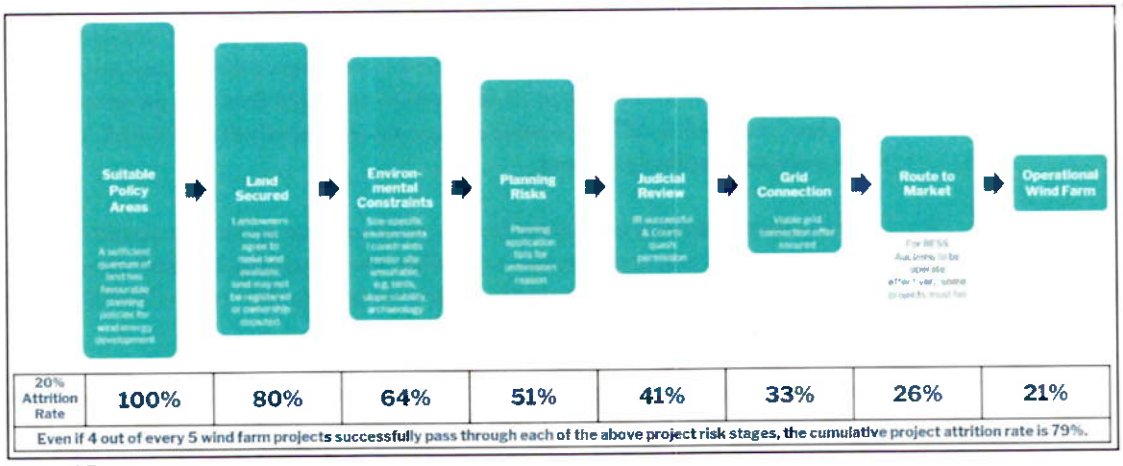


Figure 6 Project attrition

Translating project attrition to Co. Tipperary and the suitable policy areas that are unconstrained and available for wind farm development, it means that only projects that:

- *Are in suitable policy areas;*
- *Can secure the necessary legal agreements with willing landowners;*
- *Have no-site specific environmental constraints;*
- *Can secure planning permission;*
- *Can withstand judicial review;*
- *Can secure a viable grid connection offer; and*
- *Can secure a route to market for their electricity...*

are likely to be constructed and contribute to Ireland's 2030 Climate Action Plan targets.

The cumulative impact from project attrition of just 20% of project failings at each stage, results in a cumulative 79% reduction in the potential of areas with suitable planning policy support for wind energy development.

The 22.45km^2 of OTC areas that remain following the 99.22% reduction in original OTC areas in the 2016 RES, will also be subject to project attrition and a potential further 79% reduction.

4.2.1.2.4 Conclusion

The 2016 RES and 2022-2028 CDP do not classify a sufficient quantum of land as Open To Consideration for wind energy development to achieve the CDP's other policies and objectives, particularly:

- The legally binding targets of the Climate Action and Low Carbon Development (Amendment) Act 2021 which underpin by the core ambitions of the 2022–2028 CDP,
- The objective to support and facilitate the implementation of European and National objectives for climate adaptation and mitigation, and
- Supporting the Climate Action Plan (DECC, 2019) as it relates to renewable energy production, having consideration to the strategic importance and potential benefits of renewable energy investment to rural communities, and to small and medium enterprises in Tipperary.

The 2016 RES and 2022-2028 CDP simply cannot do what it claims it aims to do in relation to renewable energy and wind energy in particular.

The 2016 RES did not classify a sufficient quantum of land as OTC for wind energy development to meet the requirements of the national, regional policies, and the 2022-2028 CDP did not review the 2016 RES in light of the international, national, regional climate action policies and legislation that emerged between with the current RES was first adopted in 2016 and the current CDP was adopted in 2022.

With the current CDP in effect until 2028, to comply with international, national, regional climate action policies and legislation, suitable wind farm sites outside of the OTC areas will have to be permitted and developed in Co. Tipperary to meet our 2030 national renewable energy and climate action targets.

There is a clear and obvious conflict in the objectives of the 2022-2028 CDP, based on the inability of the 2016 RES, and by extension the 2022-2028 CDP, to deliver on the written objectives and policies elsewhere in the CDP.

4.2.1.3 National, Regional Policy and Statutory Obligations

Section 37(2)(b)(iii) of the Planning Act states:

> *Permission for the proposed development should be granted having regard to regional spatial and economic strategy for the area, guidelines under section 28, policy directives under section 29, the statutory obligations of any local authority in the area, and any relevant policy of the Government, the Minister or any Minister of the Government*

Permission for the Proposed Development should be granted as the Proposed Development is strongly supported by the following national policies, guidelines and strategies, including; the National Planning Framework (NPF), the National Development Plan 2021-2030 (NDP), the Climate Action Plan 2023 (CAP), the National Energy and Climate Plan (NECP) 2021-2030, the National Energy Security Framework (NESF), Energy Security in Ireland to 2030 – Energy Security Package, the Regional Spatial and Economic Strategy (RSES) for the Southern Region and Section 28 Guidelines such as the Wind Energy Development Guidelines (2006).

Each of these are discussed in turn below.

Project Ireland 2040: The National Planning Framework

The NPF is a government policy, published by the Department of Housing, Planning and Local Government in 2018, which sets out the strategic national planning framework for the country until 2040. The NPF supports the overarching goal to transition to a low carbon, climate resilient and environmentally sustainable economy. This includes support for the provision of new renewable energy projects and their associated transmission grid infrastructure.

Relevant to the Proposed Development, National Strategic Outcome 8 is as follows:

National Strategic Outcome 8: *Transition to a low carbon and climate resilient economy.*

The NPF acknowledges that greenhouse gas emissions from the energy sector must be reduced by at least 80% by 2050 when compared to 1990 levels while ensuring a secure supply of energy exists. The NPF acknowledges that: "*In meeting the challenge of transitioning to a low carbon economy, the location of future national renewable energy generation will, for the most part, need to be accommodated on large tracts of land that are located in a rural setting, while also continuing to protect the integrity of the environment*".

The following National Policy Objectives (NPO) are applicable to the Proposed Development.

- **NPO 21:** Enhance the competitiveness of rural areas by supporting innovation in rural economic development and enterprise through the diversification of the rural economy into new sectors and services, including ICT-based industries and those addressing climate change and sustainability.
- **NPO 54:** Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions.
- **NPO 55:** Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050.

The NPF recognises the role the planning system must play in order to meet our future needs in a sustainable manner.

"The manner in which we plan is important for the sustainability of our environment. Our planning system has influence across a wide range of sectors, both directly and indirectly and interacts with many common issues related to effective environmental management, including water services, landscape, flood risk planning, protection of designated sites and species, coastal and marine management, climate mitigation and adaptation, and land use change."

In regard to the above, it is clear that the provision of new renewable energy developments is in line with the aims and objectives of the NPF which seeks to transition to a low carbon and climate resilient economy. If permitted, the Proposed Development will contribute to the achievement of NPO 21, 54, and 55, by stimulating economic development and by providing clean, renewable energy allowing for a reduce carbon footprint.

National Development Plan 2021-2030

Prepared by the Department of Public Expenditure and Reform, the National Development Plan 2021 – 2030 was published on 4th October 2021 and sets out the major public investment projects identified by Government which are to play a significant role in addressing the opportunities and challenges faced by Ireland over the coming years such as Covid-19, Brexit, housing, health, population growth, and most relevant to the subject development, climate change. It is stated that the NDP 2021 – 2030 will be the 'largest and greenest ever delivered in Ireland', and in this regard, the NDP highlights that extensive consultation was undertaken to ensure that the plan adequately supports the implementation of climate action measures. Reflecting on the recent publication of the IPCC's 6th Assessment Report, the NDP notes that the Irish Government is fully committed to 'playing its part' to ensure that the worst climate change damage can be avoided, e.g. significant reductions in CO2 and other greenhouse gas emissions as assisted by the achievement of both European and National renewable energy targets. Specifically, the NDP states that,

"The next 10 years are critical if we are to address the climate crisis and ensure a safe and bright future for the planet, and all of us on it."

"The investment priorities included in this chapter [Ch. 13] must be delivered to meet the targets set out in the current and future Climate Action Plans, and to achieve our climate objectives. The investment priorities represent a decisive shift towards the achievement of a decarbonised society, demonstrating the Government's unequivocal commitment to securing a carbon neutral future."

Notwithstanding this, the NDP acknowledges that it is not its role to set out a specific blueprint for the achievement of Ireland's climate targets; but as noted above, facilitate capital investment allocations for the climate and environmental strategic priorities.

One of the NDP's strategic climate priorities in the need for low-carbon, resilient electricity systems; specifically, the plan commits to increasing the share of renewable electricity up to 80% by 2030. This is characterised by the NDP as an '*unprecedented commitment to the decarbonisation of electricity supplies*', which is certainly an ambitious and an explicit driver for the deployment of new renewable generators such as the Proposed Development. The focus of investment in renewable energy infrastructure is to contribute to a long-term, sustainable and competitive energy future for Ireland.

The NDP is clear in its priority to reach a low-carbon, climate resilient society over the lifetime of the plan. The Proposed Development, if permitted, will provide clean, renewable electricity to the national grid, furthering development objectives of the NDP.

The Climate Action Plan 2023

The CAP 23, published in December 2022 by the Department of the Environment, Climate and Communications, sets out an updated roadmap to delivery on Ireland's climate ambition. It aligns with the legally binding economy-wide carbon budgets and sectoral ceilings that were agreed by Government in July 2022 following the Climate Act. The Climate Act commits Ireland to a legally binding target of net-zero greenhouse gas emissions no later than 2050, and a reduction of 51% by 2030.

Under the CAP23, onshore wind targets are increased with a target of 6GW by 2025 and 9GW by 2030. The CAP23 also sets a target of reaching a 50% renewable electricity share by 2025, increasing to 80% by 2030.

CAP23 sets out indicative ranges of emissions reductions for each sector of the economy. Large-scale deployment of renewables - including onshore wind - is considered 'critical' to help decarbonise the power sector. In relation to achieving the sectoral emissions ceiling for the electricity sector the CAP states:

"The proposed pathway includes a massive and rapid build-out of renewable generation capacity (wind and solar power generation technologies) and will also rely on the continued build-out and strengthening of grid infrastructure, the deployment of zero-emissions gas and improved electricity demand management. The decarbonisation of the electricity sector will be an immense challenge as we face a growing demand for electricity and a need to ensure security of supply, while providing support for the decarbonisation of other sectors through the electrification of transport and heat."

Achieving further emissions reductions between now and 2030 requires a *"major step up"* across three key measures as follows:

- Accelerate and increase the deployment of renewable energy to replace fossil fuels;
- Deliver a flexible system to support renewables and demand;
- Manage electricity demand.

The Proposed Development will contribute directly towards the CAP23 goals of 9GW of wind energy and 80% renewable electricity by 2030. Onshore wind is identified as being critical in the decarbonisation of the electricity and as such the Proposed Development should be considered in that regard. The *'major set up'* required to accelerate the deployment of renewable energy will only be seen if renewable energy projects located on suitable sites, such as the Proposed Development, are permitted.

The National Energy & Climate Plan 2021 - 2030

Published by the Department of Communications, Climate Action and Environment in 2021, the NECP was produced in accordance with EU Regulation 2018/1999 on the Governance of the Energy Union and Climate Action. The NECP identifies 5 'dimensions' which form the basis of the policies and measures outlined in the plan. These dimensions have associated key objectives to be achieved over the NECPs lifetime. The table below each dimension and its corresponding key objectives.

Table 44: National Energy & Climate Plan 2021-2030 Summary

Dimension	Key Objectives
Decarbonisation - GHG emissions and removals	› Reduce emissions from sectors outside the EU's Emissions Trading System by 30% (relative to 2005 levels) by 2030.
Decarbonisation - Renewable energy	› Ireland has established an objective of achieving a 34% share of renewable energy in energy consumption by 2030 *(since raised to 50%)*. › Increase electricity generated from renewable sources to 70% *(since raised to 80%)*. › At least 3.5 GW of offshore renewable energy *(since raised to 5GW, with additional 2GW earmarked for green hydrogen)*. Up to 1.5 GW of grid scale solar energy *(since raised to 8GW)*. Onshore wind capacity of up to 8.2 GW *(since raised to 9GW)*.
Energy efficiency	› Contribute towards the EU wide target of achieving at least 32.5% improvement in energy efficiency by 2030. › Saving obligations in accordance with Article 7 of the Energy Efficiency Directive (EED).

	› Saving obligations in accordance with the requirements of Article 5 of the EED.
Energy security	› Ireland is committed to maintaining the security of our energy system in the most cost effective manner.
Internal energy market	› Continue to deepen the integration of IRL's wholesale electricity market, and its regulation, with the EU internal energy market (IEM), building on well-known ongoing plans, programmes and actions in this regard. › Develop further interconnection to facilitate Ireland's 2030 target of 70% renewable electricity. › Continue to align further IRL's retail electricity market, with the EU internal energy market. › Continue to develop Ireland's natural gas market in line with European energy policy.

The Proposed Development will progress the key objectives of the NECP, particularly the dimensions relating to decarbonisation and energy security, by adding a new renewable electricity generator to the national grid.

National Energy Security Framework

The National Energy Security Framework, published by Department of the Environment, Climate and Communications in April 2022, highlights clearly the impacts the Russian invasion of Ukraine and the resulting war has had on Europe's energy system. The resulting decision by the European Union to phase out the import of Russian gas, oil and coal (REPowerEU) has brought to the fore the importance of security of supply and how energy policy is designed for long-term resilience. The NESF sets out the responses identified to ensure the security of our energy supply in the near term. It also takes account of the need to decarbonise society and economy, to reduce Ireland's emissions by 51% over the decade to 2030 and reach net zero emissions by 2050.

Ireland's response per the Framework is set out over three themes:

- Theme 1 – managing the impact on consumers and businesses;
- Theme 2 – ensuring security of energy supply in the near-term;
- Theme 3 – reducing our dependency on imported fossil fuels in the context of the phasing out of Russian energy imports across the EU.

In relation to theme 3, the Framework highlights that replacing fossil fuels with renewables, including wind energy, will be a focus area of work. The Framework calls for "*Supportive policies across Government and State agencies*" which "*can reduce barriers and fast track permitting for renewable energy generation projects. Similarly, renewable energy developers need to match this through taking a leadership role in delivering high quality applications to relevant consenting authorities, meeting project milestones on time and minimising delays.*" There are a number of 'Responses' set out in the Framework aimed at reducing reliance on imported fossil fuels and increasing indigenous renewable energy generation, including Response 25 which seeks the alignment of all elements of the planning system to support accelerated renewable energy development.

There is now a *"double urgency to reduce Europe's energy dependence: the climate crisis, compounded by Russia's aggression and EU's dependence on fossil fuels"*. Considering the urgency to increase indigenous renewable energy generation to safeguard our energy supply, it is imperative that the suitable sites, such as the Proposed Development site, are developed as soon as possible to achieve the ambitions of the NESF.

Energy Security in Ireland to 2030 – Energy Security Package

Published in November 2023, the energy security package titled 'Energy Security in Ireland to 2030' builds on the policies set out in the NESF. The energy security package is based on the recognition of the following fact:

"Ireland's future energy will be secure by moving from an oil-, peat-, coal- and gas-based energy system to an electricity-led system maximising our renewable energy potential, flexibility and being integrated into Europe's energy systems."

The energy security package includes a range of measures to implement this approach by the prioritisation of the following:

1. Reduced and Responsive Demand.
2. Renewables-Led System.
3. More Resilient Systems.
4. Robust Risk Governance.

Independent research undertaken as part of the package, the McCarthy Report, provides an analysis of developments in the electricity sector in Ireland. The McCarthy Report makes the following observation in relation to the consenting process:

"The problem of delays encountered by major infrastructure projects, including in the electricity system, due to planning and environmental consent issues was evident. They had been commented upon by the International Energy Agency in its 2019 review of Ireland which named planning delays as the principal challenge to delivery of policy for the sector."

A key finding from the technical analysis conducted as part of the energy security package is the interdependence of energy security on two essential pillars: 'harnessing our indigenous renewable energy resources at speed and at scale and the rapid electrification of energy demand'. As such, the energy security package provides additional measures to supplement the existing measures introduced under previously published government policy documents. Those additional measures most relevant to the Proposed Development are as follows:

"Action 10: To implement Planning and Consenting System Reforms and provide greater certainty to the sector."

The energy security package aims to ensure that the planning system is fully aligned and resourced to fully support accelerated renewable energy development. It also aims to ensure renewable energy projects are prioritised in line with the recast Renewable Energy Directive and RePowerEU.

The Proposed Development is set to significantly support the government's objectives in ensuring the State's energy security. This proposed Development serves as a domestic renewable energy generator capable of providing clean electricity to the national electricity grid, contributing to a renewables-led system.

Regional Spatial & Economic Strategy

The RSES provides a long-term, strategic development framework for the future physical, economic and social development of the Southern Region. The RSES seeks to achieve balanced regional development and full implementation of the NPF and CAP.

"The RSES primarily aims to support the delivery of the programme for change set out in Project Ireland 2040, the National Planning Framework (NPF) and the National Development Plan 2018-27 (NDP). As the regional tier of the national planning process, it will ensure coordination between the City and County Development Plans (CCDP) and Local Enterprise and Community Plans (LECP) of the ten local authorities in the Region."

'The RSES recognizes and supports the many opportunities for wind as a major source of renewable energy and is committed to the implementation of the Climate Action Plan 2019 (superseded by CAP 23) by playing its part in the development of ***wind****, wave, tidal, solar, hydro, and bio energy.'*

The following Regional Policy Objectives (RPO) are applicable to the Proposed Development:

- **RPO 87 Low Carbon Energy Future**
  "The RSES is committed to the implementation of the Government's policy under Ireland's Transition to a Low Carbon Energy Future 2015-30 and Climate Action Plan 2019. It is an objective to promote change across business, public and residential sectors to achieve reduced GHG emissions in accordance with current and future national targets, improve energy efficiency and increase the use of renewable energy sources across the key sectors of electricity supply, heating, transport and agriculture"
- **RPO 88 National Mitigation Plan and National Adaptation Framework:**
  "The RSES is committed to the implementation of the National Mitigation Plan and National Adaptation Framework: Planning for a Climate Resilient Ireland to enable the Region transition to a low carbon, climate resilient and environmentally sustainable economy. It is an objective to ensure effective co-ordination of climate action with the Climate Action Regional Offices and local authorities to implement the National Mitigation Plan and the National Adaptation Framework in the development and implementation of long-term solutions and extensive adaptation measures."
- **RPO 90 Regional Decarbonisation:** It is an objective to develop a Regional Decarbonisation Plan to provide a framework for action on decarbonisation across all sectors. The Regional Decarbonisation Plan shall include existing and future targets for each sector and shall be prepared with key stakeholders, including the Climate Action Regional Offices, and shall identify the scope and role of the Plan, the requirements for SEA, AA and the timescale for its preparation. Implementation mechanisms and monitoring structures for the Plan should also be established.

The region has ample resources of wind, solar and ocean energy to provide a significant amount of renewable energy. Over the next ten years there is a predicted growth in electricity demand to align with the Climate Action Plan 2023. Extra generating capacity will be required to accommodate this demand. Wind energy is recognised as a major source of renewable energy generation capable of providing clean electricity to the grid and meeting the county's energy needs.

"The RSES recognises and supports the many opportunities for wind as a major source of renewable energy. Opportunities for both commercial and community wind energy projects should be harnessed, having regard to the requirements of DoHPLG Guidelines on Wind Energy. Wind Energy technology has an important role in delivering value and clean electricity for Ireland."

- ***RPO 95 Sustainable Renewable Energy Generation:***
  "It is an objective to support implementation of the National Renewable Energy Action Plan (NREAP), and the Offshore Renewable Energy Plan and the implementation of mitigation measures outlined in their respective SEA and AA and leverage the Region as a leader and innovator in sustainable renewable energy generation."
- ***RPO 96 Integrating Renewable Energy Sources:***
  "It is an objective to support the sustainable development, maintenance and upgrading of electricity and gas network grid infrastructure to integrate renewable energy sources and ensure our national and regional energy system remains safe, secure and ready to meet increased demand as the regional economy grows."
- ***RPO 99 Renewable Wind Energy***
  "It is an objective to support the sustainable development of renewable wind energy (onshore and offshore) at appropriate locations and related grid infrastructure in the Region in compliance with national Wind Energy Guidelines."
- ***RPO 100 Indigenous Renewable Energy Production and Grid Injection:***
  "It is an objective to support the integration of indigenous renewable energy production and grid injection."
- ***RPO221 Renewable Energy Generation and Transmission Network***
  "a. Local Authority City and County Development Plans shall support the sustainable development of renewable energy generation and demand centres such as data centres which can be serviced with a renewable energy source (subject to appropriate environmental

assessment and the planning process) to spatially suitable locations to ensure efficient use of the existing transmission network;
b. The RSES supports strengthened and sustainable local/community renewable energy networks, micro renewable generation, climate smart countryside projects and connections from such initiatives to the grid. The potential for sustainable local/community energy projects and micro generation to both mitigate climate change and to reduce fuel poverty is also supported;
c. The RSES supports the Southern Region as a Carbon Neutral Energy Region."

The Regional Policy Objectives above reflect the strong support for renewable energy throughout the RSES. The Proposed Development will generate renewable electricity contributing to the objectives of these objectives. The Proposed Development is therefore in alignment with and strongly supported by the policies of the RSES.

Section 28 Wind Energy Development Guidelines (2006)

The Wind Energy Development Guidelines were issued by Department of Housing, Local Government and Heritage under Section 28 of the Planning Act in 2006. These Guidelines state that the development of renewable energy sources, together with measures aimed at a reduction and more efficient use of energy, are priorities, nationally and at European level, on both environmental and energy policy grounds. The guidelines are also intended to ensure a consistency of approach throughout the country in the identification of suitable locations for wind energy development and the treatment of planning applications for wind energy developments.

The proposed development has been designed in compliance with the 2006 Guidelines. In this regard the EIAR submitted with the planning application considers all relevant potential environmental impacts that could arise (Chapter 5 of the 2006 Guidelines), and the design of the Proposed Development has followed the design principles established in Chapter 6.The Proposed Development is designed in accordance with the 2006 Guidelines and complies with the relevant guidelines in relation to the following matters Table 5 below demonstrates that the Proposed Development's compliance with the Wind Energy Guidelines 2006.

Table 5.5: Compliance with the Wind Energy Guidelines 2006

Wind Energy Guidelines 2006	Compliance
Noise In general, a lower fixed limit of 45 dB(A)10 or a maximum increase of 5dB(A) above background noise at nearby noise sensitive locations is considered appropriate to provide protection to wind energy development neighbours. However, in very quiet areas, the use of a margin of 5dB(A) above background noise at nearby noise sensitive properties is not necessary to offer a reasonable degree of protection and may unduly restrict wind energy developments which should be recognised as having wider national and global benefits. Instead, in low noise environments where background noise is less than 30 dB(A), it is recommended that the daytime level of the LA90, 10min of the wind energy development noise be limited to an absolute level within the range of 35-40 dB(A).	As stated in Section 12.9 of EIAR Chapter 12: Noise and Vibration, the noise limits contained within the 2006 Guidelines was used to assess the likely operational noise impact of the Proposed Development. Predicted cumulative noise levels and measured background noise levels indicate that for neighbouring dwellings, the wind turbine noise from the Proposed Development will comply the noise limits contained within the 2006 Guidelines.
Shadow Flicker It is recommended that shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30 hours per year or 30 minutes per day	As outlined in Section 5.7.5.1 of Chapter 5: Population and Human Health, a total of 31 No. residential dwellings were assessed as part of the shadow flicker assessment. The assessment predicted that 16 no. residential dwellings may potentially experience daily shadow flicker in excess of the 2006 Wind Energy Guidelines threshold of 30 minutes per day. This prediction

	assumes the worst-case conditions (i.e., 100% sunshine on all days where the shadow of the turbine passes over a house, wind blowing in the correct direction, no screening present, etc.) and in the absence of turbine control measures. Of the 31 No. properties modelled, when the regional sunshine average (i.e. the mean amount of sunshine hours throughout the year) of 26.46% is taken into account, the 2006 Wind Energy Guidelines total annual guideline limit of 30 hours is predicted as being potentially exceeded at 4 No. of the properties. As outlined in Section 5.9.3.10 of Chapter 5: Population and Human Health, the use of Wind Turbine Control Measures will ensure compliance with the 2006 Guidelines limits daily limit of 30 minutes and the annual shadow flicker limit of 30 hours, at potentially affected dwellings, by programming the relevant turbines to switch off at the required dates and times. Therefore, the Proposed Development will comply with the shadow flicker limits contained within the 2006 Guidelines.
Residential Set-back The Guidelines refer to a 500m residential set-back distance when assessing noise and controlling shadow flicker. Beyond this distance, adverse impacts are unlikely to occur.	The closest proposed turbine (T5) is 741m from the nearest dwelling. This complies the requirement of four times the tip height setback for a proposed turbine from a dwelling. The compliance with residential dwellings is discussed in detail in Section 3.2.6.1 and the 740m setback is shown in Figure 3-1 Constraints and Facilitators in Chapter 3: Reasonable Alternatives.
Windtake The minimum distances between wind turbines will generally be three times the rotor diameter (=3d) in the crosswind direction and seven times the rotor diameter (=7d) in the prevailing downwind direction.	Adequate separation distances between the proposed wind turbines have been maintained which will result in the Proposed Development operating efficiently.
Aircraft Safety Regard must be had to the Irish Aviation Authority's Obstacles to Aircraft in Flight Order, 2002, (S.I. 14 of 2002), as amended, which specifies the criteria used to determine whether or not any object anywhere in the State is deemed to be an obstacle affecting aircraft operations.	A Scoping Exercise was carried out in September 2022 which included the Irish Aviation Authority (IAA). The IAA responded on 4th October 2022 outlining that the Applicant should engage with Ormond Flying Club who is the licensee at Birr Airfield – the closest airfield to the Proposed Development site. The IAA further stated that in the event of planning consent being granted, the applicant should be conditioned to contact the IAA to: • *Agree an aeronautical obstacle warning light scheme for the wind farm development.* • *Provide as-constructed coordinates in WGS84 format together with ground and blade*

	tip height elevations at each wind turbine location. • *Notify the IAA of intention to commence crane operations with at least 30 days prior notification of their erection.* The Applicant will abide by the observations of the IAA and in the event of planning permission being granted will undertake actions on items numbered 1 – 3 listed above. *A second round of Scoping was undertaken in May 2023 within which the Ormond Flying Club was contacted and sent the Scoping Document,* turbine dimensions and other relevant information regarding the Proposed Development site. No reply was received from Ormond Flying Club.
Proximity to Power Lines Adequate clearance between structures and overhead power lines as specified by the electricity undertaker should be provided. It should be noted that there is a statutory obligation to notify the electricity distributor of proposed developments within 23 meters of any transmission or distribution line.	The closest proposed turbine (T7) is 4.6km from the existing 110kV overhead line which runs in a northeast-southwest direction to the west of the Proposed Development site.
Proximity to Roads and Railways Best practice indicates that it is advisable to achieve a safety set back from National and Regional roads and railways of a distance equal to the height of the turbine and blade.	The closest proposed turbine (T1) is 1.9km from the N52 National Road which is the closest national primary or secondary roadway to the Proposed Development. The closest proposed turbine (T4) is 12.9km from the Limerick-Dublin Heuston railway line. The Limerick – Dublin Heuston railway line nearest section of railway to the Proposed Development site.

As set out above, the Proposed Development is entirely in accordance with the current statutory Wind Energy Development Guidelines demonstrating that the Proposed Development is in accordance with proper planning and sustainable development.

Draft Wind Energy Guidelines 2019

The Department of Housing, Planning and Local Government published the Draft Wind Energy Guidelines (referred to as the Draft Guidelines) in December 2019 and they remain in draft at the time of writing.

The Draft Revised Guidelines note that potential impacts of wind energy development proposals on the landscape, including the natural and built environment, must be considered along with the legitimate concerns of local communities. With this in mind, the 2019 Draft Guidelines primarily focus on addressing a number of key aspects including, but not limited to:

- Acceptable noise thresholds and monitoring frameworks;
- Visual amenity setback and spacing;
- Control of shadow flicker;
- Compliance with Community consultation and dividend requirements, as included within the obligatory Community Report; and
- Consideration of the siting, route and design of the proposed grid connection as part of the whole project.

The Proposed Development fully complies with the current 2006 Guidelines and has also been designed with the provisions of the provisions of the Draft Guidelines in mind, (for example in relation to 4 times turbine tip height set back distance from third party sensitive receptors).

At the time of writing, the Draft Guidelines have not yet been adopted, and the relevant guidelines for the purposes of section 28 of the Planning Act, remain those issued in 2006. Notwithstanding this, however, due to the timelines associated with the planning process for renewable energy projects and the commitment within the Climate Action Plan 2023 to publish new draft guidelines in 2023 and final guidelines 2024, it is possible that the new guidelines are adopted before ABP determines this first-party appeal.

Towards this end it is anticipated that the Proposed Development will be capable of adhering to the relevant standards and guidance albeit without sight of the final, adopted guidelines the processes by which the Proposed Development will comply with the same cannot be confirmed at this stage. It should be noted that the Proposed Development layout complies with the required setback distance from residential properties (four times the proposed maximum tip height) in the Draft 2019 document.

4.2.1.4 Policy Conclusion

To conclude, the Proposed Development should be granted by the Board under section 37(2)(a) of the Planning Act based on the fact that:

1. The Proposed Development is of strategic and national importance,

2. There are conflicting objectives in the development plan and,

3. The proposed development is strongly supported by the National Planning Framework, the National Development Plan 2021-2030, the Climate Action Plan 2023, the National Energy and Climate Plan 2021-2030, the National Energy Security Framework, Energy Security in Ireland to 2030 – Energy Security Package, the Regional Spatial and Economic Strategy for the Southern Region and fully complies with Section 28 Guidelines such as the Wind Energy Development Guidelines (2006).

It is noted that the Board has granted permission for similar wind energy developments in material contravention of the County Development Plan under Section 37(2)(A) in the past (e.g. ABP Ref: 221656, ABP Ref: 240394, ABP Ref: 301852) which provide a clear precedent for granting permission for the Proposed Development under Section 37(2)(A) and Section 37(2)(B) of the Act. White Hills Wind Farm (ABP Ref. 315365) is also an example of permission that was granted by ABP for turbines in areas deemed 'not normally permissible' and where there were conflicting objectives in the Development Plan.

Never has the development of onshore wind energy been of such great importance to the State. Six years remain to achieve crucial climate and renewable energy targets, yet the amount of additional wind capacity installed has been dropping annually since its peak in 2017 and annual carbon budgets continue to be exceeded.

The urgency of renewable energy deployment has increased drastically over the last few years, with the climate crisis deteriorating coupled, with evolution of the energy security crisis. The urgency is reflected in the policy and legislation at the highest level, with both the EU and the Irish government acknowledging that renewable energy projects are now considered to be in the **'overriding public interest'**. It is therefore unequivocal that the Proposed Development is of strategic and national importance to the State. It is also clear from the policies set out in this section that the Proposed Development is strongly support in all national and regional policy documents, as well as the being in compliance with the Wind Energy Development Guidelines (2006).

Furthermore, the EIA and NIS, along with the additional information provided in this report, demonstrates that the Proposed Development site is suitable for wind energy development with no significant effects arising from the construction, operation or decommissioning of the wind farm.

Therefore, the planning decision solely hinges on the designation of the site as 'unsuitable' for new wind energy developments in the RES first published in 2016. With consideration for the above and the legal obligations of the Board under the Climate Act, it is submitted that planning permission should be granted notwithstanding a material contravention of a local development plan.

4.3 Reason for Refusal 2 – Ornithology

Policy11-16 of the Tipperary County Development Plan 2022 - 2028 states that
"In assessing proposals for new development to balance the need for new development with the protection and enhancement of the natural environment and human health. In line with the provisions of Article 6(3) and Article 6 (4) of the Habitats Directive, no plans, programmes, etc. or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects1)".

Having regard to the proximity to a number of European Sites with conservation objective to maintain or restore the favourable conservation conditions of a number of bird species. Having regard to the EIAR and NIS submitted with the applications and submissions made on the applications, and notwithstanding mitigation measures proposed, the Planning Authority is not satisfied that the likelihood of significant effects on the environment can be excluded. The applicant has failed to demonstrate that the development on the site would not have an adverse impact on the site integrity of the local sites within the Natura 2000 network. The Planning Authority considers that the proposed development would result in a loss of habitat, disturbance and displacement for Annex I bird species, and in this context, the proposed development would, therefore, be contrary to the proper planning and sustainable development of the area, development would adversely affect bird species or their habitat specified in Article 4 of the Birds Directive, which forms the basis of the classification of that site.

4.3.1 Grounds of Appeal against Response to Refusal 2

This section of the first party Grounds of Appeal relates solely to ornithology and herein sets out the response to the matters raised in Refusal Reason No. 2. Firstly, an outline is provided of the results of surveys that have been ongoing since lodging the planning application in Section 4.3.1. Then concerns outlined by Tipperary County Council and the Development Application Unit (DAU) of the Department of Housing, Local Government and Heritage (refer to Appendix 2) in their submission are addressed by topic below. The response to these issues has been prepared by the MKO Ornithology team who undertook the bird surveys and wrote the Ornithology Chapter 7 of the EIAR which was submitted with the planning application to Tipperary County Council. This response has been prepared by Principal Ornithologist, Padraig Cregg (BSc., MSc.) of MKO and accompanying appendices Donnacha Woods (B.Sc., M.Sc.), Project Ornithologist of MKO, both of whom are suitably qualified, competent, professional ornithologists with extensive experience in completing avifaunal assessments and is a competent expert for the purpose of the preparation of this response.
Tipperary County Council's second refusal reason concerned potential impacts on local Special Protection Areas. This is outlined in the below wording, and is addressed in the following sections:

> ***The applicant has failed to demonstrate that the development on the site would not have an adverse impact on the site integrity of the local sites within the Natura 2000 network.***

4.3.1.1 Additional Survey Data

Since lodging the Carrig Wind Farm planning application bird surveys have been ongoing at the subject site, the results of these surveys have informed this response to refusal reason two. Throughout the initial survey period (between September 2020 and March 2023), a comprehensive suite of bird surveys has been undertaken at the Wind Farm Site (as per NatureScot formerly SNH, 2017). This is now supplemented by an additional breeding season of surveying from April to September 2023. This data is provided as it serves to further corroborate the evidence of previous surveys and the results of the impact assessment as reported in Chapter 7 of the EIAR. Appendix 3 of this document contains the data from the summer 2023 survey season.

The bird assemblage of the Wind Farm Site and findings of the bird surveys remained largely unchanged during the surveys from the period between April and September 2023. There was no significant change in the distribution and abundance of key ornithological receptors (KORs). Therefore, the impact assessments for KORs as outlined in the EIAR as lodged, continue to provide an accurate description of the impacts of the Wind Farm Site on the avian community at Carrig Wind Farm. Additionally, an updated collision risk model has been conducted for all relevant KORs, including April to September 2023 survey data, as collision risk was one of the key concerns raised. The updated analysis has incorporated all survey data (September 2020 to September 2023), the results of which are outlined in Appendix 4 and discussed below.

4.3.1.2 Impacts on Local Special Protection Areas (SPAs)

Tipperary County Council outline their concerns in relation to impacts on nearby SPAs, stating the following in refusal reason two:

> ***The Planning Authority considers that the proposed development would result in a loss of habitat, disturbance and displacement for Annex I bird species, and in this context, the proposed development would, therefore, be contrary to the proper planning and sustainable development of the area, development would adversely affect bird species or their habitat specified in Article 4[28] of the Birds Directive, which forms the basis of the classification of that site.***

The Development Application Unit (DAU) and Tipperary County Council have overlapping concerns in relation to the impact on special conservation interests of nearby SPAs. Two key points were made, firstly some of the species recorded at the subject site are potentially connected with local SPAs and local impacts are therefore also impacts on the relevant special conservation interest species of nearby SPAs. The second key concern was that the predicted collision risk as submitted in the EIAR was an under-estimate as no nocturnal surveys were undertaken. These two topics are discussed in turn in the following two sections.

4.3.1.2.1 *Connectivity to SPAs*

It is the DAU's view that notwithstanding the distance from the subject site to local SPAs (Little Brosna (6.1km), Middle Shannon Callows (9.8km) and Lough Derg (7.9km)) ***"that wildfowl using the area in the zone of influence of the proposed site, ... originate from or alternately use these European Sites."*** The Applicant by contrast submits that there is little evidence for connectivity with these same European Sites.

As outlined in the NIS as submitted with the application, the distance between the SPA and the Carrig Wind Farm Site is greater than the core foraging ranges of whooper swan (<5km), pintail (1.3km) and shoveler (2-3km)) (NatureScot, 2016; Johnson *et al.*, 2014) and no regular or patterned flight activity of these species was recorded during surveys[29] such as would suggest connectivity between the Wind Farm Site and the SPA (see EIAR Chapter 7 Section 7.3.7 for outline of field survey results and Section 7.5.2 for further assessment). Furthermore, in relation to whooper swan, a regularly used roost site was identified a minimum of 600m from the nearest turbine. Flock sizes recorded in the vicinity of the Wind Farm Site were broadly in-line with numbers observed at the roost site, and therefore the birds recorded in the vicinity of the Wind Farm Site are considered to be associated with this roost site, and not the SPA. Therefore, based on published core foraging ranges and recorded flight activity, there is no evidence to suggest connectivity between the SPA and the Wind Farm Site for whooper swan,

---

[28] *As per the NPWS website: Special Protection Areas (SPAs) are to be identified and classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (Article 4).*

[29] *A number of the vantage point survey locations were located between the Wind Farm Site and the SPA. Surveys were conducted monthly at these locations over 2.5 years, including overlapping with periods of dusk and dawn.*

pintail or shoveler. Therefore, there is no potential for adverse effects via ex-situ collision risk, disturbance or displacement on the SCI populations associated with the SPA.

In relation to the duck species mentioned (teal, shoveler or pintail) no significant effects were predicted or adverse effects on any SPA population, principally due to the considerable separation distance versus core foraging range and very low rate of occurrence (shoveler and pintail) and lack of dependence on habitats of the wind farm (teal). Please see EIAR Sections 7.4 and 7.5.2.11 for further details.

In the case of wintering whooper swan, the DAU states "***the difference between the referenced 5km core range and 6km to the Little Brosna SPA, or indeed the other SPAs mentioned, is little for a species that migrates to Ireland from Iceland (or greater distances in the case of other wildfowl species considered***)." It is acknowledged that whooper swan fly long distances on migration however when on their wintering grounds their movement is much more localised. The literature states their core foraging range is <5km between feeding and roosting locations as per NatureScot guidance (2016). The stated purpose of this NatureScot guidance is to help identify 'connectivity' between development proposals and Special Protection Areas (SPAs). The DAU disputes this referenced literature.
It is acknowledged that there are limitations associated with relying on the literature alone however this is not what was done in this instance. The balance of evidence was weighed, which included:

1. The NatureScot guidance document (NatureScot, 2016), which is the best available information on the foraging range of several species including whooper swan. The distance to the nearest SPAs exceeds the core foraging range.
2. The evidence of three winters of robust industry best practice surveys. As has been previously outlined, the flock of whooper swans regularly roosting in the nearby waterbody look to be resident locally when present.
3. As outlined in the DAU submission foraging habitat in the form of improved agricultural grassland is widely available in the area for the birds from the roost. As provided in Appendix 7-4 of the EIAR, there are many records of whooper swans foraging close to the regularly used roost. While it is very difficult to identify individuals it is reasonable to conclude that the swans from the roost would use the nearest available foraging habitat which is 2-3.5km to the west/southwest of the roost and would require the birds to fly in the opposite direction to the nearest SPA.
4. A further and final consideration is the distribution of whooper swan in Ireland, the species is widely distributed with the majority of birds occurring outside of SPAs. As outlined in Lewis et al., (2019)[30] of the 11,852 birds present in the Republic of Ireland 4,052 are associated with the SPA network.

In summary, the balance of the evidence of the literature, the observation of surveys and the character of the local landscape point to local residence rather than association with an SPA. Therefore, there is no potential for adverse effects of habitat loss, disturbance, displacement, or collision risk on the SCI populations of whooper swan associated with any SPA.

As outlined in EIAR Section 7.5.2.5, no significant effects were identified for whooper swan. The impacts for habitat loss, disturbance, displacement and collision risk were characterised as no greater than a **Low** effect significance as per Percival (2003) criteria or **Slight** as per EPA (2022) criteria[31]. The key reason for the prediction of no significant effect was the design of the wind farm which specifically avoided sensitive features such as the whooper swan roost. As outlined in EIAR Section 7.6.2, to avoid disturbance displacement no infrastructure is sited by design within 600m of the identified whooper swan roost site as per best practice recommendations (Goodship & Furness, 2022 and McGuinness *et al.*, 2015).

---

[30] *Lewis, L. J., Burke, B., Fitzgerald, N., Tierney, T. D. & Kelly, S. (2019) Irish Wetland Bird Survey: Waterbird Status and Distribution 2009/10-2015/16. Irish Wildlife Manuals, No. 106. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.*

[31] *Impact assessment approach is outlined in EIAR Section 7.2.5.*

In the specific case of displacement, the DAU dispute the relevance of "***McGuinness 2015 which was qualified guidance based largely on studies carried out much earlier than 2015 when turbines were far smaller than the turbines being proposed in this case.***" It is acknowledged that older studies are referenced in McGuinness 2015, in relation to whooper swan disturbance displacement the guidance states:

> ***"Exclusion from habitat around wind turbines has been identified (Larsen & Clausen 2002), in some cases up to 300 m from wind energy installations (Percival 2003). Observations of swan non-breeding activity from 8 European studies have given a mean minimum distance of 150 m from the base of wind turbines (Hötker et al. 2006)".***

The context of these older studies was taken into consideration when proposing the 600m buffer from the roost to the nearest infrastructure at the subject site. The nearest turbine to the whooper swan roost is turbine T6. A precautionary approach was taken in proposing a 600m buffer which greatly exceeds the distance at which disturbance displacement impacts were observed in the studies of smaller turbines (i.e. 150-300m). As previously stated and reiterated here, significant effects are therefore not predicted.

In summary, impacts for habitat loss, disturbance, displacement and collision risk were characterised as no greater than a **Low** effect significance as per Percival (2003) criteria or **Slight** as per EPA (2022) criteria are predicted for the whooper swan locally.

While the balance of evidence is that they do not, if these local whooper swans very occasionally visit the nearest SPAs (Little Brosna SPA or the Middle Shannon Callows SPA) then the impacts are predicted to be no greater than negligible for these larger SPA populations. Therefore, there is no potential for adverse effects of habitat loss, disturbance, displacement, or collision risk on the SCI populations of whooper swan associated with any SPA.

4.3.1.2.2 Nocturnal Flights and Collision Risk

Tipperary County Council (See page 73-74 of the Planner's Report) and the DAU raise similar concerns regarding the potential underestimation of collision risk due to the lack of nocturnal surveys. Water birds have the potential to undertake low light and/or nocturnal flights between feeding and foraging sites. The key species mentioned was whooper swan. The wording from the DAU submission is as follows:

> ***"There is no night time collision risk analysis despite significant potential for night time movements of birds. This in the Department's view is an inadequate quantification and potentially significant underestimate of any risks posed.*** "

While it is acknowledged that overnight surveys were not undertaken, this does not mean that the collision risk analysis as submitted did not account for the potential for nocturnal flights and the related collision risk, it did. Firstly, vantage point surveys were scheduled to overlap with the dawn/dusk period to ensure this period of potential commuting activity of water birds was monitored and secondly, the collision risk analysis can account for nocturnal flight activity.

It is acknowledged that some waterbirds commute between feeding and roosting locations during periods of low light, typically before sunrise or after sunset. The DAU in particular highlights whooper swan as a species that habitually undertakes such low-light flights and is as such vulnerable to impacts. As a consequence of this behaviour, a diurnal schedule of surveys alone could miss these low light and nocturnal flights and hence under-represent the amount of flight activity for these species and consequently predict a lower rate of collision risk. However, the survey scope that was undertaken at the proposed wind farm site included the low light periods before sunrise or after sunset during the migratory/wintering season surveys. As is outlined in Appendix 7-2 of the EIAR, winter vantage point surveys finished/started the hour after/before sunset/sunrise during the migratory/wintering period. This survey approach is in line with best practice and follows the recommendation of NatureScot (2017). NatureScot (SNH, 2017) states in Table 1.3 that vantage point surveys targeting swans and geese should be undertaken "*between and including dawn and dusk*". These surveys were specifically designed to overlap with these previously mentioned periods of low light to ensure that commuting flights of waterbirds including whooper swan would be recorded. The DAU also raised concerns that inclement

weather could limit visibility and impact predicted collision risk if not accounted for. As outlined in Appendix 7-2 of the EIAR, surveys were undertaken in a range of weather conditions such that a representative sample was collected of local conditions. This data informed the collision risk analysis. The second and further step in accounting for nocturnal flight activity is outlined in the next paragraph.

NatureScot (2017) outlines that it is possible to estimate levels of nocturnal activity, in practice, this is done by applying a percentage increase on the diurnal flight activity recorded during vantage point surveys in the range of 25-28% depending on the species. As is noted in Section 2.4 of Appendix 7-5 of the EIAR, this was the approach taken to account for nocturnal flight activity in the assessment of collision risk. Notwithstanding the inclusion of diurnal and nocturnal flight activity in the analysis, no significant collision risk was predicted for whooper swan[32]. Please refer to Section 7.5.2.5 of the EIAR for further detailed discussion.

While no significant effect has been identified, in line with best practice and following a precautionary approach, a comprehensive programme of operational phase surveys is proposed in the EIAR to monitor for interactions between the proposed development and the local avian community. Please refer to EIAR Appendix 7-6 for further details. The programme of works will monitor parameters associated with collision risk, displacement/barrier effects and habituation during the lifetime of the project. The results of this monitoring will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation if required.

Other Survey Approaches

The DAU refers to the potential for radar and acoustic surveys of nocturnal flight activity to be undertaken.

The use of automated sensing techniques such as radar is more typically used for surveying birds offshore rather than at onshore wind farms. The offshore environment lacks the ground clutter (e.g. moving ground vegetation etc) that can undermine the radar's ability to provide reliable data. It should also be noted, as outlined in NatureScot (2017) concerning radar that "*such systems cannot discriminate between species of similar size and weight (e.g. common gull and golden plover produce similar echoes).*" In the specific case of whooper swan the radar would not be able to differentiate this species from the other species of migratory/wintering swans that occur in Ireland. Therefore, it would not be recommended to use radar at the proposed wind farm site following NatureScot (2017) criteria. Acoustic surveys are also useful in particular circumstances, however, they are limited in only providing information on presence or absence and can not be used to establish abundance as would be needed to assess collision risk.

Instead of surveying with such technology, another option is available as previously discussed, NatureScot (2017) outlines that it is possible to estimate levels of nocturnal activity. As previously stated and reiterated here, no significant collision risk was predicted for whooper swan or any other species. Please refer to Section 7.6 of the EIAR for further detailed discussion.

Other Species

The DAU also mentioned the potential for collision risk impacts on several other species. The key species mentioned was the highly endangered Irish population of breeding curlew. The wording was as follows:

> ***The Department also notes extensive flight observations of Kestrel (red list), snipe (red list), black headed gull (amber list), sparrowhawk and buzzard in the proposed turbine area, with fewer but nevertheless notable, records of other significant species such as curlew (red list), golden plover (Annex I, red list), woodcock (red list, breeding), hen harrier (Annex I, amber list), merlin (Annex I, amber list) and peregrine (Annex I).***

[32] *It is noted that an updated collision risk analysis has been submitted as an Appendix to this Appeal however this was not relevant to this wintering species as the update was made to include a summer season of data.*

The DAU notes that even the loss of a single pair of curlew would have an impact of national importance, given how few breeding birds remain in the country. While the significance of such an impact is acknowledged, as outlined in EIAR Section 7.5.2.13 no significant impacts (including displacement and collision risk) are predicted for curlew. The key factor in this regard is the infrequency of observations and the observed locus of activity for this species being c. 900m from the nearest proposed infrastructure. The intervening land between the probable territory location and the Wind Farm Site comprises areas of mature forestry, treelines and scrubland which further screen the Wind Farm Site from this area. In relation to collision risk, this species was not recorded flying at potential collision height (within 500m of the wind farm site) during the extensive vantage point survey work undertaken at the Wind Farm Site. Collision-related mortality is not likely to significantly impact this species.

In relation to the other species mentioned, as outlined in Section 7.5.2 of the EIAR as lodged, effects no greater than low effect significance (Percival, 2003) and long-term slight negative (EPA, 2022) were predicted for collision risk at the proposed development site. An updated collision risk assessment has been conducted and is presented in Appendix 4 of this document. The updated collision risk assessment incorporates the most recent survey data (April to September 2023), and therefore assesses the full duration of bird surveys at the Wind Farm Site, from September 2020 to September 2023. This represents a 36-month survey period, consisting of three breeding seasons and three winter seasons.

Table 1-4 in Appendix 4 provides a comparison of the collision risk model as outlined in the EIAR as lodged, compared to the updated collision risk model which includes the most up-to-date survey data (from April to September 2023). The effect of the collision mortality from the proposed development was assessed in relation to the county population and the background mortality for each species. The percentage increase in background mortality as outlined in the EIAR, as lodged, and the updated increase in background mortality are presented in Appendix 4, Table 1-4. This change is then assessed to establish if there is a significant change in the collision risk impact for each species.

As outlined in Table 1-4 in Appendix 4, there were no significant changes in the collision risk impact for any species assessed. Therefore, the impact assessment for collision risk on KORs as outlined in the EIAR as lodged, continues to provide an accurate description of the collision risk impact of the proposed development on the avian community at the Proposed Development site.

As previously outlined, while no significant effect has been identified, a comprehensive programme of operational phase surveys is proposed in EIAR Appendix 7-6 to monitor for interactions between the proposed development and the local avian community. The results of this monitoring will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation if required.

Lighting

Concerns were raised about the impact of the lighting associated with the Proposed Development on birds. The wording was as follows: ***"Therefore lighting is an important consideration in minimizing collision risk and the recommendation is that they [the turbines] should not be strongly illuminated."***.

As some bird species are known to be attracted to artificial lighting (phototaxis), there is potential for some bird species to be put at increased risk of colliding with a turbine if attracted to artificial lighting on turbines. However, some taxonomic groups (e.g., some burrow nesting seabirds) and nocturnally migratory species (especially passerines) are more attracted to lights than others. It is noted that there were no key ornithological receptors (KOR) from either of these groups identified at the proposed development site please see Section 7.4 of the EIAR for further details on KOR identification. As detailed in the guidance document: *'Effects of Aviation Obstruction Lighting on Birds at Wind Turbines, Communication Towers and Other Structures'*:

> ***"It is likely that collision risk at lit turbines for non-passerine taxa are likely to be relatively low in general."***

This is of note as all of the KORs identified at the proposed development site were non-passerines. There is, therefore, no potential for significant effects.

4.3.1.2.3 Merlin Displacement

The DAU raised concerns regarding the potential displacement of breeding merlin, including from the increased use of the site by humans. The wording was as follows:

> ***"The turbines will be located within a merlin breeding territory and that it is likely there will be an element of displacement from this territory in addition to habitat loss and degradation through development and disturbance. Merlin move nest site annually within large territories, therefore the location of the nest site could equally be within the proposed development site in the future."***

There are two elements to the DAU's concerns, firstly displacement of foraging merlin and secondly loss of nesting habitat onsite.

Foraging

Concerning foraging merlin, the evidence of surveys is that this species very rarely utilises the land within the proposed wind farm site. The proposed wind farm site is composed of suboptimal habitat (forestry and degraded bog) which is (as was borne out by surveys) unlikely to be favoured by foraging merlin. As provided in Appendix 7-4 and 7-7 of the EIAR and Appendix 3 of this First Party Appeal, merlin with very few exceptions were recorded to forage in the less degraded/intact raised bog to the north of the wind farm site. The DAU refer to disturbance distances published in a review by Goodship and Furness (2022). As outlined in Section 7.5.2.3 of the EIAR as submitted, a disturbance buffer zone of between 300-500m from construction works is recommended for breeding merlin, and <200m for roosting merlin (Goodship & Furness, 2022).

The evidence of surveys has shown that this species is not dependent on the habitats of the wind farm site and are predicted to continue to forage in the more favourable habitat to the north of the development beyond the zone of influence (>500m) of the proposed wind farm site. Therefore, no significant effects are predicted (including from increased use of the wind farm site by humans), as outlined in Section 7.5.2.3 of the EIAR as submitted.

Nesting

The DAU posits that merlin are equally likely to nest within the wind farm as anywhere else in their territory. While it is possible that nesting could occur in the proposed wind farm given the presence of suitable nesting habitat (forestry), the evidence of surveys suggests that it is very unlikely. As outlined in Section 7.3.6.5 of the EIAR and Appendix 3 of this First Party Ground of Appeal, the evidence of three breeding seasons shows that the recorded pair of merlin exhibit a very high rate of nest site fidelity. In summary, merlin bred/attempted to breed in the same location (the same tree) approximately 1.7km from the Wind Farm Site in the 2021, 2022 and 2023 breeding seasons. As outlined in Section 7.5.2.3 of the EIAR as submitted, owing to the observed nest site fidelity and the considerable separation distance between the proposed wind farm and the nest, no significant effects are predicted (including from increased use of the wind farm site by humans).

While no significant effect has been identified as outlined in EIAR Appendix 7-6, pre-construction surveys will be undertaken prior to the initiation of works at the wind farm. The survey will include a thorough walkover survey to a 500m radius of the Proposed Development footprint and all works areas, where access allows. If a merlin nest is found to be active during the construction phase, no works shall be undertaken within a disturbance buffer in line with industry best practice (e.g. Forestry Commission Scotland, 2006; Ruddock and Whitfield, 2007; Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the nest is no longer occupied. In the unlikely event merlin move the nest site, this measure will ensure no significant effects are avoided as a result of construction works.

Additionally, a comprehensive programme of operational phase surveys is proposed in EIAR Appendix 7-6 to monitor for interactions between the proposed development and the local avian community. The

results of this monitoring will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation if required.

In conclusion, as outlined in the EIAR as submitted and reiterated herein, no significant effects are predicted for merlin.

4.3.1.3 Ornithology Conclusion

Following the clarification and explanation provided above, it is clearly demonstrated that the issues raised have been comprehensively addressed and that the information before ABP is adequate and that no deficiencies in information remain. Furthermore, it has been demonstrated that the Proposed Development site will not significantly impact avian populations of importance in the area and does not therefore, run contrary to the proper planning and sustainable development of the area.

4.4 Reason for Refusal 3 – Traffic

Policy 12-4 of the Tipperary County Development Plan, 2022 - 2028 seeks to maintain and protect the safety, capacity and efficiency of Tipperary's road network and associated junctions in accordance with the Spatial Planning and National Roads Guidelines for Planning Authorities, (DECLG, 2012) and the TransEuropean Networks Regulations. The Planning Authority considers that the applicants' have failed to demonstrate that the proposed development would not have a significant detrimental impact on the capacity and operation of such road network. Accordingly, it is considered that the proposed development would materially contravene 12-4 of the Tipperary County Development Plan 2022 - 2028 and would be contrary to the proper planning and sustainable development of the area.

4.4.1 Grounds of Appeal against Reason for Refusal 3

This reason for refusal, together with all other matters discussed in the TCC Planner's Report relating to traffic are discussed in the following section.

This Grounds of Appeal against the Reason for Refusal no. 3 was prepared in collaboration with Alan Lipscombe Traffic and Transport Consultants Ltd, whom, together with MKO, prepared Chapter 15.1 – Traffic and Transport, of the Environmental Impact Assessment Report (EIAR) and the Appendix 15-2 of the EIAR – Traffic Management Plan.

With reference to the Planner's Report prepared by Tipperary County Council, there are additional traffic points raised, in particular in relation to the operation and safety of the N52 / L-5040. These additional issue are addressed in Section 4.4.1.4 of this document.

4.4.1.1 Points for discussion

Policy 12-4 of the Tipperary County Development Plan 2022 -2028 reads as follows;

Maintain and protect the safety, capacity and efficiency of Tipperary's roads network and associated junctions in accordance with the Spatial Planning and National Roads Guidelines for Planning Authorities, (DECLG, 2012) and the Trans-European Networks Regulations and to avoid the creation of additional access points to national roads to which speed limits greater than 60kmh apply.

With respect to the above, the points set out in the following sections of this report addresses TCCs statement that: *The Planning Authority considers that the applicants' have failed to demonstrate that the proposed development would not have a significant detrimental impact on the capacity and operation of such road network.*

The response is prepared under the following subject headings;

- The Traffic Impact of the proposed Carrig Renewables Wind Farm
- Policy set out in the Spatial Planning and National Roads Guidelines for Planning Authorities, (DECLG, 2012).
- Policy set out in Trans-European Networks Regulations.

4.4.1.2 The Traffic Impact of the Proposed Carrig Renewables Wind Farm

A detailed assessment of the traffic related impacts of the Proposed Development is set out in Chapter 15-1 Traffic and Transport of the EIAR. As stated in Section 15.1.1.5 of the EIAR the assessment "*adopts the guidance for such assessments set out by Transport Infrastructure Ireland, or TII, in the document number PE-PDV-02045 'Traffic and Transport Assessment Guidelines, May 2014'.*

It is noted that traffic related impacts that will be experienced on the surrounding road network as a result of the Proposed Development will generally be confined to the construction period, and the impacts will therefore be temporary. Once the Proposed Development is operational traffic generation will be limited to up 3 car/lgv trips to the site on any given day, with the long-term impacts on the surrounding road network imperceptible.

The traffic impacts experienced on the existing road network during the construction phase were assessed for 4 different types of typical delivery day: 1) pouring of the concrete foundations, 2) Site preparation and groundworks, 3) Abnormal wind turbine loads, and 4) The delivery turbine components on standard HGVs.

The greatest impacts on the road network are forecast to be during the 222 working days when it is forecast that up to 11 standard HGVs will access and leave the site in any one hour. The impacts on the road network during these days are shown in Table 15-19 of the EIAR and discussed in Section 15.1.6.1. On the National road network leading to the site in Birr, the forecast show that on these busiest days the percentage increase on links flows at the N52 / N62 roundabout in Birr ranges from +3.6% to 6.7%, while the forecast increase on the N52 and the L-5040 leading to the site are forecast to be +22.3% and a 3 fold increase respectively.

The N52 / L-5040 junction is therefore the only junction on the delivery route on the National Road network where it is forecast that a temporary increase in traffic flows will exceed 10% during the construction period. A 10% increase in traffic flows is the threshold set out in TII guidelines for Traffic and Transport Assessments, above which a detailed junction capacity assessment is required. During pre-planning discussions it was confirmed that a capacity assessment of the N52 / L-5040 should be included in the assessment. A detailed assessment of the capacity of the N52 / L-5040 junction is set out in Section 15.1.6.4 and Table 15-24 of the EIAR. The results show that it is forecast that the additional development generated construction traffic on these busiest days will result in an increase in the maximum ratio of flow to capacity (RFC) at the junction from 0.5% to 5.4% during the AM peak hour, and from 1.3% to 6.2% during the PM peak hour, with both applying to the right turn movement from the N52 onto the L5040. The assessment shows that the junction is forecast to operate well within the acceptable limit of 85% in accordance with TII guidelines.

As stated in the EIAR submitted with the planning application, it is emphasised that the assessment of traffic generation on link flows during the delivery of the stone and general materials presented is a precautionary approach for assessment purposes, in that it assumes all deliveries come from both directions through Birr. In reality a proportion of deliveries will approach from the N52 north of Birr and some from the N62 south of Birr, with the percentage increases being less than the maximum presented in the EIAR.

The traffic impacts on the general road network will be significantly less during the delivery of the abnormally large loads transporting the large turbine components, which is also set out in Section 15.1.6.4 of the EIAR. A detailed swept path analysis was undertaken of the proposed Turbine Delivery Route, with proposed temporary measures required along the route set out in Section 15.1.8. of the EIAR.

In addition, the likely traffic impacts that will be experienced on the surrounding road network during the construction of the proposed 13.7km cable grid connection linking the proposed on-site 38kV substation in the townland of Faddan More, to the existing 110kV Dallow substation, is set out in terms of additional traffic on the road network and the potential diversion routes for existing traffic in Section 15.1.7 of the EIAR.

Based on the above and the information presented in Chapter 15.1 of the EIAR it is considered that a comprehensive assessment of the impacts for the proposed development is presented in the EIAR, and it is established that the Proposed Development will not have a significant detrimental impact on the capacity and operation of the road network.

4.4.1.3 The Spatial Planning and National Roads Guidelines for Planning Authorities, (DECLG, 2012)

It is not clear from the reason for refusal which policies of the Spatial Planning and National Roads Guidelines for Planning Authorities, that the Proposed Development contravenes. A summary of those policies considered relevant to the Proposed Development is therefore provided below.

With reference to the Spatial Planning and National Roads Guidelines for Planning Authorities, (DECLG, 2012) ('the Roads Guidelines'), the following Policies are noted in the context that the existing L-5040 connects into the N52 National Secondary Road Network at a point where the speed limit is 100 km/h.

Section 2.5 Required Development Plan Policy on Access to National Roads

This section of the Roads Guidelines states;

With regard to access to national roads, all development plans and any relevant local area plans must implement the policy approaches outlined below. ***Lands adjoining National Roads to which speed limits greater than 60 km/h apply:*** *The policy of the planning authority will be to avoid the creation of any additional access point from new development or the generation of increased traffic from existing accesses to national roads to which speed limits greater than 60 km/h apply. This provision applies to all categories of development, including individual houses in rural areas, regardless of the housing circumstances of the applicant.*

While all traffic generated by the Proposed Development will gain access to the National Road network at a location within the 100km/h speed limit, the following points should also be noted;

- Access will be via the existing L-5040 local road and not an existing or new development access point,
- The notable traffic volumes that will be generated will be temporary, with the operational long-term traffic comprising a maximum of 3 vehicles per day approximately 2 times per month.
- It is noted that similar volumes of traffic volumes have been permitted at previously permitted Wind Farm Developments; including the following:

Galway Wind Park (58 turbines) & Ardderoo Wind Farm (25 turbines) – Both of these wind farm developments, which are now both operational, were accessed off the N59 National Secondary Road via the L-53453 local road.

Derrinlough Wind Farm (21 turbines) – During the construction of this permitted wind farm access will be gained to the site via 2 site access junctions off the N52 National Secondary Road.

Exceptional Circumstances

This section of the Roads Guidelines states;

Notwithstanding the provisions of Section 2.5 above, planning authorities may identify stretches of national roads where a less restrictive approach may be applied, but only as part of the process of reviewing or varying the relevant development plan and having consulted and taken on board the advice of the NRA (TII) and having followed the approach outlined below.

(1) Developments of National and Regional Strategic Importance

A less restrictive approach may be adopted in the case of developments of national and regional strategic importance which by their nature are most appropriately located outside urban areas, and where the locations concerned have specific characteristics that make them particularly suitable for the developments proposed.

It is considered that the above conditions apply to the Proposed Development, due to the nature and scale of the development.

2.2.2 The Trans-European Networks Regulations

The key objectives of Trans-European Transport Network (TEN-T) are inserted below. The TEN-T objectives are aimed at the provision of a ***"coherent, efficient, multimodal, and high-quality transport infrastructure across the EU"***. While the Proposed Development is not a transport infrastructure project, it will not impact on other transport related projects proposed within the region with these aims.

Trans-European Transport Network (TEN-T)

Objectives

The EU's trans-European transport network policy, the TEN-T policy, is a key instrument for the development of coherent, efficient, multimodal, and high-quality transport infrastructure across the EU. It comprises railways, inland waterways, short sea shipping routes and roads linking urban nodes, maritime and inland ports, airports and terminals.

It fosters the efficient transportation of people and goods, ensures access to jobs and services, and enables trade and economic growth. It strengthens the EU's economic, social and territorial cohesion and creates seamless transport systems across borders, without physical gaps, bottlenecks or missing links. It also aims to reduce the environmental impact of transport and to increase the safety and the resilience of the network.

4.4.1.4 Other Traffic Related Issues Raised in TCC Internal Reports

Page 9 of the Planners Report prepared by TCC for the Proposed Development includes the following observations made by the Nenagh District Engineer;

In relation to Traffic Management, the Traffic Management Plan (contained within Appendix 15-2 of the EIAR) the DE report notes, that in the absence of any quarry within the development site, a large quantity of rock will need to be imported, resulting in 229 HGV movements daily over the construction period of 229 days (note predicted HV usage in 2028 without the windfarm is 22 movements per day). The proposed delivery route includes 1.2km of L5040 (local secondary road which is narrow and doesn't allow 2-way traffic. The DE report notes proposals to use a shuttle system with stacking of trucks and use of GPS tracking to ensure spacing of deliveries and prevent excess HGV traffic, however the DE raises concerns with the proposal in relation to road safety (particularly at the junction of N52 & L5040).The report recommends that a Traffic and Transport Assessment should be undertaken at this junction and submitted for agreement with the Planning Authority (scope to be agreed with DE) in the event of a grant of permission. Finally, the report of the District Engineer raises concerns about the capacity of the L5040 having regard to the proposed transportation of large quantities of bulk construction material. It is considered that the 1.2km stretch will require strengthening in advance of works and regular maintenance during construction, with an estimated total cost of €409k. The report

recommends that a condition be attached in this regard. Similarly, it is noted that sections of the L5041 are incorporated into the development site. The road is described as being extremely vulnerable and the DE states that same should not be used by HGV vehicles which could cause permanent damage to the road. (Emphasis added)

The key issues raised by the Nenagh District Engineer are underlined above and fall under the following subject headings.

- Road Safety - N52 / L-5040 junction,
- The recommendation that a Traffic and Transport Assessment should be submitted for this junction (scope to be agreed with DE) in the event of a grant of planning permission,
- Concerns about the capacity of the L-5040 with respect to the large quantities of bulk construction material.

Each of these issues is addressed in turn below.

4.4.1.4.1 Road Safety N52 / L-5040 junction

In response to the safety concerns raised by the Nenagh District Engineer, Traffico Ltd were commissioned by the Applicant to undertake a Stage 1 Road Safety Audit of the proposed temporary traffic management works at the junction of the N52 / L-5040 and the construction delivery route along the L-5040 to the proposed site access (refer to Appendix 5 of this Appeal document). The information provided to the Audit Team included;

- Appendix 15-2 - Traffic Management Plan for Carrig Renewables Wind Farm Development,
- Relevant Sections of Chapter 15.1 of the EIAR, including Section 15.1.6.3 which discusses the junction capacity tests undertaken for the N52 / L-5040 junction, and Figures 15-28 and 15-29, which shows the swept path analysis of the abnormally sized turbine blade and tower loads negotiating the N52 / L-5040 junctions.

The Auditors were requested to include the proposals on the ground during the construction of the Proposed Development, and the proposed delivery arrangements for the L-5040 during the busiest days when materials will be delivered to the site.

The Stage 1 Road Safety Audit Report prepared by Traffico Ltd is included as Appendix 5 of this report. The format of Road Safety Audits, as set out in the Traffic Infrastructure Ireland (TII) publication number ***GE-STY-01024 Road Safety Audit***, is that potential problems are identified by the Audit Team, with responses to each problem prepared by the Design Team on behalf of the Applicant. Following a review of the responses the Audit Team then either accept the design team response, indicating that the problem has been addressed, or reject the response, indicating that the problem remains.

The audit team identified 3 problems, together with Design Team responses are as follows;

Problem 2.1 - Forward Visibility from Holding Area A to Local Road - Location: Junction N52 / L5040 - HGV Holding Area Option A to South of L-5040

Audit Team Problem - Forward visibility between the lead delivery vehicle and (opposing) eastbound traffic travelling on L- 5040 was partially obscured by foliage in the field boundary. This could lead to opposition type conflicts and driver frustration, resulting in poor decision making.

Audit Team Recommendation - Forward visibility should be optimised here by removing foliage within the field boundary.

Design Team Response – The Design Team agree with this point and confirm that all foliage within the area identified as the Holding Area A will be removed for the duration of the delivery phase of the Proposed Development, in order to maximise forward visibility along the L-5040. In addition, it is noted that all traffic movements leaving the holding area will be managed on site by site staff (flagman) and the holding area will be closed off at all other times by means of fencing.

Is Design Team Response accepted by the Audit Team – The Audit Team accept the design Teams response, with this problem now resolved.

Problem 2.2 - Depleted Priority Control Road Markings - Location: L-5040 Approach to Junction with N52

Audit Team Problem - The centre line and stop road markings were heavily depleted and difficult to register when driving on the L-5040 towards the N52 mainline. This could lead to vehicles over-shooting the stop line, placing them at risk of conflict with high speed traffic on the N52.

Audit Team Recommendation - The centre line and stop road markings should be replenished prior to the commencement of the construction work.

Design Team Response – It is acknowledged that the existing road markings on the L-5040 approach to the junction with the N52 are worn. It is confirmed that the Applicant will offer to TCC that these road markings will be renewed prior to construction, and again, following the construction of the Proposed Development.

Is Design Team Response accepted by the Audit Team - The Audit Team accept the design Teams response, with this problem now resolved.

Problem 2.3 - Sightline for Drivers Looking to Right Obscured - Location: Windfarm Site Construction Access onto L-5040

Audit Team Problem - Visibility looking to the right for drivers leaving the construction site was partially obscured by foliage within the adjacent field boundary. This is likely to increase the risk of a side impact type collision at the wind farm construction access.

Recommendation - Sightlines at the wind farm construction access should be maximised by cutting back and maintaining all boundary foliage falling within the envelope of visibility.

Design Team Response – The Design Team agree with this and submit Figure 15-31 of the EIAR for consideration in the Audit. The figure shows 3m x 90m visibility splays at the proposed access junction on the L-5040 that will be kept clear of all obstructions during both the construction and operational stages of the Proposed Development.

Is Design Team Response accepted by the Audit Team - The Audit Team accept the design Teams response, with this problem now resolved.

Summary of Road Safety Audit Process – Independent Road Safety Auditors were commissioned to undertake a Stage 1 Road Safety Audit covering the delivery route from the N52 / L-5040 junction and the proposed site access on the L-5040. While undertaking the Audit three Problems were identified by the Audit Team. Responses to each of Problem were submitted to the Audit Team, with each response accepted by the Audit Team. It is therefore concluded that the 3 safety concerns raised by the Audit Team have been addressed and that the N52 / L-5040 junction, the L-5040, together with the proposed Traffic Management Plan, will provide a safe environment for the construction phase of the proposed Carrig Renewables Wind Farm. A record of the auditing process is provided in the Road Safety Audit Feedback Form included as Appendix A of the Stage 1 Road Safety Audit Report.

4.4.1.4.2 The recommendation that a Traffic and Transport Assessment should be submitted for the N52 / L-5040 junction (scope to be agreed with DE) in the event of a grant of planning permission

It is considered that a comprehensive Traffic and Transport Assessment has been undertaken for the Proposed Development, including an assessment of the potential impacts on the operation and capacity of the N52 / L-5040 junction. The various stages associated with a Traffic and Transport Assessment in accordance with TII Guidelines are set out in the following sections of the EIAR;

- A review of the existing and future transport infrastructure in the vicinity of the Proposed Development, including the proposed haul route, an assessment of 2023 traffic flows and traffic forecasts during an assumed construction year of 2028 (Section 15.1.2 Receiving Environment and 15.1.3 – Existing Traffic Volumes),
- A description of the nature of the Proposed Development and the traffic volumes that it will generate during the different construction stages and when it is operational (Section 15.1.4 – Proposed Development Traffic Generation),
- A description of the abnormally sized loads and vehicles that will require access to the site (Section 15.1.5 Construction Traffic Vehicles),
- A review of the effects of Proposed Development generated traffic on links and junctions during construction and when the facility is operational (Section 15.1.6 – Traffic Effects During Construction and Operation). This section includes the detailed capacity undertaken for the N52 / L-5040 junction,
- A review of the effects of the Proposed Development on the public road network along the underground electrical cabling route (Section 15.1.7 Effect of grid connection on road network),
- A description of traffic management measures of large deliveries (Section 15.1.8 traffic Management of Large Deliveries),
- A geometric assessment of the routes and their capacity to accommodate the abnormal loads associated with the Proposed Development (Section 15.1.9 – Abnormal Load Route Assessment),
- An assessment of the provision for sustainable modes of travel (in this case primarily with respect to the transport of construction staff) (Section 15.1.10 – Provision for Sustainable Modes of Travel),
- A description of potential significant effects on Roads and Traffic (Section 15.1.11 – Likely and Significant Effect and Associated Mitigation Measures).

4.4.1.4.3 Concerns about the capacity of the L-5040 with respect to the large quantities of bulk construction material.

Traffic capacity

A detailed Traffic Management Plan for the operation of the deliveries of the bulk materials along the 1.2km section of the L-5040 is set out in the Traffic Management Plan included as Appendix 15-2 of the EIAR. The assessment shows that there will be sufficient time for organised convoys of HGVs to travel to and from the site unopposed. It is determined that approximately 2.4 minutes of each 15 minute period will be required for one convoy to access the site via the L-5040, and the same time required for a convoy to exit the site (total of 4.8 minutes). This will leave approximately 10 minutes of each 15 minute period free of construction traffic on this section of the L-5040.

Structural capacity

With respect to the structural capacity of the L-5040, pre and post condition surveys of the L-5040 will be undertaken as part of the mitigation measures set out in Section 15.1.12.5 of the EIAR.

It is noted that the L-5040 currently has the structural capacity to provide for the construction traffic associated with the Proposed Development and it is confirmed that the condition of the road will be continuously monitored and maintained throughout the construction period.

4.4.1.5 Traffic Conclusion

It is considered that the information provided above, clarifying elements previously set out in Chapter 15 of the EIAR illustrates that a detailed assessment was undertaken of the traffic related impacts that will be incurred during the construction and operation of the Proposed Development as set out in Chapter 15 of the EIAR submitted with the application. It is concluded that with the implementation of the proposed traffic management measures, there will be no significant detrimental impacts on the road network. Importantly it is noted that all traffic related impacts associated with the Proposed Development will be temporary, and that once operational, traffic generation will comprise of low volumes of maintenance trips by cars and vans only.

The Independent Stage 1 Road Safety Audit commissioned to assess the N52 / L-5040 junction and the proposed traffic management measures on the L-5040, confirms that the junction will operate safely during the construction of the Proposed Development

5. CONCLUSION

This first party appeal is being lodged in respect of the decision issued by Tipperary County Council to refuse planning permission for the Carrig Renewables Wind Farm proposed under Pl. Ref. 23/60763. The Proposed Development, if permitted, will assist Tipperary County Council in meeting their 600MW wind energy target and contribute to the national target wind energy target of 9GW.

In summary, the Proposed Development is strongly supported by the following:

National planning, related policy, guidance and legislation, including

- Project Ireland 2040 National Planning Framework,
- National climate and energy policy including the CAP 23, with regard to the development of alternative and indigenous energy sources and the minimisation of emissions from greenhouse gases,
- The Climate Act, which requires public bodies to carry out their functions in accordance with the national climate policies and objectives.
- The provisions of the Wind Energy Development Guidelines, Guidelines for Planning Authorities issued in 2006, and the Draft Wind Energy Guidelines issued in 2019
- The National Energy Security Framework and Energy Security in Ireland to 2030 – Energy Security Package

Regional and Local Level Policy, including:

- The Regional Spatial and Economic Strategy
- The policies of the planning authority as set out in the Tipperary County Development Plan 2022-2028 as they relate to the achieving national climate and renewable energy targets.

Other Matters, including

- Tipperary County Council's assessment of the EIAR and NIS, highlights that the site is considered to be acceptable for wind energy across a number of key material considerations. This includes landscape, residential amenity, biodiversity, hydrology, cultural heritage and material assets. The issues raised in relation to ornithology and traffic have been comprehensively addressed in this report.
- The RES is out of date and does not reflect the ambition of national policy.

In response to refusal reason 1, it is demonstrated that Under section 37(2)(a) of the Planning Act, it is within the remit of the Board to grant permission for the Proposed Development, notwithstanding the contravention of the Tipperary County Development Plan. A material contravention can be granted on the following basis:

- The Proposed Development is of strategic and national importance due to the fact that it is an indigenous, secure, renewable energy source, it contributes to the national climate and energy targets, and it represents a significant investment in the rural economy.
- There are conflicting objectives in the development plan insofar as the proposed development is concerned insofar as it relates to climate change, renewable energy ambition and specifically wind farm developments such as the Proposed Development.
- The Proposed Development supports the achievement of the policies and objectives set out in national and regional policy and guidelines issued under Section 28 of the Planning Act.

In determining this case, the points above should be considered alongside the Board's legal obligation under the Climate Act to carry out its functions in accordance with the provisions of national climate policy.

In response to refusal reason 2 the information provided in this report demonstrates that the Proposed Development will not significantly impact avian populations of importance in the area. The issues raised by Tipperary County Council with regard to the impact on SPAs, collision risks and nocturnal flights, and the displacement of breeding merlin have been comprehensively addressed and clarification has been provided where necessary. It is evident that no deficiencies in information remain and that no significant impacts will occur.

In response to refusal reason 3, the additional information and clarification provide demonstrates that a significant detrimental impact on the road will not arise during the construction phase. Upon completion of the construction phase, maintenance and operational traffic will not impact the road network. An Independent Stage 1 Road Safety Audit was conducted and demonstrates that the N52 / L-5040 junction and the proposed traffic management measures on the L-5040 will operate safely during the construction phase.

Ultimately, it is considered that this Proposed Development is in accordance with the provisions of proper planning and sustainable development and should be granted planning permission in respect of the suitability of the site and the need for renewable energy development. It is the policy of the government to rapidly accelerate the roll-out of renewable energy technology. However, if suitable sites are ruled out due wind energy policy drafted almost a decade ago, it is unlikely that any acceleration will be seen.

To combat the effects of climate change, Ireland must decarbonise its economy by 2050. There is no "silver bullet" to do so. It will take hundreds, if not thousands, of individual renewable energy projects to decarbonise the Irish economy. The scale of the challenge we face to decarbonise the Irish economy is enormous, but the climate change implications of not doing so are even greater. There is no other way to decarbonise a modern society except through renewable energy projects such as the Proposed Development.

Therefore, it is respectfully requested that the Board overturn this reason for refusal and resultingly grant planning permission for this development in accordance with the provisions of proper planning and sustainable development.

APPENDIX 1

TIPPERARY COUNTY COUNCIL DECISION TO REFUSE PERMISSION

Comhairle Contae Thiobraid Árann
Tipperary County Council

Comhairle Contae Thiobraid Árann,
Oifigí Cathartha,
Cluain Meala,
Co. Thiobraid Árann
Tipperary County Council,
Civic Offices, Clonmel,
Co. Tipperary
E91 N512

Comhairle Contae Thiobraid Árann,
Oifigí Cathartha,
An tAonach,
Co. Thiobraid Árann
Tipperary County Council,
Civic Offices, Nenagh,
Co. Tipperary
E45 A099

t 0818 06 5000
e customerservice
@tipperarycoco.ie

tipperarycoco.ie

Ref. No. 2360763

Carrig Renewable Energy Limited
Ronan Dunne
MKO Planning and Environmental Consultants
Tuam Road
Galway
H91 VW84

Application Received: 22/09/2023 & 26/09/2023

Re: Notification of Decision to Refuse PERMISSION under Planning & Development Act 2000 (as amended)

A Chara,

In pursuance of the powers conferred on it by the above mentioned Act, the Tipperary County Council has by Order dated **16/11/2023,** decided to refuse to grant you PERMISSION for development of land namely:- (1) The construction of 7 no. wind turbines and associated hardstand areas with the following parameters a) total tip height range of 179.5m – 185m, b) rotor diameter range of 149m – 163m, c) hub height range of 103.5m to 110.5m; (2) 1 no. permanent 38kV electrical substation which will be constructed in the townland of Faddan Beg consisting of a single storey control building with welfare facilities, all associated electrical plant and equipment, battery energy storage system, security fencing, all associated underground cabling, wastewater holding tank and all ancillary works and equipment; (3) All works (within County Tipperary) associated with the connection of the proposed wind farm to the national electricity grid, via the provision of underground electrical cabling (38kV) to the existing Dallow 110kV substation in the townland of Clondallow, Co. Offaly; (4) Provision of 10 no. joint bays, communication chambers and earth sheath links along the underground electrical cabling route; (5) reinstatement of the road or track surface above the proposed cabling trench along existing roads and tracks; (6) all associated underground electrical and communications cabling connecting the turbines to the proposed wind farm substation; (7) 1 no. meteorological mast with a height of 107m above ground and associated foundation and hard-standing area; (8) upgrade of existing tracks and roads and the provision of new site access roads; (9) all works associated with the provision of a new permanent site entrance off the L5040 local road; (10) provision of 5 no. new access and egress points along the L5041

local road in the townlands of Cloncorig, Faddan More and Coolderry; (11) Provision of 4 no. peat repository areas and 3 no. spoil repository areas; (12) 2 no. temporary construction compounds with temporary site offices and staff facilities; (13) Accommodation works along the public road network along the N52 national secondary road in the townland of Ballyloughnane to facilitate the delivery of turbine components and other abnormal sized loads; (14) Site Drainage; (15) Tree Felling; (16) Operational stage site signage; and, (17) all associated site development works, ancillary works and apparatus. - Works within the curtilage of Protected Structures RPS Ref. TRPS336 (Ballyloughnane Bridge) and RPS Ref. TRPS519 (Croghan Bridge) at In the townlands of Croghan, Clohaskin, Caherhoereigh, Ballykinash, Tinnakilly, Arragh More, Ballyloughnane, Faddan Beg, Coolderry, Tinlough, Sharragh, Doughkill, Ballaghgar, Faddan More, Cloncorig, Killeen, and Cornhill, Co. Tipperary.

for the reason(s) set out in the attached schedule.

An appeal against this decision may be made to An Bord Pleanala within the prescribed period - see footnote.

Signed on behalf of Director of Services _____ **Date: 16th November, 2023**

Tipperary County Council Schedule of Reasons 2360763

1. Notwithstanding the general Planning Policy support for wind energy generation at national, regional and local policy level, including:

Policy 3-1 which seeks to '**promote and facilitate renewable energy development, in accordance with the policies and objectives of the Tipperary Renewable Energy Strategy 2016 (and any review thereof), and the Tipperary Climate Adaptation Strategy 2019**', the proposed development is located on lands identified as an area unsuitable for new wind energy development within the Tipperary Renewable Energy Strategy. Furthermore, it is considered that the proposed development would not, come within the limited circumstances provided for in policy TWIND 4.14. of the Wind Energy Strategy in the Renewable Energy Strategy.
Accordingly, it is considered that the proposed development would contravene materially the policies and objectives of the Tipperary County Development Plan 2022 - 2028, specifically Volume 3, Appendix 2, Tipperary Renewable Energy Strategy, Wind Energy Strategy, Policy TWIND 4. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area.

2. Policy11-16 of the Tipperary County Development Plan 2022 - 2028 states that
"In assessing proposals for new development to balance the need for new development with the protection and enhancement of the natural environment and human health. In line with the provisions of Article 6(3) and Article 6 (4) of the Habitats Directive, no plans, programmes, etc. or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects[1])".

Having regard to the proximity to a number of European Sites with conservation objective to maintain or restore the favourable conservation conditions of a number of bird species. Having regard to the EIAR and NIS submitted with the applications and submissions made on the applications, and notwithstanding mitigation measures proposed, the Planning Authority is not satisfied that the likelihood of significant effects on the environment can be excluded. The applicant has failed to demonstrate that the development on the site would not have an adverse impact on the site integrity of the local sites within the Natura 2000 network. The Planning Authority considers that the proposed development would result in a loss of habitat, disturbance and displacement for Annex I bird species, and in this context, the proposed development would, therefore, be contrary to the proper planning and sustainable development of the area, development would adversely affect bird species or their habitat specified in Article 4 of the Birds Directive, which forms the basis of the classification of that site.

---

1 Except as provided for in Article 6(4) of the Habitats Directive, viz. There must be: a) no alternative solution available; b) imperative reasons of overriding public interest for the project to proceed; and c) Adequate compensatory measures in place

3. Policy 12-4 of the Tipperary County Development Plan, 2022 - 2028 seeks to maintain and protect the safety, capacity and efficiency of Tipperary's road network and associated junctions in accordance with the Spatial Planning and National Roads Guidelines for Planning Authorities, (DECLG, 2012) and the Trans-European Networks Regulations. The Planning Authority considers that the applicants' have failed to demonstrate that the proposed development would not have a significant detrimental impact on the capacity and operation of such road network. Accordingly, it is considered that the proposed development would materially contravene 12-4 of the Tipperary County Development Plan 2022 - 2028 and would be contrary t the proper planning and sustainable development of the area.

Footnote:

An appeal against a decision of a Planning Authority under the Planning and Development Act 2000 (as amended) may be made to An Bord Pleanala, 64 Marlborough Street, Dublin 1, D01 V902. (Tel. (01) 8588100) during office hours.

1. You have four weeks beginning on the date the planning authority makes its decision which was (16/11/2023). This is a strict time limit.

2. You must put your appeal in writing (either typed or handwritten).

3. You must clearly state your own name and address. If someone is acting for you, like a planning agent they must clearly state their own name and address as well as your name and address.

4. You must give enough details to allow An Bord Pleanala to identify the application you wish to appeal.

5. You must provide your planning grounds of appeal (reasons and arguments) for your appeal and any items you wish to support your grounds of appeal.

6. If you are a third party, you must include the written acknowledgement given to you by the planning authority to confirm it received your submission at planning application stage.

7. You must pay the correct fee.

For more information on how to make an appeal see www.pleanala.ie

APPENDIX 2

SUBMISSION BY THE DEVELOPMENT APPLICATIONS UNIT TO THE PLANNING APPLICATION

Submission Details

Submitter

Name	Department of Housing, Local Government and Heritage
Address	Custom House, Dublin, Ireland D01 W6X0
Note	Please find attached the nature conservation observations and recommendations of the Department of Housing, Local Government and Heritage in relation to this Planning Application.

In relation to application

File Number	2360763
Name	Carrig Renewable Energy Limited
Address	In the townlands of Croghan, Clohaskin, Caherhoereigh, Ballykinash, Tinnakilly, Arragh More, Ballyloughnane, Faddan Beg, Coolderry, Tinlough, Sharragh, Doughkill, Ballaghgar, Faddan More, Cloncorig, Killeen, and Cornhill, Co. Tipperary

An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

Planning Ref: 2360763
(Please quote in all related correspondence)

27 October 2023

Director of Services – Planning
Tipperary County Council
Civic Offices
Nenagh
Co Tipperary
E45 TE81

Via LGMA Portal

Re: Notification under Article 28 (Part 4) or Article 82 (Part 8) of the Planning and Development Regulations, 2001, as amended.

Proposed Development: Planning Application 2360763 for permission for (1) The construction of 7 no. wind turbines and associated hardstand areas with the following parameters a) total tip height range of 179.5m – 185m, b) rotor diameter range of 149m – 163m, c) hub height range of 103.5m to 110.5m; (2) 1 no. permanent 38kV electrical substation which will be constructed in the townland of Faddan Beg consisting of a single storey control building with welfare facilities, all associated electrical plant and equipment, battery energy storage system, security fencing, all associated underground cabling, wastewater holding tank and all ancillary works and equipment; (3) All works (within County Tipperary) associated with the connection of the proposed wind farm to the national electricity grid, via the provision of underground electrical cabling (38kV) to the existing Dallow 110kV substation in the townland of Clondallow, County Offaly; (4) Provision of 10 no. joint bays, communication chambers and earth sheath links along the underground electrical cabling route; (5) reinstatement of the road or track surface above the proposed cabling trench along existing roads and tracks; (6) all associated underground electrical and communications cabling connecting the turbines to the proposed wind farm substation; (7) 1 no. meteorological mast with a height of 107m above ground and associated foundation and hard-standing area; (8) upgrade of existing tracks and roads and the provision of new site access roads; (9) all works associated with the provision of a new permanent site entrance off the L5040 local road; (10) provision of 5 no. new access and egress points along the L5041 local road in the townlands of Cloncorig, Faddan More and Coolderry; (11) Provision of 4 no. peat repository areas and 3 no. spoil repository areas; (12) 2 no. temporary construction compounds with temporary site offices and staff facilities; (13) Accommodation works along the public road network along the N52 national secondary road in the townland of Ballyloughnane to facilitate the delivery of turbine components and other abnormal sized loads; (14) Site Drainage; (15) Tree Felling; (16) Operational stage site signage; and, (17) all associated site

development works, ancillary works and apparatus. - Works within the curtilage of Protected Structures RPS Ref. TRPS336 (Ballyloughnane Bridge) and RPS Ref. TRPS519 (Croghan Bridge) in the townlands of Croghan, Clohaskin, Caherhoereigh, Ballykinash, Tinnakilly, Arragh More, Ballyloughnane, Faddan Beg, Coolderry, Tinlough, Sharragh, Doughkill, Ballaghgar, Faddan More, Cloncorig, Killeen and Cornhill, County Tipperary

A Chara

I refer to correspondence on 27th September received in connection with the above.

Outlined below are nature conservation observations/recommendations co-ordinated by the Development Applications Unit.

Thank you for your correspondence on this application. In relation to impacts on nature conservation and biodiversity in general, the Department has concerns regarding this application. The Department has determined that insufficient information was provided in the application and therefore cannot fully assess the impact that this development either individually or in combination with other plans may have on the adjacent/close by NATURA 2000 sites, Annex species and biodiversity in general. In order to fully assess the impact this development may have, further information is required. Areas where further information is sought can be found in the advice provided below.

The Department has a range of ecological concerns in relation to the proposed development. In particular there are a number of ornithological issues which the Department does not feel have been adequately addressed by the Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS). The Department also has concerns in relation to potential adverse hydrological impacts on sensitive water dependant Special Areas of Conservation and Natural Heritage Areas in the catchment of the development. It is clear from the surveys carried out that a range of both Annex I and Birds of Conservation Concern Ireland (BoCCI) red listed Birds of Conservation Concern occur in the zone of influence of the development and in the Department's view it is not established that a number of these will not be adversely affected by the development. The Department notes that The Southern Regional Assembly Regional Spatial & Economic Strategy (RSES) lists Regional Policy Objectives (RPOs) for this region and RPO1 states
"*Any reference to support for all plans, projects, activities and development in the RSES should be considered to refer to 'environmentally sustainable development' that has no adverse effects on the integrity of European sites and no net loss of biodiversity*". In the Department's view it has not been established that the proposed project would not cause a net loss of biodiversity nor does the Department accept that ex-situ adverse impacts on any European site have been ruled out.

This Department owns 63ha of wetland at Sharragh which is managed for conservation and directly adjoins the proposed development site. This includes an area of open water which

provides a regular night time roost for the Annex I bird species whooper swan. The Department owns a further 33ha of wetland at Abbeyville 2km west of the proposed site which is also managed for conservation and in particular for wintering wildfowl. The Department owns further lands within The Little Brosna Callows Special Protection Area (SPA), Ballyduff/Clonfinane Bog Special Area of Conservation (SAC) (110m north of site), Kilcaren-Firville Bog SAC (1.5km) and Arragh More (Derrybreen) Bog SAC/Natural Heritage Area (NHA) (450m from site), all of which are managed solely for conservation and where there has been substantial investment in measures to restore damaged wetlands, largely through measures to retain water in peatland. The Designated Special Protection Areas of the Little Brosna (6.1km), Middle Shannon Callows (9.8km) and Lough Derg (7.9km) are some distance from the site but it has not in the Department's view been established that wildfowl using the area in the zone of influence of the proposed site, do not originate from or alternately use these European Sites. SPAs designated to protect birds typically cover just core breeding and feeding areas but birds may range far more widely and can therefore be affected by windfarms outside the SPA boundaries, particularly on transit to other feeding and/or roosting sites outside the SPA. Core foraging areas have been referenced for some SPA species in the assessment but these are guidelines only and are dependent on the availability of suitable habitat adjoining designated sites. Where suitable habitat is only available beyond referenced "*core range*" recorded at other sites, or where particularly attractive habitat is available beyond this distance, it can form important supporting habitat for qualifying interest species. Whooper swan is an Annex I species and a qualifying interest species for The Little Brosna SPA. While foraging habitat in the form of improved grassland for whooper swan is widely available in the area, secure open water roosting areas are very limited and may limit potential usage of otherwise abundant foraging habitat. The open water with secluded and secure setting at Sharragh provides such an area with birds able to utilise this to roost and feed in adjoining farmland. The EIAR/NIS concludes that because a study of other sites has recorded a core range of 5km that the birds in the vicinity of the proposed site are not linked to the SPA which is approximately 6km away, the Department does not accept this is established and the difference between the referenced 5km core range and 6km to the Little Brosna SPA, or indeed the other SPAs mentioned, is little for a species that migrates to Ireland from Iceland (or greater distances in the case of other wildfowl species considered). There are very few suitable roosting areas between Sharragh and the Little Brosna SPA and foraging grounds to the south of the proposed site. Therefore the Department considers it entirely possible that there may be movement between the sites, constituting ex-situ usage of the development zone of influence by qualifying interest species from the SPA. Some data from the surveys carried out may support this view, for example the surveys repeatedly recorded up to 27 whooper swans roosting at Sharragh but on one occasion recorded 86 whoopers feeding on grassland just outside the 500m zone. Such movements of birds and fluctuation in numbers suggests to the Department possible intermittent movement to and from core SPAs. Similarly the Department suggests the records of the duck species teal (BoCCI amber list), shoveler (red list) and pintail (amber list), within the zone of influence may originate from or share usage of SPA land to the north explaining their sporadic occurrence. These species while not on Annex I of the Birds Directive are nevertheless qualifying interests of the SPAs listed above. Small satellite areas of habitat

play a role in supporting larger more concentrated sites, this may be particularly the case for example at times of high water levels when grounds within or directly adjoining the SPA may be inaccessible or in the case of duck species, which sometimes forage in tillage or other crops, may provide specific feeding not available within the core range. Such satellite sites are also important in the context of Article 10 of the Habitats Directive in providing stepping stones in the landscape between or beyond designated sites. Apart from any links to SPAs, the surveys have also identified regular nationally significant (over 150) numbers of whooper swan in the "*Lackabrack flock*" approximately 2km east of the proposed turbines. E.g. 226 birds on 30-01-22. Any threat to such a nationally significant flock is of concern even if not within an SPA.

The vast majority of the ornithological assessment including both the displacement considerations and the collision risk analysis are based on bird surveys and detections which were carried out during daylight hours. Nocturnal surveying for breeding woodcock and some limited barn owl survey was carried out but there has been no assessment of nocturnal migration or, of particular relevance in this case, nocturnal commuting movements of wildfowl[1] over or in the zone of influence of the site. A range of wildfowl are known to carry out movements at night and again the Department would point to the sporadic recordings of flocks of pintail, shoveler, whooper and teal in or adjoining the zone of influence. These were detected in daylight surveys but may be indicative of larger movements at night which have not been surveyed for. The Department must also, as indicated above, consider where such birds are coming from. Acoustic recording of calls from migrating birds over fixed points at night (often referred to as nocmig) is now widely used by both scientists and enthusiasts, and should be used to indicate bird usage in the zone of influence of the proposed development. In addition, radar can be used to quantify movements of birds above a certain height through the area and could be combined with acoustic recording to indicate species concerned. The full impact of the development cannot in the Department's opinion be assessed without this information.

Collision risk

In the collision risk assessment only bird sightings from the daytime vantage point surveys were included, but surveyors did note night time movement of whoopers on at least one occasion. There is no night time collision risk analysis despite significant potential for night time movements of birds. This in the Department's view is an inadequate quantification and potentially significant underestimate of any risks posed. In so far as daytime surveys of the proposed site is concerned it is clear there are multiple records of ecologically significant species moving through the proposed site. This is particularly obvious for whooper swan (Appendix 7-4-9) where the flight observations from vantage points demonstrate it is proposed to locate the turbines within a pre-existing regularly used whooper swan flight line. These birds if not completely displaced, which the Department considers quite possible, would if they maintain current usage be at greater than normal collision risk as many will be

Guillemain M., Fritz H., Duncan P. 2002. The importance of protected areas as nocturnal feeding grounds for dabbling ducks wintering in western France. Biological Conservation, Volume 103, Issue 2, pp 183-198.

ascending from or descending to the adjoining roost site at Sharragh and therefore flying at a range of heights through the rotor sweep zone. Whoopers are larger and less manoeuvrable than other species increasing collision risk[2]. The Department also notes extensive flight observations of Kestrel (red list), snipe (red list), black headed gull (amber list), sparrowhawk and buzzard in the proposed turbine area, with fewer but nevertheless notable, records of other significant species such as curlew (red list), golden plover (Annex I, red list), woodcock (red list, breeding), hen harrier (Annex I, amber list), merlin (Annex I, amber list) and peregrine (Annex I).

On the significance of collision risk assessments calculations, the Department would point out that while they may be useful statistical indicators in some circumstances they are not definitive and can be unintentionally influenced by a range of factors during the input of data. As already outlined if a species is prone to movement at night such as wildfowl and swans and surveys have been carried out by day (as is the case here) the data being used is only representing daytime movements when collision risk is likely to be lower . It is accepted birds will, most of the time, avoid turbines hence the acceptability of applying avoidance rates to the collision prediction models. However; low visibility events (apart from night time), such as fog or heavy rain are likely to greatly reduce the ability of species to avoid danger areas. Such conditions are not unusual during the winter wildfowl season and while good visibility and avoidance of turbines is the normal behaviour, these conditions will occur when species are present in an area all winter. The Department can find no detailed reference in the assessment, quantifying the likely number of nights of fog, low cloud ceiling or precipitation at the site based on previous weather patterns.

It should also be remembered when collision rate mortalities are being compared to larger natural mortality rates, that they are in addition to natural mortality and the range of other threats facing species This is a factor to be particularly considered for species already in serious decline, for example there are believed to be approximately 105 breeding pairs of curlew left in Ireland[3], therefore the loss of even one pair, whether from collision or displacement, would equate to a loss of almost 1% of the national breeding population.

The Department can find no reference in the ornithological impact assessment to the proposed lighting of the turbines or site. Given the proposed height of the turbines the Department assumes lighting at the tips will be compulsory. While lighting on wind turbines may in some circumstances reduce collision risk from lack of visibility[4], it has been well documented[5] that in adverse weather conditions (low ceiling, fog, precipitation) night migrating birds congregate around lighted structures. These birds have lost access to normal

[2] Larsen, J.K. & Clausen, P., 2002. Potential Wind Park Impacts on Whooper Swans in Winter: The Risk of Collision. Waterbirds: The International Journal of Waterbird Biology, 25, pp.327–330.

[3] Colhoun, K., Flannelly, F., O'Neill, J., Phelan, E., Servignat, H., O 'Donoghue, B. & Kelly, S. (2022) Status and distribution of breeding Eurasian Curlew in Ireland 2021. Irish Wildlife Manuals, No. 138. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.
[4] Evans W.R. Applications of Acoustic Bird Monitoring for the Wind Power Industry
[5] Avery et al. 1980

orientation cues and tend to approach lights, become disorientated, and fly about in the lighted area. Therefore lighting is an important consideration in minimizing collision risk and the recommendation is that they should not be strongly illuminated. Some guidance is available on this[6] with factors such as colour, flashing and intensity important factors; however, the Department was unable to find evidence that this has been assessed in the application.

Displacement

Displacement of breeding and wintering birds by wind farms is well established[7]. The predicted displacement effect of this windfarm appears largely based on information from McGuinness 2015[8] which was qualified guidance based largely on studies carried out much earlier than 2015 when turbines were far smaller than the turbines being proposed in this case. The 179.5-185m turbines proposed in this case are of the order of twice the height and sweep of the turbines in the earlier studies on which referenced displacement distances were estimated. It is in the Department's view likely that displacement distances will therefore also be greater[9] and as a consequence adversely affect sensitive species identified in surveys over a greater distance than the EIAR or NIS recognise. This would not be a problem if the habitats and species concerned were widespread and abundant; however, they are not. While the habitat concerned is from a raised bog perspective significantly damaged through drainage, among other issues, it is nevertheless still ecologically valuable and an important island of habitat for species which are of significant conservation concern and in decline in the surrounding vastly greater area of improved agricultural landscape. It also serves as a supporting habitat and connection to other nearby islands of habitat such as the nearby designated European Sites. This enables species such as merlin and curlew among others in national decline, which require larger areas of less intensive land use to persist in the area. The placement of turbines with potentially larger displacement impacts than those of smaller turbines within this limited non-intensively farmed area will damage connectivity and create a barrier effect within the habitats concerned potentially making even adjoining areas unsuitable for species like the globally threatened breeding curlew. This will also remove any potential for species to move within habitats or expand should habitat quality improve through various measures in adjoining properties. Even studies based on the significantly smaller turbines of the past posited a reduction in breeding density of up to 42% within 500m of wind energy sites and significant levels of flight avoidance by curlews within 800m[10]. Spreading

[6] NatureScot Information Note The Effect of Aviation Obstruction Lighting on Birds at Wind Turbines, Communication Towers and Other Structures. September 2020 v1.1

[7] Pearce-Higgins, J.W. et al., 2009. The distribution of breeding birds around upland wind farms. Journal of Applied Ecology, pp.1323–1331.

[8] Mc Guinness, S., Muldoon, C., Tierney, N., Cummins, S., Murray, A., Egan, S. & Crowe, O. (2015). Bird Sensitivity Mapping for Wind Energy Developments and Associated Infrastructure in the Republic of Ireland. BirdWatch Ireland, Kilcoole, Wicklow.

[9] Hötker, H., Thomsen, K.-M. & Jeromin, H., 2006. Impacts on biodiversity of exploitation of renewable energy sources: The example of birds and bats. Report by Nature and Biodiversity Conservation Union (NABU)

[10] Pearce-Higgins, J.W. et al., 2009. The distribution of breeding birds around upland wind farms. Journal of Applied Ecology, pp.1323–1331

this displacement further within a limited habitat has clear consequences for reliant species. In relation to the Annex I species merlin the Department notes inference in the assessment that because nest sites have been located beyond previously referenced displacement distances (for smaller turbines) from proposed turbines that an adverse impact can be ruled out. The Department does not accept this as the survey data in the Department's view indicates that the turbines will be located within a merlin breeding territory and that it is likely there will be an element of displacement from this territory in addition to habitat loss and degradation through development and disturbance. Merlin move nest site annually within large territories, therefore the location of the nest site could equally be within the proposed development site in the future as it forms part of the territory and currently contains suitable undisturbed nesting habitat The development would in the Department's view remove a significant section of this territory and potential nesting area. Any assessment of displacement also needs to fully consider the displacement caused not only by wind turbines but also other infrastructure such as roads, lighting etc., but more importantly by greatly increased usage of the site by humans and the associated avoidance behaviour this will cause in sensitive species[11] which in some cases may exceed the displacement caused by infrastructure.

Drainage and hydrology

The development would entail extensive drainage and excavation works including in the groundwater zone, it is clear these will remove water from the site at greater than current volumes. Mitigation in relation to drainage concentrates on the prevention of sediment entering watercourses which is an important issue but of greater concern to this Department is the removal of large volumes of water in the first place. It is accepted that significant drainage already exists on site and has already damaged annexed habitats but the development proposes to increase this substantially exacerbating existing ecological and carbon sequestration problems. This is at a time when the re-wetting of our peatlands nationally has been recognised as of great importance in order to restore habitats, but also to reduce the loss of carbon to the atmosphere. The conflict between the drainage and destruction of an existing peatland which is a natural carbon store with potential to store more if made wetter, in order to facilitate a development which aims to reduce carbon emissions does not appear to be recognised. Increased carbon could be retained in the ground by raising water levels on the site, conversely reducing water levels will lead to the release of carbon. It does not appear that this carbon release and loss of potential carbon retention has been factored into the carbon budget presented in the EIAR.

The Department does not have specialist hydrologist consultation available to independently assess the full impacts of the proposed development on the adjoining designated Natura 2000 Sites which are fully dependant on existing water levels but the Department is concerned in relation to potential impacts. Any lowering of water levels would very seriously

[11] Goodship, N.M. and Furness, R.W. (MacArthur Green) (2022). Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283

damage these wetland sites. The consent authority must ensure the proposal to carry out such extensive surface drainage and excavation in addition to deep excavation and pile driving into the groundwater zone does not adversely impact on the integrity of the close by Natura 2000 sites. The proposals include various scenarios which are not yet determined, including potentially 50 driven piles 5-18m below ground level per turbine. That this cannot be predetermined and has further as yet undetermined mitigation depending on method required is a concern. It is proposed these may require complex mitigation such as bentonite seals around pile driving to prevent movement of water from surface to aquifer or vice versa. That this is necessary next to such sensitive sites raises concern about the potential for unforeseen problems and signals to the Department that there may be risks involved with potential adverse effects possible on adjoining wetland European Sites. This Department is aware of a consented wind farm development elsewhere in the country where post consent construction difficulties with groundwater entering turbine foundations has necessitated a further consent application requiring further drainage beyond those originally consented, despite the fact that no such difficulties were previously foreseen. Now that excavation works have already commenced on that site, new proposed drainage works are required to support the original project even though these new proposed works now also have potential to impact adjoining wetland habitat and dependant species with adverse implications for nature conservation.

There are already significant problems in relation to the drying out of areas in nearby conservation sites due to past damage and significant works have taken place funded by this Department to retain water and meet the state's obligations under the Habitats Directive to protect these areas. Any potential to undermine this or exacerbate many existing conservation problems is of great concern. In summary to achieve favourable conservation status more retention of water is required, further loss would be a significant problem. There are already incentives in various areas to rewet peatlands and it is likely that such schemes will be expanded further in the future.

Proposals must also consider how climate change and in particular how predicted longer dry periods in combination with the proposed project could exacerbate drying out of bog habitats. Drainage systems that have been enlarged to facilitate a development will, the Department presumes, remove water from the area faster and more efficiently than previously, particularly during dry spells with obvious impacts on wetlands. Therefore the Department suggests that the consent authority in this case must be certain that the drainage and excavation/pile driving works etc. required in this case will not affect the hydrological regime in adjoining designated wetlands and that consent should not be granted if this is not guaranteed and this cannot be dependent on or subject to any future assessments or determinations.

This Department is not able to conclude that the proposed development individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site and in addition the Department cannot conclude that the proposed development will not adversely affect a number of sensitive bird species listed on Annex I of

the Birds Directive and/or on the Red list of Bids of Conservation Concern. The Department believes that this proposed development is not in a good site from an ecological point of view.

As outlined above Further Information is required in relation to this planning application.

You are requested to send any further communications to this Department's Development Applications Unit (DAU) at referrals@npws.gov.ie, where used, or to the following address:

The Manager
Development Applications Unit (DAU)
Government Offices
Newtown Road
Wexford
Y35 AP90

Is mise, le meas

Sinéad O' Brien
Development Applications Unit
Administration

APPENDIX 3

BREEDING BIRD SURVEY DATA 2023

Planning and Environmental Consultants

Breeding Bird Survey Data Summary 2023

Carrig Renewables Wind Farm

Table of Contents

TABLE OF TABLES

1. METHODS

1.1 Field Surveys

The following surveys were undertaken from April 2023 to September 2023 inclusive:

- Vantage Point Survey
- Breeding Walkover Survey
- Breeding Raptor Survey
- Breeding Woodcock Survey
- Breeding Barn Owl Survey
- Waterbird Distribution Survey

For a description of survey methodology for the above surveys, please refer to Section 7.2.1 of the EIAR for the proposed Carrig Renewables Wind Farm.

2. RESULTS

2.1 Field Surveys

The following bird species were recorded during the survey period. These include species listed on **Annex I** of the EU Birds Directive (2009/147/EC), and species that are a Special Conservation Interest **(SCI)** of a Special Protection Area (SPA) designated under the EU Birds and Habitats (92/43/EEC) Directives Natura 2000 network within 15km of the proposed development site[1], species listed on the **Red List** of Birds of Conservation Concern in Ireland (Gilbert *et al.,* 2021), and species considered sensitive to this type of development (i.e., raptor species). The list is ordered in accordance with conservation significance: Annex I species, SCIs of designated sites, Red listed species and raptors:

- Hen Harrier (Annex I)
- Kingfisher (Annex I)
- Merlin (Annex I)
- Peregrine (Annex I)
- White-tailed Eagle (Annex I)
- Lapwing (SCI of River Little Brosna Callows SPA & Middle Shannon Callows SPA; Red-listed)
- Black-headed Gull (SCI of River Little Brosna Callows SPA & Middle Shannon Callows SPA)
- Barn Owl (Red-listed)
- Curlew (Red-listed)
- Kestrel (Red-listed)
- Snipe (Red-listed)
- Woodcock (Red-listed)
- Buzzard (Raptor)
- Sparrowhawk (Raptor)
- BoCCI Red-listed passerine species (Grey Wagtail, Meadow Pipit, Stock Dove, Swift)

The following sections describe the species observed during surveys. Raw data and maps are provided in Appendix 1-1 and Appendix 1-2 respectively. Incidental records of birds of conservation concern are also presented.

The target species listed below were only recorded during waterbird distribution surveys, greater than 1km from, and up to 10km from, the Wind Farm Site. The vast majority of these records were from the Little Brosna Callows, which was encompassed by the survey area. These species were not observed within a minimum 1km of the Wind Farm Site and are therefore not discussed below. Raw tabular data for these species is provided in Appendix 1-1.

- Little Egret (Annex I)
- Whooper Swan (Annex I; SCI of River Little Brosna Callows SPA & Middle Shannon Callows SPA)
- Cormorant (SCI of Lough Derg (Shannon) SPA)
- Tufted Duck (SCI of Lough Derg (Shannon) SPA)
- Teal (SCI of Middle Shannon Callows SPA)
- Wigeon (SCI of Middle Shannon Callows SPA)
- Redshank (Red-listed)

[1] *It is noted that a determination will be made on whether there is connectivity between the SPAs and the site at the appropriate assessment stage*

2.1.1 ## Vantage Point Surveys

Summary results from vantage point surveys are presented below in Table 2-1.

Table 2-1 Vantage Point Survey Summary

Species	Total number of observations recorded during this survey type	Total Number of Bird Seconds[2] at PCH[3]	Number of observations on site/within 500m	Activity of note	Figure[4]
Hen Harrier	1	50	1	The was one observation of an individual ringtail hunting in August. (offsite)	Appendix 1-2, Figure 1.1
Kingfisher	1	0	0	The was one observation of an individual travelling in August over 1.5km from the Wind Farm Site.	Appendix 1-2, Figure 1.2
Merlin	5	117	0	There were five observations of merlin. All observations were greater than 1.5km from the Wind Farm Site and comprised individuals travelling, hunting and being mobbed by corvids.	Appendix 1-2, Figure 1.3
Peregrine	1	0	0	The was one observation of an individual travelling in May August over 1.5km from the Wind Farm Site.	Appendix 1-2, Figure 1.4
White-tailed Eagle	1	73	0	The was one observation of an individual juvenile bird travelling and soaring in August. (offsite)	Appendix 1-2, Figure 1.5
Black-headed Gull	2	121	2	The were two observations in May, both of individuals travelling.	Appendix 1-2, Figure 1.6
Curlew	2	30	1	The were two observations in September, both of individual birds. One comprised a bird travelling beyond 500m from the Wind Farm Site, and the other observation comprised a bird head calling within 500m of the Wind Farm Site.	Appendix 1-2, Figure 1.7
Kestrel	22	1,763	15	The were 22 observations of kestrel. The majority of observations comprised individuals hunting / travelling. A male and female were seen together on-site in July.	Appendix 1-2, Figure 1.8

[2] *Bird Seconds are the number of birds observed multiplied by the number of seconds the flock was observed for.*
[3] *PCH – potential collision height. The PCH is taken as the surveyed height bands 1.5-25m and 25-200m (see submitted EIAR for further information)*
[4] *Please note that flightline numbers are a continuation of observations from the EIAR.*

Species	Total number of observations recorded during this survey type	Total Number of Bird Seconds[3] at PCH[3]	Number of observations on site/within 500m	Activity of note	Figure[4]
Snipe	6	530	1	There were six observations of snipe, with flock size ranging from 1 - 10 birds. The only observation within the Wind Farm Site comprised an individual flushed. An individual bird was recorded displaying in April, approximately 1km north of the Wind Farm Site.	Appendix 1-2, Figure 1.9
Woodcock	1	35	1	Single observation, comprising an individual bird roding in May within 500m of the Wind Farm Site.	Appendix 1-2, Figure 1.10
Buzzard	63	10,390	19	There were 63 observations of buzzard, with the majority of observations comprising single birds hunting / travelling / soaring. There was some territorial behaviour observed in July within the Wind Farm Site, comprising two buzzards chasing each other.	Appendix 1-2, Figure 1.11
Sparrowhawk	1	0	1	There was a single observation of a bird calling in July.	Appendix 1-2, Figure 1.12

2.1.2 Breeding Walkover Surveys

Summary results from breeding walkover surveys are presented below in Table 2-2.

Table 2-2 Breeding Walkover Survey Summary

Species	Total number of observations recorded during survey type	Number of observations on site/ within 500m	Activity of note	Breeding Status	Figure
Kestrel	5	4	There were five observations of kestrel. All observations comprised individual birds hunting and/or travelling.	Non-breeding	Appendix 1-2, Figure 2.1
Snipe	1	1	Single observation of bird flushed in April.	Non-breeding	Appendix 1-2, Figure 2.2
Buzzard	13	7	There were 13 observations of buzzard. Most observations comprised single birds hunting and /or travelling. Chicks were heard from a nest site in June, confirming breeding approximately 650m from the Wind Farm Site.	**Confirmed breeding**	Appendix 1-2, Figure 2.3 & Figure 2.3.1
Sparrowhawk	1	0	Single observation of an individual travelling in June.	Non-breeding	Appendix 1-2, Figure 2.4

2.1.3 Breeding Raptor Surveys

Summary results from breeding raptor surveys are presented below in Table 2-3. Note: observations relating to merlin nest site are contained in Confidential Appendix 1-3.

Table 2-3 Breeding Raptor Survey Summary

Species	Total number of observations recorded during survey type	Number of observations on site/within 500m	Activity of note	Breeding Status	Figure
Merlin	8	1	There were eight observations of merlin. Two merlin were seen fighting during survey in April within the Wind Farm Site. There were no further observations of merlin form this location. There were several observations of single merlin (both male and female) in the vicinity of the previously recorded nest site, however no breeding behaviour was recorded during the 2023 breeding season.	Non-breeding	Appendix 1-2, Figure 3.1
Peregrine	1	0	There was a single observation of a peregrine soaring in April.	Non-breeding	Appendix 1-2, Figure 3.2
Kestrel	21	3	There were 21 observations of kestrel. Most observations comprised single birds hunting and /or travelling. There were three observations of adults mobbing other birds (buzzard and merlin) in April and July, two of which were 1.5km north of the Wind Farm Site and one was within the Wind Farm Site, at the same location a pair was observed together during VP surveys in July. There was also one observation of two males and a female fighting in the same vicinity as above 1.5km north of the Wind Farm Site in July.	**Probable breeding**	Appendix 1-2, Figure 3.3 & Figure 3.3.1
Buzzard	30	6	There were 30 observations of buzzard. Most observations comprised single birds hunting, soaring and /or travelling. There were some observations of two birds together, however no breeding behaviour was recorded.	Non-breeding	Appendix 1-2, Figure 3.4
Sparrowhawk	1	1	There was a single observation of a male travelling in April.	Non-breeding	Appendix 1-2, Figure 3.5

2.1.4 Breeding Woodcock Surveys

Summary results from breeding woodcock surveys are presented below in Table 2-4.

Table 2-4 Breeding Woodcock Survey Summary

Species	Total number of observations recorded during survey type	Number of observations on site/ within 500m	Activity of note	Breeding Status	Figure
Woodcock	41	41	There were 41 observations of woodcock. The majority of observations were of roding males, indicating probable breeding territories across the Wind Farm Site in areas largely analogous to breeding seasons 2021 and 2022.	**Probable breeding**	Appendix 1-2, Figure 4.1

215

Breeding Barn Owl Surveys

Summary results from breeding barn owl surveys are presented below in Table 2-5.

Note: Results from breeding barn owl surveys undertaken from April – June 2023 were presented in the submitted EIAR. These records are duplicated in this document in addition to the outstanding July 2023 records.

These observations are presented in Confidential Appendix 1-3.

Table 2-5 Breeding Barn Owl Survey Summary

Species	Total number of observations recorded during survey type	Number of observations on site/within 500m	Activity of note	Breeding Status	Figure
Barn Owl	9	9	Chicks heard begging from nest site in June and juveniles seen in July.	**Confirmed breeding**	Appendix 1-2, Figure 5.1

2.1.6 Waterbird Distribution Surveys

Summary results from waterbird distribution surveys are presented below in Table 2-6.

Table 2-6 Waterbird Distribution Survey Summary

Species	Total number of observations recorded during survey type	Flock Size Range	Number of observations on site/ within 500m	Activity of note	Figure
Black-headed Gull	9	1 - 18	0	There were nine observations of black-headed gull, all within the Little Brosna Callows / Ashton Callows.	Appendix 1-2, Figure 6.1
Lapwing	9	1 - 10	0	There were nine observations of lapwing, all within the Little Brosna Callows / Ashton Callows.	Appendix 1-2, Figure 6.2

2.1.8 Incidental Records

Incidental records of target species during the survey period are detailed in Table 2-7. Note: observations relating to barn owl nest site are contained in Confidential Appendix 1-3.

Table 2-7 Incidental Records

Species	Survey Type(s)	No. of Observations	Activity of note	Figure
Hen Harrier	Waterbird Distribution Survey	1	Individual observed hunting approximately 7km form Wind Farm Site in April.	Appendix 1-2, Figure 7.1
White-tailed Eagle	Waterbird Distribution Survey	2	Two observations of separate individuals in April and May, both at Little Brosna Callows.	Appendix 1-2, Figure 7.2
Lapwing	Breeding Woodcock Survey	1	Single observation of individual bird travelling and calling in June.	Appendix 1-2, Figure 7.3
Barn Owl	Breeding Woodcock Survey	5	Two observations related to the known nest site and the remaining three observations comprised single birds hunting in the surrounding area.	Appendix 1-2, Figure 7.4
Curlew	Breeding Raptor Survey, Breeding Woodcock Survey and Vantage Point Survey	8	There were two observations of one and two birds calling in the vicinity of the probable 2021 & 2022 breeding territory location in May, approximately 750m north of the Wind Farm Site. There were two observations of birds calling within the Wind Farm Site in June. The remaining observations comprised between 1-12 birds calling and travelling within 500m of the Wind Farm Site in June and September.	Appendix 1-2, Figure 7.5
Kestrel	Waterbird Distribution Survey	2	Two observations of individuals hunting and being mobbed.	Appendix 1-2, Figure 7.6
Snipe	Breeding Raptor Survey and Breeding Woodcock Survey	15	There were incidental records of snipe. The majority of these observations comprised drumming or calling birds within Wind Farm Site and within 500m of Wind Farm Site, indicating probable breeding territories in areas largely analogous to breeding seasons 2021 and 2022.	Appendix 1-2, Figure 7.7
Woodcock	Breeding Raptor Survey and Breeding Barn Owl Survey	2	Two observations, both within 500m of Wind Farm Site and comprising calling and roding individuals.	Appendix 1-2, Figure 7.8

Species	Survey Type(s)	No. of Observations	Activity of note	Figure
Buzzard	Breeding Woodcock Survey and Waterbird Distribution Survey	11	Nine of the eleven observations were from the Little Brosna Callows. The remaining two observations were from the Wind Farm Site and comprised single birds travelling.	Appendix 1-2, Figure 7.9

APPENDIX 1-1

FIELD SURVEY DATA

TABLE OF CONTENTS

Appendix 1 Table 1 Survey Effort

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
05/04/2023	Vantage Point Survey	VP3a	3:00 starting at 06:05	Visibility: good; Wind speed and direction: gentle breeze S; Cloud cover and height: 66-100% >500m; Rain: drizzle; Frost: none; Snow: none		TR
05/04/2023	Vantage Point Survey	VP3a	3:00 starting at 09:35	Visibility: good; Wind speed and direction: gentle breeze S; Cloud cover and height: 66-100% >500m; Rain: drizzle; Frost: none; Snow: none		TR
06/04/2023	Waterbird Distribution Survey	Carrig	0:45 starting at 07:00	Visibility: good; Wind speed and direction: calm WNW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
06/04/2023	Waterbird Distribution Survey	Derrinasallow Bridge	0:30 starting at 07:55	Visibility: good; Wind speed and direction: calm WNW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
06/04/2023	Waterbird Distribution Survey	Ashton Callows	1:40 starting at 09:00	Visibility: good; Wind speed and direction: light air WNW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
06/04/2023	Waterbird Distribution Survey	Stream	0:25 starting at 10:55	Visibility: good; Wind speed and direction: light air WNW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
06/04/2023	Waterbird Distribution Survey	Little River Brosna Callows	1:05 starting at 11:25	Visibility: good; Wind speed and direction: light air WNW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
06/04/2023	Waterbird Distribution Survey	Ashton Callows	0:10 starting at 12:45	Visibility: good; Wind speed and direction: light air WNW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
06/04/2023	Waterbird Distribution Survey	Redwood Bog	0:10 starting at 13:00	Visibility: good; Wind speed and direction: light air WNW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
13/04/2023	Breeding Walkover Survey	TA	6:00 starting at 06:00	Visibility: good; Wind speed and direction: light breeze S; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		TR
14/04/2023	Waterbird Distribution Survey	Carrig	0:45 starting at 07:00	Visibility: good; Wind speed and direction: light air NW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
14/04/2023	Waterbird Distribution Survey	Derrinasallow Bridge	0:35 starting at 07:55	Visibility: good; Wind speed and direction: light air NW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
14/04/2023	Waterbird Distribution Survey	Ashton Callows	1:30 starting at 10:30	Visibility: good; Wind speed and direction: light air NW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
14/04/2023	Waterbird Distribution Survey	Stream	0:23 starting at 12:05	Visibility: good; Wind speed and direction: light air NW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
14/04/2023	Waterbird Distribution Survey	Little River Brosna Callows	1:11 starting at 12:34	Visibility: good; Wind speed and direction: light air NW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
14/04/2023	Waterbird Distribution Survey	Ashton Callows	0:12 starting at 13:55	Visibility: good; Wind speed and direction: light air NW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
14/04/2023	Waterbird Distribution Survey	Redwood Bog	0:13 starting at 14:15	Visibility: good; Wind speed and direction: light air NW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
19/04/2023	Vantage Point Survey	VP1a	3:00 starting at 06:00	Visibility: good; Wind speed and direction: fresh breeze NW; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		TR
19/04/2023	Vantage Point Survey	VP1a	3:00 starting at 09:30	Visibility: good; Wind speed and direction: fresh breeze NW; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		TR
20/04/2023	Vantage Point Survey	VP2	3:00 starting at 05:24	Visibility: good; Wind speed and direction: light air NW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		POG
20/04/2023	Breeding Walkover Survey	TB	6:00 starting at 06:00	Visibility: good; Wind speed and direction: light breeze S; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		TR
20/04/2023	Waterbird Distribution Survey	Carrig	0:50 starting at 07:05	Visibility: good; Wind speed and direction: light air NE; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none	Garish	NL
20/04/2023	Waterbird Distribution Survey	Derrinasallow Bridge	0:30 starting at 08:05	Visibility: good; Wind speed and direction: light breeze E; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
20/04/2023	Vantage Point Survey	VP2	3:00 starting at 08:54	Visibility: good; Wind speed and direction: gentle breeze NW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		POG

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
20/04/2023	Waterbird Distribution Survey	Ashton Callows	1:30 starting at 08:55	Visibility: good; Wind speed and direction: light breeze E; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none	Water table very low. Almost at summer levels. Cows back on callows.	NL
20/04/2023	Waterbird Distribution Survey	Stream	0:25 starting at 10:35	Visibility: good; Wind speed and direction: light breeze E; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
20/04/2023	Waterbird Distribution Survey	Little River Brosna Callows	1:25 starting at 11:05	Visibility: good; Wind speed and direction: light breeze E; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
20/04/2023	Waterbird Distribution Survey	Ashton Callows	0:15 starting at 12:40	Visibility: good; Wind speed and direction: light breeze E; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
20/04/2023	Waterbird Distribution Survey	Redwood Bog	0:12 starting at 13:03	Visibility: good; Wind speed and direction: light breeze E; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		NL
21/04/2023	Breeding Raptor Survey	BRVP2	3:00 starting at 09:00	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
21/04/2023	Breeding Raptor Survey	BRVP2	3:00 starting at 12:00	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
25/04/2023	Breeding Raptor Survey	BRVP1	3:00 starting at 14:30	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
25/04/2023	Breeding Raptor Survey	BRT1	1:30 starting at 18:00	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
25/04/2023	Breeding Barn Owl Survey	BOVP1	1:30 starting at 20:15	Visibility: moderate; Wind speed and direction: gentle breeze SW; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
26/04/2023	Vantage Point Survey	VP4	3:00 starting at 05:00	Visibility: good; Wind speed and direction: light breeze ESE; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none	wind varied between 1 and 3	POG
26/04/2023	Vantage Point Survey	VP4	3:00 starting at 08:30	Visibility: good; Wind speed and direction: light breeze ESE; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		POG

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
26/04/2023	Breeding Raptor Survey	BRVP4	3:00 starting at 10:00	Visibility: good; Wind speed and direction: moderate breeze SW; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
26/04/2023	Breeding Raptor Survey	BRVP3	3:00 starting at 13:15	Visibility: good; Wind speed and direction: moderate breeze S; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
27/04/2023	Waterbird Distribution Survey	Carrig	0:50 starting at 07:10	Visibility: good; Wind speed and direction: gentle breeze SE; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none	water levels very low. Evidence of ms roosting here but not seen. No birds on coot nest.	NL
27/04/2023	Waterbird Distribution Survey	Derrinasallow Bridge	0:35 starting at 08:15	Visibility: good; Wind speed and direction: light breeze SE; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none	Very low water level	NL
27/04/2023	Waterbird Distribution Survey	Ashton Callows	1:20 starting at 09:20	Visibility: good; Wind speed and direction: fresh breeze SE; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
27/04/2023	Waterbird Distribution Survey	Stream	0:18 starting at 10:47	Visibility: good; Wind speed and direction: fresh breeze SE; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
27/04/2023	Waterbird Distribution Survey	Little River Brosna Callows	1:12 starting at 11:18	Visibility: good; Wind speed and direction: fresh breeze SE; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
27/04/2023	Waterbird Distribution Survey	Ashton Callows	0:05 starting at 12:45	Visibility: good; Wind speed and direction: fresh breeze SE; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none	Practically no water left	NL
27/04/2023	Waterbird Distribution Survey	Redwood Bog	0:17 starting at 12:58	Visibility: good; Wind speed and direction: moderate breeze SE; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
03/05/2023	Breeding Woodcock Survey	WKT1	1:00 starting at 20:00	Visibility: moderate; Wind speed and direction: calm N; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		PDC
03/05/2023	Breeding Woodcock Survey	WKT2	1:00 starting at 20:00	Visibility: moderate; Wind speed and direction: calm N; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		PDC
03/05/2023	Breeding Woodcock Survey	WKT1	1:00 starting at 21:00	Visibility: limited; Wind speed and direction: calm N; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		PDC

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
03/05/2023	Breeding Woodcock Survey	WKT2	1:00 starting at 21:00	Visibility: limited; Wind speed and direction: calm N; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		PDC
04/05/2023	Waterbird Distribution Survey	Carrig	0:40 starting at 06:50	Visibility: good; Wind speed and direction: light breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
04/05/2023	Waterbird Distribution Survey	Derrinasallow Bridge	0:37 starting at 07:40	Visibility: good; Wind speed and direction: light breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
04/05/2023	Waterbird Distribution Survey	Ashton Callows	1:25 starting at 08:35	Visibility: good; Wind speed and direction: light breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
04/05/2023	Waterbird Distribution Survey	Stream	0:20 starting at 10:05	Visibility: good; Wind speed and direction: light breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
04/05/2023	Waterbird Distribution Survey	Little River Brosna Callows	1:10 starting at 10:30	Visibility: good; Wind speed and direction: light breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
04/05/2023	Waterbird Distribution Survey	Ashton Callows	0:05 starting at 11:55	Visibility: good; Wind speed and direction: light breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
04/05/2023	Waterbird Distribution Survey	Redwood Bog	0:20 starting at 12:05	Visibility: good; Wind speed and direction: light breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
04/05/2023	Breeding Woodcock Survey	WKT3	1:00 starting at 20:00	Visibility: moderate; Wind speed and direction: gentle breeze ENE; Cloud cover and height: 66-100% <150m; Rain: heavy showers; Frost: none; Snow: none		PDC
04/05/2023	Breeding Woodcock Survey	WKT4	1:00 starting at 20:00	Visibility: moderate; Wind speed and direction: gentle breeze ENE; Cloud cover and height: 66-100% <150m; Rain: heavy showers; Frost: none; Snow: none		PDC
04/05/2023	Breeding Woodcock Survey	WKT3	1:00 starting at 21:00	Visibility: limited; Wind speed and direction: gentle breeze ENE; Cloud cover and height: 66-100% <150m; Rain: drizzle; Frost: none; Snow: none		PDC
04/05/2023	Breeding Woodcock Survey	WKT4	1:00 starting at 21:00	Visibility: limited; Wind speed and direction: gentle breeze ENE; Cloud cover and height: 66-100% <150m; Rain: drizzle; Frost: none; Snow: none		PDC

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
09/05/2023	Breeding Walkover Survey	TA	1:00 starting at 12:00	Visibility: good; Wind speed and direction: fresh breeze W; Cloud cover and height: 33-66% <150m; Rain: none; Frost: none; Snow: none		MH
09/05/2023	Breeding Walkover Survey	TA	1:00 starting at 13:00	Visibility: good; Wind speed and direction: fresh breeze W; Cloud cover and height: 33-66% <150m; Rain: none; Frost: none; Snow: none		MH
09/05/2023	Breeding Walkover Survey	TB	1:00 starting at 14:00	Visibility: good; Wind speed and direction: fresh breeze W; Cloud cover and height: 33-66% <150m; Rain: none; Frost: none; Snow: none		MH
09/05/2023	Breeding Walkover Survey	TB	1:00 starting at 15:00	Visibility: good; Wind speed and direction: fresh breeze W; Cloud cover and height: 33-66% <150m; Rain: none; Frost: none; Snow: none		MH
11/05/2023	Waterbird Distribution Survey	Carrig	0:40 starting at 06:50	Visibility: good; Wind speed and direction: gentle breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none	Reduced water on north turlough but still wet. Limtd visability of turlough due to hedge density.	NL
11/05/2023	Waterbird Distribution Survey	Derrinasallow Bridge	0:40 starting at 07:50	Visibility: good; Wind speed and direction: gentle breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
11/05/2023	Waterbird Distribution Survey	Ashton Callows	1:25 starting at 08:45	Visibility: good; Wind speed and direction: strong breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
11/05/2023	Waterbird Distribution Survey	Stream	0:15 starting at 10:15	Visibility: good; Wind speed and direction: gentle breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
11/05/2023	Waterbird Distribution Survey	Little River Brosna Callows	1:12 starting at 10:38	Visibility: good; Wind speed and direction: gentle breeze W; Cloud cover and height: 66-100% >500m; Rain: heavy showers; Frost: none; Snow: none		NL
11/05/2023	Waterbird Distribution Survey	Ashton Callows	0:05 starting at 12:05	Visibility: good; Wind speed and direction: gentle breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
11/05/2023	Waterbird Distribution Survey	Redwood Bog	0:20 starting at 12:15	Visibility: good; Wind speed and direction: gentle breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
11/05/2023	Vantage Point Survey	VP3a	1:00 starting at 15:30	Visibility: moderate; Wind speed and direction: strong breeze NW; Cloud cover and height: 66-100% 150-500m; Rain: drizzle; Frost: none; Snow: none	Rain	MH

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
11/05/2023	Vantage Point Survey	VP3a	1:00 starting at 16:30	Visibility: moderate; Wind speed and direction: strong breeze NW; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		MH
11/05/2023	Vantage Point Survey	VP3a	1:00 starting at 17:30	Visibility: poor; Wind speed and direction: strong breeze NW; Cloud cover and height: 66-100% 150-500m; Rain: heavy showers; Frost: none; Snow: none	Thunderstorm	MH
11/05/2023	Vantage Point Survey	VP3a	1:00 starting at 19:00	Visibility: good; Wind speed and direction: strong breeze NW; Cloud cover and height: 33-66% 150-500m; Rain: none; Frost: none; Snow: none	Cleared, sunny for remainder	MH
11/05/2023	Vantage Point Survey	VP3a	1:00 starting at 20:00	Visibility: good; Wind speed and direction: fresh breeze NW; Cloud cover and height: 33-66% 150-500m; Rain: none; Frost: none; Snow: none		MH
11/05/2023	Vantage Point Survey	VP3a	1:00 starting at 21:00	Visibility: good; Wind speed and direction: fresh breeze NW; Cloud cover and height: 33-66% 150-500m; Rain: none; Frost: none; Snow: none		MH
15/05/2023	Breeding Raptor Survey	BRVP2	3:00 starting at 09:00	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
15/05/2023	Breeding Raptor Survey	BRVP2	2:00 starting at 13:00	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		CG
18/05/2023	Waterbird Distribution Survey	Carrig	0:40 starting at 07:00	Visibility: good; Wind speed and direction: light breeze S; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL
18/05/2023	Waterbird Distribution Survey	Derrinasallow Bridge	0:40 starting at 07:50	Visibility: good; Wind speed and direction: light breeze S; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL
18/05/2023	Waterbird Distribution Survey	Ashton Callows	1:25 starting at 08:50	Visibility: good; Wind speed and direction: gentle breeze S; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL
18/05/2023	Waterbird Distribution Survey	Stream	0:15 starting at 10:30	Visibility: good; Wind speed and direction: light breeze S; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL
18/05/2023	Waterbird Distribution Survey	Little River Brosna Callows	1:10 starting at 10:50	Visibility: good; Wind speed and direction: light breeze S; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
18/05/2023	Waterbird Distribution Survey	Ashton Callows	0:05 starting at 12:15	Visibility: good; Wind speed and direction: light breeze S; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL
18/05/2023	Waterbird Distribution Survey	Redwood Bog	0:15 starting at 12:25	Visibility: good; Wind speed and direction: light breeze S; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL
18/05/2023	Vantage Point Survey	VP1a	1:00 starting at 16:00	Visibility: good; Wind speed and direction: moderate breeze SW; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
18/05/2023	Vantage Point Survey	VP1a	1:00 starting at 17:00	Visibility: none; Wind speed and direction: moderate breeze SW; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
18/05/2023	Vantage Point Survey	VP1a	1:00 starting at 18:00	Visibility: good; Wind speed and direction: moderate breeze SW; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
18/05/2023	Vantage Point Survey	VP1a	1:00 starting at 19:30	Visibility: good; Wind speed and direction: moderate breeze SW; Cloud cover and height: 33-66% ; Rain: none; Frost: none; Snow: none		MH
18/05/2023	Vantage Point Survey	VP1a	1:00 starting at 20:30	Visibility: good; Wind speed and direction: moderate breeze SW; Cloud cover and height: 33-66% ; Rain: none; Frost: none; Snow: none		MH
18/05/2023	Vantage Point Survey	VP1a	1:00 starting at 21:30	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 33-66% ; Rain: none; Frost: none; Snow: none		MH
19/05/2023	Vantage Point Survey	VP2	1:00 starting at 16:00	Visibility: good; Wind speed and direction: gentle breeze NW; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
19/05/2023	Vantage Point Survey	VP2	1:00 starting at 17:00	Visibility: good; Wind speed and direction: gentle breeze NW; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
19/05/2023	Vantage Point Survey	VP2	1:00 starting at 18:00	Visibility: good; Wind speed and direction: gentle breeze NW; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
19/05/2023	Vantage Point Survey	VP2	1:00 starting at 19:30	Visibility: good; Wind speed and direction: gentle breeze NW; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
19/05/2023	Vantage Point Survey	VP2	1:00 starting at 20:30	Visibility: good; Wind speed and direction: light breeze NW; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
19/05/2023	Vantage Point Survey	VP2	1:00 starting at 21:30	Visibility: good; Wind speed and direction: light breeze NW; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
22/05/2023	Breeding Walkover Survey	TA	1:00 starting at 11:15	Visibility: good; Wind speed and direction: moderate breeze NNW; Cloud cover and height: 33-66% ; Rain: none; Frost: ; Snow: none		MH
22/05/2023	Breeding Walkover Survey	TA	1:00 starting at 12:15	Visibility: good; Wind speed and direction: moderate breeze NNW; Cloud cover and height: 33-66% ; Rain: none; Frost: none; Snow: none		MH
22/05/2023	Breeding Walkover Survey	TB	1:00 starting at 13:15	Visibility: good; Wind speed and direction: moderate breeze NNW; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
22/05/2023	Breeding Walkover Survey	TB	1:00 starting at 14:15	Visibility: good; Wind speed and direction: moderate breeze NNW; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
24/05/2023	Breeding Raptor Survey	BRVP4	3:00 starting at 08:00	Visibility: good; Wind speed and direction: gentle breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
24/05/2023	Breeding Raptor Survey	BRVP3	3:00 starting at 11:00	Visibility: good; Wind speed and direction: light breeze W; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
25/05/2023	Waterbird Distribution Survey	Carrig	0:40 starting at 07:00	Visibility: good; Wind speed and direction: light air NNE; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
25/05/2023	Waterbird Distribution Survey	Derrinasallow Bridge	0:40 starting at 07:50	Visibility: good; Wind speed and direction: light air NNE; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL
25/05/2023	Waterbird Distribution Survey	Ashton Callows	1:25 starting at 08:50	Visibility: good; Wind speed and direction: light air NNE; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL
25/05/2023	Waterbird Distribution Survey	Stream	0:15 starting at 10:30	Visibility: good; Wind speed and direction: light air NNE; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
25/05/2023	Waterbird Distribution Survey	Little River Brosna Callows	1:10 starting at 10:50	Visibility: good; Wind speed and direction: light air NNE; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL
25/05/2023	Waterbird Distribution Survey	Ashton Callows	0:05 starting at 12:15	Visibility: good; Wind speed and direction: light air NNE; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL
25/05/2023	Waterbird Distribution Survey	Redwood Bog	0:15 starting at 12:25	Visibility: good; Wind speed and direction: light air NNE; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		NL
25/05/2023	Vantage Point Survey	VP4	1:00 starting at 16:00	Visibility: good; Wind speed and direction: moderate breeze N; Cloud cover and height: 33-66% ; Rain: none; Frost: none; Snow: none		MH
25/05/2023	Vantage Point Survey	VP4	1:00 starting at 17:00	Visibility: good; Wind speed and direction: gentle breeze N; Cloud cover and height: 33-66% ; Rain: none; Frost: none; Snow: none		MH
25/05/2023	Vantage Point Survey	VP4	1:00 starting at 18:00	Visibility: good; Wind speed and direction: gentle breeze N; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
25/05/2023	Vantage Point Survey	VP4	1:00 starting at 19:30	Visibility: good; Wind speed and direction: gentle breeze N; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
25/05/2023	Vantage Point Survey	VP4	1:00 starting at 20:30	Visibility: good; Wind speed and direction: gentle breeze N; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
25/05/2023	Vantage Point Survey	VP4	1:00 starting at 21:30	Visibility: good; Wind speed and direction: gentle breeze N; Cloud cover and height: 66-100% ; Rain: none; Frost: none; Snow: none		MH
29/05/2023	Breeding Raptor Survey	BRVP1	3:00 starting at 16:00	Visibility: good; Wind speed and direction: gentle breeze NE; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
29/05/2023	Breeding Barn Owl Survey	BOVP1	2:00 starting at 22:00	Visibility: good; Wind speed and direction: gentle breeze NE; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
07/06/2023	Breeding Woodcock Survey	WKT1	2:00 starting at 21:00	Visibility: good; Wind speed and direction: light air W; Cloud cover and height: 33-66% <150m; Rain: none; Frost: none; Snow: none		PM

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
07/06/2023	Breeding Woodcock Survey	WKT2	2:00 starting at 21:00	Visibility: good; Wind speed and direction: light air W; Cloud cover and height: 33-66% <150m; Rain: none; Frost: none; Snow: none		SD
08/06/2023	Breeding Woodcock Survey	WKT3	2:00 starting at 21:00	Visibility: good; Wind speed and direction: light air W; Cloud cover and height: 33-66% <150m; Rain: none; Frost: none; Snow: none		SD
08/06/2023	Breeding Woodcock Survey	WKT4	2:00 starting at 21:00	Visibility: good; Wind speed and direction: light air W; Cloud cover and height: 33-66% <150m; Rain: none; Frost: none; Snow: none		PM
12/06/2023	Breeding Raptor Survey	BRVP4	3:00 starting at 10:30	Visibility: good; Wind speed and direction: light breeze W; Cloud cover and height: 33-66% 150-500m; Rain: none; Frost: none; Snow: none		CG
12/06/2023	Breeding Raptor Survey	BRVP3	3:00 starting at 13:35	Visibility: good; Wind speed and direction: light breeze W; Cloud cover and height: 33-66% 150-500m; Rain: none; Frost: none; Snow: none		CG
13/06/2023	Breeding Raptor Survey	BRVP2	3:00 starting at 09:00	Visibility: good; Wind speed and direction: gentle breeze NE; Cloud cover and height: 33-66% 150-500m; Rain: none; Frost: none; Snow: none		CG
13/06/2023	Breeding Raptor Survey	BRT2	2:00 starting at 12:00	Visibility: good; Wind speed and direction: gentle breeze E; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		CG
15/06/2023	Breeding Walkover Survey	TB	3:00 starting at 10:30	Visibility: good; Wind speed and direction: light air SE; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		CG
15/06/2023	Breeding Walkover Survey	TB	2:30 starting at 13:30	Visibility: good; Wind speed and direction: light air SE; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		CG
16/06/2023	Breeding Walkover Survey	TA	3:00 starting at 09:00	Visibility: good; Wind speed and direction: light breeze SE; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		CG
16/06/2023	Breeding Walkover Survey	TA	2:00 starting at 12:00	Visibility: good; Wind speed and direction: light breeze SE; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
20/06/2023	Breeding Raptor Survey	BRVP1	3:00 starting at 12:30	Visibility: good; Wind speed and direction: gentle breeze S; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none	Distant thunder for last 1.5 hours, Barn owl survey postponed(weather warning)	CG

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
21/06/2023	Vantage Point Survey	VP3a	3:00 starting at 13:00	Visibility: good; Wind speed and direction: light breeze S; Cloud cover and height: 66-100% >500m; Rain: heavy showers; Frost: none; Snow: none		CG
21/06/2023	Vantage Point Survey	VP3a	3:00 starting at 16:30	Visibility: good; Wind speed and direction: light breeze S; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
21/06/2023	Breeding Barn Owl Survey	BOVP1	2:00 starting at 21:00	Visibility: good; Wind speed and direction: light breeze S; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
22/06/2023	Vantage Point Survey	VP1a	3:00 starting at 12:00	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
22/06/2023	Vantage Point Survey	VP1a	3:00 starting at 15:30	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
22/06/2023	Breeding Woodcock Survey	WKT2	2:00 starting at 21:10	Visibility: good; Wind speed and direction: light air N; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		FOD
22/06/2023	Breeding Woodcock Survey	WKT3	1:00 starting at 22:00	Visibility: good; Wind speed and direction: gentle breeze W; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		NL
22/06/2023	Breeding Woodcock Survey	WKT4	1:00 starting at 22:00	Visibility: good; Wind speed and direction: gentle breeze W; Cloud cover and height: 66-101% >500m; Rain: none; Frost: none; Snow: none		PM
22/06/2023	Breeding Woodcock Survey	WKT1	1:00 starting at 22:00	Visibility: good; Wind speed and direction: gentle breeze W; Cloud cover and height: 66-102% >500m; Rain: none; Frost: none; Snow: none		SD
27/06/2023	Vantage Point Survey	VP2	3:00 starting at 10:00	Visibility: good; Wind speed and direction: moderate breeze NW; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		CG
27/06/2023	Vantage Point Survey	VP2	3:00 starting at 13:30	Visibility: good; Wind speed and direction: moderate breeze NW; Cloud cover and height: 66-100% 150-500m; Rain: drizzle; Frost: none; Snow: none		CG
28/06/2023	Vantage Point Survey	VP4	3:00 starting at 09:30	Visibility: moderate; Wind speed and direction: fresh breeze W; Cloud cover and height: 66-100% 150-500m; Rain: heavy showers; Frost: none; Snow: none		CG

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
28/06/2023	Vantage Point Survey	VP4	3:00 starting at 13:00	Visibility: good; Wind speed and direction: fresh breeze W; Cloud cover and height: 66-101% 150-500m; Rain: light showers; Frost: none; Snow: none		CG
10/07/2023	Vantage Point Survey	VP3a	3:00 starting at 10:00	Visibility: good; Wind speed and direction: light breeze SW; Cloud cover and height: 66-100% 150-500m; Rain: light showers; Frost: none; Snow: none		CG
10/07/2023	Vantage Point Survey	VP3a	3:00 starting at 13:30	Visibility: good; Wind speed and direction: light breeze SW; Cloud cover and height: 66-100% 150-500m; Rain: heavy showers; Frost: none; Snow: none		CG
11/07/2023	Breeding Walkover Survey	TA	2:00 starting at 09:00	Visibility: good; Wind speed and direction: light breeze SW; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
11/07/2023	Breeding Walkover Survey	TA	2:00 starting at 11:00	Visibility: good; Wind speed and direction: light breeze W; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
12/07/2023	Breeding Walkover Survey	TB	2:00 starting at 09:30	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
12/07/2023	Breeding Walkover Survey	TB	2:30 starting at 11:30	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 66-100% >500m; Rain: drizzle; Frost: none; Snow: none		CG
13/07/2023	Breeding Raptor Survey	BRVP4	3:00 starting at 09:30	Visibility: good; Wind speed and direction: moderate breeze SW; Cloud cover and height: 66-100% 150-500m; Rain: light showers; Frost: none; Snow: none		CG
13/07/2023	Breeding Raptor Survey	BRVP3	3:00 starting at 12:45	Visibility: good; Wind speed and direction: moderate breeze SW; Cloud cover and height: 66-100% 150-500m; Rain: light showers; Frost: none; Snow: none		CG
24/07/2023	Vantage Point Survey	VP1a	3:00 starting at 09:00	Visibility: good; Wind speed and direction: gentle breeze N; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		CG
24/07/2023	Vantage Point Survey	VP1a	3:00 starting at 12:30	Visibility: good; Wind speed and direction: gentle breeze N; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		CG
25/07/2023	Vantage Point Survey	VP2	3:00 starting at 09:30	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
25/07/2023	Vantage Point Survey	VP2	3:00 starting at 13:00	Visibility: good; Wind speed and direction: moderate breeze SW; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
26/07/2023	Vantage Point Survey	VP4	3:00 starting at 09:30	Visibility: poor; Wind speed and direction: moderate breeze SW; Cloud cover and height: 66-100% 150-500m; Rain: persistent; Frost: none; Snow: none		CG
26/07/2023	Vantage Point Survey	VP4	3:00 starting at 13:00	Visibility: moderate; Wind speed and direction: moderate breeze SW; Cloud cover and height: 66-100% 150-500m; Rain: persistent; Frost: none; Snow: none		CG
27/07/2023	Breeding Raptor Survey	BRVP1	3:00 starting at 14:00	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none	brvp	CG
27/07/2023	Breeding Raptor Survey	BRVP1	1:30 starting at 17:00	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none	br transect	CG
27/07/2023	Breeding Barn Owl Survey	BOVP1	2:00 starting at 20:30	Visibility: moderate; Wind speed and direction: gentle breeze SW; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
28/07/2023	Breeding Raptor Survey	BRVP2	3:00 starting at 09:30	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 66-100% 150-500m; Rain: heavy showers; Frost: none; Snow: none		CG
28/07/2023	Breeding Raptor Survey	BRVP2	2:00 starting at 12:30	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 66-100% 150-500m; Rain: drizzle; Frost: none; Snow: none		CG
09/08/2023	Vantage Point Survey	VP3a	3:00 starting at 09:00	Visibility: good; Wind speed and direction: gentle breeze S; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
09/08/2023	Vantage Point Survey	VP3a	3:00 starting at 12:30	Visibility: good; Wind speed and direction: gentle breeze S; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
10/08/2023	Vantage Point Survey	VP1a	3:00 starting at 09:30	Visibility: good; Wind speed and direction: gentle breeze SE; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
10/08/2023	Vantage Point Survey	VP1a	3:00 starting at 13:00	Visibility: good; Wind speed and direction: gentle breeze SE; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG

Date	Survey	Location	Duration (h)	Weather Conditions	Comments	Surveyor
22/08/2023	Vantage Point Survey	VP2	3:00 starting at 09:30	Visibility: good; Wind speed and direction: moderate breeze SW; Cloud cover and height: 66-100% 150-500m; Rain: heavy showers; Frost: none; Snow: none		CG
22/08/2023	Vantage Point Survey	VP2	3:00 starting at 13:00	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 66-100% >500m; Rain: light showers; Frost: none; Snow: none		CG
29/08/2023	Vantage Point Survey	VP4	3:00 starting at 09:30	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
29/08/2023	Vantage Point Survey	VP4	3:00 starting at 13:00	Visibility: good; Wind speed and direction: light breeze SW; Cloud cover and height: 66-100% >500m; Rain: none; Frost: none; Snow: none		CG
06/09/2023	Vantage Point Survey	VP3a	3:00 starting at 05:50	Visibility: good; Wind speed and direction: light breeze SW; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none		CG
06/09/2023	Vantage Point Survey	VP3a	3:00 starting at 09:20	Visibility: good; Wind speed and direction: gentle breeze SW; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
12/09/2023	Vantage Point Survey	VP1a	3:00 starting at 06:00	Visibility: good; Wind speed and direction: light breeze NW; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
12/09/2023	Vantage Point Survey	VP1a	3:00 starting at 09:30	Visibility: good; Wind speed and direction: light breeze NW; Cloud cover and height: 33-66% >500m; Rain: none; Frost: none; Snow: none		CG
18/09/2023	Vantage Point Survey	VP2	3:00 starting at 06:00	Visibility: good; Wind speed and direction: moderate breeze W; Cloud cover and height: 66-100% 150-500m; Rain: heavy showers; Frost: none; Snow: none		CG
18/09/2023	Vantage Point Survey	VP2	3:00 starting at 09:30	Visibility: good; Wind speed and direction: moderate breeze W; Cloud cover and height: 66-100% 150-500m; Rain: heavy showers; Frost: none; Snow: none		CG
22/09/2023	Vantage Point Survey	VP4	3:00 starting at 06:15	Visibility: good; Wind speed and direction: light breeze NW; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		CG
22/09/2023	Vantage Point Survey	VP4	3:00 starting at 09:45	Visibility: good; Wind speed and direction: light breeze NW; Cloud cover and height: 66-100% 150-500m; Rain: none; Frost: none; Snow: none		CG

Appendix 1 Table 2 Vantage Point Survey Results

Ref.	VP	Date	Time	Species	Number	Duration of flight (s)	Band 1 (0-15m)	Band 2 (15-25m)	Band 3 (25-200m)	Band 4 (>200m)	Habitat and activity	Surveyor
SN063	VP3a	05/04/2023	07:48	Snipe	1	10	10	0	0	0	upland blanket bog; display flight	TR
	VP3a	05/04/2023	08:34	Mallard	2	55	0	55	0	0	lowland blanket bog; commuting	TR
BZ355	VP1a	19/04/2023	05:52	Buzzard	2	98	0	8	90	0	lowland blanket bog, treelines and improved agricultural grassland; commuting	TR
BZ356	VP1a	19/04/2023	06:41	Buzzard	1	154	154	0	0	0	treelines, lowland blanket bog and improved agricultural grassland; hunting	TR
	VP1a	19/04/2023	06:53	Mallard	3	212	0	24	20	168	lowland blanket bog and improved agricultural grassland; flying	TR
	VP1a	19/04/2023	07:09	Mallard	3	35	0	0	35	0	lowland blanket bog and improved agricultural grassland; commuting	TR
	VP1a	19/04/2023	07:10	Mallard	3	57	0	0	57	0	lowland blanket bog and mixed broadleaved/conifer woodland; commuting	TR
	VP1a	19/04/2023	09:02	Grey Heron	1	52	0	0	52	0	lowland blanket bog and improved agricultural grassland; flying	TR
BZ357	VP1a	19/04/2023	09:26	Buzzard	1	487	0	0	207	280	#N/A	TR
BZ358	VP1a	19/04/2023	09:28	Buzzard	1	159	0	0	159	0	treelines and improved agricultural grassland; commuting, joined by second bird at treeline	TR
K.290	VP1a	19/04/2023	10:26	Kestrel	1	544	0	544	0	0	improved agricultural grassland and conifer plantation; hunting	TR
	VP1a	19/04/2023	10:54	Grey Heron	1	147	0	0	147	0	lowland blanket bog and improved agricultural grassland; flying	TR
BZ359	VP1a	19/04/2023	10:55	Buzzard	1	233	0	93	140	0	lowland blanket bog; hunting	TR

Ref.	VP	Date	Time	Species	Number	Duration of flight (s)	Band 1 (0-15m)	Band 2 (15-25m)	Band 3 (25-200m)	Band 4 (>200m)	Habitat and activity	Surveyor
	VP2	20/04/2023	06:26	Mallard	2	30	30	0	0	0	cutover bog and improved agricultural grassland; flying, male and female	POG
K.291	VP2	20/04/2023	06:46	Kestrel	1	60	5	55	0	0	wet willow-alder-ash woodland; hunting	POG
BZ360	VP2	20/04/2023	08:19	Buzzard	1	25	0	25	0	0	cutover bog; flying	POG
	VP3a	11/05/2023	19:01	Meadow Pipit	1	15	15	0	0	0	improved agricultural grassland; travelling	MH
	VP3a	11/05/2023	19:47	Meadow Pipit	2	35	35	0	0	0	improved agricultural grassland and bogs; travelling	MH
PE019	VP1a	18/05/2023	17:27	Peregrine Falcon	1	30	30	0	0	0	bogs and improved agricultural grassland; travelling	MH
	VP1a	18/05/2023	17:53	Meadow Pipit	2	61	61	0	0	0	bogs; travelling	MH
BZ361	VP1a	18/05/2023	21:25	Buzzard	2	300	300	0	0	0	improved agricultural grassland and bogs; socialising, potential pair	MH
	VP2	19/05/2023	16:28	Meadow Pipit	1	23	23	0	0	0	improved agricultural grassland; travelling	MH
	VP2	19/05/2023	16:58	Meadow Pipit	1	16	16	0	0	0	improved agricultural grassland; travelling	MH
	VP2	19/05/2023	18:04	Swift	2	45	0	0	0	0	improved agricultural grassland; travelling	MH
BH020	VP2	19/05/2023	19:37	Black-headed Gull	1	60	0	60	0	0	improved agricultural grassland; travelling	MH
	VP2	19/05/2023	20:04	Meadow Pipit	1	33	33	0	0	0	improved agricultural grassland and bogs; travelling	MH
BH021	VP2	19/05/2023	21:36	Black-headed Gull	1	61	0	0	61	0	improved agricultural grassland and bogs; travelling	MH
BZ362	VP4	25/05/2023	16:57	Buzzard	1	5400	0	5400	0	0	improved agricultural grassland; soaring, buzzard seen on and off	MH

Ref.	VP	Date	Time	Species	Number	Duration of flight (s)	Band 1 (0-15m)	Band 2 (15-25m)	Band 3 (25-200m)	Band 4 (>200m)	Habitat and activity	Surveyor
											for 90 mins, calling loudly but no others present	
	VP4	25/05/2023	17:28	Meadow Pipit	1	31	31	0	0	0	improved agricultural grassland; travelling	MH
	VP4	25/05/2023	17:38	Meadow Pipit	1	27	27	0	0	0	improved agricultural grassland; travelling	MH
	VP4	25/05/2023	21:05	Meadow Pipit	2	29	29	0	0	0	improved agricultural grassland; travelling	MH
WK002	VP4	25/05/2023	22:12	Woodcock	1	35	0	35	0	0	improved agricultural grassland; roding, roding, heard first, good views and filmed	MH
BZ363	VP3a	21/06/2023	15:38	Buzzard	1	48	0	20	28	0	bogs and improved agricultural grassland; flying	CG
BZ364	VP3a	21/06/2023	15:50	Buzzard	1	-	-	-	-	-	oak-birch-holly woodland; calling	CG
BZ365	VP1a	22/06/2023	12:31	Buzzard	1	124	24	40	60	0	improved agricultural grassland and bogs; soaring	CG
BZ366	VP1a	22/06/2023	13:13	Buzzard	1	239	29	30	150	30	bogs and improved agricultural grassland; soaring	CG
BZ367	VP1a	22/06/2023	14:01	Buzzard	2	206	36	70	70	30	improved agricultural grassland and bogs; soaring, perching, calling, flew in, perched on trees along bog edge calling, took off soaring	CG
	VP1a	22/06/2023	17:44	Meadow Pipit	15	-	-	-	-	-	bogs; flitting	CG
BZ368	VP2	27/06/2023	11:30	Buzzard	1	33	20	13	0	0	improved agricultural grassland; in flight	CG
	VP2	27/06/2023	16:26	Meadow Pipit	8	-	-	-	-	-	bogs; flitting	CG
BZ369	VP4	28/06/2023	11:49	Buzzard	1	-	-	-	-	-	mixed broadleaved woodland; calling	CG

Ref.	VP	Date	Time	Species	Number	Duration of flight (s)	Band 1 (0-15m)	Band 2 (15-25m)	Band 3 (25-200m)	Band 4 (>200m)	Habitat and activity	Surveyor
BZ370	VP4	28/06/2023	12:34	Buzzard	2	-	-	-	-	-	mixed broadleaved woodland; calling	CG
BZ371	VP4	28/06/2023	12:59	Buzzard	1	110	40	40	30	0	mixed broadleaved woodland and improved agricultural grassland; soaring	CG
BZ372	VP4	28/06/2023	13:05	Buzzard	3	384	84	50	200	50	mixed broadleaved woodland and improved agricultural grassland; soaring, territorial	CG
BZ373	VP4	28/06/2023	13:06	Buzzard	1	270	0	35	135	100	improved agricultural grassland and mixed broadleaved woodland; soaring, territorial, with other 3 initially, left in opposite direction	CG
BZ374	VP4	28/06/2023	15:10	Buzzard	1	48	20	28	0	0	improved agricultural grassland and oak-birch-holly woodland; flying	CG
SN064	VP3a	10/07/2023	10:48	Snipe	2	-	-	-	-	-	bogs; calling, calling for 30 mins	CG
	VP3a	10/07/2023	10:48	Mallard	1	-	-	-	-	-	bogs and improved agricultural grassland; calling	CG
BZ375	VP3a	10/07/2023	11:56	Buzzard	1	37	37	0	0	0	improved agricultural grassland and bogs; flying	CG
	VP3a	10/07/2023	14:52	Mallard	3	17	17	0	0	0	improved agricultural grassland and bogs; flying	CG
BZ376	VP1a	24/07/2023	10:29	Buzzard	1	98	18	30	50	0	improved agricultural grassland and bogs; flying	CG
	VP1a	24/07/2023	10:48	Swift	2	42	0	32	10	0	bogs and improved agricultural grassland; hunting	CG
BZ377	VP1a	24/07/2023	11:05	Buzzard	2	185	25	60	100	0	improved agricultural grassland and bogs; flying	CG
BZ378	VP1a	24/07/2023	11:06	Buzzard	1	50	10	20	20	0	bogs and bog woodland; flying	CG

Ref.	VP	Date	Time	Species	Number	Duration of flight (s)	Band 1 (0-15m)	Band 2 (15-25m)	Band 3 (25-200m)	Band 4 (>200m)	Habitat and activity	Surveyor
BZ379	VP1a	24/07/2023	11:07	Buzzard	1	45	10	15	20	0	improved agricultural grassland; flying	CG
BZ380	VP1a	24/07/2023	12:00	Buzzard	1	112	50	62	0	0	bogs and bog woodland; flying	CG
BZ381	VP1a	24/07/2023	12:01	Buzzard	2	95	15	50	30	0	bogs and improved agricultural grassland; flying	CG
BZ382	VP1a	24/07/2023	12:29	Buzzard	1	97	37	40	20	0	bogs and bog woodland; flying	CG
K.292	VP1a	24/07/2023	12:40	Kestrel	1	42	32	10	0	0	bogs; hunting	CG
K.293	VP1a	24/07/2023	13:32	Kestrel	1	192	60	42	90	0	bogs and improved agricultural grassland; hunting, soaring	CG
BZ383	VP1a	24/07/2023	13:39	Buzzard	1	96	46	20	30	0	bogs and improved agricultural grassland; flying	CG
	VP1a	24/07/2023	15:37	Meadow Pipit	12	-	-	-	-	-	bogs; flitting	CG
BZ384	VP2	25/07/2023	10:48	Buzzard	1	38	0	0	38	0	improved agricultural grassland; soaring, calling	CG
BZ385	VP2	25/07/2023	10:49	Buzzard	2	200	0	15	25	160	improved agricultural grassland; fighting, aggressive interaction, one bird drove the other away, territorial	CG
BZ386	VP2	25/07/2023	10:51	Buzzard	1	15	0	0	15	0	improved agricultural grassland; flying, driven off by other buzzard, territorial	CG
BZ387	VP2	25/07/2023	10:53	Buzzard	2	25	5	10	10	0	improved agricultural grassland and conifer plantation; calling, soaring, drove off another buzzard before returning to forestry joined by a third buzzard	CG
SH043	VP2	25/07/2023	11:01	Sparrowhawk	1	-	-	-	-	-	conifer plantation; calling	CG

Ref.	VP	Date	Time	Species	Number	Duration of flight (s)	Band 1 (0-15m)	Band 2 (15-25m)	Band 3 (25-200m)	Band 4 (>200m)	Habitat and activity	Surveyor
	VP2	25/07/2023	11:02	Swift	3	43	33	10	0	0	bogs; hunting	CG
K.294	VP2	25/07/2023	11:05	Kestrel	1	87	60	27	0	0	bogs; hunting, male	CG
BZ388	VP2	25/07/2023	11:12	Buzzard	1	332	0	0	250	82	bogs and improved agricultural grassland; soaring	CG
K.295	VP2	25/07/2023	11:13	Kestrel	1	45	0	25	20	0	bogs, improved agricultural grassland and conifer plantation; travelling	CG
BZ389	VP2	25/07/2023	11:14	Buzzard	1	35	0	0	35	0	conifer plantation and bogs; soaring, calling	CG
K.296	VP2	25/07/2023	12:23	Kestrel	1	137	40	60	37	0	bogs; hunting, soaring	CG
K.297	VP2	25/07/2023	12:34	Kestrel	1	119	100	19	0	0	bogs and improved agricultural grassland; hunting	CG
K.298	VP2	25/07/2023	14:16	Kestrel	1	285	200	65	20	0	bogs; hunting, female, joined briefly by male	CG
K.299	VP2	25/07/2023	14:17	Kestrel	1	12	12	0	0	0	bogs; flying, male, flew up briefly to meet female	CG
	VP2	25/07/2023	15:22	Meadow Pipit	15	-	-	-	-	-	bogs; flitting	CG
K.300	VP2	25/07/2023	15:34	Kestrel	1	203	150	30	22	0	bogs; hunting, male	CG
BZ390	VP4	26/07/2023	10:06	Buzzard	1	42	32	10	0	0	improved agricultural grassland; flying	CG
K.301	VP4	26/07/2023	11:18	Kestrel	1	15	0	15	0	0	improved agricultural grassland; flying	CG
WE002	VP3a	09/08/2023	12:45	White-tailed Eagle	1	73	0	0	73	0	improved agricultural grassland and bogs; soaring, flying, juvenile bird, briefly mobbed by hooded crow	CG

Ref.	VP	Date	Time	Species	Number	Duration of flight (s)	Band 1 (0-15m)	Band 2 (15-25m)	Band 3 (25-200m)	Band 4 (>200m)	Habitat and activity	Surveyor
BZ391	VP3a	09/08/2023	13:04	Buzzard	1	-	-	-	-	-	improved agricultural grassland; calling	CG
BZ392	VP3a	09/08/2023	13:25	Buzzard	1	35	0	15	20	0	improved agricultural grassland and bogs; flying	CG
K.302	VP3a	09/08/2023	14:05	Kestrel	1	285	40	100	145	0	improved agricultural grassland; hunting, perched	CG
KF003	VP1a	10/08/2023	10:07	Kingfisher	1	8	8	0	0	0	bogs; flying	CG
K.303	VP1a	10/08/2023	10:08	Kestrel	1	56	56	0	0	0	bogs; hunting, perched	CG
SN065	VP1a	10/08/2023	10:40	Snipe	7	35	30	5	0	0	bogs; flying	CG
K.304	VP1a	10/08/2023	11:43	Kestrel	1	72	37	35	0	0	bogs; hunting	CG
BZ393	VP1a	10/08/2023	11:52	Buzzard	1	21	21	0	0	0	bogs and bog woodland; flying	CG
BZ394	VP1a	10/08/2023	12:00	Buzzard	2	135	10	25	100	0	bogs and improved agricultural grassland; soaring, some aggression	CG
BZ395	VP1a	10/08/2023	12:12	Buzzard	1	38	38	0	0	0	improved agricultural grassland; flying, calling	CG
BZ396	VP1a	10/08/2023	12:17	Buzzard	2	81	30	20	31	0	bogs and improved agricultural grassland; flying, calling	CG
BZ397	VP1a	10/08/2023	12:26	Buzzard	1	55	25	30	0	0	bogs; flying	CG
BZ398	VP1a	10/08/2023	12:27	Buzzard	1	24	0	0	24	0	improved agricultural grassland and conifer plantation; flying	CG
ML013	VP1a	10/08/2023	12:32	Merlin	1	15	15	0	0	0	bogs; perched, flying, perched on peat mound for over an hour before taking off	CG
BZ399	VP1a	10/08/2023	12:34	Buzzard	1	40	10	30	0	0	bogs; flying	CG

Ref.	VP	Date	Time	Species	Number	Duration of flight (s)	Band 1 (0-15m)	Band 2 (15-25m)	Band 3 (25-200m)	Band 4 (>200m)	Habitat and activity	Surveyor
K.305	VP1a	10/08/2023	12:36	Kestrel	1	30	30	0	0	0	bogs and improved agricultural grassland; flying	CG
ML014	VP1a	10/08/2023	12:41	Merlin	1	42	30	12	0	0	bogs; flying	CG
SN066	VP1a	10/08/2023	13:26	Snipe	10	43	0	0	43	0	bogs; flying	CG
BZ400	VP2	22/08/2023	11:36	Buzzard	1	-	-	-	-	-	improved agricultural grassland; calling	CG
K.306	VP2	22/08/2023	11:47	Kestrel	1	74	54	20	0	0	bogs and improved agricultural grassland; hunting, juvenile	CG
K.307	VP2	22/08/2023	15:52	Kestrel	1	54	54	0	0	0	bogs; flying, perching	CG
HH007	VP4	29/08/2023	12:00	Hen Harrier	1	65	15	40	10	0	improved agricultural grassland; flying, hunting, ringtail	CG
BZ401	VP4	29/08/2023	12:44	Buzzard	1	28	28	0	0	0	improved agricultural grassland; flying	CG
	VP3a	06/09/2023	06:12	Mallard	6	17	10	7	0	0	improved agricultural grassland; flying	CG
	VP3a	06/09/2023	09:50	Grey Heron	1	27	27	0	0	0	improved agricultural grassland and bogs; flying	CG
BZ402	VP1a	12/09/2023	06:30	Buzzard	1	-	-	-	-	-	bogs; calling	CG
ML015	VP1a	12/09/2023	07:58	Merlin	1	45	15	15	15	0	bogs and improved agricultural grassland; flying, female	CG
ML016	VP1a	12/09/2023	08:09	Merlin	1	95	20	75	0	0	bogs; mobbed, mobbed by rook	CG
SN067	VP1a	12/09/2023	10:06	Snipe	4	20	10	10	0	0	bogs; flying	CG
CU016	VP1a	12/09/2023	10:24	Curlew	1	30	0	0	30	0	bogs and bog woodland; flying	CG

Ref.	VP	Date	Time	Species	Number	Duration of flight (s)	Band 1 (0-15m)	Band 2 (15-25m)	Band 3 (25-200m)	Band 4 (>200m)	Habitat and activity	Surveyor
ML017	VP1a	12/09/2023	10:49	Merlin	1	60	60	0	0	0	conifer plantation and bogs; mobbed, female, mobbed by two hooded crows	CG
BZ403	VP1a	12/09/2023	10:52	Buzzard	1	15	0	15	0	0	improved agricultural grassland; flying	CG
BZ404	VP1a	12/09/2023	11:30	Buzzard	1	310	0	0	250	60	improved agricultural grassland; flying, calling	CG
BZ405	VP1a	12/09/2023	11:34	Buzzard	1	-	-	-	-	-	improved agricultural grassland; calling	CG
BZ406	VP1a	12/09/2023	11:58	Buzzard	1	116	0	10	106	0	improved agricultural grassland; flying	CG
BZ407	VP1a	12/09/2023	12:00	Buzzard	1	150	0	15	135	0	improved agricultural grassland; flying	CG
BZ408	VP1a	12/09/2023	12:06	Buzzard	1	406	0	0	100	306	marsh; flying	CG
BZ409	VP1a	12/09/2023	12:12	Buzzard	1	240	0	0	15	225	improved agricultural grassland and bogs; soaring	CG
BZ410	VP1a	12/09/2023	12:16	Buzzard	1	30	15	15	0	0	bogs and bog woodland; flying, perched	CG
BZ411	VP1a	12/09/2023	12:18	Buzzard	1	20	5	15	0	0	bog woodland; flying	CG
	VP1a	12/09/2023	12:20	Meadow Pipit	8	-	-	-	-	-	bogs; flitting	CG
BZ412	VP1a	12/09/2023	12:22	Buzzard	1	20	0	20	0	0	improved agricultural grassland and hedgerows; soaring	CG
BZ413	VP2	18/09/2023	07:13	Buzzard	1	-	-	-	-	-	conifer plantation; calling	CG
K.308	VP2	18/09/2023	10:26	Kestrel	2	148	40	20	80	0	bogs; hunting	CG
SN068	VP2	18/09/2023	10:32	Snipe	1	45	20	5	20	0	improved agricultural grassland and bogs; flying	CG

Ref.	VP	Date	Time	Species	Number	Duration of flight (s)	Band 1 (0-15m)	Band 2 (15-25m)	Band 3 (25-200m)	Band 4 (>200m)	Habitat and activity	Surveyor
K.309	VP2	18/09/2023	11:13	Kestrel	2	35	15	20	0	0	bogs; flying	CG
K.310	VP2	18/09/2023	11:14	Kestrel	1	104	40	30	34	0	bogs; hunting	CG
K.311	VP2	18/09/2023	11:56	Kestrel	1	78	0	18	60	0	bogs and conifer plantation; hunting, flying	CG
BZ414	VP2	18/09/2023	11:57	Buzzard	1	-	-	-	-	-	conifer plantation; calling	CG
BZ415	VP4	21/09/2023	07:06	Buzzard	1	28	0	8	20	0	improved agricultural grassland; calling, flying	CG
CU017	VP4	21/09/2023	07:23	Curlew	1	-	-	-	-	-	bogs and improved agricultural grassland; calling	CG
BZ416	VP4	21/09/2023	11:26	Buzzard	1	-	-	-	-	-	improved agricultural grassland; calling	CG
BZ417	VP4	21/09/2023	12:00	Buzzard	1	81	0	0	61	20	improved agricultural grassland; soaring	CG

Appendix 1 Table 3 Breeding Walkover Survey Results

Ref.	Date	Time	Species	Number	Habitat and activity	Surveyor
BZ049	13/04/2023	06:45	Buzzard	1	improved agricultural grassland; perched (suitable nesting habitat; possible breeder)	TR
SN022	13/04/2023	08:16	Snipe	1	lowland blanket bog; flushed (suitable nesting habitat; possible breeder)	TR
BZ050	13/04/2023	08:30	Buzzard	1	lowland blanket bog and improved agricultural grassland; commuting (suitable nesting habitat; possible breeder)	TR
BZ051	13/04/2023	08:37	Buzzard	1	improved agricultural grassland; perched (suitable nesting habitat; possible breeder)	TR
K.017	20/04/2023	09:05	Kestrel	1	lowland blanket bog and mixed broadleaved/conifer woodland; hunting (suitable nesting habitat; possible breeder)	TR
BZ052	20/04/2023	11:31	Buzzard	2	mixed broadleaved/conifer woodland and improved agricultural grassland; soaring (pair; probable breeding)	TR
K.018	20/04/2023	11:31	Kestrel	1	improved agricultural grassland; hunting (suitable nesting habitat; possible breeder)	TR
BZ053	09/05/2023	13:35	Buzzard	1	bogs; circling (suitable nesting habitat; possible breeder)	MH
K.019	22/05/2023	12:04	Kestrel	1	bogs; travelling (suitable nesting habitat; possible breeder)	MH
K.020	22/05/2023	14:54	Kestrel	1	improved agricultural grassland; hunting (migrating; non-breeding)	MH
BZ054	15/06/2023	11:33	Buzzard	1	conifer plantation; calling (suitable nesting habitat; possible breeder)	CG
BZ055	15/06/2023	12:54	Buzzard	1	bog woodland and wet grassland; visiting probable nest, visiting probable nest, chicks heard (probable nest site; probable breeding)	CG
BZ056	15/06/2023	12:56	Buzzard	1	bog woodland; calling, young heard (nest with young; confirmed breeding)	CG
SH018	16/06/2023	13:30	Sparrowhawk	1	bogs and wet grassland; flying (suitable nesting habitat; possible breeder)	CG
BZ057	11/07/2023	10:35	Buzzard	1	bogs and mixed broadleaved woodland; calling, heard, not seen (suitable nesting habitat; possible breeder)	CG

Ref.	Date	Time	Species	Number	Habitat and activity	Surveyor
BZ058	11/07/2023	12:29	Buzzard	1	improved agricultural grassland; calling, heard not seen (suitable nesting habitat; possible breeder)	CG
K.021	11/07/2023	12:55	Kestrel	1	improved agricultural grassland; flying (suitable nesting habitat; possible breeder)	CG
BZ059	12/07/2023	09:38	Buzzard	1	improved agricultural grassland; flying (suitable nesting habitat; possible breeder)	CG
BZ060	12/07/2023	11:06	Buzzard	1	conifer plantation; calling (suitable nesting habitat; possible breeder)	CG
BZ061	12/07/2023	11:56	Buzzard	1	conifer plantation; calling (suitable nesting habitat; possible breeder)	CG

Appendix 1 Table 4 Breeding Raptor Survey Results

Ref.	BR	Date	Time	Species	Number	Habitat and activity	Breeding status	Surveyor
BZ080	BRVP2	21/04/2023	09:04	Buzzard	1	conifer plantation and bogs, soaring	suitable nesting habitat; possible breeder	CG
ML027	BRVP2	21/04/2023	10:32	Merlin	2	bogs and bog woodland, fighting	agitated behaviour; probable breeding	CG
K.062	BRVP2	21/04/2023	12:11	Kestrel	1	conifer plantation, mobbing, mobbing buzzard	suitable nesting habitat; possible breeder	CG
BZ081	BRVP2	21/04/2023	12:12	Buzzard	1	conifer plantation and bogs, soaring, mobbed by k.	suitable nesting habitat; possible breeder	CG
BZ082	BRVP2	21/04/2023	12:22	Buzzard	1	conifer plantation and bogs, soaring	suitable nesting habitat; possible breeder	CG
K.063	BRVP2	21/04/2023	12:29	Kestrel	1	recently-felled woodland and conifer plantation, hunting	suitable nesting habitat; possible breeder	CG
BZ083	BRVP1	25/04/2023	14:38	Buzzard	2	bogs, soaring	pair; probable breeding	CG
BZ084	BRVP1	25/04/2023	14:47	Buzzard	1	bogs, mobbed, mobbed by hc	suitable nesting habitat; possible breeder	CG
BZ085	BRVP1	25/04/2023	15:17	Buzzard	1	bogs and improved agricultural grassland, soaring	suitable nesting habitat; possible breeder	CG
PE001	BRVP1	25/04/2023	15:33	Peregrine Falcon	1	bogs, soaring	suitable nesting habitat; possible breeder	CG
BZ086	BRVP1	25/04/2023	18:52	Buzzard	1	improved agricultural grassland, feeding	suitable nesting habitat; possible breeder	CG
BZ087	BRVP1	25/04/2023	19:40	Buzzard	1	improved agricultural grassland, flying	suitable nesting habitat; possible breeder	CG
SH020	BRVP1	25/04/2023	21:15	Sparrowhawk	1	improved agricultural grassland, flying, male	suitable nesting habitat; possible breeder	CG
BZ088	BRVP4	26/04/2023	10:49	Buzzard	1	improved agricultural grassland, bogs and conifer plantation, soaring	suitable nesting habitat; possible breeder	CG
BZ089	BRVP4	26/04/2023	10:50	Buzzard	2	conifer plantation and bogs, flying	pair; probable breeding	CG

Ref.	BR	Date	Time	Species	Number	Habitat and activity	Breeding status	Surveyor
BZ090	BRVP4	26/04/2023	10:51	Buzzard	1	conifer plantation, bogs and improved agricultural grassland, flying	suitable nesting habitat; possible breeder	CG
K.064	BRVP4	26/04/2023	11:03	Kestrel	1	bogs and improved agricultural grassland, hunting	suitable nesting habitat; possible breeder	CG
BZ091	BRVP3	24/05/2023	12:08	Buzzard	1	bog woodland and conifer plantation, soaring	suitable nesting habitat; possible breeder	CG
BZ092	BRVP3	24/05/2023	13:27	Buzzard	1	improved agricultural grassland, soaring	suitable nesting habitat; possible breeder	CG
BZ093	BRVP1	29/05/2023	15:15	Buzzard	1	improved agricultural grassland, bogs and conifer plantation, soaring	suitable nesting habitat; possible breeder	CG
ML028	BRVP1	29/05/2023	16:05	Merlin	1	bogs, hunting, flew from bush, killed prey, perched on post and ate, sat for over an hour	suitable nesting habitat; possible breeder	CG
BZ094	BRVP1	29/05/2023	16:17	Buzzard	1	bogs and bog woodland, flying	suitable nesting habitat; possible breeder	CG
BZ095	BRVP1	29/05/2023	16:52	Buzzard	1	bogs, flying	suitable nesting habitat; possible breeder	CG
ML029	BRVP1	29/05/2023	17:18	Merlin	1	bogs, flying, perched, soaring, male, rose from perch and flew into stand of large trees, perched briefly before taking off and flying west	suitable nesting habitat; possible breeder	CG
BZ096	BRVP1	29/05/2023	17:43	Buzzard	2	bogs, bog woodland and improved agricultural grassland, flying	pair; probable breeding	CG
BZ097	BRVP1	29/05/2023	18:03	Buzzard	1	bogs, bog woodland and improved agricultural grassland, soaring	suitable nesting habitat; possible breeder	CG
ML030	BRVP1	29/05/2023	18:56	Merlin	1	bogs, flying	suitable nesting habitat; possible breeder	CG
BZ098	BRVP1	29/05/2023	19:00	Buzzard	1	bogs and bog woodland, flying	suitable nesting habitat; possible breeder	CG
BZ099	BRVP1	29/05/2023	19:49	Buzzard	1	bogs, flying	suitable nesting habitat; possible breeder	CG
BZ100	BRVP2	13/06/2023	11:36	Buzzard	1	bogs and conifer plantation, calling	suitable nesting habitat; possible breeder	CG

Ref.	BR	Date	Time	Species	Number	Habitat and activity	Breeding status	Surveyor
BZ101	BRVP2	13/06/2023	11:44	Buzzard	1	bogs and conifer plantation, soaring	suitable nesting habitat; possible breeder	CG
BZ102	BRVP1	20/06/2023	12:42	Buzzard	2	bogs and bog woodland, soaring	permanent territory; probable breeding	CG
BZ103	BRVP1	20/06/2023	12:45	Buzzard	1	bogs, soaring	permanent territory; probable breeding	CG
BZ104	BRVP1	20/06/2023	14:23	Buzzard	1	bogs, soaring, joined other buzzard	permanent territory; probable breeding	CG
ML031	BRVP1	20/06/2023	14:35	Merlin	1	bogs, perched, female, no calling or begging heard didnt seem to visit a nest, perched for a few minutes before moving on	suitable nesting habitat; possible breeder	CG
BZ105	BRVP1	20/06/2023	15:27	Buzzard	1	bogs and improved agricultural grassland, calling	suitable nesting habitat; possible breeder	CG
BZ106	BRVP1	21/06/2023	20:50	Buzzard	1	improved agricultural grassland and conifer plantation, flying	suitable nesting habitat; possible breeder	CG
BZ107	BRVP3	13/07/2023	13:25	Buzzard	1	improved agricultural grassland, flying	suitable nesting habitat; possible breeder	CG
K.065	BRVP1	27/07/2023	14:19	Kestrel	1	bogs, hunting	suitable nesting habitat; possible breeder	CG
K.066	BRVP1	27/07/2023	14:28	Kestrel	1	bogs, hunting, female, 2nd bird hunting far side of bog	suitable nesting habitat; possible breeder	CG
K.067	BRVP1	27/07/2023	14:29	Kestrel	1	bogs, hunting, observed at same time as female	suitable nesting habitat; possible breeder	CG
K.068	BRVP1	27/07/2023	14:52	Kestrel	1	bogs, hunting, mobbing, attacked and chased male merlin	agitated behaviour; probable breeding	CG
ML032	BRVP1	27/07/2023	14:55	Merlin	1	bogs, mobbed, alarm calling, mobbed by kestrel	suitable nesting habitat; possible breeder	CG
K.069	BRVP1	27/07/2023	14:59	Kestrel	1	bogs, hunting, female	suitable nesting habitat; possible breeder	CG
K.070	BRVP1	27/07/2023	15:00	Kestrel	1	bogs, flying, perched, male	suitable nesting habitat; possible breeder	CG

Ref.	BR	Date	Time	Species	Number	Habitat and activity	Breeding status	Surveyor
K.071	BRVP1	27/07/2023	15:06	Kestrel	1	bogs, hunting, female	suitable nesting habitat; possible breeder	CG
K.072	BRVP1	27/07/2023	15:36	Kestrel	1	bogs, flying	fledged young; confirmed breeding	CG
K.073	BRVP1	27/07/2023	15:37	Kestrel	3	bogs and mixed broadleaved/conifer woodland, fighting, 2 males, 1 female	agitated behaviour; probable breeding	CG
K.074	BRVP1	27/07/2023	15:45	Kestrel	1	bogs, hunting	suitable nesting habitat; possible breeder	CG
K.075	BRVP1	27/07/2023	15:51	Kestrel	1	bogs, mobbing , mobbing a merlin	agitated behaviour; probable breeding	CG
ML033	BRVP1	27/07/2023	15:52	Merlin	1	bogs, mobbed, male, mobbed by kestrel, entered wd4 plantation	suitable nesting habitat; possible breeder	CG
ML034	BRVP1	27/07/2023	16:14	Merlin	1	bogs, flying, male	suitable nesting habitat; possible breeder	CG
K.076	BRVP1	27/07/2023	16:18	Kestrel	1	bogs, hunting, caught and consumed small prey item	suitable nesting habitat; possible breeder	CG
K.077	BRVP1	27/07/2023	16:19	Kestrel	1	bogs, hunting, male	suitable nesting habitat; possible breeder	CG
K.078	BRVP1	27/07/2023	16:19	Kestrel	1	bogs, hunting, female	suitable nesting habitat; possible breeder	CG
K.079	BRVP1	27/07/2023	16:50	Kestrel	1	bogs, hunting	suitable nesting habitat; possible breeder	CG
K.080	BRVP1	27/07/2023	16:52	Kestrel	2	bogs, fighting	agitated behaviour; probable breeding	CG
BZ108	BRVP1	27/07/2023	16:55	Buzzard	2	bogs and improved agricultural grassland, soaring, calling	suitable nesting habitat; possible breeder	CG
BZ109	BRVP1	27/07/2023	17:10	Buzzard	3	bogs and improved agricultural grassland, soaring, calling	suitable nesting habitat; possible breeder	CG
K.081	BRVP1	27/07/2023	17:11	Kestrel	3	mixed broadleaved/conifer woodland and bogs, chasing each other	agitated behaviour; probable breeding	CG

Ref.	BR	Date	Time	Species	Number	Habitat and activity	Breeding status	Surveyor
K.082	BRVP2	28/07/2023	11:03	Kestrel	1	bogs, hunting	suitable nesting habitat; possible breeder	CG

Appendix 1 Table 5 Breeding Woodcock Survey Results

Ref.	Transect	Date	Time	Species	Number	Habitat and activity	Surveyor
WK074	WKT2	03/05/2023	21:13	Woodcock	1	conifer plantation, travelling	PM
WK075	WKT1	03/05/2023	21:22	Woodcock	1	conifer plantation, travelling	PDC
WK076	WKT2	03/05/2023	21:28	Woodcock	1	conifer plantation, roding	PM
WK077	WKT3	04/05/2023	20:32	Woodcock	1	bogs and conifer plantation, travelling, not sure if it was roding, no frog call heard just the squeak	PDC
WK078	WKT3	04/05/2023	20:35	Woodcock	1	conifer plantation and bogs, travelling, not sure if it was roding, no frog call heard just the squeak	PDC
WK079	WKT3	04/05/2023	20:55	Woodcock	1	conifer plantation and bogs, travelling, not sure if it was roding, no frog call heard just the squeak	PDC
WK080	WKT4	04/05/2023	21:00	Woodcock	1	conifer plantation and bogs, travelling	PM
WK081	WKT3	04/05/2023	21:20	Woodcock	1	bogs and conifer plantation, travelling, not sure if it was roding, no frog call heard just the squeak	PDC
WK082	WKT3	04/05/2023	21:30	Woodcock	1	conifer plantation, calling, heard but not seen	PDC
WK083	WKT3	04/05/2023	21:33	Woodcock	1	conifer plantation, travelling, not sure if it was roding, no frog call heard just the squeak	PDC
WK084	WKT1	07/06/2023	21:17	Woodcock	1	conifer plantation, roding, 2nd bird	PM
WK085	WKT1	07/06/2023	22:06	Woodcock	1	conifer plantation, roding	PM
WK086	WKT1	07/06/2023	22:09	Woodcock	1	conifer plantation, roding, same bird	PM
WK087	WKT1	07/06/2023	22:17	Woodcock	1	conifer plantation, calling, 3rd bird	PM
WK088	WKT2	07/06/2023	22:19	Woodcock	1	conifer plantation, roding	SD

Ref.	Transect	Date	Time	Species	Number	Habitat and activity	Surveyor
WK089	WKT1	07/06/2023	22:21	Woodcock	1	conifer plantation, flying, same as previos bird	PM
WK090	WKT1	07/06/2023	22:27	Woodcock	1	conifer plantation, calling in flight, same as prev bird	PM
WK091	WKT1	07/06/2023	22:33	Woodcock	1	conifer plantation, roding, same as first bird	PM
WK092	WKT1	07/06/2023	22:38	Woodcock	1	conifer plantation, flying, 4th bird	PM
WK093	WKT1	07/06/2023	22:45	Woodcock	1	conifer plantation, roding, 5th bird	PM
WK094	WKT3	08/06/2023	22:20	Woodcock	1	conifer plantation, roding	SD
WK095	WKT4	08/06/2023	22:30	Woodcock	1	conifer plantation, roding	SD
WK096	WKT3	08/06/2023	23:00	Woodcock	1	conifer plantation, flying over	SD
WK097	WKT3	08/06/2023	23:07	Woodcock	1	conifer plantation, roding	SD
WK098	WKT2	22/06/2023	22:34	Woodcock	1	conifer plantation, roding, only heard squeaking	FOD
WK099	WKT1	22/06/2023	22:20	Woodcock	1	conifer plantation, calling	SD
WK100	WKT1	22/06/2023	22:23	Woodcock	1	conifer plantation, calling	SD
WK101	WKT1	22/06/2023	22:24	Woodcock	1	conifer plantation, fly over	SD
WK102	WKT3	22/06/2023	22:25	Woodcock	1	bogs, roding	NL
WK103	WKT1	22/06/2023	22:25	Woodcock	1	conifer plantation, fly over roding	SD

Ref.	Transect	Date	Time	Species	Number	Habitat and activity	Surveyor
WK104	WKT1	22/06/2023	22:26	Woodcock	1	conifer plantation, calling	SD
WK105	WKT1	22/06/2023	22:27	Woodcock	1	conifer plantation, fly over roding	SD
WK106	WKT3	22/06/2023	22:28	Woodcock	1	bogs, roding	NL
WK107	WKT1	22/06/2023	22:28	Woodcock	1	conifer plantation, fly over	SD
WK108	WKT4	22/06/2023	22:29	Woodcock	1	conifer plantation and cutover bog, roding	PM
WK109	WKT1	22/06/2023	22:30	Woodcock	1	conifer plantation, fly overer	SD
WK110	WKT4	22/06/2023	22:32	Woodcock	1	conifer plantation and cutover bog, roding	PM
WK111	WKT1	22/06/2023	22:33	Woodcock	1	conifer plantation, calling	SD
WK112	WKT1	22/06/2023	22:35	Woodcock	1	conifer plantation, roding circling	SD
WK113	WKT4	22/06/2023	22:36	Woodcock	1	conifer plantation, roding, bird 2	PM
WK114	WKT1	22/06/2023	22:36	Woodcock	1	conifer plantation, flying	SD

Appendix 1 Table 6 Breeding Barn Owl Survey Results

Ref.	Location	Date	Time	Observation	Habitat	Surveyor
BO001	BOVP1	25/04/2023	21:48	Breeding Site - Barn Owl; in flight/perched. emerged from red roofed shed through nw facing window, perched in nearby tree for a few minutes before taking off	improved agricultural grassland	CG
BO002	BOVP1	29/05/2023	23:45	Breeding Site - Barn Owl; calling. heard not seen	improved agricultural grassland	CG
BO003	BOVP1	21/06/2023	22:13	Breeding Site - Barn Owl; single bird in flight	improved agricultural grassland	CG
BO004	BOVP1	21/06/2023	22:26	Breeding Site - Barn Owl; single bird in flight	improved agricultural grassland	CG
BO005	BOVP1	21/06/2023	23:04	Breeding Site - Barn Owl; hissing calls heard from building	buildings and artificial surfaces	CG
BO006	BOVP1	27/07/2023	22:07	Breeding Site - Barn Owl; 2 juveniles, exercising wings. wing flapping, head bobbing	buildings and artificial surfaces and arable crops	CG
BO007	BOVP1	27/07/2023	22:09	Breeding Site - Barn Owl; flying	arable crops and buildings and artificial surfaces	CG
BO008	BOVP1	27/07/2023	22:20	Breeding Site - Barn Owl; two birds. flying, perched	buildings and artificial surfaces and arable crops	CG
BO009	BOVP1	27/07/2023	22:28	Breeding Site - Barn Owl; came from active nest site. hunting	arable crops	CG

Appendix 1 Table 7 Waterbird Distribution Survey Results

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Carrig	06/04/2023	07:12	Tufted Duck	2	turloughs; loafing	NL
	Carrig	06/04/2023	07:15	Coot	2	turloughs; breeding	NL
	Carrig	06/04/2023	07:16	Moorhen	1	turloughs; feeding	NL
	Carrig	06/04/2023	07:17	Coot	2	turloughs; feeding	NL
	Carrig	06/04/2023	07:18	Moorhen	1	turloughs; feeding	NL
	Carrig	06/04/2023	07:18	Teal	2	turloughs; feeding, preening	NL
	Carrig	06/04/2023	07:21	Mute Swan	1	turloughs; feeding	NL
	Carrig	06/04/2023	07:22	Little Grebe	2	turloughs; feeding	NL
	Carrig	06/04/2023	07:23	Mute Swan	1	turloughs; feeding	NL
	Carrig	06/04/2023	07:28	Coot	2	turloughs; feeding	NL
	Derrinasallow Bridge	06/04/2023	08:10	Grey Wagtail	1	watercourses; flying	NL
	Derrinasallow Bridge	06/04/2023	08:21	Grey Heron	1	watercourses; flying	NL
	Derrinasallow Bridge	06/04/2023	08:23	Grey Wagtail	2	watercourses; agitated behaviour	NL
	Derrinasallow Bridge	06/04/2023	09:04	Grey Heron	1	wet grassland; flushed	NL
	Ashton Callows	06/04/2023	09:14	Little Egret	1	wet grassland; perched	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Ashton Callows	06/04/2023	09:27	Cormorant	1	wet grassland; perched, drying wings, on post	NL
BH129	Ashton Callows	06/04/2023	09:29	Black-headed Gull	13	wet grassland; flying	NL
	Ashton Callows	06/04/2023	09:35	Mute Swan	2	wet grassland; feeding, preening, breeding	NL
	Ashton Callows	06/04/2023	09:35	Mallard	2	wet grassland; feeding	NL
	Ashton Callows	06/04/2023	09:56	Mute Swan	1	wet grassland; preening	NL
	Ashton Callows	06/04/2023	11:06	Mute Swan	1	wet grassland; feeding	NL
	Ashton Callows	06/04/2023	11:14	Mute Swan	2	wet grassland; feeding	NL
	River Little Brosna Callows	06/04/2023	11:26	Little Egret	1	wet grassland; roosting	NL
	River Little Brosna Callows	06/04/2023	11:28	Mute Swan	1	watercourses; feeding	NL
	River Little Brosna Callows	06/04/2023	11:29	Grey Heron	1	wet grassland; flying	NL
	River Little Brosna Callows	06/04/2023	11:29	Mallard	2	wet grassland; flying	NL
	River Little Brosna Callows	06/04/2023	11:31	Little Egret	1	wet grassland; roosting	NL
	River Little Brosna Callows	06/04/2023	11:37	Mute Swan	2	watercourses; feeding	NL
	River Little Brosna Callows	06/04/2023	11:48	Little Egret	5	wet grassland and watercourses; feeding	NL
	River Little Brosna Callows	06/04/2023	11:54	Wigeon	192	wet grassland and watercourses; feeding	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	River Little Brosna Callows	06/04/2023	11:57	Mute Swan	40	wet grassland and watercourses; feeding, roosting, breeding	NL
	River Little Brosna Callows	06/04/2023	12:00	Wigeon	75	wet grassland and watercourses; feeding	NL
BH130	River Little Brosna Callows	06/04/2023	12:03	Black-headed Gull	18	wet grassland and watercourses; flying	NL
	River Little Brosna Callows	06/04/2023	12:16	Cormorant	1	wet grassland and watercourses; perched	NL
	Carrig	14/04/2023	07:08	Coot	1	turloughs; loafing	NL
	Carrig	14/04/2023	07:09	Tufted Duck	2	turloughs; feeding	NL
	Carrig	14/04/2023	07:10	Mallard	6	turloughs; flying over	NL
	Carrig	14/04/2023	07:10	Little Grebe	1	turloughs; diving	NL
	Carrig	14/04/2023	07:11	Grey Heron	1	turloughs; flying over	NL
	Carrig	14/04/2023	07:12	Cormorant	1	turloughs; perched	NL
	Carrig	14/04/2023	07:13	Mallard	1	turloughs; roosting	NL
	Carrig	14/04/2023	07:13	Moorhen	1	turloughs; feeding	NL
	Carrig	14/04/2023	07:15	Little Grebe	1	turloughs; feeding	NL
	Carrig	14/04/2023	07:16	Mallard	2	turloughs; feeding	NL
	Carrig	14/04/2023	07:16	Coot	1	turloughs; feeding	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Carrig	14/04/2023	07:16	Moorhen	1	turloughs; feeding	NL
	Carrig	14/04/2023	07:17	Little Grebe	1	turloughs; swimming, nesting material in beak	NL
	Carrig	14/04/2023	07:18	Little Grebe	3	turloughs; flushed	NL
	Carrig	14/04/2023	07:21	Little Grebe	1	turloughs; feeding	NL
	Carrig	14/04/2023	07:21	Moorhen	1	turloughs; feeding	NL
	Carrig	14/04/2023	07:21	Mallard	2	turloughs; flying over	NL
	Carrig	14/04/2023	07:22	Little Grebe	1	turloughs; flushed	NL
	Carrig	14/04/2023	07:22	Grey Heron	1	turloughs; flushed	NL
	Carrig	14/04/2023	07:23	Mute Swan	2	turloughs; preening	NL
	Derrinasallow Bridge	14/04/2023	08:23	Grey Heron	1	watercourses; flying over	NL
	Derrinasallow Bridge	14/04/2023	08:24	Grey Wagtail	3	watercourses; feeding	NL
	Ashton Callows	14/04/2023	11:12	Mallard	1	watercourses and marsh; flying	NL
	Ashton Callows	14/04/2023	11:13	Cormorant	1	watercourses and marsh; perched	NL
BH131	Ashton Callows	14/04/2023	11:13	Black-headed Gull	3	watercourses and marsh; flying	NL
	Ashton Callows	14/04/2023	11:16	Mute Swan	1	watercourses and marsh; roosting, on nest in reeds	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Ashton Callows	14/04/2023	11:28	Mallard	2	watercourses and marsh; flying	NL
	Ashton Callows	14/04/2023	11:28	Grey Heron	1	watercourses and marsh; flying	NL
	Ashton Callows	14/04/2023	11:28	Mute Swan	2	watercourses; feeding	NL
	Little River Brosna Callows	14/04/2023	12:24	Moorhen	1	wet grassland; feeding	NL
	Little River Brosna Callows	14/04/2023	12:24	Mute Swan	5	wet grassland; feeding	NL
	Little River Brosna Callows	14/04/2023	12:25	Greenshank	1	wet grassland; feeding	NL
	Little River Brosna Callows	14/04/2023	12:25	Little Egret	1	wet grassland; feeding	NL
	Little River Brosna Callows	14/04/2023	13:04	Redshank	14	wet grassland; feeding	NL
	Little River Brosna Callows	14/04/2023	13:04	Red Knot	12	wet grassland; feeding	NL
	Little River Brosna Callows	14/04/2023	13:05	Whooper Swan	27	wet grassland; roosting, feeding	NL
	Little River Brosna Callows	14/04/2023	13:06	Little Egret	9	wet grassland; roosting, feeding	NL
	Little River Brosna Callows	14/04/2023	13:06	Mallard	3	wet grassland; feeding	NL
	Little River Brosna Callows	14/04/2023	13:07	Mute Swan	6	wet grassland; feeding	NL
	Little River Brosna Callows	14/04/2023	13:07	Mallard	2	wet grassland; feeding	NL
	Little River Brosna Callows	14/04/2023	13:07	Wigeon	120	wet grassland; flying	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Little River Brosna Callows	14/04/2023	13:08	Greylag Goose	8	wet grassland; feeding, roosting	NL
	Little River Brosna Callows	14/04/2023	13:08	Mute Swan	2	wet grassland; feeding	NL
	Little River Brosna Callows	14/04/2023	13:09	Mallard	1	wet grassland; flying over	NL
	Little River Brosna Callows	14/04/2023	13:09	Cormorant	1	wet grassland; flying over	NL
	Carrig	20/04/2023	07:11	Grey Heron	1	lakes and ponds; flying, landed in stream	NL
	Carrig	20/04/2023	07:15	Tufted Duck	2	turloughs; roosting, feeding	NL
	Carrig	20/04/2023	07:16	Moorhen	1	turloughs; feeding	NL
	Carrig	20/04/2023	07:18	Coot	1	turloughs; feeding	NL
	Carrig	20/04/2023	07:18	Moorhen	1	turloughs; feeding	NL
	Carrig	20/04/2023	07:21	Coot	2	turloughs; roosting, feeding, 1 bird on nest	NL
	Carrig	20/04/2023	07:24	Mallard	5	turloughs; feeding	NL
	Carrig	20/04/2023	07:24	Mute Swan	2	turloughs; feeding	NL
	Carrig	20/04/2023	07:25	Moorhen	4	turloughs; feeding	NL
	Carrig	20/04/2023	07:27	Mallard	2	turloughs; feeding	NL
	Carrig	20/04/2023	07:28	Moorhen	1	turloughs; flushed	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Ashton Callows	20/04/2023	09:12	Redshank	1	marsh; perched	NL
BH132	Ashton Callows	20/04/2023	09:21	Black-headed Gull	4	marsh; flying	NL
	Ashton Callows	20/04/2023	09:38	Mallard	2	marsh; flying	NL
	Ashton Callows	20/04/2023	09:38	Mute Swan	2	watercourses; feeding	NL
	Ashton Callows	20/04/2023	09:44	Mute Swan	1	marsh; preening	NL
	Ashton Callows	20/04/2023	09:46	Cormorant	1	marsh; flying, 1st year	NL
	Ashton Callows	20/04/2023	09:50	Little Egret	1	marsh and watercourses; feeding	NL
	Ashton Callows	20/04/2023	10:05	Cormorant	1	marsh and watercourses; flying	NL
	Little River Brosna Callows	20/04/2023	11:17	Mute Swan	19	watercourses; feeding, roosting	NL
	Little River Brosna Callows	20/04/2023	11:21	Little Egret	11	watercourses; feeding, roosting	NL
	Little River Brosna Callows	20/04/2023	11:26	Whooper Swan	14	watercourses; feeding, roosting	NL
	Little River Brosna Callows	20/04/2023	11:32	Greylag Goose	1	watercourses; feeding	NL
	Little River Brosna Callows	20/04/2023	11:33	Grey Heron	2	watercourses; feeding	NL
	Little River Brosna Callows	20/04/2023	11:33	Mallard	4	watercourses; feeding	NL
	Little River Brosna Callows	20/04/2023	11:38	Cormorant	1	watercourses; diving	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Carrig	27/04/2023	07:20	Moorhen	2	turloughs; feeding	NL
	Carrig	27/04/2023	07:22	Little Grebe	1	turloughs; feeding	NL
	Carrig	27/04/2023	07:23	Mallard	1	turloughs; feeding	NL
	Carrig	27/04/2023	07:23	Coot	1	turloughs; preening	NL
	Carrig	27/04/2023	07:24	Coot	1	turloughs; perched	NL
	Carrig	27/04/2023	07:27	Coot	1	turloughs; feeding	NL
	Carrig	27/04/2023	07:29	Moorhen	1	turloughs; feeding	NL
	Carrig	27/04/2023	07:30	Mallard	9	turloughs; feeding, 1 female with 8 ducklings	NL
	Carrig	27/04/2023	07:31	Mallard	13	turloughs; feeding, male & female with 11 ducklings	NL
	Carrig	27/04/2023	07:32	Grey Heron	1	turloughs; feeding	NL
	Carrig	27/04/2023	07:33	Moorhen	1	turloughs; feeding	NL
	Carrig	27/04/2023	07:34	Mallard	2	turloughs; feeding	NL
	Carrig	27/04/2023	07:35	Wigeon	2	turloughs; feeding	NL
	Carrig	27/04/2023	07:36	Coot	1	turloughs; feeding	NL
	Carrig	27/04/2023	07:38	Mallard	2	turloughs; flushed, males	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Carrig	27/04/2023	07:40	Mallard	1	turloughs; flushed	NL
	Derrinasallow Bridge	27/04/2023	08:50	Grey Wagtail	1	watercourses; feeding	NL
	Derrinasallow Bridge	27/04/2023	08:50	Grey Heron	1	watercourses; feeding, flushed	NL
	Ashton Callows	27/04/2023	09:55	Grey Heron	1	wet grassland; feeding	NL
	Ashton Callows	27/04/2023	10:07	Mute Swan	1	wet grassland; feeding	NL
	Ashton Callows	27/04/2023	10:47	Mute Swan	2	wet grassland and watercourses; flying	NL
	Little River Brosna Callows	27/04/2023	11:17	Grey Heron	1	wet grassland; flying	NL
	Little River Brosna Callows	27/04/2023	11:18	Mute Swan	1	wet grassland; feeding	NL
	Little River Brosna Callows	27/04/2023	11:18	Mute Swan	1	wet grassland; feeding	NL
	Little River Brosna Callows	27/04/2023	11:19	Grey Heron	2	wet grassland; flying	NL
	Little River Brosna Callows	27/04/2023	11:19	Cormorant	1	wet grassland; flying	NL
	Little River Brosna Callows	27/04/2023	11:20	Mallard	1	wet grassland; feeding	NL
	Little River Brosna Callows	27/04/2023	11:31	Mute Swan	2	wet grassland; feeding	NL
L218	Little River Brosna Callows	27/04/2023	11:31	Lapwing	1	wet grassland; flying	NL
	Little River Brosna Callows	27/04/2023	11:35	Mute Swan	1	wet grassland; feeding	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Little River Brosna Callows	27/04/2023	11:41	Whooper Swan	6	wet grassland; grazing	NL
	Little River Brosna Callows	27/04/2023	11:43	Little Egret	13	wet grassland; feeding, roosting	NL
	Little River Brosna Callows	27/04/2023	12:02	Mute Swan	28	wet grassland; feeding, roosting	NL
L.219	Little River Brosna Callows	27/04/2023	12:15	Lapwing	1	wet grassland; flying	NL
	Carrig	04/05/2023	06:57	Moorhen	1	turloughs; flushed	NL
	Carrig	04/05/2023	07:01	Moorhen	2	turloughs; calling	NL
	Carrig	04/05/2023	07:04	Mute Swan	2	turloughs; preening	NL
	Carrig	04/05/2023	07:05	Little Grebe	1	turloughs; feeding	NL
	Carrig	04/05/2023	07:08	Coot	1	turloughs; feeding	NL
	Carrig	04/05/2023	07:11	Mallard	10	turloughs; feeding, male, female & 8 ducklings	NL
	Carrig	04/05/2023	07:12	Mallard	5	turloughs; feeding, all male	NL
	Carrig	04/05/2023	07:12	Little Grebe	1	turloughs; feeding	NL
	Carrig	04/05/2023	07:13	Moorhen	1	turloughs; feeding	NL
	Ashton Callows	04/05/2023	08:46	Mute Swan	2	turloughs; preening, feeding	NL
	Ashton Callows	04/05/2023	08:49	Grey Heron	1	wet grassland; flying	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
L.220	Ashton Callows	04/05/2023	08:54	Lapwing	1	wet grassland; flying	NL
	Ashton Callows	04/05/2023	08:58	Little Egret	1	wet grassland; flying	NL
	Ashton Callows	04/05/2023	09:03	Grey Heron	1	wet grassland; flying	NL
BH133	Ashton Callows	04/05/2023	09:09	Black-headed Gull	1	wet grassland; flying	NL
	Little River Brosna Callows	04/05/2023	10:32	Cormorant	1	wet grassland; perched	NL
	Little River Brosna Callows	04/05/2023	10:32	Little Egret	5	wet grassland; feeding	NL
BH134	Little River Brosna Callows	04/05/2023	10:34	Black-headed Gull	2	wet grassland; flying	NL
	Little River Brosna Callows	04/05/2023	10:36	Mute Swan	4	wet grassland; feeding	NL
	Little River Brosna Callows	04/05/2023	10:39	Whooper Swan	4	wet grassland; feeding	NL
L.221	Little River Brosna Callows	04/05/2023	10:39	Lapwing	1	wet grassland; flying	NL
	Carrig	11/05/2023	07:02	Mute Swan	1	turloughs; feeding	NL
	Carrig	11/05/2023	07:03	Mute Swan	1	turloughs; feeding	NL
	Carrig	11/05/2023	07:05	Grey Heron	1	turloughs; feeding	NL
	Carrig	11/05/2023	07:06	Coot	1	turloughs; feeding	NL
	Carrig	11/05/2023	07:07	Moorhen	1	turloughs; feeding	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Carrig	11/05/2023	07:09	Grey Heron	1	turloughs; flying	NL
	Carrig	11/05/2023	07:12	Mallard	4	turloughs; feeding	NL
	Carrig	11/05/2023	07:12	Coot	1	turloughs; feeding	NL
	Carrig	11/05/2023	07:18	Coot	1	turloughs; alarm call	NL
	Derrinasallow Bridge	11/05/2023	08:11	Cormorant	2	watercourses; feeding, flushed	NL
	Ashton Callows	11/05/2023	08:55	Shag	1	wet grassland; perched, drying wings, 1st year, in tree	NL
	Ashton Callows	11/05/2023	09:00	Grey Heron	1	wet grassland; flying	NL
	Ashton Callows	11/05/2023	09:11	Mallard	3	wet grassland; flying	NL
BH135	Ashton Callows	11/05/2023	09:24	Black-headed Gull	1	wet grassland; flying, 1st summer	NL
BH136	Ashton Callows	11/05/2023	09:28	Black-headed Gull	4	wet grassland; flying	NL
	Ashton Callows	11/05/2023	09:40	Grey Heron	2	wet grassland; flying	NL
	Stream	11/05/2023	10:19	Mute Swan	3	wet grassland; feeding	NL
	Little River Brosna Callows	11/05/2023	10:39	Mute Swan	2	watercourses; feeding	NL
	Little River Brosna Callows	11/05/2023	10:39	Little Egret	1	wet grassland; feeding	NL
	Little River Brosna Callows	11/05/2023	10:47	Little Egret	1	wet grassland; feeding	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Little River Brosna Callows	11/05/2023	10:51	Little Egret	1	wet grassland; feeding	NL
	Little River Brosna Callows	11/05/2023	10:52	Mute Swan	1	wet grassland; travelling	NL
L.222	Little River Brosna Callows	11/05/2023	10:55	Lapwing	2	wet grassland; flying	NL
BH137	Little River Brosna Callows	11/05/2023	11:00	Black-headed Gull	2	wet grassland; flying	NL
	Little River Brosna Callows	11/05/2023	11:00	Cormorant	1	wet grassland; perched	NL
	Little River Brosna Callows	11/05/2023	11:00	Mute Swan	25	wet grassland; feeding	NL
	Little River Brosna Callows	11/05/2023	11:03	Greylag Goose	3	wet grassland; feeding	NL
	Little River Brosna Callows	11/05/2023	11:03	Whooper Swan	3	wet grassland; feeding	NL
	Little River Brosna Callows	11/05/2023	11:06	Mallard	7	wet grassland; flying	NL
	Little River Brosna Callows	11/05/2023	11:06	Little Egret	1	wet grassland; feeding	NL
	Carrig	18/05/2023	07:06	Little Grebe	1	turloughs; feeding	NL
	Carrig	18/05/2023	07:07	Little Grebe	1	turloughs; feeding	NL
	Carrig	18/05/2023	07:08	Mallard	1	turloughs; perched	NL
	Carrig	18/05/2023	07:11	Moorhen	1	turloughs; feeding	NL
	Carrig	18/05/2023	07:12	Mute Swan	2	turloughs; feeding	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Carrig	18/05/2023	07:15	Mallard	1	turloughs; feeding	NL
	Carrig	18/05/2023	07:16	Mallard	1	turloughs; feeding	NL
	Carrig	18/05/2023	07:17	Mallard	11	turloughs; flushed, ducklings	NL
	Carrig	18/05/2023	07:19	Coot	1	turloughs; calling	NL
	Derrinasallow Bridge	18/05/2023	07:50	Grey Wagtail	2	watercourses; agitated behaviour	NL
	Derrinasallow Bridge	18/05/2023	08:07	Grey Heron	1	watercourses; flying	NL
	Ashton Callows	18/05/2023	09:08	Grey Heron	1	wet grassland; perched	NL
	Ashton Callows	18/05/2023	09:20	Cormorant	1	wet grassland; perched	NL
	Ashton Callows	18/05/2023	09:21	Mallard	1	wet grassland; flying	NL
	Ashton Callows	18/05/2023	09:28	Grey Heron	1	wet grassland; flying	NL
	Stream	18/05/2023	10:34	Grey Heron	1	wet grassland; flying	NL
	Little River Brosna Callows	18/05/2023	10:50	Mute Swan	2	wet grassland and watercourses; feeding	NL
	Little River Brosna Callows	18/05/2023	10:50	Mallard	1	wet grassland; flying	NL
L223	Little River Brosna Callows	18/05/2023	10:59	Lapwing	10	wet grassland; flying	NL
	Little River Brosna Callows	18/05/2023	11:01	Mute Swan	28	wet grassland and watercourses; feeding	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
L.224	Little River Brosna Callows	18/05/2023	11:02	Lapwing	1	wet grassland; feeding	NL
	Little River Brosna Callows	18/05/2023	11:02	Grey Heron	3	wet grassland; flying	NL
	Little River Brosna Callows	18/05/2023	11:06	Mallard	1	wet grassland; feeding	NL
	Little River Brosna Callows	18/05/2023	11:06	Little Egret	5	wet grassland and watercourses; feeding	NL
	Little River Brosna Callows	18/05/2023	11:16	Whooper Swan	1	wet grassland; preening, feeding	NL
	Carrig	25/05/2023	07:10	Mallard	1	turloughs; feeding	NL
	Carrig	25/05/2023	07:12	Mallard	4	turloughs; feeding, ducklings	NL
	Carrig	25/05/2023	07:14	Coot	1	turloughs; calling	NL
	Carrig	25/05/2023	07:18	Moorhen	1	turloughs; feeding	NL
	Carrig	25/05/2023	07:18	Coot	1	turloughs; calling	NL
	Carrig	25/05/2023	07:22	Grey Heron	1	turloughs; perched	NL
	Carrig	25/05/2023	07:24	Coot	1	turloughs; calling	NL
	Carrig	25/05/2023	07:24	Mallard	1	turloughs; calling	NL
	Carrig	25/05/2023	07:25	Mallard	2	turloughs; flying	NL
	Ashton Callows	25/05/2023	09:24	Cormorant	1	wet grassland; perched	NL

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Ashton Callows	25/05/2023	09:59	Mute Swan	1	wet grassland and watercourses; flying	NL
	Little River Brosna Callows	25/05/2023	11:08	Redshank	1	wet grassland; agitated behaviour	NL
	Little River Brosna Callows	25/05/2023	11:18	Grey Heron	3	wet grassland; flying	NL
	Little River Brosna Callows	25/05/2023	11:21	Little Egret	1	wet grassland; feeding	NL
L.225	Little River Brosna Callows	25/05/2023	11:22	Lapwing	1	wet grassland; flying	NL
L.226	Little River Brosna Callows	25/05/2023	11:24	Lapwing	1	wet grassland; flying	NL
	Little River Brosna Callows	25/05/2023	11:24	Mute Swan	1	wet grassland; feeding	NL
	Little River Brosna Callows	25/05/2023	11:24	Redshank	1	wet grassland; feeding	NL
	Little River Brosna Callows	25/05/2023	11:31	Redshank	2	wet grassland; perched, females	NL
	Little River Brosna Callows	25/05/2023	11:36	Mute Swan	1	wet grassland; feeding	NL

Appendix 1 Table 8 Incidental Records

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
K.071	Waterbird Distribution Survey; Clonrah and Glaster	06/04/2023	08:34	Kestrel	1	improved agricultural grassland; mobbed, male, mobbed by corvid	NL
BZ059	Waterbird Distribution Survey; Ashton Callows Bird Hide Car Park	06/04/2023	08:55	Buzzard	2	scrub/transitional woodland; calling, agitated, pair showing agitated behaviour and alarm calls	NL
BZ060	Waterbird Distribution Survey; Ashton Callows Bird Hide	14/04/2023	08:38	Buzzard	1	semi-natural grassland; flushed	NL
BZ061	Waterbird Distribution Survey; Ashton Callows Bird Hide	14/04/2023	08:39	Buzzard	1	semi-natural grassland; perched	NL
BZ062	Waterbird Distribution Survey; Near redwood bog	14/04/2023	13:46	Buzzard	1	improved grassland; flying, perched	NL
BZ063	Waterbird Distribution Survey; Little Brosna Callows	20/04/2023	11:39	Buzzard	1	wet grassland; mobbed, mobbed by hooded crow	NL
HH010	Waterbird Distribution Survey; R489	20/04/2023	13:28	Hen Harrier	1	improved agricultural grassland; hunting	NL
SN050	Breeding Raptor Survey; BRVP2	21/04/2023	08:38	Snipe	1	bogs; drumming	CG
	Breeding Raptor Survey; BRVP2	21/04/2023	09:22	Grey Heron	1	bogs and conifer plantation; flying	CG
	Breeding Raptor Survey; BRVP2	21/04/2023	11:01	Mallard	1	bogs; flying	CG
	Breeding Raptor Survey; BRVP1	25/04/2023	15:17	Mallard	1	bogs; flying	CG
	Breeding Raptor Survey; BRT1	25/04/2023	18:47	Mallard	3	improved agricultural grassland and bogs; flying	CG
SN051	Breeding Raptor Survey; brt1	25/04/2023	21:15	Snipe	1	improved agricultural grassland, bogs and conifer plantation; flying	CG
SN052	Breeding Raptor Survey; BRT1	25/04/2023	21:28	Snipe	1	bogs; drumming	CG
WK006	Breeding Raptor Survey; BRT1	25/04/2023	21:31	Woodcock	1	improved agricultural grassland; calling	CG

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
SN053	Breeding Raptor Survey; BRVP4	26/04/2023	10:26	Snipe	1	bogs; singing	CG
	Breeding Raptor Survey; BRVP4	26/04/2023	10:27	Meadow Pipit	3	bogs and improved agricultural grassland; flitting	CG
	Breeding Raptor Survey; BRVP3	26/04/2023	15:27	Mallard	1	bog woodland and conifer plantation; flying	CG
BZ064	Waterbird Distribution Survey; Ashton Callows	27/04/2023	09:31	Buzzard	1	wet grassland; hunting	NL
WE007	Waterbird Distribution Survey; Little River Brosna Callows	27/04/2023	12:16	White-Tailed Eagle	1	wet grassland; perched, hunting, juvenile with green tag on left wing, on post	NL
	Breeding Woodcock Survey; The Island	03/05/2023	20:26	Mallard	1	bogs; flushed	PM
BZ065	Breeding Woodcock Survey; The Island	03/05/2023	20:39	Buzzard	1	conifer plantation; travelling	PM
BZ066	Breeding Woodcock Survey; Cloncorig	03/05/2023	20:42	Buzzard	1	conifer plantation; travelling	PDC
SN054	Breeding Woodcock Survey; The Island	03/05/2023	21:39	Snipe	1	bogs; drumming	PM
SN055	Breeding Woodcock Survey; The Island	03/05/2023	22:00	Snipe	6	bogs and improved agricultural grassland; drumming, at least 6 noted drumming and calling	PDC
BO004	Breeding Woodcock Survey; Lissernane	03/05/2023	22:25	Barn Owl	1	improved agricultural grassland and bogs; travelling	MH
BZ067	Waterbird Distribution Survey; Ashton Callows	04/05/2023	09:18	Buzzard	1	wet grassland; perched, same individual as recorded 27/04/2023, on post	NL
	Breeding Woodcock Survey; Coolderry	04/05/2023	20:15	Mallard	2	bogs and conifer plantation; travelling	PDC
SN056	Breeding Woodcock Survey; Cloncorig	04/05/2023	21:38	Snipe	1	bogs; drumming	PM
SN057	Breeding Woodcock Survey; Coolderry	04/05/2023	21:50	Snipe	2	bogs; drumming	PDC

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
K.072	Waterbird Distribution Survey; Ashton Callows	11/05/2023	09:34	Kestrel	1	wet grassland; hunting	NL
WE008	Waterbird Distribution Survey; Little River Brosna Callows	11/05/2023	10:54	White-Tailed Eagle	1	wet grassland; perched, blue tag on right wing, on post	NL
	Breeding Raptor Survey; BRVP2	15/05/2023	09:30	Mallard	1	bogs and conifer plantation; flying	CG
	Breeding Raptor Survey; BRVP2	15/05/2023	11:15	Mallard	2	bogs and conifer plantation; flying	CG
	Breeding Raptor Survey; BRVP4	24/05/2023	09:26	Meadow Pipit	4	bogs, improved agricultural grassland and conifer plantation; flitting	CG
	Breeding Raptor Survey; BRVP3	24/05/2023	11:34	Feral Goose	4	improved agricultural grassland and bogs; flying	CG
	Waterbird Distribution Survey; Carrig	25/05/2023	07:10	Stock Dove	1	turloughs; perched, on wire	NL
BZ068	Waterbird Distribution Survey; Ashton Callows Bird Hide	25/05/2023	08:45	Buzzard	1	immature woodland; flushed	NL
BZ069	Waterbird Distribution Survey; Ashton Callows	25/05/2023	10:30	Buzzard	3	bogs and semi-natural woodland; soaring	NL
CU017	Breeding Raptor Survey; BRVP1	29/05/2023	16:17	Curlew	1	bogs; calling	CG
CU018	Breeding Raptor Survey; BRVP1	29/05/2023	18:39	Curlew	2	bogs; flying, calling	CG
WK007	Breeding Barn Owl Survey; BOVP1	29/05/2023	22:33	Woodcock	1	bog woodland and improved agricultural grassland; roding, barn owl survey	CG
SN058	Breeding Raptor Survey; BRVP1	29/05/2023	23:46	Snipe	2	improved agricultural grassland; drumming, calling	CG
L.001	Breeding Woodcock Survey; WKT1	07/06/2023	21:15	Lapwing	1	conifer plantation; flying, calling	PM
BO005	Breeding Woodcock Survey; WKT2	07/06/2023	22:32	Barn Owl	1	conifer plantation; flying, female	SD

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
	Breeding Woodcock Survey; Bog on site	07/06/2023	22:58	Mallard	2	cutover bog; flying, calling	PM
BO006	Breeding Woodcock Survey; at nest site	07/06/2023	23:10	Barn Owl	1	buildings and artificial surfaces and improved agricultural grassland; leaving shed, female	PM
BO007	Breeding Woodcock Survey; at nest site	07/06/2023	23:25	Barn Owl	1	buildings and artificial surfaces and improved agricultural grassland; leaving shed, male	PM
	Breeding Raptor Survey; BRVP4	12/06/2023	10:35	Meadow Pipit	6	wet grassland and bogs; flitting	CG
	Breeding Raptor Survey; BRVP4	12/06/2023	13:05	Meadow Pipit	3	improved agricultural grassland; flitting	CG
SN059	Breeding Raptor Survey; BRVP2	13/06/2023	09:37	Snipe	1	bogs; drumming	CG
CU019	Breeding Raptor Survey; BRVP2	13/06/2023	11:04	Curlew	2	bogs; calling, calls heard	CG
CU020	Breeding Raptor Survey; BRVP2	13/06/2023	11:58	Curlew	1	bogs; calling	CG
SN060	Breeding Raptor Survey; BRVP1	20/06/2023	14:21	Snipe	1	bogs; calling	CG
	Breeding Raptor Survey; BRVP1	20/06/2023	14:22	Meadow Pipit	10	bogs; flitting	CG
	Breeding Raptor Survey; BRVP1	20/06/2023	15:32	Mallard	1	bogs; flying	CG
SN061	Breeding Raptor Survey; BRVP1	21/06/2023	20:51	Snipe	1	bogs; singing/drumming	CG
SN062	Breeding Raptor Survey; BRVP1	21/06/2023	20:57	Snipe	1	improved agricultural grassland and bogs; flying, calling	CG
CU021	Breeding Raptor Survey; BRVP1	21/06/2023	22:04	Curlew	12	bogs, improved agricultural grassland and conifer plantation; flying, roosting, landed onto bog at dusk, roosting on site.	CG
	Breeding Raptor Survey; BRVP1	21/06/2023	22:33	Mallard	1	improved agricultural grassland and bogs; flying	CG

Ref.	Location	Date	Time	Species	Number	Habitat and activity	Surveyor
CU022	Breeding Raptor Survey; BRVP1	21/06/2023	23:06	Curlew	3	bogs; alarm calling	CG
CU023	Breeding Woodcock Survey; WKT1	22/06/2023	21:10	Curlew	6	improved agricultural grassland; flying	SD
	Breeding Woodcock Survey; WKT2	22/06/2023	22:30	Mallard	4	conifer plantation; travelling	FOD
BO008	Breeding Woodcock Survey; WKT1	22/06/2023	22:36	Barn Owl	1	improved agricultural grassland; hunting, possible female	SD
	Breeding Raptor Survey; BRVP4	13/07/2023	11:00	Meadow Pipit	3	improved agricultural grassland and bogs; flitting	CG
SN063	Breeding Raptor Survey; BRVP4	13/07/2023	11:00	Snipe	1	bogs; singing	CG
	Breeding Raptor Survey; BRVP4	13/07/2023	12:02	Mallard	3	improved agricultural grassland; flying	CG
SN064	Breeding Raptor Survey; Cloncorig	28/07/2023	09:35	Snipe	1	bogs; calling	CG
	Breeding Raptor Survey; Cloncorig	28/07/2023	14:36	Grey Heron	1	bogs; flying	CG
CU024	Vantage Point Survey; VP4	21/09/2023	08:34	Curlew	1	improved agricultural grassland; calling, behind viewshed	CG

Appendix 1 Table 9 Non-target Species Records

Date	Survey	Species	Notes	Surveyor
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
05/04/2023	Vantage Point Survey, VP3a	Blackbird		TR
05/04/2023	Vantage Point Survey, VP3a	Great Tit		TR
05/04/2023	Vantage Point Survey, VP3a	Song Thrush		TR
05/04/2023	Vantage Point Survey, VP3a	Wren		TR
05/04/2023	Vantage Point Survey, VP3a	Blue Tit		TR
05/04/2023	Vantage Point Survey, VP3a	Hooded Crow		TR
05/04/2023	Vantage Point Survey, VP3a	Rook		TR
05/04/2023	Vantage Point Survey, VP3a	Woodpigeon		TR
05/04/2023	Vantage Point Survey, VP3a	Magpie		TR
05/04/2023	Vantage Point Survey, VP3a	Chaffinch		TR
05/04/2023	Vantage Point Survey, VP3a	Pheasant		TR
05/04/2023	Vantage Point Survey, VP3a	Bullfinch		TR
05/04/2023	Vantage Point Survey, VP3a	Dunnock		TR
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
05/04/2023	Vantage Point Survey, VP3a	Robin		TR
20/04/2023	Vantage Point Survey, VP2	Wren	singing in bog boundary	POG

20/04/2023	Vantage Point Survey, VP2	Blackbird	singing in bog boundary	POG
20/04/2023	Vantage Point Survey, VP2	Pheasant	calling towards the southern edge of bog	POG
20/04/2023	Vantage Point Survey, VP2	Pied Wagtail	perched on bog bank	POG
20/04/2023	Vantage Point Survey, VP2	Stonechat	perched on gorse near eastern bog boundary	POG
20/04/2023	Vantage Point Survey, VP2	Willow Warbler	singing in trees along eastern boundary of bog	POG
20/04/2023	Vantage Point Survey, VP2	Hooded Crow	perched in tree above farmyard to the west	POG
20/04/2023	Vantage Point Survey, VP2	Woodpigeon	flying along western boundary of bog	POG
20/04/2023	Vantage Point Survey, VP2	Song Thrush	flying along eastern gorse boundary of cutover	POG
20/04/2023	Vantage Point Survey, VP2	Dunnock	perched on pine tree	POG
20/04/2023	Vantage Point Survey, VP2	Song Thrush	2 perched on tall pine tree on eastern boundary of cutover	POG
20/04/2023	Vantage Point Survey, VP2	Barn Swallow	flying low on ga1 between surveyor and cutover bog	POG
20/04/2023	Vantage Point Survey, VP2	Chaffinch	seen flying over ga1and calling from tree	POG
20/04/2023	Vantage Point Survey, VP2	Rook	flying from west to east over the bog	POG
27/04/2023	Vantage Point Survey, VP4	Wren	in trees south east of vp	POG
27/04/2023	Vantage Point Survey, VP4	Blackbird	singing in trees to the east of vp	POG
27/04/2023	Vantage Point Survey, VP4	Hooded Crow	flying over treeline to the nw	POG
27/04/2023	Vantage Point Survey, VP4	Chaffinch	calling in trees se of vp	POG
27/04/2023	Vantage Point Survey, VP4	Robin	calling in trees se of vp	POG
27/04/2023	Vantage Point Survey, VP4	Mistle Thrush	calling in trees se of vp	POG
27/04/2023	Vantage Point Survey, VP4	Jay	calling from treetop in trees to sw - buzzard-like call	POG
27/04/2023	Vantage Point Survey, VP4	Woodpigeon	flying over trees to sw, and perched in trees	POG
27/04/2023	Vantage Point Survey, VP4	Pheasant	calling in woods nw of vp	POG
27/04/2023	Vantage Point Survey, VP4	Rook	flew over field and across to the nw	POG
27/04/2023	Vantage Point Survey, VP4	Barn Swallow	flying low over ga1 in which vp was conducted	POG
15/06/2023	Breeding Walkover Survey, T2	Cuckoo		CG
15/06/2023	Breeding Walkover Survey, T2	Willow Warbler		CG
15/06/2023	Breeding Walkover Survey, T2	Goldcrest		CG
15/06/2023	Breeding Walkover Survey, T2	Coal Tit		CG

15/06/2023	Breeding Walkover Survey, T2	Robin		CG
15/06/2023	Breeding Walkover Survey, T2	Woodpigeon		CG
15/06/2023	Breeding Walkover Survey, T2	Dunnock		CG
15/06/2023	Breeding Walkover Survey, T2	Blackbird		CG
15/06/2023	Breeding Walkover Survey, T2	Wren		CG
15/06/2023	Breeding Walkover Survey, T2	Jay		CG
15/06/2023	Breeding Walkover Survey, T2	Barn Swallow		CG
15/06/2023	Breeding Walkover Survey, T2	Reed Bunting		CG
15/06/2023	Breeding Walkover Survey, T2	Mistle Thrush		CG
15/06/2023	Breeding Walkover Survey, T2	Blue Tit		CG
15/06/2023	Breeding Walkover Survey, T2	Blackcap		CG
15/06/2023	Breeding Walkover Survey, T2	Chiffchaff		CG
15/06/2023	Breeding Walkover Survey, T2	Bluethroat		CG
15/06/2023	Breeding Walkover Survey, T2	Chaffinch		CG
15/06/2023	Breeding Walkover Survey, T2	Sand Martin		CG
15/06/2023	Breeding Walkover Survey, T2	Song Thrush		CG
15/06/2023	Breeding Walkover Survey, T2	Rook		CG
15/06/2023	Breeding Walkover Survey, T2	House Martin		CG
15/06/2023	Breeding Walkover Survey, T2	House Sparrow		CG
15/06/2023	Breeding Walkover Survey, T2	Jackdaw		CG
15/06/2023	Breeding Walkover Survey, T2	Starling		CG
15/06/2023	Breeding Walkover Survey, T2	Linnet		CG
15/06/2023	Breeding Walkover Survey, T2	Great Tit		CG
15/06/2023	Breeding Walkover Survey, T2	Skylark		CG
15/06/2023	Breeding Walkover Survey, T2	Magpie		CG
15/06/2023	Breeding Walkover Survey, T2	Long-tailed Tit		CG
16/06/2023	Breeding Walkover Survey, T1	Chaffinch		CG
16/06/2023	Breeding Walkover Survey, T1	Woodpigeon		CG

16/06/2023	Breeding Walkover Survey, T1	Goldcrest		CG
16/06/2023	Breeding Walkover Survey, T1	Great Tit		CG
16/06/2023	Breeding Walkover Survey, T1	Blue Tit		CG
16/06/2023	Breeding Walkover Survey, T1	Wren		CG
16/06/2023	Breeding Walkover Survey, T1	Blackbird		CG
16/06/2023	Breeding Walkover Survey, T1	Hooded Crow		CG
16/06/2023	Breeding Walkover Survey, T1	Song Thrush		CG
16/06/2023	Breeding Walkover Survey, T1	Linnet		CG
16/06/2023	Breeding Walkover Survey, T1	Pheasant		CG
16/06/2023	Breeding Walkover Survey, T1	Willow Warbler		CG
16/06/2023	Breeding Walkover Survey, T1	Blackcap		CG
16/06/2023	Breeding Walkover Survey, T1	Mistle Thrush		CG
16/06/2023	Breeding Walkover Survey, T1	Cuckoo		CG
16/06/2023	Breeding Walkover Survey, T1	Stonechat		CG
16/06/2023	Breeding Walkover Survey, T1	Whitethroat		CG
16/06/2023	Breeding Walkover Survey, T1	Wheatear		CG
16/06/2023	Breeding Walkover Survey, T1	Barn Swallow		CG
16/06/2023	Breeding Walkover Survey, T1	Sand Martin		CG
16/06/2023	Breeding Walkover Survey, T1	House Martin		CG
16/06/2023	Breeding Walkover Survey, T1	Rook		CG
16/06/2023	Breeding Walkover Survey, T1	Starling		CG
16/06/2023	Breeding Walkover Survey, T1	Jackdaw		CG
16/06/2023	Breeding Walkover Survey, T1	Jay		CG
16/06/2023	Breeding Walkover Survey, T1	Robin		CG
16/06/2023	Breeding Walkover Survey, T1	Dunnock		CG
21/06/2023	Vantage Point Survey, VP3a	Woodpigeon		CG
21/06/2023	Vantage Point Survey, VP3a	Dunnock		CG
21/06/2023	Vantage Point Survey, VP3a	Robin		CG

21/06/2023	Vantage Point Survey, VP3a	Blackbird		CG
21/06/2023	Vantage Point Survey, VP3a	Wren		CG
21/06/2023	Vantage Point Survey, VP3a	Hooded Crow		CG
21/06/2023	Vantage Point Survey, VP3a	Rook		CG
21/06/2023	Vantage Point Survey, VP3a	Jackdaw		CG
21/06/2023	Vantage Point Survey, VP3a	Willow Warbler		CG
21/06/2023	Vantage Point Survey, VP3a	Bluethroat		CG
21/06/2023	Vantage Point Survey, VP3a	Barn Swallow		CG
21/06/2023	Vantage Point Survey, VP3a	Starling		CG
21/06/2023	Vantage Point Survey, VP3a	Blackcap		CG
21/06/2023	Vantage Point Survey, VP3a	Goldcrest		CG
21/06/2023	Vantage Point Survey, VP3a	Greenfinch		CG
21/06/2023	Vantage Point Survey, VP3a	Pheasant		CG
21/06/2023	Vantage Point Survey, VP3a	Chaffinch		CG
21/06/2023	Vantage Point Survey, VP3a	Mistle Thrush		CG
21/06/2023	Vantage Point Survey, VP3a	Song Thrush		CG
21/06/2023	Vantage Point Survey, VP3a	Goldfinch		CG
21/06/2023	Vantage Point Survey, VP3a	Sand Martin		CG
22/06/2023	Vantage Point Survey, VP1a	Chaffinch		CG
22/06/2023	Vantage Point Survey, VP1a	Barn Swallow		CG
22/06/2023	Vantage Point Survey, VP1a	Wren		CG
22/06/2023	Vantage Point Survey, VP1a	Starling		CG
22/06/2023	Vantage Point Survey, VP1a	Blackbird		CG
22/06/2023	Vantage Point Survey, VP1a	Song Thrush		CG
22/06/2023	Vantage Point Survey, VP1a	Mistle Thrush		CG
22/06/2023	Vantage Point Survey, VP1a	Willow Warbler		CG
22/06/2023	Vantage Point Survey, VP1a	Stonechat		CG
22/06/2023	Vantage Point Survey, VP1a	Skylark		CG

22/06/2023	Vantage Point Survey, VP1a	Robin		CG
22/06/2023	Vantage Point Survey, VP1a	Hooded Crow		CG
22/06/2023	Vantage Point Survey, VP1a	Rook		CG
22/06/2023	Vantage Point Survey, VP1a	Woodpigeon		CG
22/06/2023	Vantage Point Survey, VP1a	Blackcap		CG
22/06/2023	Vantage Point Survey, VP1a	Cuckoo		CG
22/06/2023	Vantage Point Survey, VP1a	Goldfinch		CG
27/06/2023	Vantage Point Survey, VP2	Wren		CG
27/06/2023	Vantage Point Survey, VP2	Chaffinch		CG
27/06/2023	Vantage Point Survey, VP2	Chiffchaff		CG
27/06/2023	Vantage Point Survey, VP2	Woodpigeon		CG
27/06/2023	Vantage Point Survey, VP2	Robin		CG
27/06/2023	Vantage Point Survey, VP2	Blackbird		CG
27/06/2023	Vantage Point Survey, VP2	Dunnock		CG
27/06/2023	Vantage Point Survey, VP2	Sand Martin		CG
27/06/2023	Vantage Point Survey, VP2	Barn Swallow		CG
27/06/2023	Vantage Point Survey, VP2	Blackcap		CG
27/06/2023	Vantage Point Survey, VP2	Willow Warbler		CG
27/06/2023	Vantage Point Survey, VP2	Raven		CG
27/06/2023	Vantage Point Survey, VP2	Hooded Crow		CG
27/06/2023	Vantage Point Survey, VP2	Skylark		CG
27/06/2023	Vantage Point Survey, VP2	Pheasant		CG
27/06/2023	Vantage Point Survey, VP2	Jay		CG
27/06/2023	Vantage Point Survey, VP2	Cuckoo		CG
27/06/2023	Vantage Point Survey, VP2	Great Tit		CG
27/06/2023	Vantage Point Survey, VP2	Goldfinch		CG
27/06/2023	Vantage Point Survey, VP2	Linnet		CG
27/06/2023	Vantage Point Survey, VP2	Mistle Thrush		CG

27/06/2023	Vantage Point Survey, VP2	Rook		CG
28/06/2023	Vantage Point Survey, VP4	Chiffchaff		CG
28/06/2023	Vantage Point Survey, VP4	Woodpigeon		CG
28/06/2023	Vantage Point Survey, VP4	Rook		CG
28/06/2023	Vantage Point Survey, VP4	Jackdaw		CG
28/06/2023	Vantage Point Survey, VP4	Willow Warbler		CG
28/06/2023	Vantage Point Survey, VP4	Wren		CG
28/06/2023	Vantage Point Survey, VP4	Robin		CG
28/06/2023	Vantage Point Survey, VP4	Chaffinch		CG
28/06/2023	Vantage Point Survey, VP4	Blackbird		CG
28/06/2023	Vantage Point Survey, VP4	Dunnock		CG
28/06/2023	Vantage Point Survey, VP4	Blackcap		CG
28/06/2023	Vantage Point Survey, VP4	Pheasant		CG
28/06/2023	Vantage Point Survey, VP4	Goldcrest		CG
28/06/2023	Vantage Point Survey, VP4	Great Tit		CG
28/06/2023	Vantage Point Survey, VP4	Barn Swallow		CG
28/06/2023	Vantage Point Survey, VP4	Pied Wagtail		CG
28/06/2023	Vantage Point Survey, VP4	Song Thrush		CG
28/06/2023	Vantage Point Survey, VP4	Mistle Thrush		CG
28/06/2023	Vantage Point Survey, VP4	Goldfinch		CG
10/07/2023	Vantage Point Survey, VP3a	Woodpigeon		CG
10/07/2023	Vantage Point Survey, VP3a	Dunnock		CG
10/07/2023	Vantage Point Survey, VP3a	Robin		CG
10/07/2023	Vantage Point Survey, VP3a	Blackbird		CG
10/07/2023	Vantage Point Survey, VP3a	Wren		CG
10/07/2023	Vantage Point Survey, VP3a	Hooded Crow		CG
10/07/2023	Vantage Point Survey, VP3a	Rook		CG
10/07/2023	Vantage Point Survey, VP3a	Jackdaw		CG

10/07/2023	Vantage Point Survey, VP3a	Willow Warbler		CG
10/07/2023	Vantage Point Survey, VP3a	Bluethroat		CG
10/07/2023	Vantage Point Survey, VP3a	Barn Swallow		CG
10/07/2023	Vantage Point Survey, VP3a	Starling		CG
10/07/2023	Vantage Point Survey, VP3a	Blackcap		CG
10/07/2023	Vantage Point Survey, VP3a	Goldcrest		CG
10/07/2023	Vantage Point Survey, VP3a	Greenfinch		CG
10/07/2023	Vantage Point Survey, VP3a	Pheasant		CG
10/07/2023	Vantage Point Survey, VP3a	Chaffinch		CG
10/07/2023	Vantage Point Survey, VP3a	Mistle Thrush		CG
10/07/2023	Vantage Point Survey, VP3a	Song Thrush		CG
10/07/2023	Vantage Point Survey, VP3a	Goldfinch		CG
10/07/2023	Vantage Point Survey, VP3a	Sand Martin		CG
10/07/2023	Vantage Point Survey, VP3a	House Martin		CG
11/07/2023	Breeding Walkover Survey, T1	Chaffinch		CG
11/07/2023	Breeding Walkover Survey, T1	Woodpigeon		CG
11/07/2023	Breeding Walkover Survey, T1	Goldcrest		CG
11/07/2023	Breeding Walkover Survey, T1	Great Tit		CG
11/07/2023	Breeding Walkover Survey, T1	Blue Tit		CG
11/07/2023	Breeding Walkover Survey, T1	Wren		CG
11/07/2023	Breeding Walkover Survey, T1	Blackbird		CG
11/07/2023	Breeding Walkover Survey, T1	Hooded Crow		CG
11/07/2023	Breeding Walkover Survey, T1	Song Thrush		CG
11/07/2023	Breeding Walkover Survey, T1	Linnet		CG
11/07/2023	Breeding Walkover Survey, T1	Pheasant		CG
11/07/2023	Breeding Walkover Survey, T1	Willow Warbler		CG
11/07/2023	Breeding Walkover Survey, T1	Blackcap		CG
11/07/2023	Breeding Walkover Survey, T1	Mistle Thrush		CG

11/07/2023	Breeding Walkover Survey, T1	Stonechat		CG
11/07/2023	Breeding Walkover Survey, T1	Barn Swallow		CG
11/07/2023	Breeding Walkover Survey, T1	Sand Martin		CG
11/07/2023	Breeding Walkover Survey, T1	House Martin		CG
11/07/2023	Breeding Walkover Survey, T1	Rook		CG
11/07/2023	Breeding Walkover Survey, T1	Starling		CG
11/07/2023	Breeding Walkover Survey, T1	Jackdaw		CG
11/07/2023	Breeding Walkover Survey, T1	Robin		CG
11/07/2023	Breeding Walkover Survey, T1	Dunnock		CG
12/07/2023	Breeding Walkover Survey, T2	Willow Warbler		CG
12/07/2023	Breeding Walkover Survey, T2	Goldcrest		CG
12/07/2023	Breeding Walkover Survey, T2	Coal Tit		CG
12/07/2023	Breeding Walkover Survey, T2	Robin		CG
12/07/2023	Breeding Walkover Survey, T2	Woodpigeon		CG
12/07/2023	Breeding Walkover Survey, T2	Dunnock		CG
12/07/2023	Breeding Walkover Survey, T2	Blackbird		CG
12/07/2023	Breeding Walkover Survey, T2	Wren		CG
12/07/2023	Breeding Walkover Survey, T2	Jay		CG
12/07/2023	Breeding Walkover Survey, T2	Barn Swallow		CG
12/07/2023	Breeding Walkover Survey, T2	Reed Bunting		CG
12/07/2023	Breeding Walkover Survey, T2	Mistle Thrush		CG
12/07/2023	Breeding Walkover Survey, T2	Blue Tit		CG
12/07/2023	Breeding Walkover Survey, T2	Blackcap		CG
12/07/2023	Breeding Walkover Survey, T2	Chiffchaff		CG
12/07/2023	Breeding Walkover Survey, T2	Bluethroat		CG
12/07/2023	Breeding Walkover Survey, T2	Chaffinch		CG
12/07/2023	Breeding Walkover Survey, T2	Sand Martin		CG
12/07/2023	Breeding Walkover Survey, T2	Song Thrush		CG

12/07/2023	Breeding Walkover Survey, T2	Rook		CG
12/07/2023	Breeding Walkover Survey, T2	House Martin		CG
12/07/2023	Breeding Walkover Survey, T2	House Sparrow		CG
12/07/2023	Breeding Walkover Survey, T2	Jackdaw		CG
12/07/2023	Breeding Walkover Survey, T2	Starling		CG
12/07/2023	Breeding Walkover Survey, T2	Linnet		CG
12/07/2023	Breeding Walkover Survey, T2	Great Tit		CG
12/07/2023	Breeding Walkover Survey, T2	Skylark		CG
12/07/2023	Breeding Walkover Survey, T2	Magpie		CG
24/07/2023	Vantage Point Survey, VP1a	Chaffinch		CG
24/07/2023	Vantage Point Survey, VP1a	Barn Swallow		CG
24/07/2023	Vantage Point Survey, VP1a	Wren		CG
24/07/2023	Vantage Point Survey, VP1a	Starling		CG
24/07/2023	Vantage Point Survey, VP1a	Blackbird		CG
24/07/2023	Vantage Point Survey, VP1a	Song Thrush		CG
24/07/2023	Vantage Point Survey, VP1a	Mistle Thrush		CG
24/07/2023	Vantage Point Survey, VP1a	Willow Warbler		CG
24/07/2023	Vantage Point Survey, VP1a	Stonechat		CG
24/07/2023	Vantage Point Survey, VP1a	Skylark		CG
24/07/2023	Vantage Point Survey, VP1a	Robin		CG
24/07/2023	Vantage Point Survey, VP1a	Hooded Crow		CG
24/07/2023	Vantage Point Survey, VP1a	Rook		CG
24/07/2023	Vantage Point Survey, VP1a	Woodpigeon		CG
24/07/2023	Vantage Point Survey, VP1a	Blackcap		CG
24/07/2023	Vantage Point Survey, VP1a	Raven		CG
24/07/2023	Vantage Point Survey, VP1a	Goldfinch		CG
24/07/2023	Vantage Point Survey, VP1a	Pheasant		CG
25/07/2023	Vantage Point Survey, VP2	Wren		CG

25/07/2023	Vantage Point Survey, VP2	Chaffinch		CG
25/07/2023	Vantage Point Survey, VP2	Woodpigeon		CG
25/07/2023	Vantage Point Survey, VP2	Robin		CG
25/07/2023	Vantage Point Survey, VP2	Blackbird		CG
25/07/2023	Vantage Point Survey, VP2	Dunnock		CG
25/07/2023	Vantage Point Survey, VP2	Barn Swallow		CG
25/07/2023	Vantage Point Survey, VP2	Blackcap		CG
25/07/2023	Vantage Point Survey, VP2	Willow Warbler		CG
25/07/2023	Vantage Point Survey, VP2	Raven		CG
25/07/2023	Vantage Point Survey, VP2	Hooded Crow		CG
25/07/2023	Vantage Point Survey, VP2	Pheasant		CG
25/07/2023	Vantage Point Survey, VP2	Jay		CG
25/07/2023	Vantage Point Survey, VP2	Great Tit		CG
25/07/2023	Vantage Point Survey, VP2	Goldfinch		CG
25/07/2023	Vantage Point Survey, VP2	Linnet		CG
25/07/2023	Vantage Point Survey, VP2	Mistle Thrush		CG
25/07/2023	Vantage Point Survey, VP2	Rook		CG
25/07/2023	Vantage Point Survey, VP2	Coal Tit		CG
25/07/2023	Vantage Point Survey, VP2	Blue Tit		CG
26/07/2023	Vantage Point Survey, VP4	Woodpigeon		CG
26/07/2023	Vantage Point Survey, VP4	Rook		CG
26/07/2023	Vantage Point Survey, VP4	Jackdaw		CG
26/07/2023	Vantage Point Survey, VP4	Willow Warbler		CG
26/07/2023	Vantage Point Survey, VP4	Wren		CG
26/07/2023	Vantage Point Survey, VP4	Robin		CG
26/07/2023	Vantage Point Survey, VP4	Chaffinch		CG
26/07/2023	Vantage Point Survey, VP4	Blackbird		CG
26/07/2023	Vantage Point Survey, VP4	Dunnock		CG

26/07/2023	Vantage Point Survey, VP4	Blackcap		CG
26/07/2023	Vantage Point Survey, VP4	Pheasant		CG
26/07/2023	Vantage Point Survey, VP4	Goldcrest		CG
26/07/2023	Vantage Point Survey, VP4	Great Tit		CG
26/07/2023	Vantage Point Survey, VP4	Barn Swallow		CG
26/07/2023	Vantage Point Survey, VP4	Pied Wagtail		CG
26/07/2023	Vantage Point Survey, VP4	Song Thrush		CG
26/07/2023	Vantage Point Survey, VP4	Mistle Thrush		CG
26/07/2023	Vantage Point Survey, VP4	Goldfinch		CG
09/08/2023	Vantage Point Survey, VP3a	Hooded Crow		CG
09/08/2023	Vantage Point Survey, VP3a	Willow Warbler		CG
09/08/2023	Vantage Point Survey, VP3a	Dunnock		CG
09/08/2023	Vantage Point Survey, VP3a	Robin		CG
09/08/2023	Vantage Point Survey, VP3a	Blackbird		CG
09/08/2023	Vantage Point Survey, VP3a	Great Tit		CG
09/08/2023	Vantage Point Survey, VP3a	Chaffinch		CG
09/08/2023	Vantage Point Survey, VP3a	Jackdaw		CG
09/08/2023	Vantage Point Survey, VP3a	Barn Swallow		CG
09/08/2023	Vantage Point Survey, VP3a	Rook		CG
09/08/2023	Vantage Point Survey, VP3a	Goldcrest		CG
09/08/2023	Vantage Point Survey, VP3a	Pied Wagtail		CG
09/08/2023	Vantage Point Survey, VP3a	Woodpigeon		CG
09/08/2023	Vantage Point Survey, VP3a	Song Thrush		CG
09/08/2023	Vantage Point Survey, VP3a	Blue Tit		CG
09/08/2023	Vantage Point Survey, VP3a	Raven		CG
10/08/2023	Vantage Point Survey, VP1a	Robin		CG
10/08/2023	Vantage Point Survey, VP1a	Blackbird		CG
10/08/2023	Vantage Point Survey, VP1a	Mistle Thrush		CG

10/08/2023	Vantage Point Survey, VP1a	Raven		CG
10/08/2023	Vantage Point Survey, VP1a	Goldfinch		CG
10/08/2023	Vantage Point Survey, VP1a	Dunnock		CG
10/08/2023	Vantage Point Survey, VP1a	Hooded Crow		CG
10/08/2023	Vantage Point Survey, VP1a	Stonechat		CG
10/08/2023	Vantage Point Survey, VP1a	Pied Wagtail		CG
10/08/2023	Vantage Point Survey, VP1a	Chaffinch		CG
10/08/2023	Vantage Point Survey, VP1a	Great Tit		CG
10/08/2023	Vantage Point Survey, VP1a	Blue Tit		CG
10/08/2023	Vantage Point Survey, VP1a	Willow Warbler		CG
10/08/2023	Vantage Point Survey, VP1a	Barn Swallow		CG
10/08/2023	Vantage Point Survey, VP1a	Woodpigeon		CG
10/08/2023	Vantage Point Survey, VP1a	House Martin		CG
10/08/2023	Vantage Point Survey, VP1a	Goldcrest		CG
10/08/2023	Vantage Point Survey, VP1a	Song Thrush		CG
22/08/2023	Vantage Point Survey, VP1a	Robin		CG
22/08/2023	Vantage Point Survey, VP1a	Blackbird		CG
22/08/2023	Vantage Point Survey, VP1a	Chaffinch		CG
22/08/2023	Vantage Point Survey, VP1a	Goldfinch		CG
22/08/2023	Vantage Point Survey, VP1a	Woodpigeon		CG
22/08/2023	Vantage Point Survey, VP1a	Jay		CG
22/08/2023	Vantage Point Survey, VP1a	Hooded Crow		CG
22/08/2023	Vantage Point Survey, VP1a	House Sparrow		CG
22/08/2023	Vantage Point Survey, VP1a	Starling		CG
22/08/2023	Vantage Point Survey, VP1a	Song Thrush		CG
22/08/2023	Vantage Point Survey, VP1a	Great Tit		CG
22/08/2023	Vantage Point Survey, VP1a	Blue Tit		CG
22/08/2023	Vantage Point Survey, VP1a	Goldcrest		CG

22/08/2023	Vantage Point Survey, VP1a	Barn Swallow		CG
22/08/2023	Vantage Point Survey, VP1a	Dunnock		CG
22/08/2023	Vantage Point Survey, VP1a	Coal Tit		CG
22/08/2023	Vantage Point Survey, VP1a	Pheasant		CG
29/08/2023	Vantage Point Survey, VP1a	Raven		CG
29/08/2023	Vantage Point Survey, VP1a	Jay		CG
29/08/2023	Vantage Point Survey, VP1a	Robin		CG
29/08/2023	Vantage Point Survey, VP1a	Dunnock		CG
29/08/2023	Vantage Point Survey, VP1a	Hooded Crow		CG
29/08/2023	Vantage Point Survey, VP1a	Barn Swallow		CG
29/08/2023	Vantage Point Survey, VP1a	Starling		CG
29/08/2023	Vantage Point Survey, VP1a	Mistle Thrush		CG
29/08/2023	Vantage Point Survey, VP1a	Song Thrush		CG
29/08/2023	Vantage Point Survey, VP1a	Chaffinch		CG
29/08/2023	Vantage Point Survey, VP1a	Great Tit		CG
29/08/2023	Vantage Point Survey, VP1a	Pied Wagtail		CG
29/08/2023	Vantage Point Survey, VP1a	Woodpigeon		CG
29/08/2023	Vantage Point Survey, VP1a	Great Tit		CG
29/08/2023	Vantage Point Survey, VP1a	Collared Dove		CG
29/08/2023	Vantage Point Survey, VP1a	Blackbird		CG
29/08/2023	Vantage Point Survey, VP1a	Rook		CG
29/08/2023	Vantage Point Survey, VP1a	Jackdaw		CG
06/09/2023	Vantage Point Survey, VP1a	Robin		CG
06/09/2023	Vantage Point Survey, VP1a	Blackbird		CG
06/09/2023	Vantage Point Survey, VP1a	Dunnock		CG
06/09/2023	Vantage Point Survey, VP1a	Song Thrush		CG
06/09/2023	Vantage Point Survey, VP1a	Wren		CG
06/09/2023	Vantage Point Survey, VP1a	Goldcrest		CG

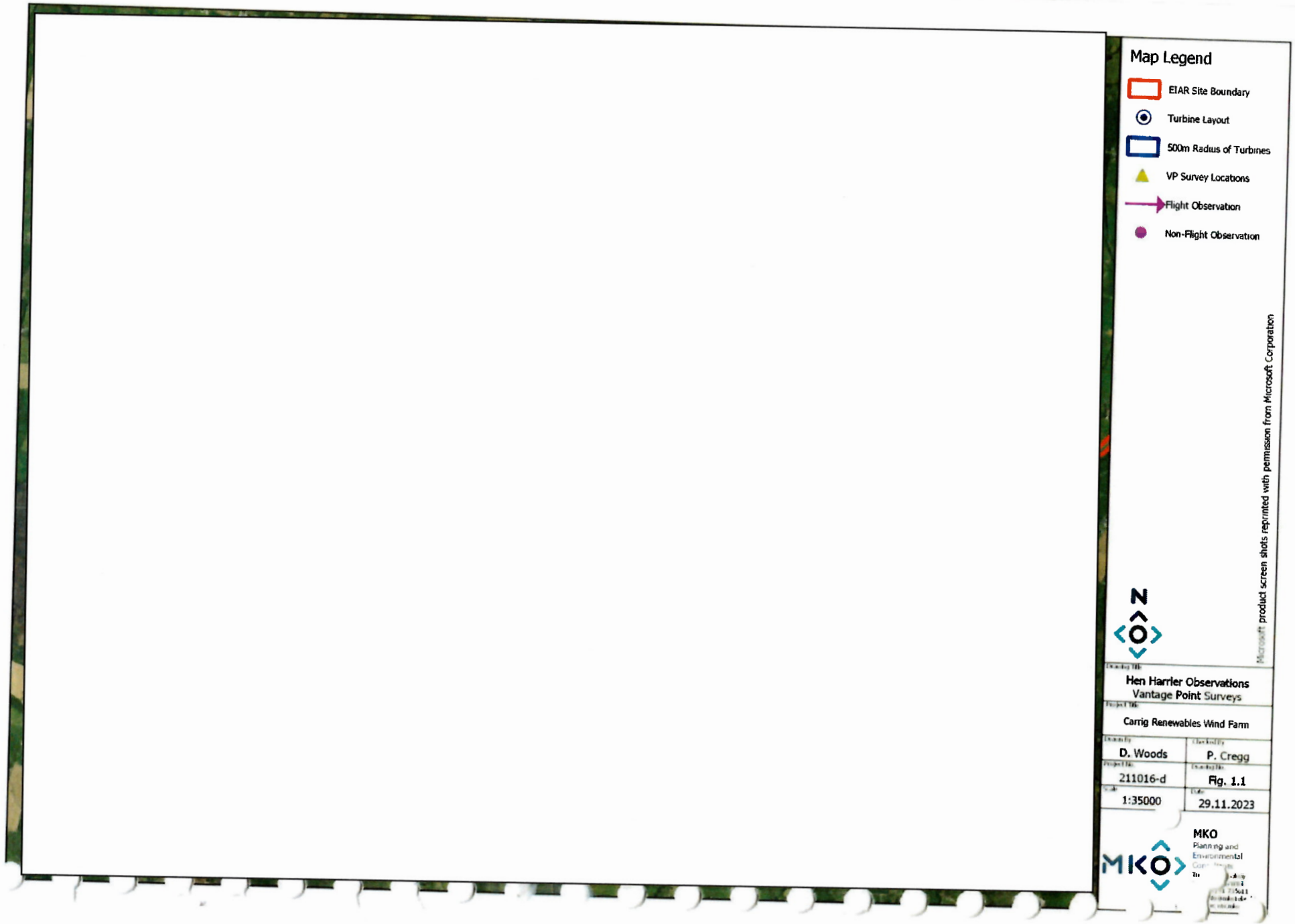
06/09/2023	Vantage Point Survey, VP1a	Barn Swallow		CG
06/09/2023	Vantage Point Survey, VP1a	Hooded Crow		CG
06/09/2023	Vantage Point Survey, VP1a	Rook		CG
06/09/2023	Vantage Point Survey, VP1a	Goldfinch		CG
06/09/2023	Vantage Point Survey, VP1a	Jackdaw		CG
06/09/2023	Vantage Point Survey, VP1a	Chaffinch		CG
06/09/2023	Vantage Point Survey, VP1a	Blue Tit		CG
06/09/2023	Vantage Point Survey, VP1a	Jay		CG
06/09/2023	Vantage Point Survey, VP1a	Great Tit		CG
06/09/2023	Vantage Point Survey, VP1a	Starling		CG
12/09/2023	Vantage Point Survey, VP1a	Raven		CG
12/09/2023	Vantage Point Survey, VP1a	Rook		CG
12/09/2023	Vantage Point Survey, VP1a	Hooded Crow		CG
12/09/2023	Vantage Point Survey, VP1a	Chaffinch		CG
12/09/2023	Vantage Point Survey, VP1a	Wren		CG
12/09/2023	Vantage Point Survey, VP1a	Robin		CG
12/09/2023	Vantage Point Survey, VP1a	Woodpigeon		CG
12/09/2023	Vantage Point Survey, VP1a	Collared Dove		CG
12/09/2023	Vantage Point Survey, VP1a	Mistle Thrush		CG
12/09/2023	Vantage Point Survey, VP1a	Starling		CG
12/09/2023	Vantage Point Survey, VP1a	Goldfinch		CG
12/09/2023	Vantage Point Survey, VP1a	Goldcrest		CG
12/09/2023	Vantage Point Survey, VP1a	Blue Tit		CG
12/09/2023	Vantage Point Survey, VP1a	Great Tit		CG
12/09/2023	Vantage Point Survey, VP1a	Dunnock		CG
12/09/2023	Vantage Point Survey, VP1a	Blackbird		CG
12/09/2023	Vantage Point Survey, VP1a	Pied Wagtail		CG
12/09/2023	Vantage Point Survey, VP1a	Jackdaw		CG

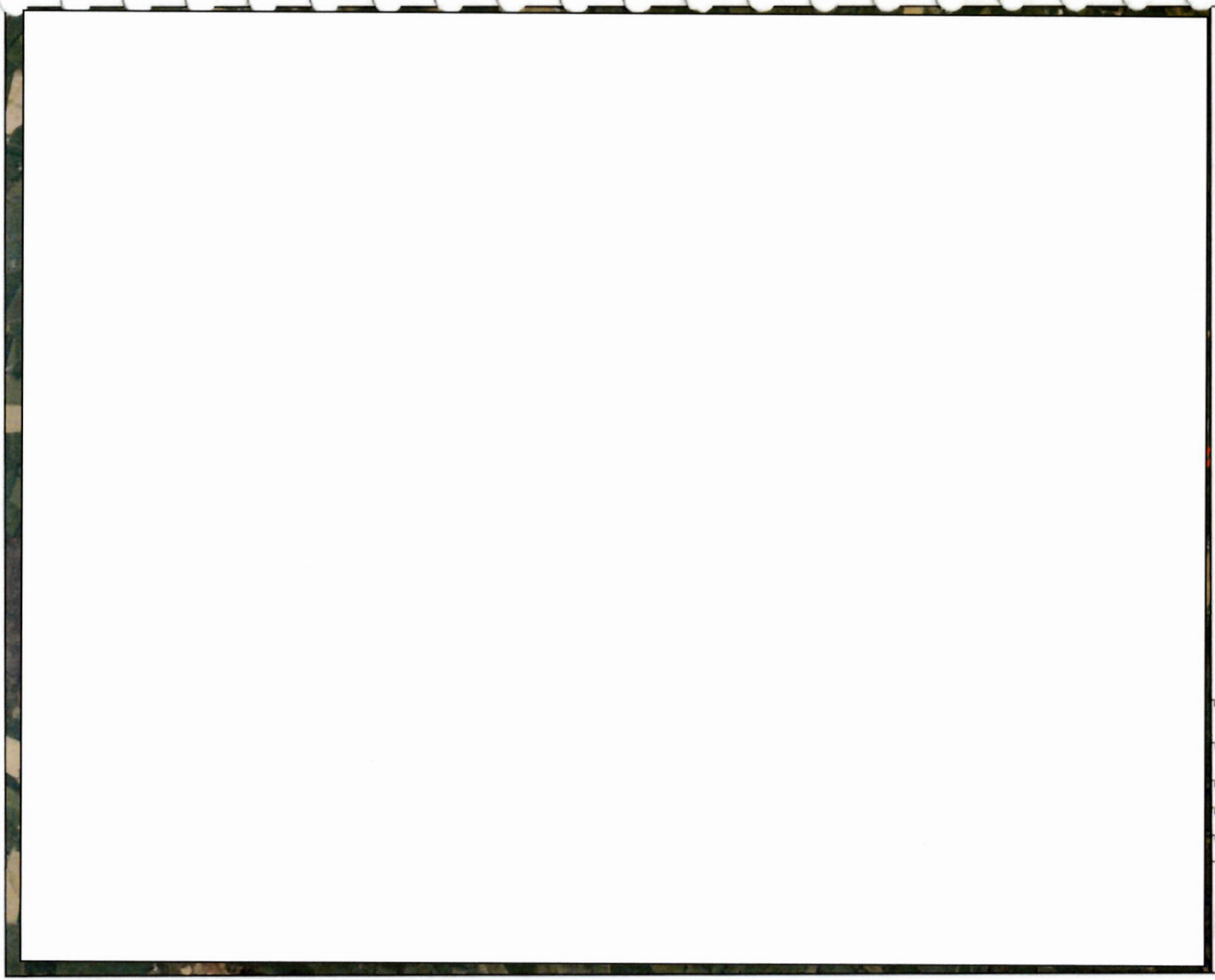
12/09/2023	Vantage Point Survey, VP1a	Magpie		CG
12/09/2023	Vantage Point Survey, VP1a	Barn Swallow		CG
12/09/2023	Vantage Point Survey, VP1a	Sand Martin		CG
12/09/2023	Vantage Point Survey, VP1a	Linnet		CG
12/09/2023	Vantage Point Survey, VP1a	Reed Bunting		CG
18/09/2023	Vantage Point Survey, VP2	Robin		CG
18/09/2023	Vantage Point Survey, VP2	Blackbird		CG
18/09/2023	Vantage Point Survey, VP2	Goldcrest		CG
18/09/2023	Vantage Point Survey, VP2	Stonechat		CG
18/09/2023	Vantage Point Survey, VP2	Hooded Crow		CG
18/09/2023	Vantage Point Survey, VP2	Jay		CG
18/09/2023	Vantage Point Survey, VP2	Magpie		CG
18/09/2023	Vantage Point Survey, VP2	Rook		CG
18/09/2023	Vantage Point Survey, VP2	Pied Wagtail		CG
18/09/2023	Vantage Point Survey, VP2	Barn Swallow		CG
18/09/2023	Vantage Point Survey, VP2	Blue Tit		CG
18/09/2023	Vantage Point Survey, VP2	Dunnock		CG
18/09/2023	Vantage Point Survey, VP2	Linnet		CG
18/09/2023	Vantage Point Survey, VP2	Goldfinch		CG
18/09/2023	Vantage Point Survey, VP2	House Sparrow		CG
18/09/2023	Vantage Point Survey, VP2	Song Thrush		CG
18/09/2023	Vantage Point Survey, VP2	Jackdaw		CG
18/09/2023	Vantage Point Survey, VP2	Mistle Thrush		CG
21/09/2023	Vantage Point Survey, VP4	Coal Tit		CG
21/09/2023	Vantage Point Survey, VP4	Goldcrest		CG
21/09/2023	Vantage Point Survey, VP4	Wren		CG
21/09/2023	Vantage Point Survey, VP4	Blackbird		CG
21/09/2023	Vantage Point Survey, VP4	Hooded Crow		CG

21/09/2023	Vantage Point Survey, VP4	Jay		CG
21/09/2023	Vantage Point Survey, VP4	Blue Tit		CG
21/09/2023	Vantage Point Survey, VP4	Robin		CG
21/09/2023	Vantage Point Survey, VP4	Magpie		CG
21/09/2023	Vantage Point Survey, VP4	Barn Swallow		CG
21/09/2023	Vantage Point Survey, VP4	Song Thrush		CG
21/09/2023	Vantage Point Survey, VP4	Pied Wagtail		CG
21/09/2023	Vantage Point Survey, VP4	Linnet		CG
21/09/2023	Vantage Point Survey, VP4	Woodpigeon		CG
21/09/2023	Vantage Point Survey, VP4	Chaffinch		CG

APPENDIX 1-2

FIGURES


Map Legend
EIAR Site Boundary
Turbine Layout
500m Radius of Turbines
VP Survey Locations
Flight Observation
Non-Flight Observation
N
Microsoft product screen shots reprinted with permission from Microsoft Corporation
Hen Harrier Observations
Vantage Point Surveys
Carrig Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 1.1
1:35000
29.11.2023
MKO
Planning and
Environmental



Map Legend

- EIAR Site Boundary
- Layout
- 500m Radius of Turbines
- VP Survey Locations
- Flight Observation
- Non-Flight Observation

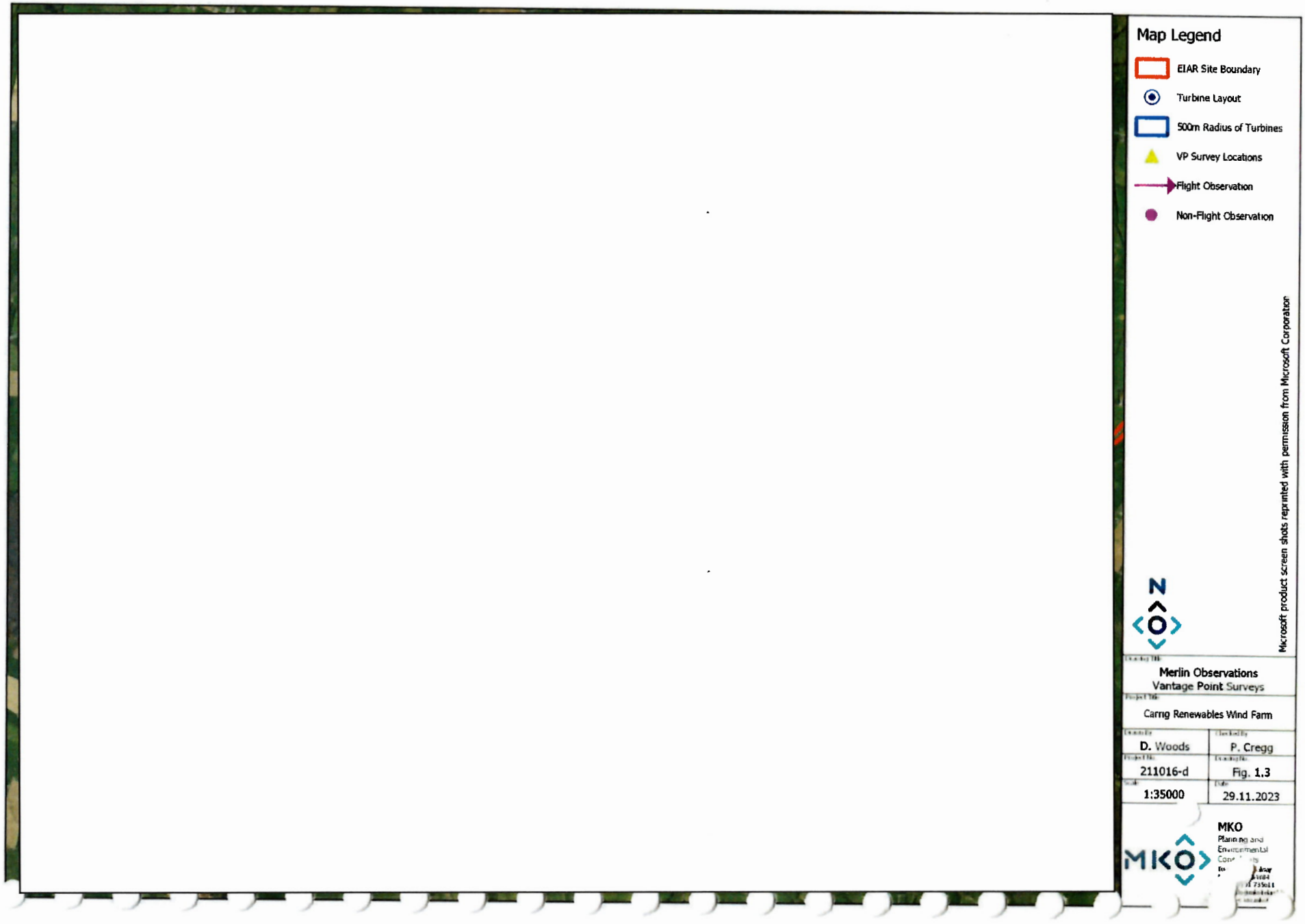
N

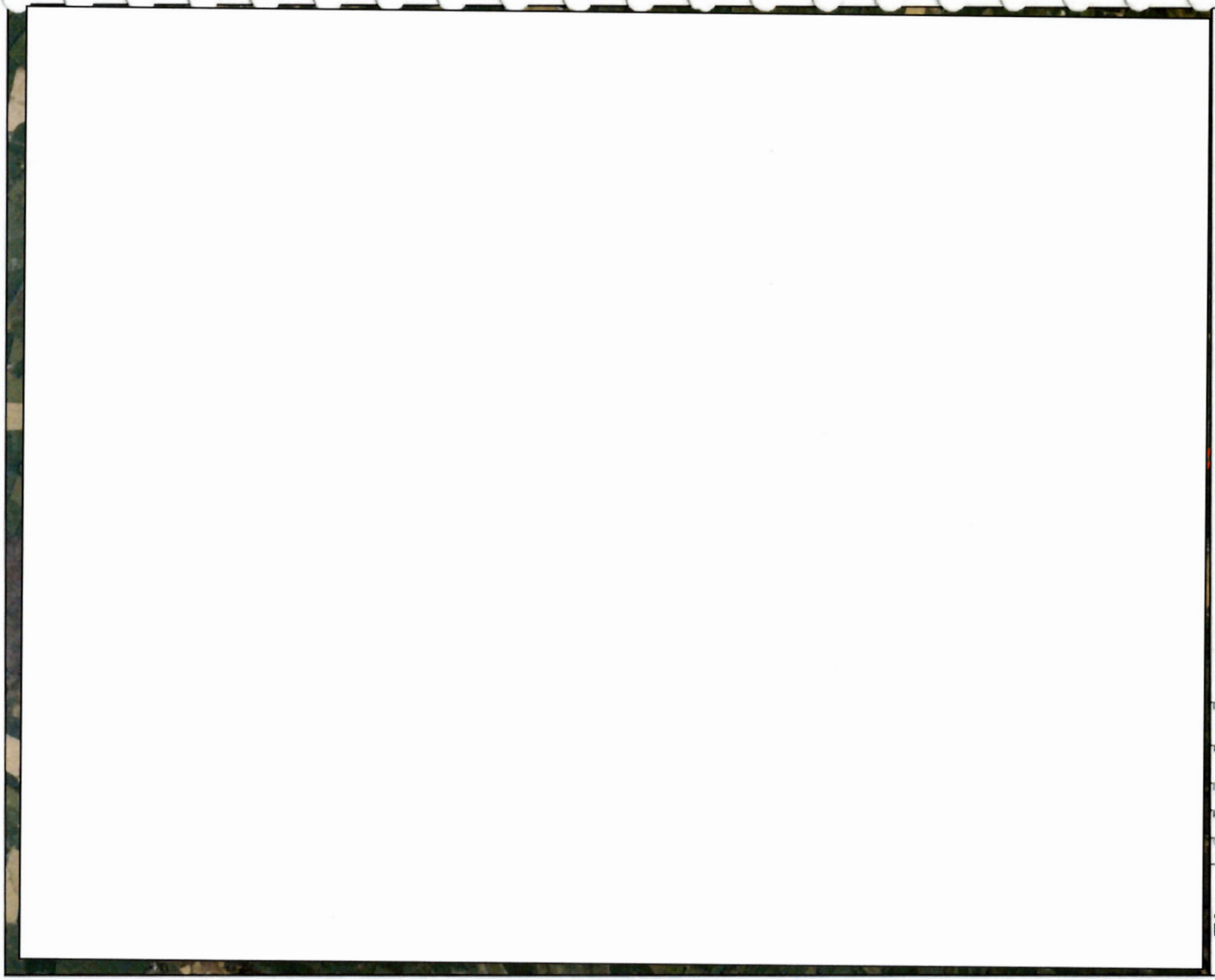
Kingfisher Observations
Vantage Point Surveys

Carng Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 1.2
1:35000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: www.mkoireland.ie


Map Legend
EIAR Site Boundary
Turbine Layout
500m Radius of Turbines
VP Survey Locations
Flight Observation
Non-Flight Observation
Microsoft product screen shots reprinted with permission from Microsoft Corporation
N
Merlin Observations
Vantage Point Surveys
Carrig Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 1.3
1:35000
29.11.2023
MKO
Planning and
Environmental



Map Legend

- EIAR Site Boundary
- T Layout
- 500m Radius of Turbines
- VP Survey Locations
- Flight Observation
- Non-Flight Observation

Microsoft product screen shots reprinted with permission from Microsoft Corporation

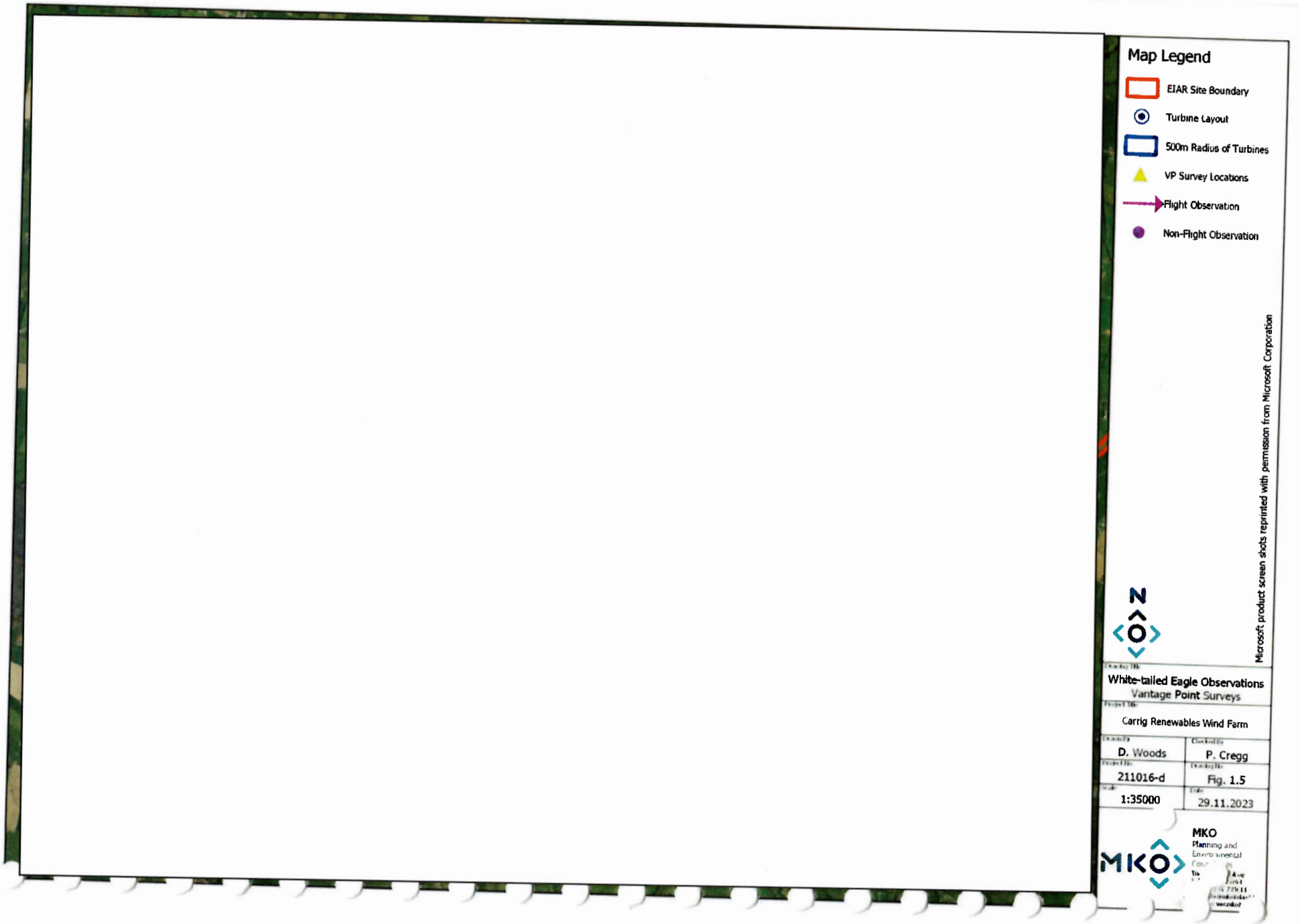
N

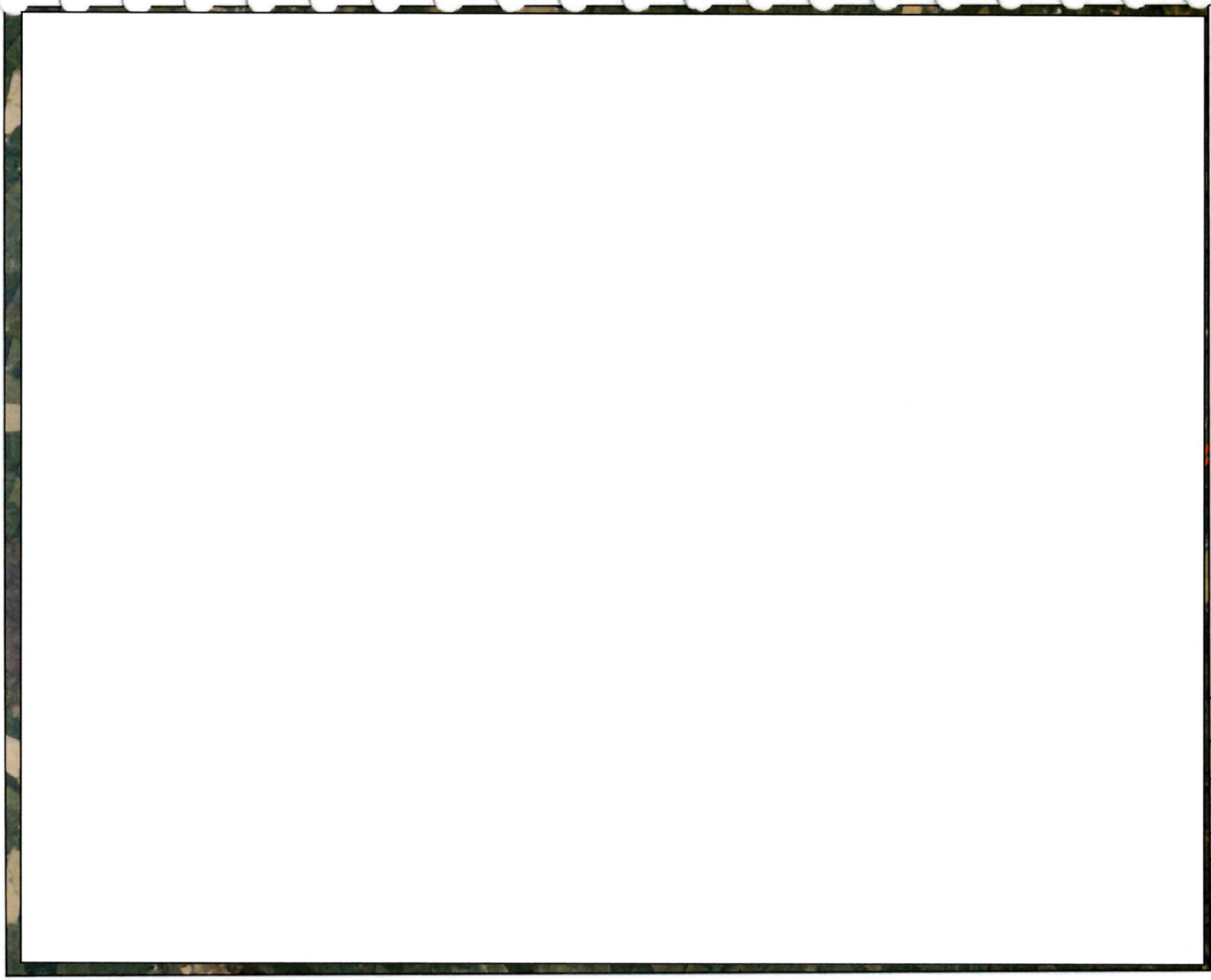
Peregrine Observations
Vantage Point Surveys

Carrig Renewables Wind Farm

Drawn By	Checked By
D. Woods	P. Cregg
Project No.	Drawing No.
211016-d	Fig. 1.4
Scale	Date
1:35000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0)91 735611
email: info@mkoireland.ie
Website: www.mkoireland.ie


Map Legend
EIAR Site Boundary
Turbine Layout
500m Radius of Turbines
VP Survey Locations
Flight Observation
Non-Flight Observation
Microsoft product screen shots reprinted with permission from Microsoft Corporation
N
White-tailed Eagle Observations
Vantage Point Surveys
Carrig Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 1.5
1:35000
29.11.2023
MKO
Planning and



Map Legend

- EIAR Site Boundary
- T Layout
- 500m Radius of Turbines
- VP Survey Locations
- Flight Observation
- Non-Flight Observation

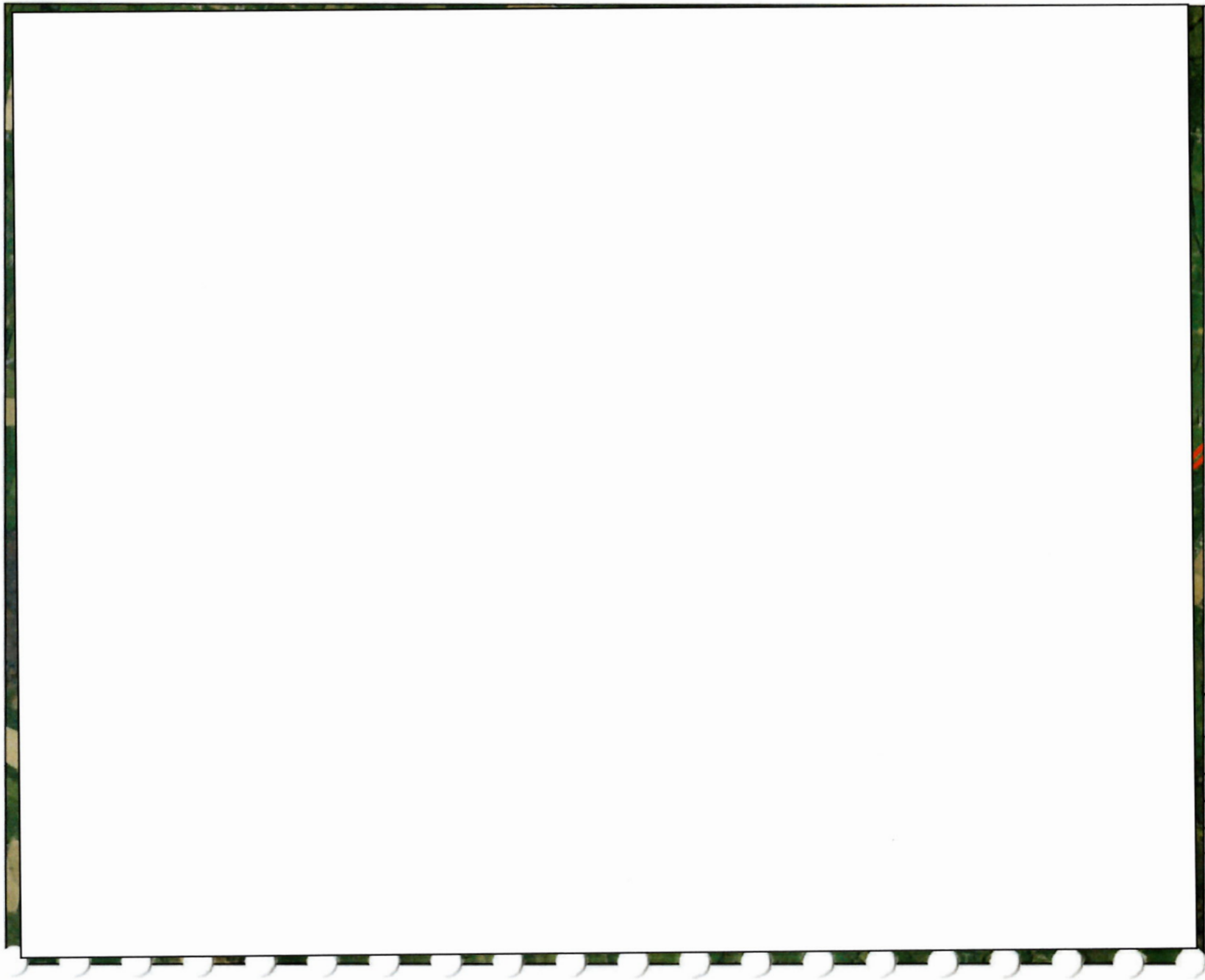
N

Black-headed Gull Observations
Vantage Point Surveys

Carrig Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 1.6
1:35000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: www.mkoireland.ie



Map Legend

- EIAR Site Boundary
- Turbine Layout
- 500m Radius of Turbines
- VP Survey Locations
- Flight Observation
- Non-Flight Observation

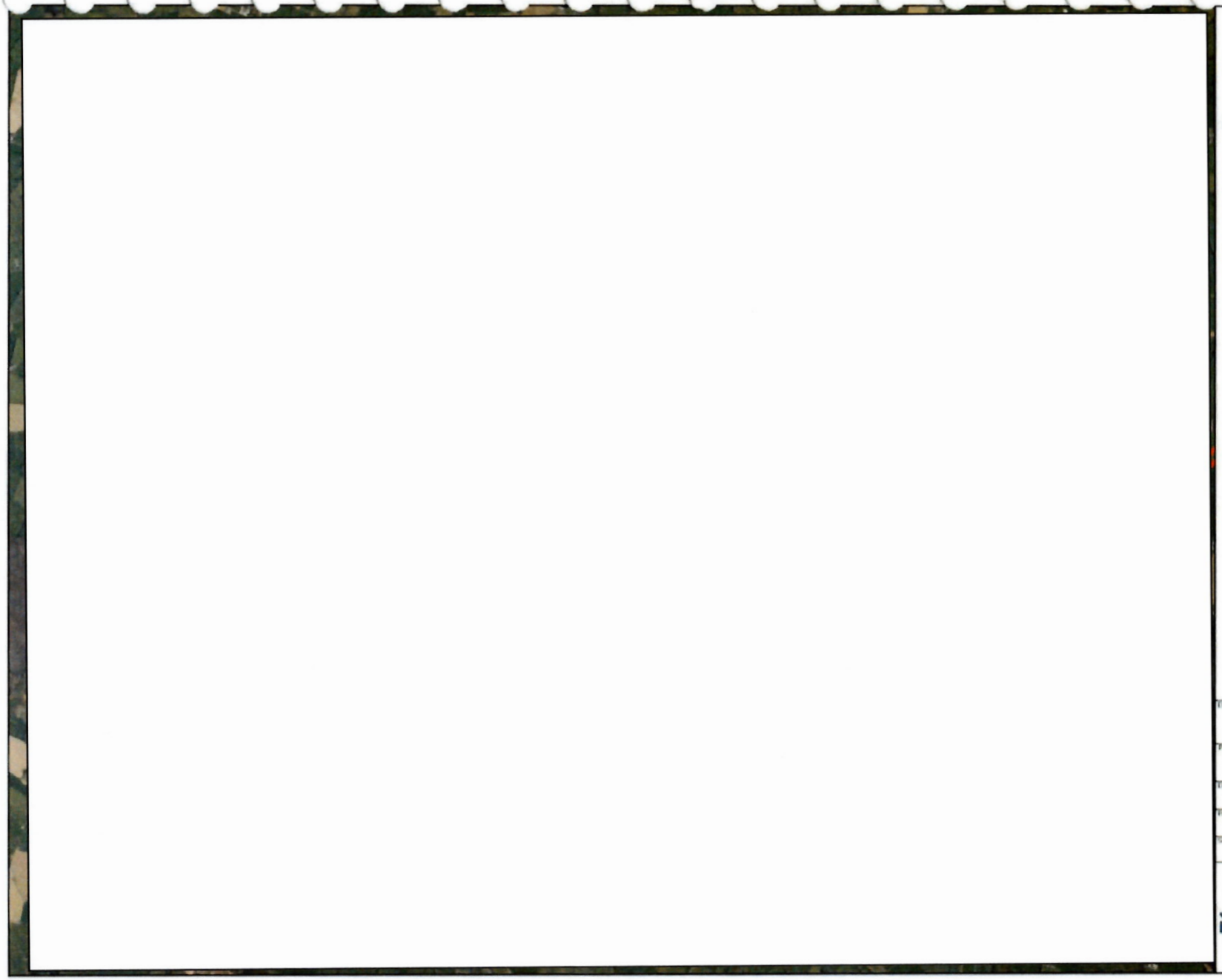
N

Curlew Observations
Vantage Point Surveys

Carrig Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 1.7
1:35000	29.11.2023

MKO
Planning and Environmental



Map Legend

- EIAR Site Boundary
- T Layout
- 500m Radius of Turbines
- VP Survey Locations
- Flight Observation
- Non-Flight Observation

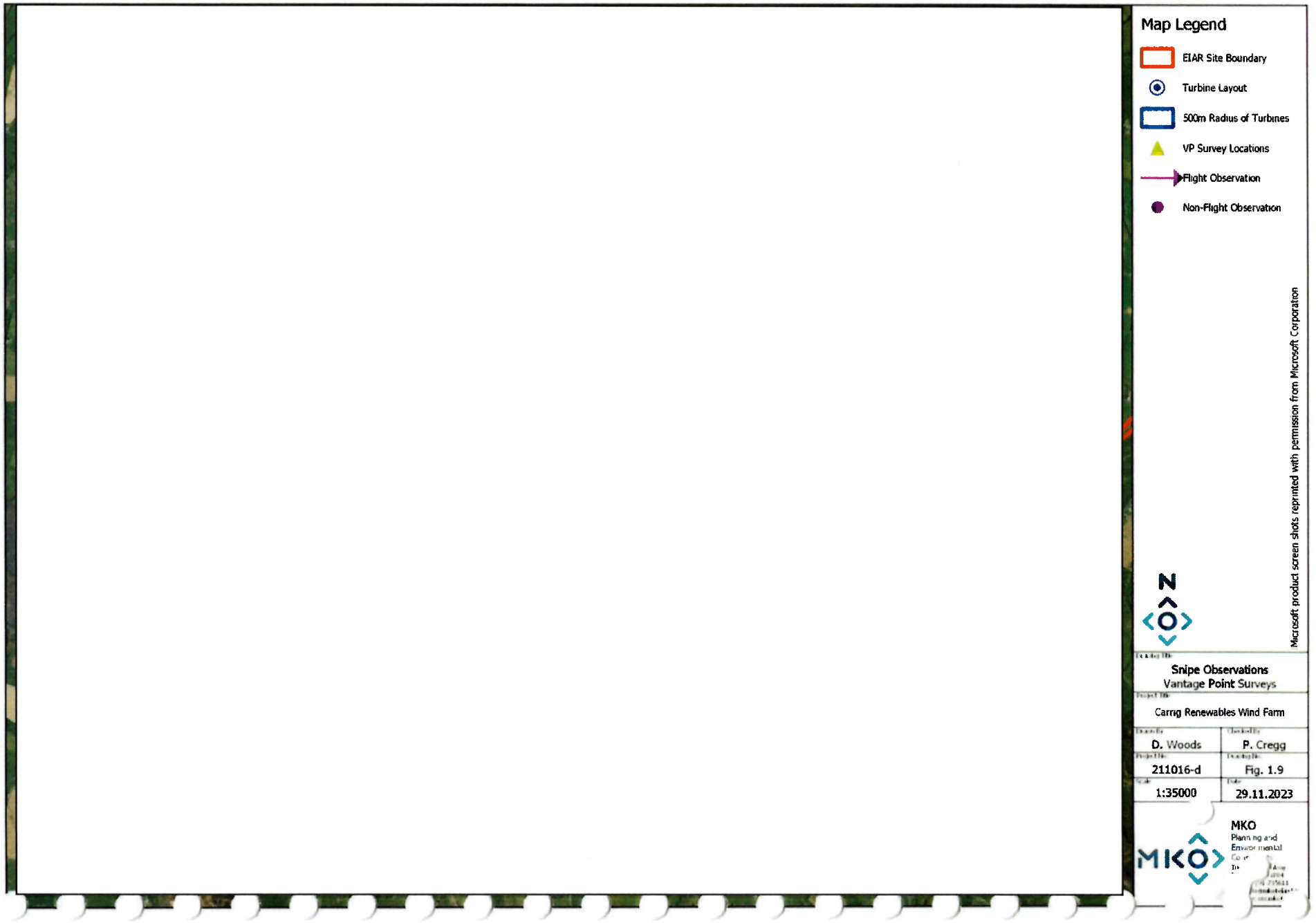
N

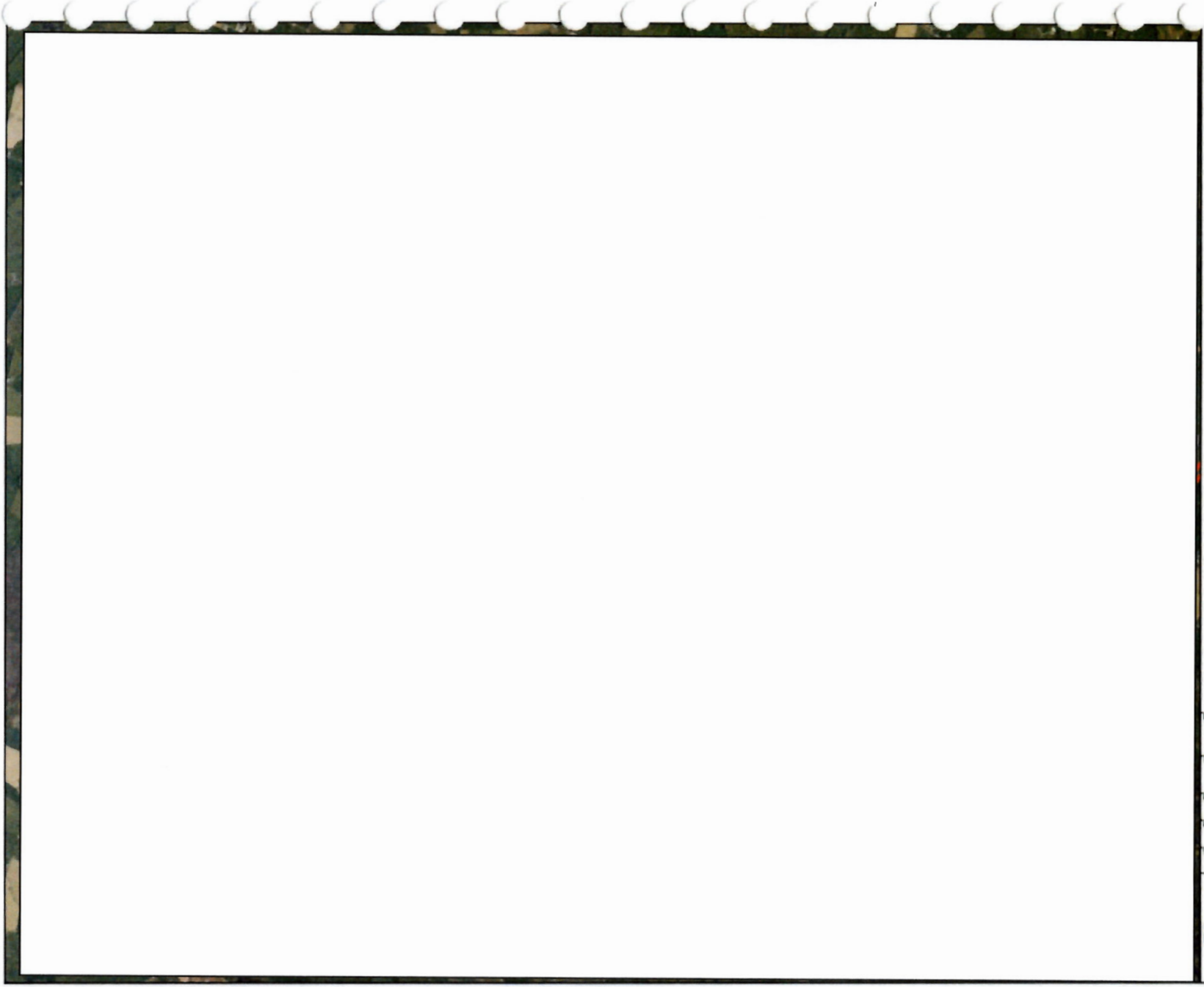
Kestrel Observations
Vantage Point Surveys

Carnig Renewables Wind Farm

Drawn By	Checked By
D. Woods	P. Cregg
Project No.	Drawing No.
211016-d	Fig. 1.8
Scale	Date
1:35000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0)91 735611
email: info@mkoireland.ie
Website: www.mkoireland.ie


Map Legend
EIAR Site Boundary
Turbine Layout
500m Radius of Turbines
VP Survey Locations
Flight Observation
Non-Flight Observation
Microsoft product screen shots reprinted with permission from Microsoft Corporation
N
Snipe Observations
Vantage Point Surveys
Carrig Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 1.9
1:35000
29.11.2023
MKO
Planning and
Environmental



Map Legend

- EIAR Site Boundary
- T(Layout
- 500m Radius of Turbines
- VP Survey Locations
- Flight Observation
- Non-Flight Observation

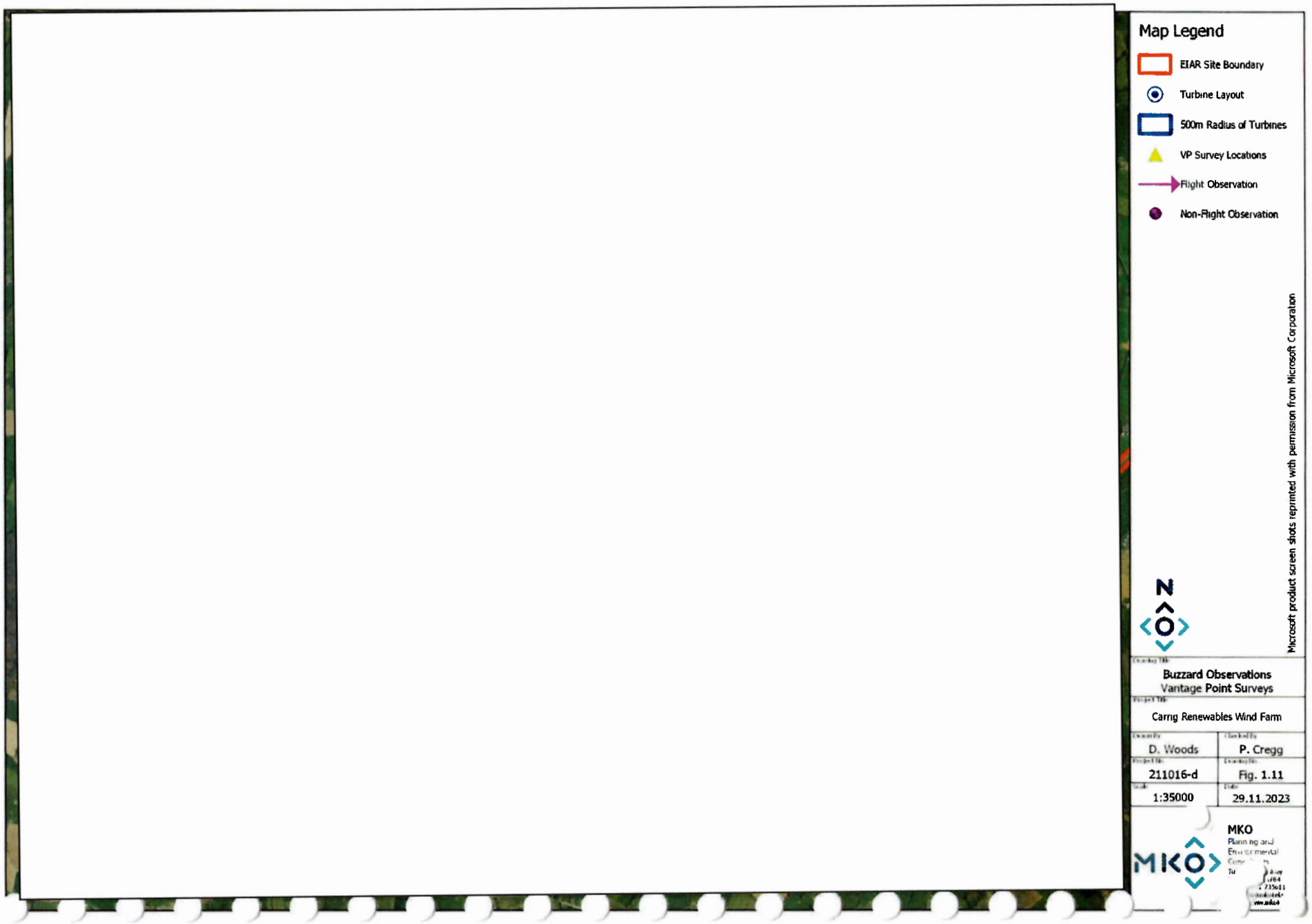
N

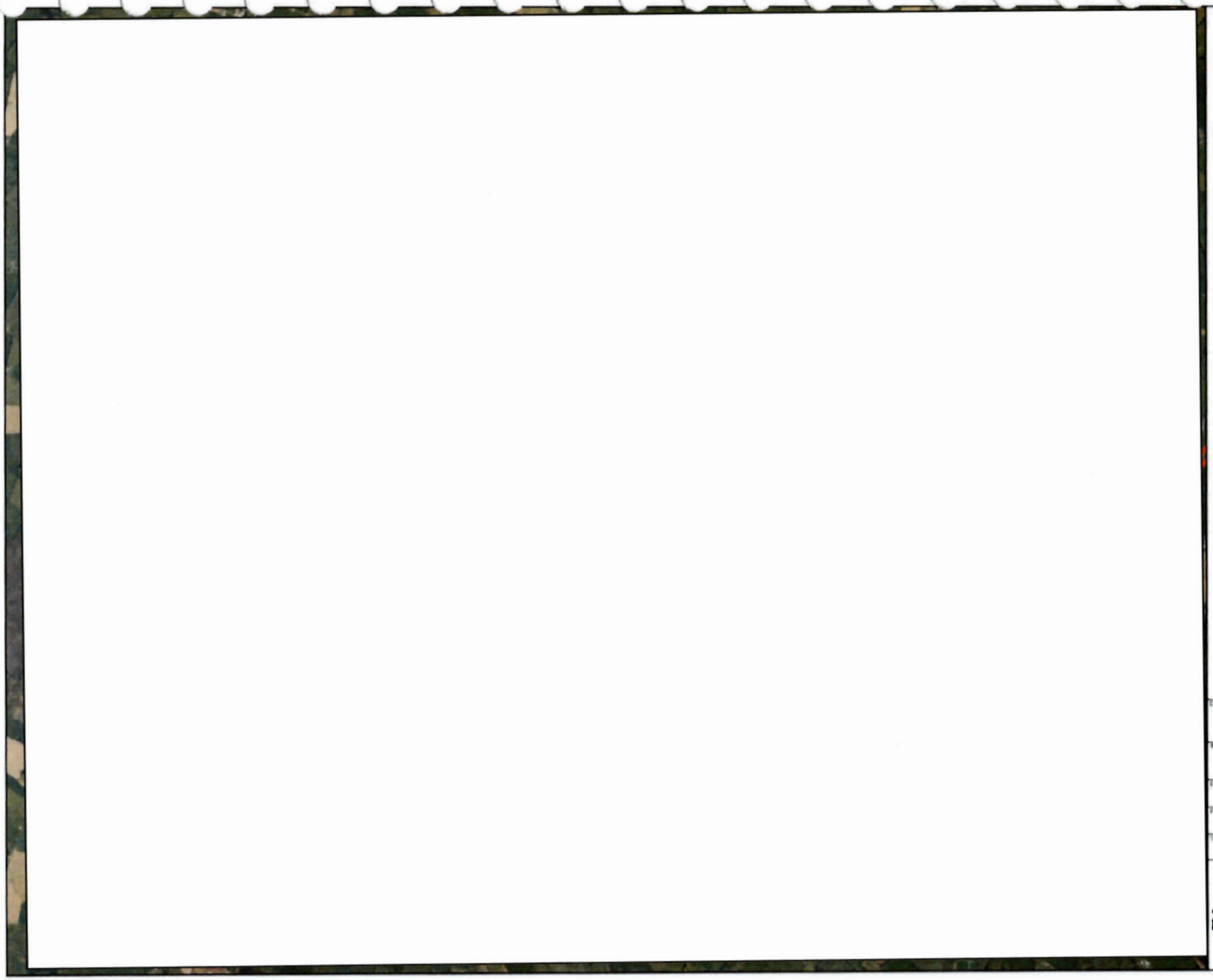
Woodcock Observations
Vantage Point Surveys

Carrig Renewables Wind Farm

Drawn By	Checked By
D. Woods	P. Cregg
Project No.	Drawing No.
211016-d	Fig. 1.10
Scale	Date
1:35000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: www.mkoireland.ie


Map Legend
EIAR Site Boundary
Turbine Layout
500m Radius of Turbines
VP Survey Locations
Flight Observation
Non-Flight Observation
Microsoft product screen shots reprinted with permission from Microsoft Corporation
N
Buzzard Observations
Vantage Point Surveys
Carrig Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 1.11
1:35000
29.11.2023
MKO



Map Legend

- EIAR Site Boundary
- T[illegible] Layout
- 500m Radius of Turbines
- VP Survey Locations
- Flight Observation
- Non-Flight Observation

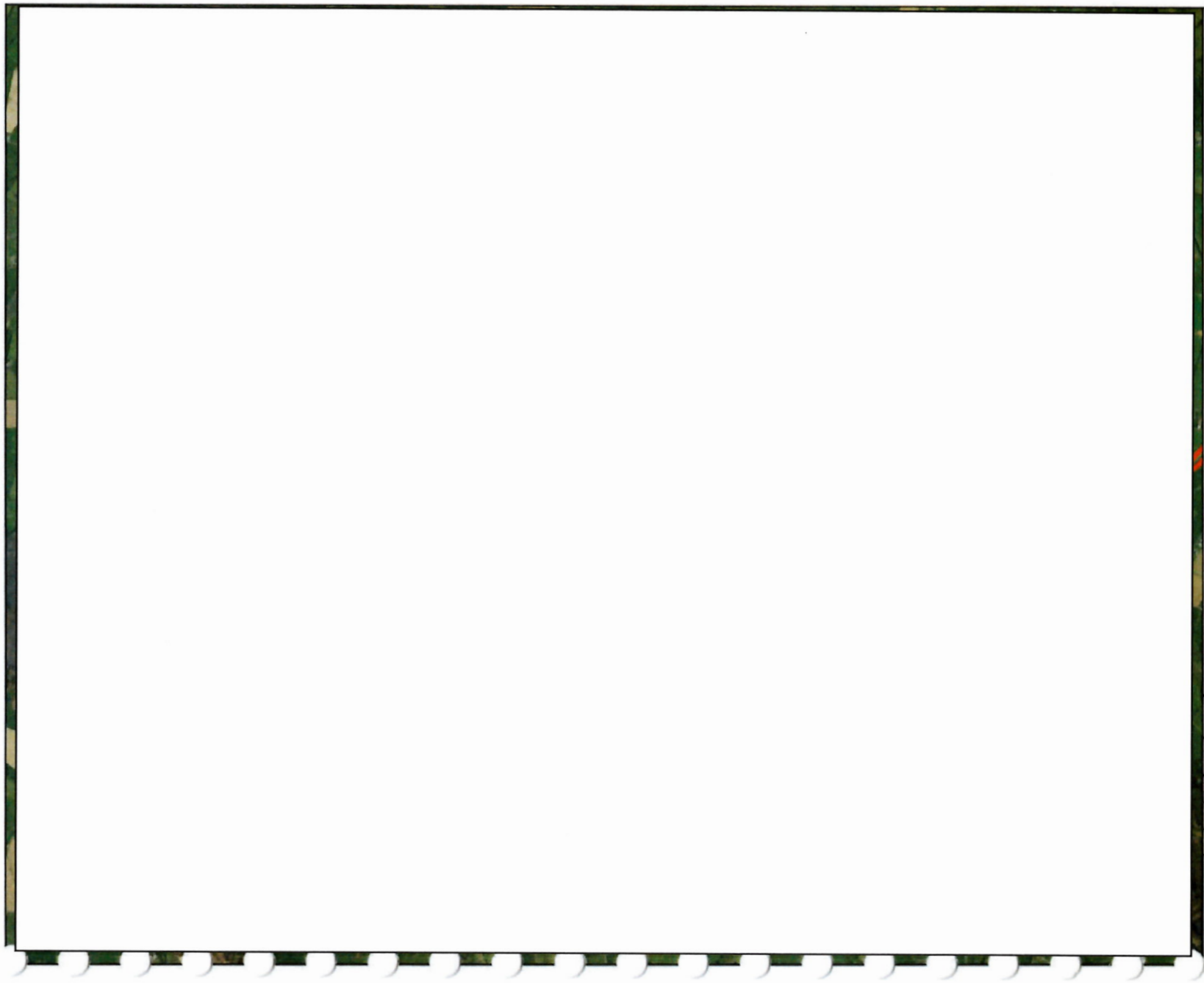
N

Sparrowhawk Observations
Vantage Point Surveys

Carng Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 1.12
1:35000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0)91 735611
email:info@mkoireland.ie
Website: www.mkoireland.ie



Map Legend

- EIAR Site Boundary
- Turbine Layout
- Flight Observation

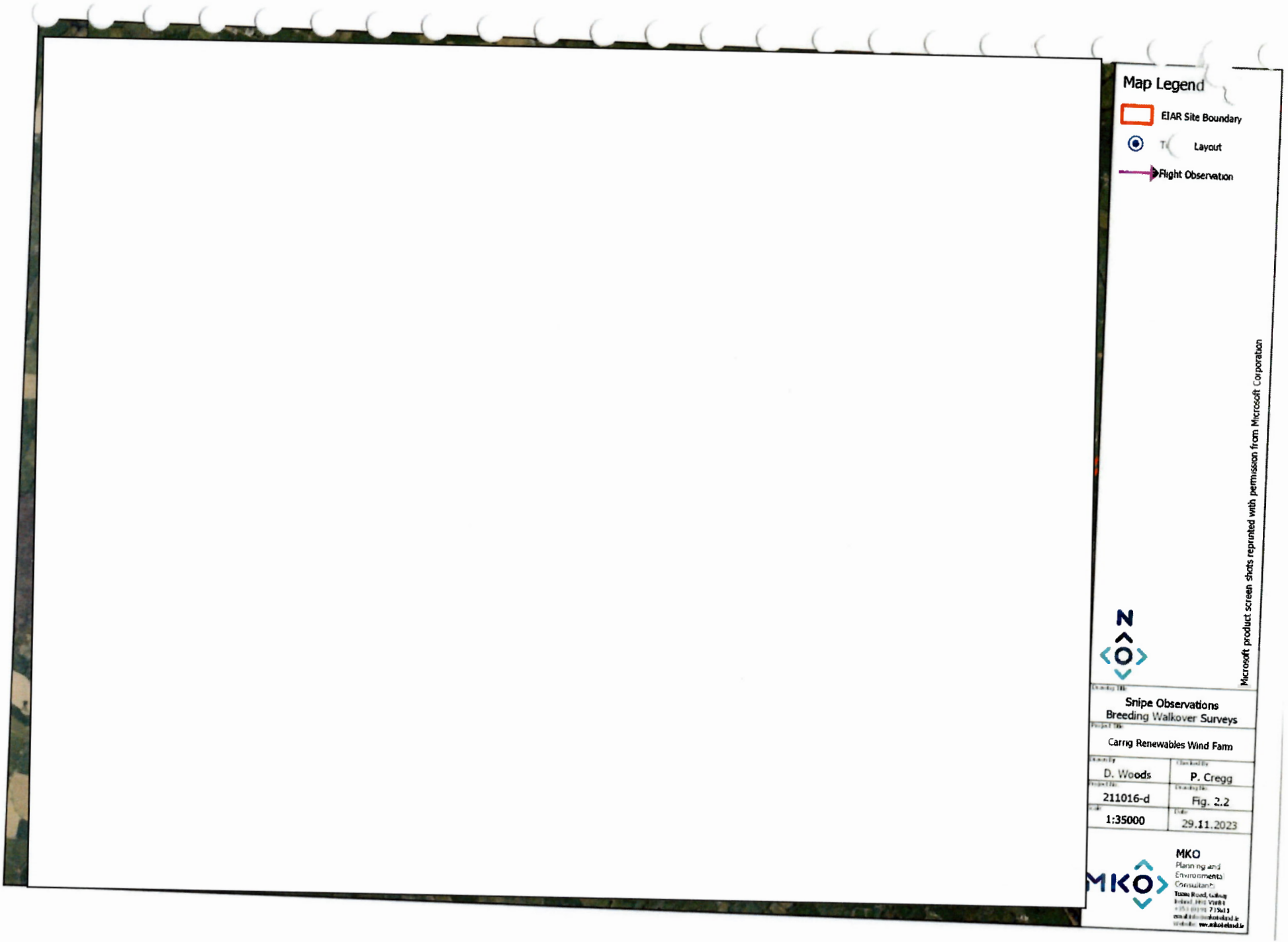
N

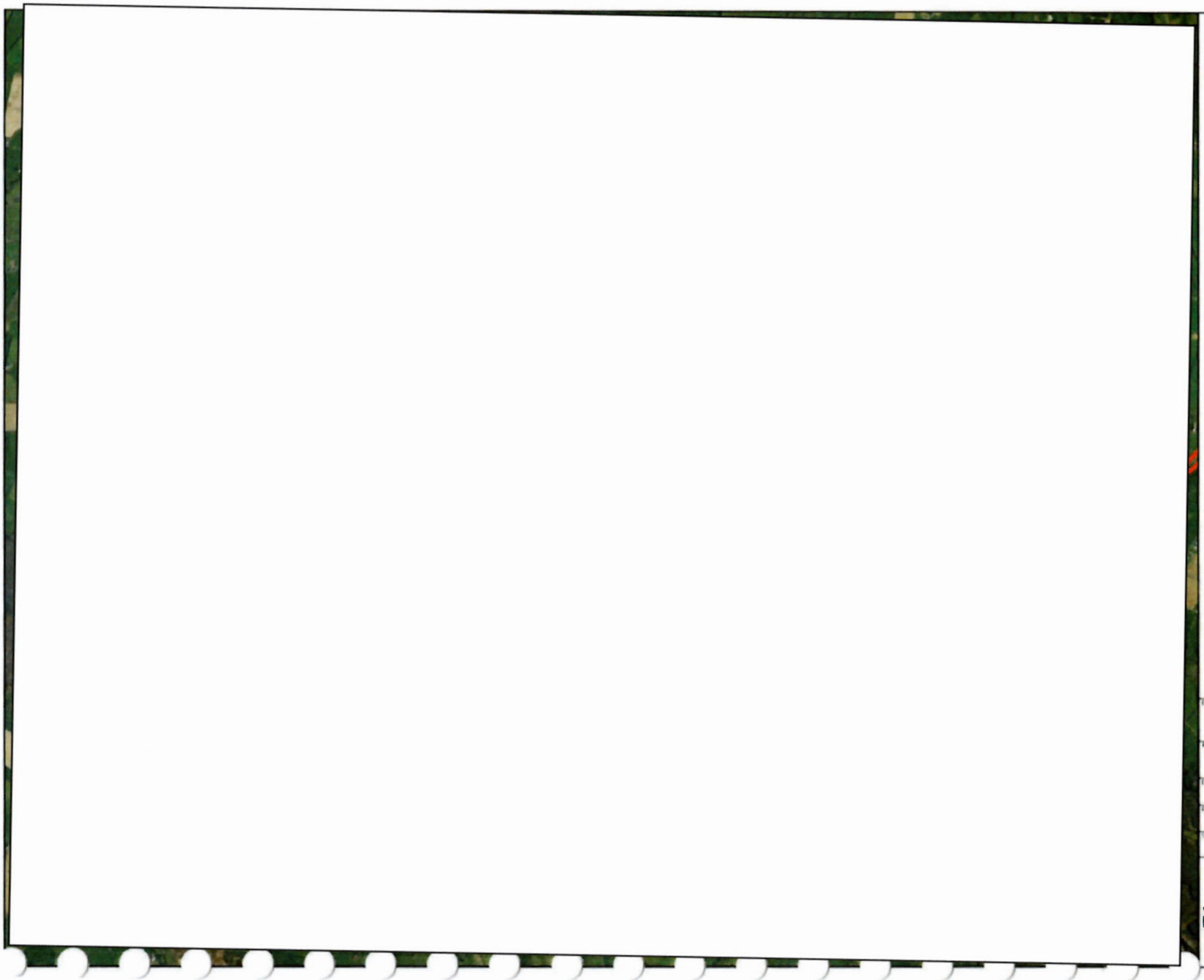
Kestrel Observations
Breeding Walkover Surveys

Carrig Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 2.1
1:35000	29.11.2023

MKO
Planning and Environmental Consultants


Map Legend
EIAR Site Boundary
T Layout
Flight Observation
N
Microsoft product screen shots reprinted with permission from Microsoft Corporation
Snipe Observations
Breeding Walkover Surveys
Carrig Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 2.2
1:35000
29.11.2023
MKO
Planning and
Environmental
Consultants



Map Legend

- EIAR Site Boundary
- Turbine Layout
- Flight Observation

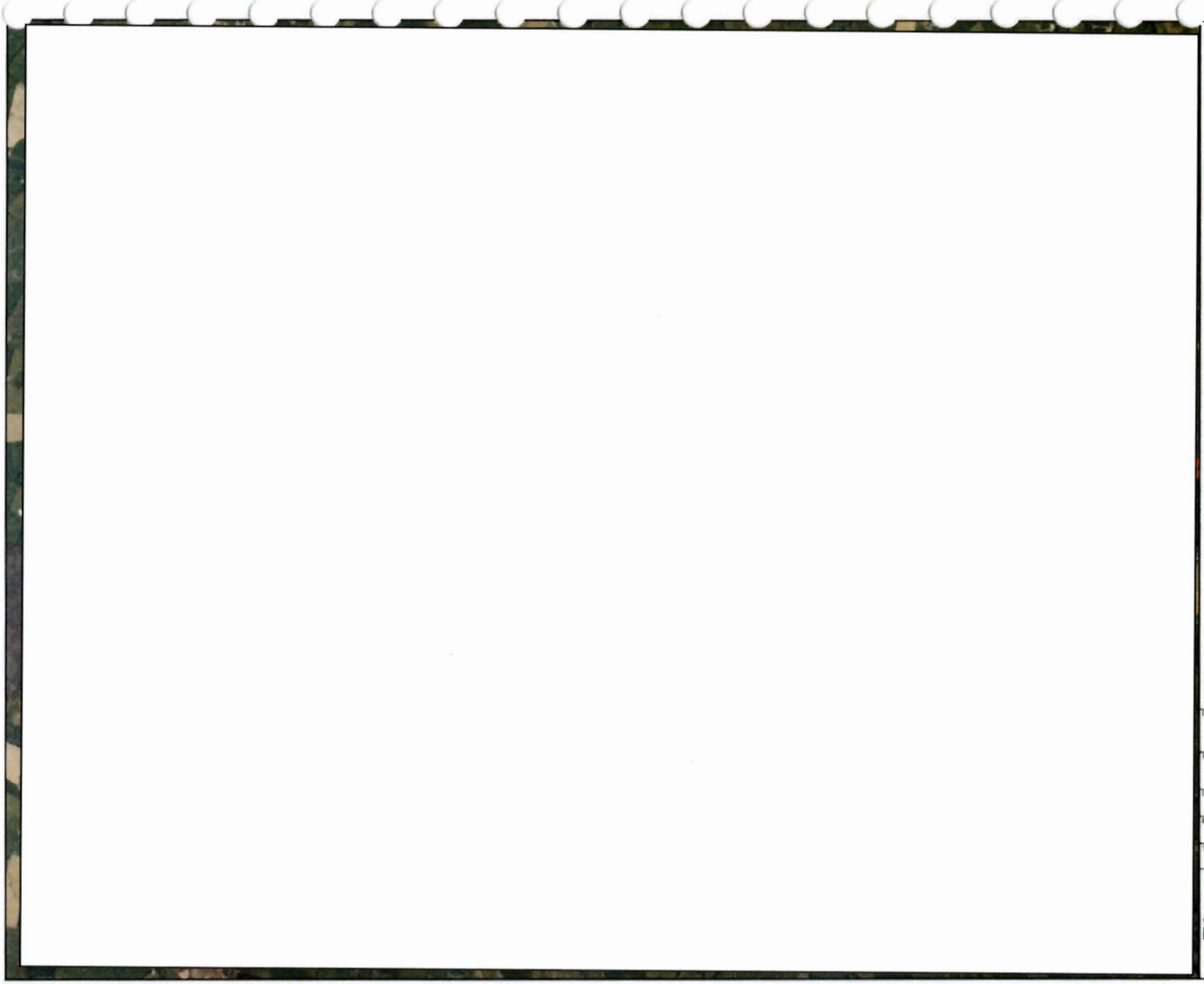
N

Buzzard Observations
Breeding Walkover Surveys

Carnq Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 2.3
1:35000	29.11.2023

MKO
Planning and Environmental



Map Legend

- EIAR Site Boundary
- T[illegible] Layout

Breeding Territories

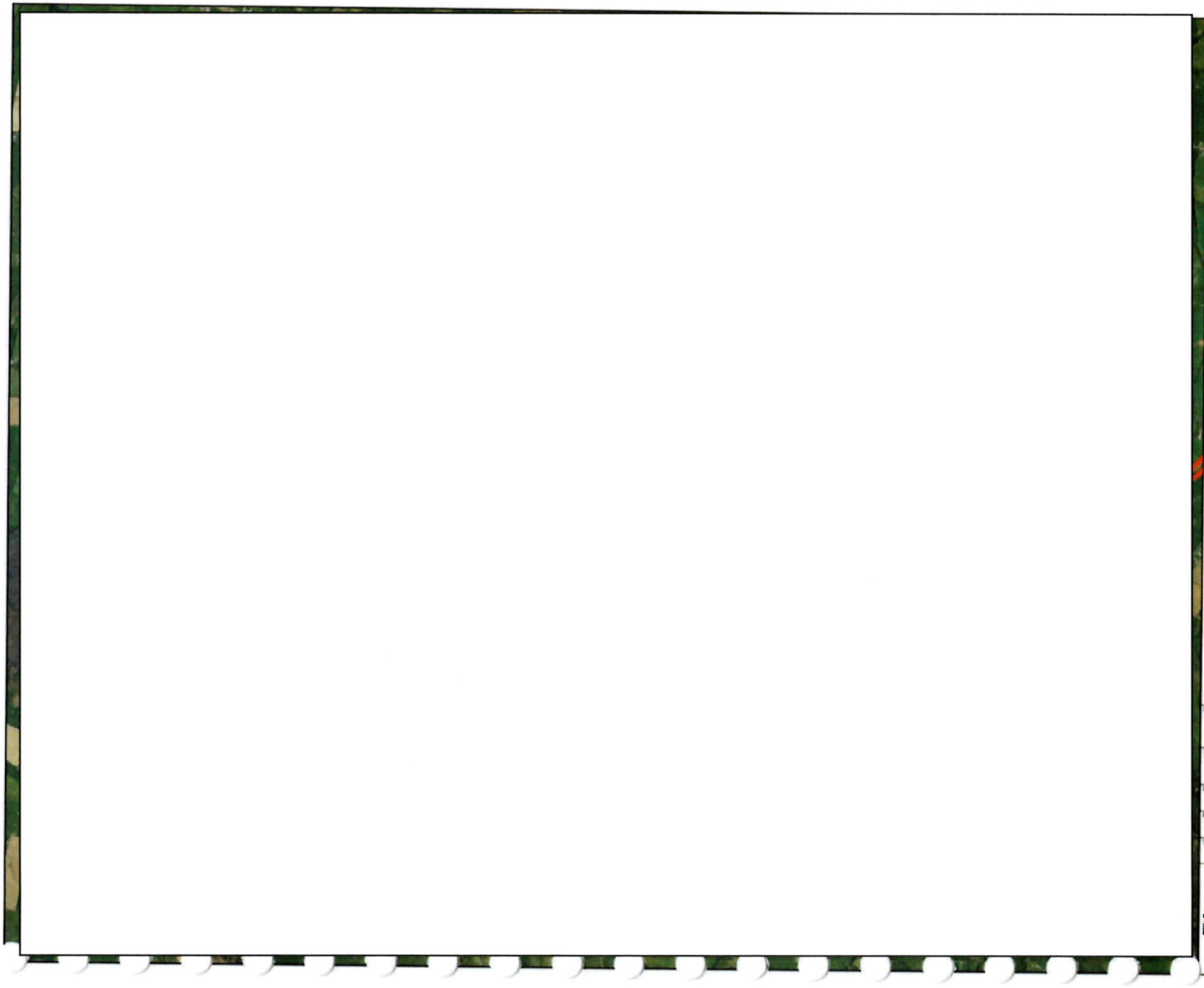
- Confirmed
- Probable

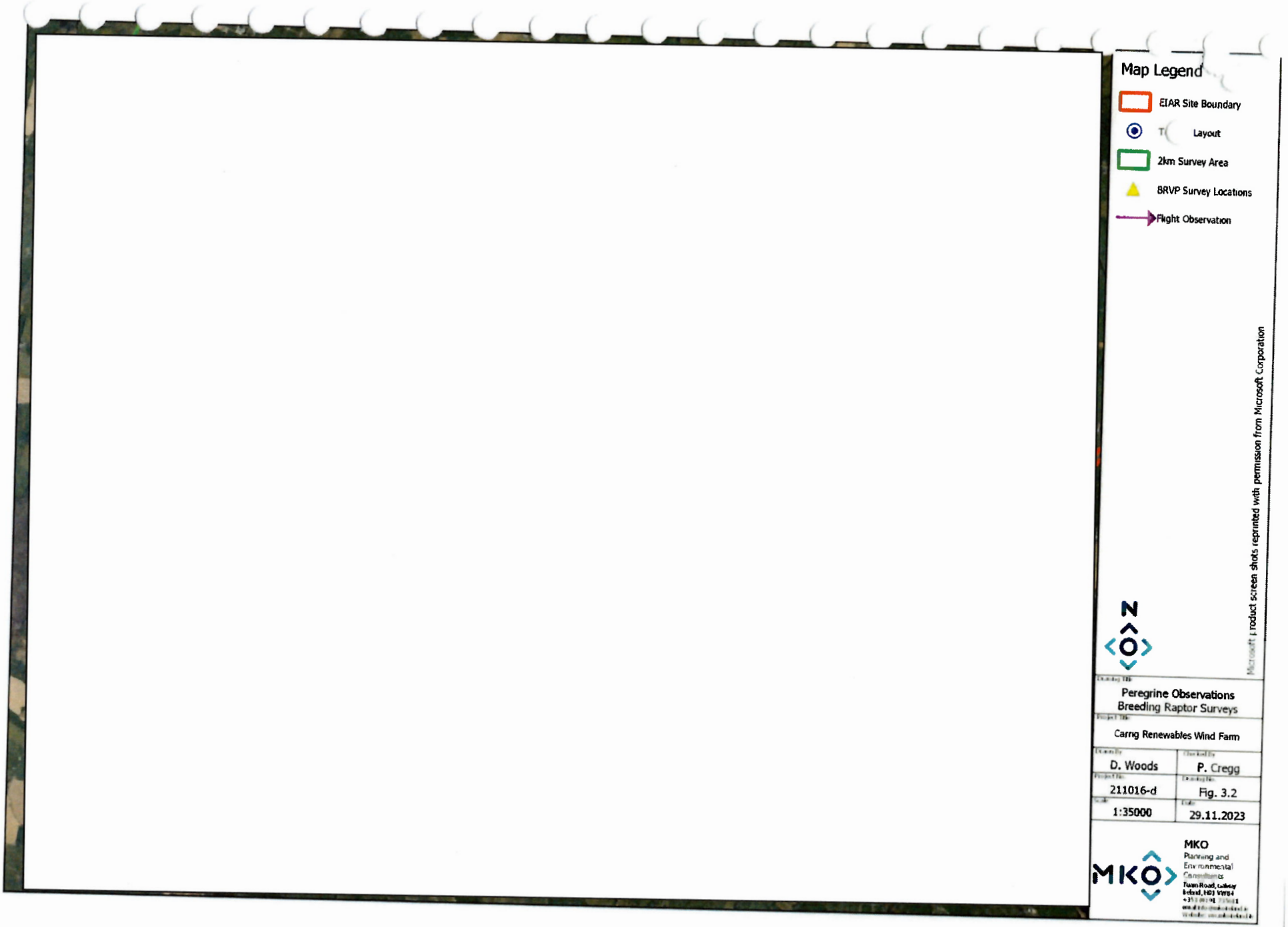
Buzzard Territories
Breeding Walkover Surveys

Carrig Renewables Wind Farm

Drawn By	Checked By
D. Woods	P. Cregg
Project No.	Drawing No.
211016-d	Fig. 2.3.1
Scale	Date
1:35000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0)91 735611
[illegible]


Map Legend
EIAR Site Boundary
Turbine Layout
Flight Observation
N
Microsoft product screen shots reprinted with permission from Microsoft Corporation
Sparrowhawk Observations
Breeding Walkover Surveys
Carrg Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 2.4
1:35000
29.11.2023
MKO
Planning and
Environmental


Map Legend
EIAR Site Boundary
T Layout
2km Survey Area
BRVP Survey Locations
Flight Observation
N
Microsoft product screen shots reprinted with permission from Microsoft Corporation
Peregrine Observations
Breeding Raptor Surveys
Carrg Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 3.2
1:35000
29.11.2023
MKO
Planning and
Environmental
Consultants

Map Legend

- EIAR Site Boundary
- Turbine Layout
- 2km Survey Area
- BRVP Survey Locations
- Flight Observation

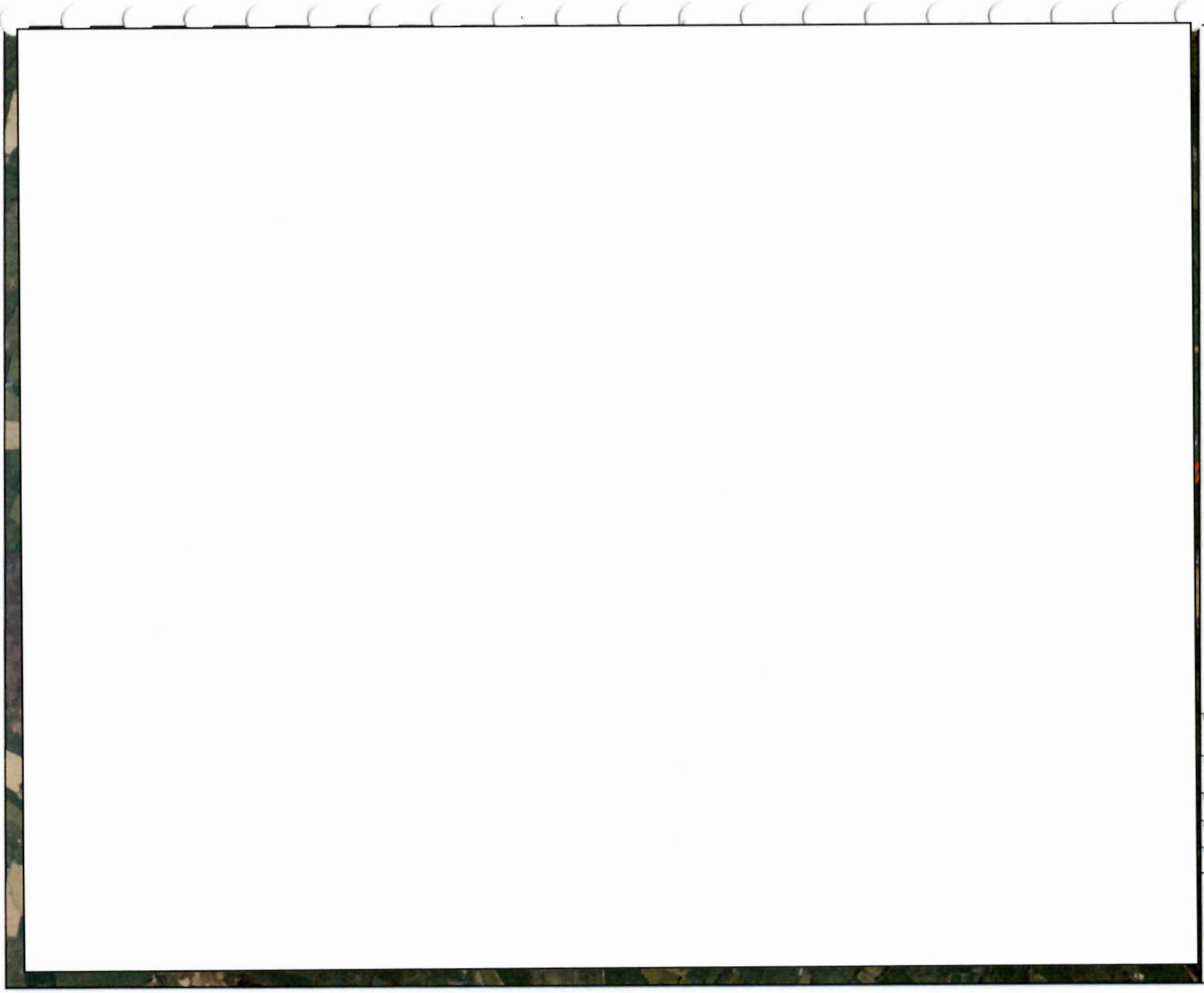
N

Kestrel Observations
Breeding Raptor Surveys

Carrig Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 3.3
1:35000	29.11.2023

MKO
Planning and Environmental



Map Legend

- EIAR Site Boundary
- T : Layout

Breeding Territories

- Confirmed
- Probable

N

Kestrel Breeding Territories
Breeding Raptor Surveys

Carrig Renewables Wind Farm

Drawn By	Checked By
D. Woods	P. Cregg
Project No.	Drawing No.
211016-d	Fig. 3.3.1
Scale	Date
1:35000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email@mkoireland.ie
Website: www.mkoireland.ie

Map Legend

- EIAR Site Boundary
- Turbine Layout
- 2km Survey Area
- 8RVP Survey Locations
- Flight Observation

N

Buzzard Observations
Breeding Raptor Surveys

Carrig Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 3.4
1:35000	29.11.2023

MKO
Planning and Environmental Consultants

Map Legend

- EIAR Site Boundary
- Layout
- 2km Survey Area
- BRVP Survey Locations
- Flight Observation

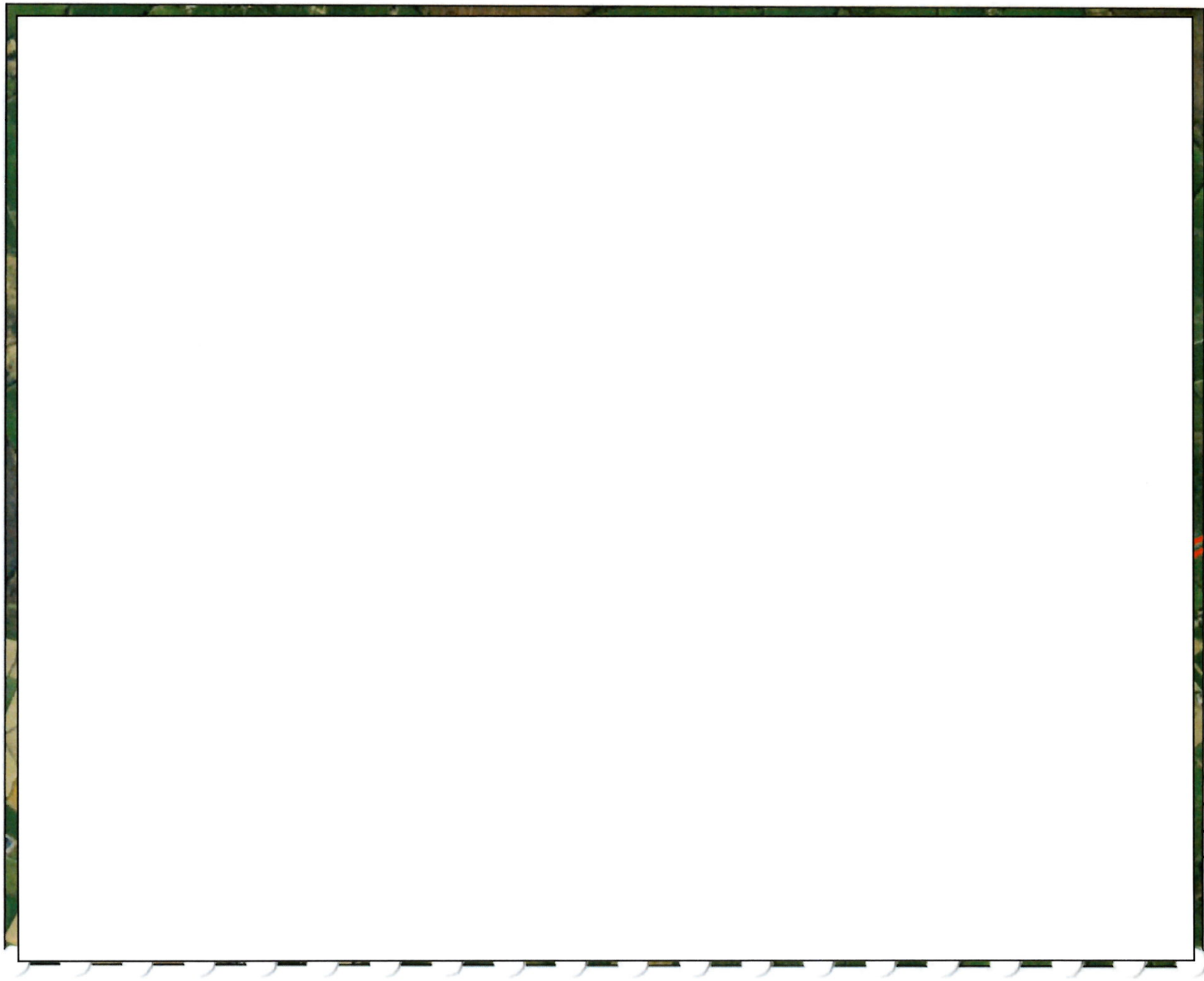
N

Sparrowhawk Observations
Breeding Raptor Surveys

Carng Renewables Wind Farm

Drawn By	Checked By
D. Woods	P. Cregg
Project No.	Drawing No.
211016-d	Fig. 3.5
Scale	Date
1:35000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road Galway
Ireland, H91 VW84
+353 (0)91 735611
email: info@mkoireland.ie
Website: www.mkoireland.ie



Map Legend

- EIAR Site Boundary
- Turbine Layout
- Flight Observation

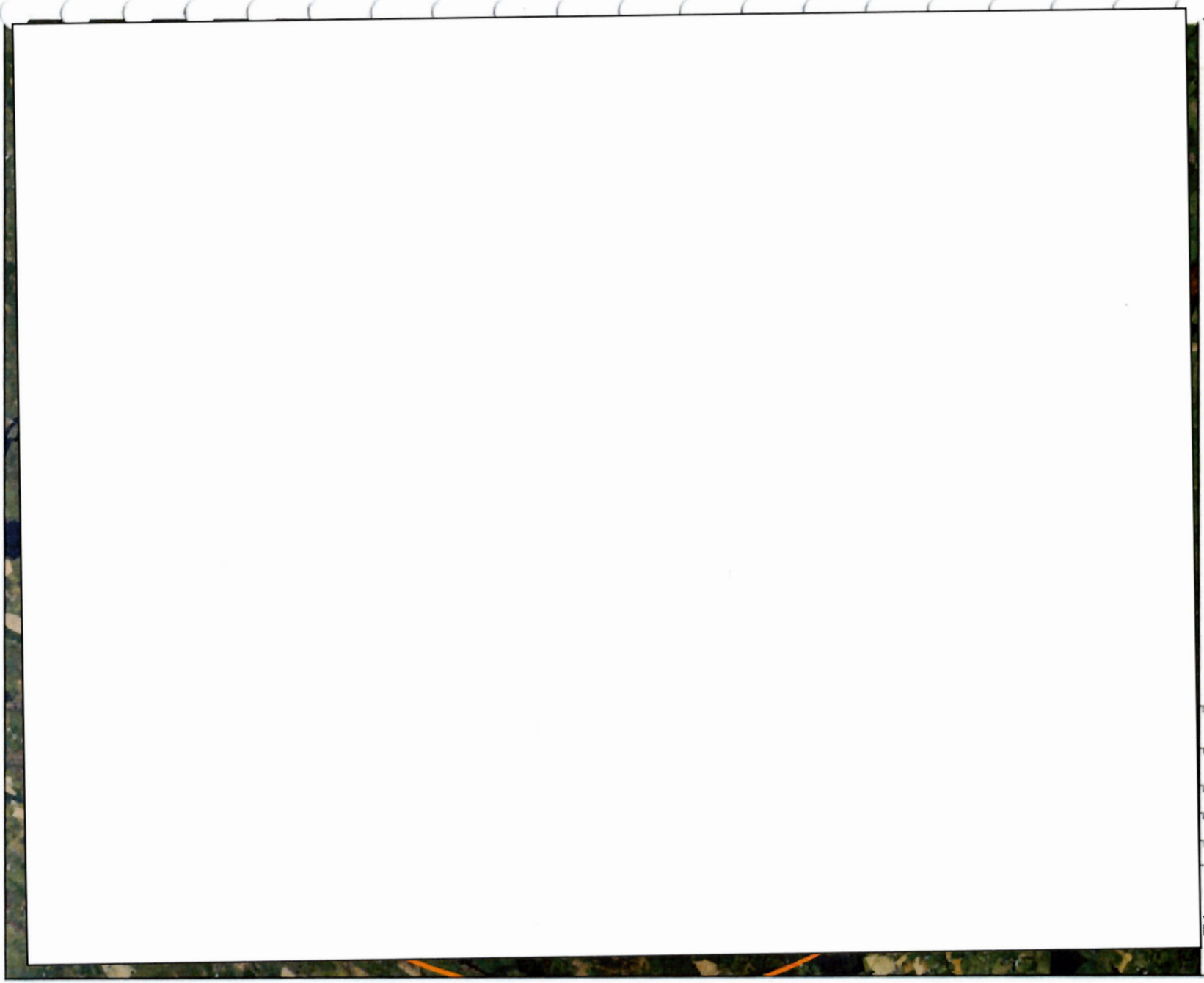
N

Woodcock Observations
Breeding Woodcock Surveys

Carrig Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 4.1
1:25000	29.11.2023

MKO
Planning and Environmental



Map Legend

- EIAR Site Boundary
- T[illegible] Layout
- 8km Survey Area
- Observation

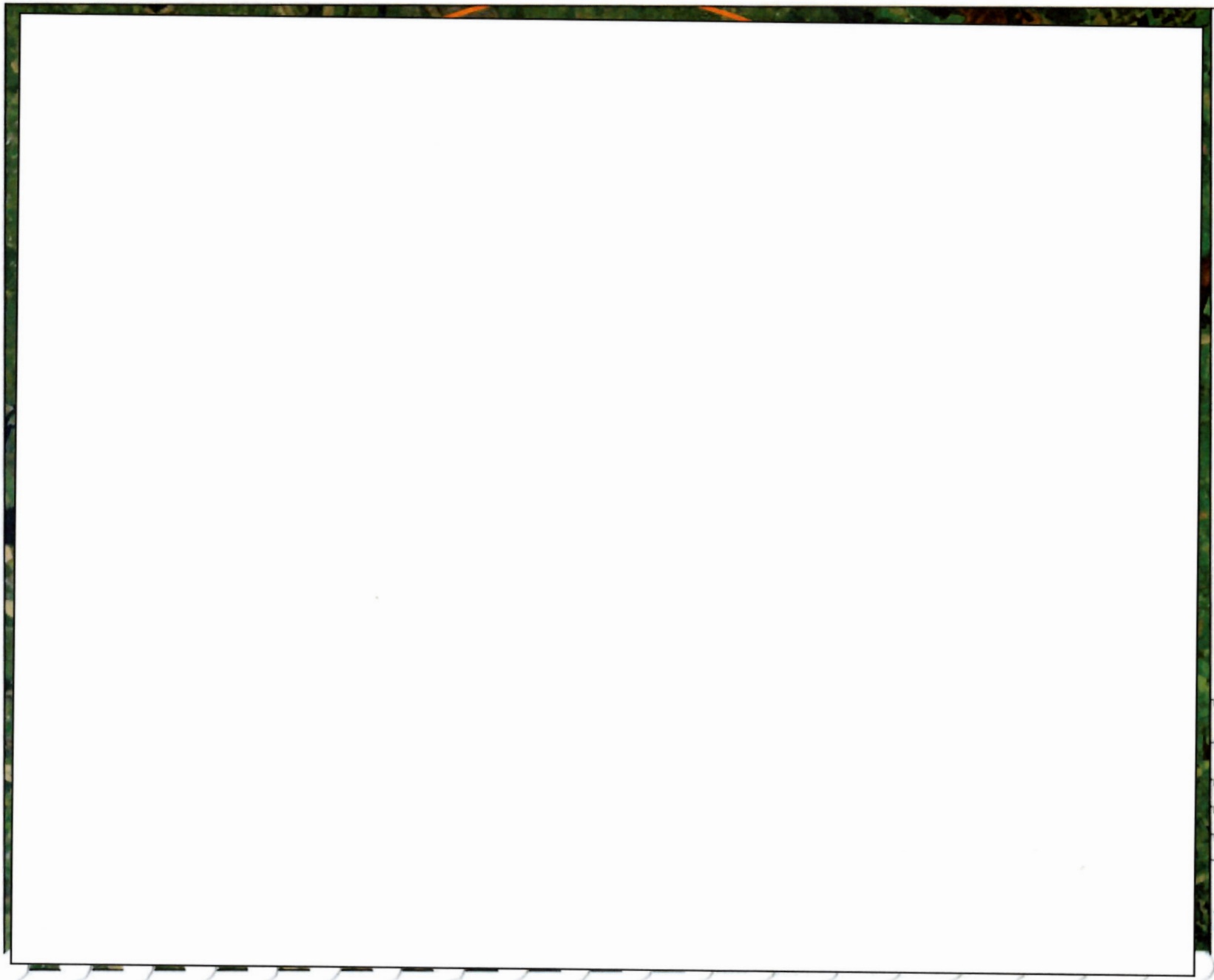
N

Black-headed Gull Observations
Waterbird **Distribution** Surveys

Carng Renewables Wind Farm

Drawn By	Checked By
D. Woods	P. Cregg
Project No.	Drawing No.
211016-d	Fig. 6.1
Scale	Date
1:100000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: [illegible]
Website: www.mkoireland.ie



Map Legend

- EIAR Site Boundary
- Turbine Layout
- 8km Survey Area
- Observation

N

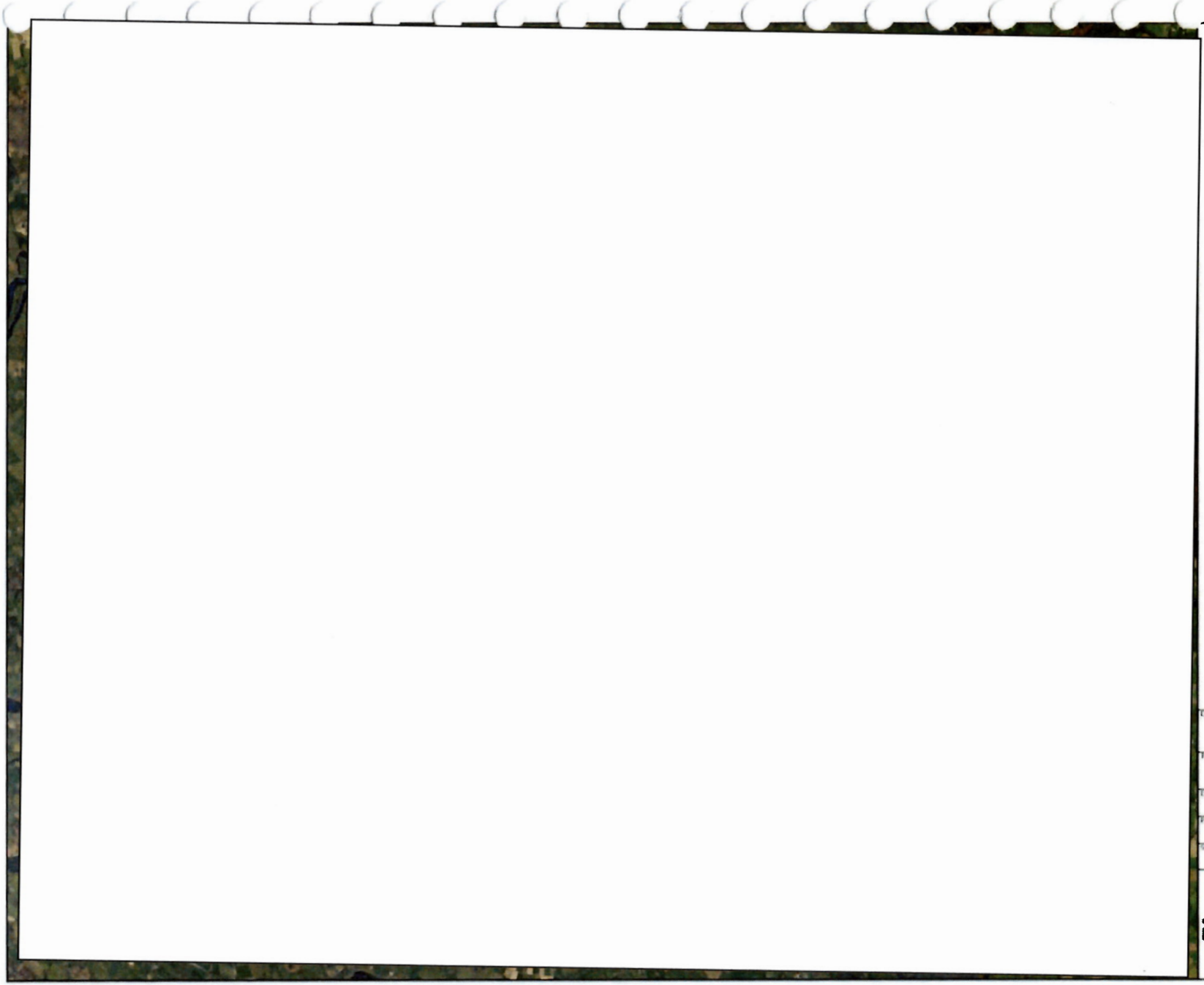
Microsoft product screen shots reprinted with permission from Microsoft Corporation

Lapwing Observations
Waterbird Distribution Surveys

Carng Renewables Wind Farm

Drawn By: D. Woods	Checked By: P. Cregg
Project No: 211016-d	Drawing No: Fig. 6.2
Scale: 1:100000	Date: 29.11.2023

MKO
Planning and
Environmental
Consultants



Map Legend

- EIAR Site Boundary
- T[illegible] Layout
- Observation

N

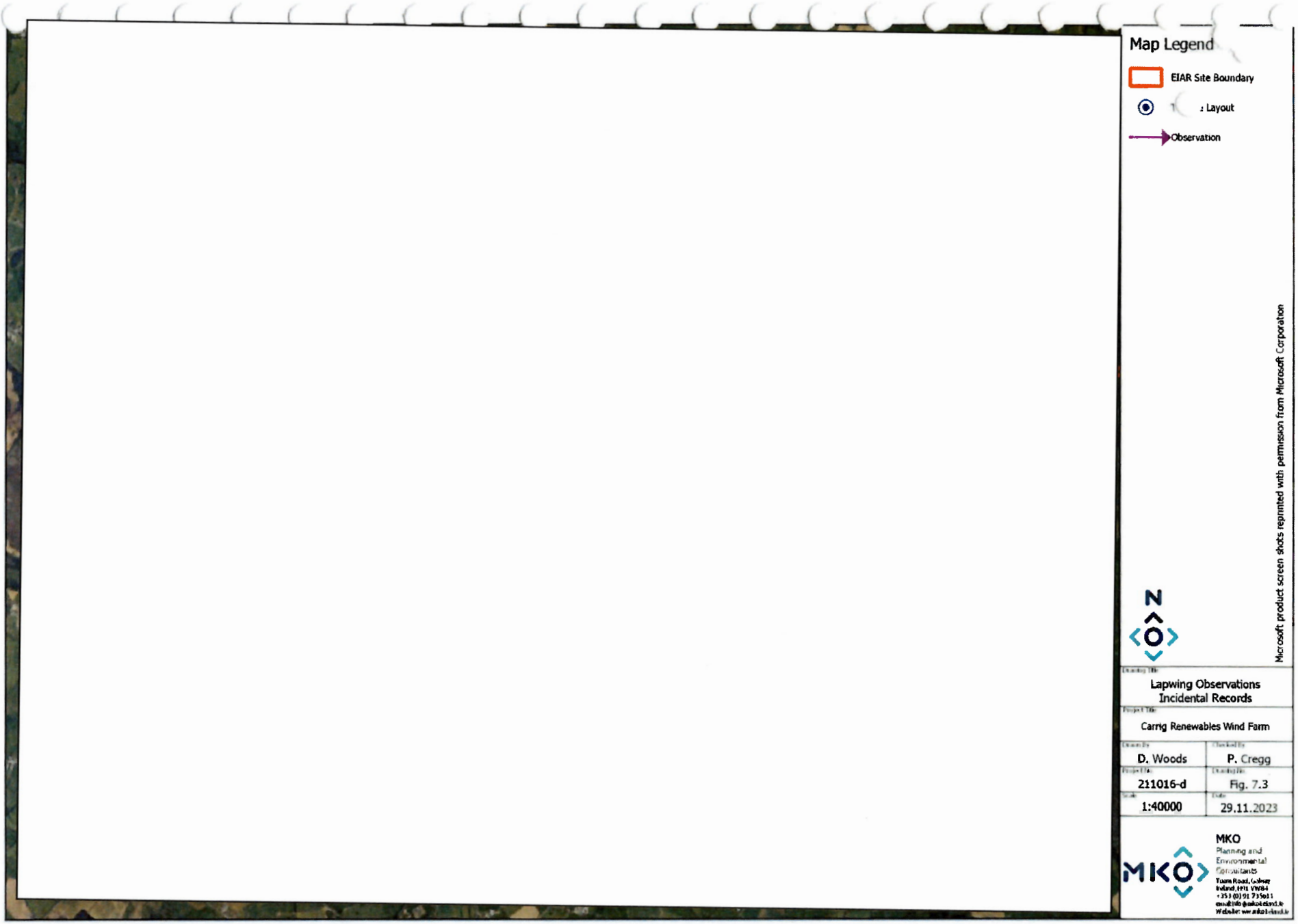
Drawing Title
Hen Harrier Observations Incidental Records

Project Title
Carrig Renewables Wind Farm

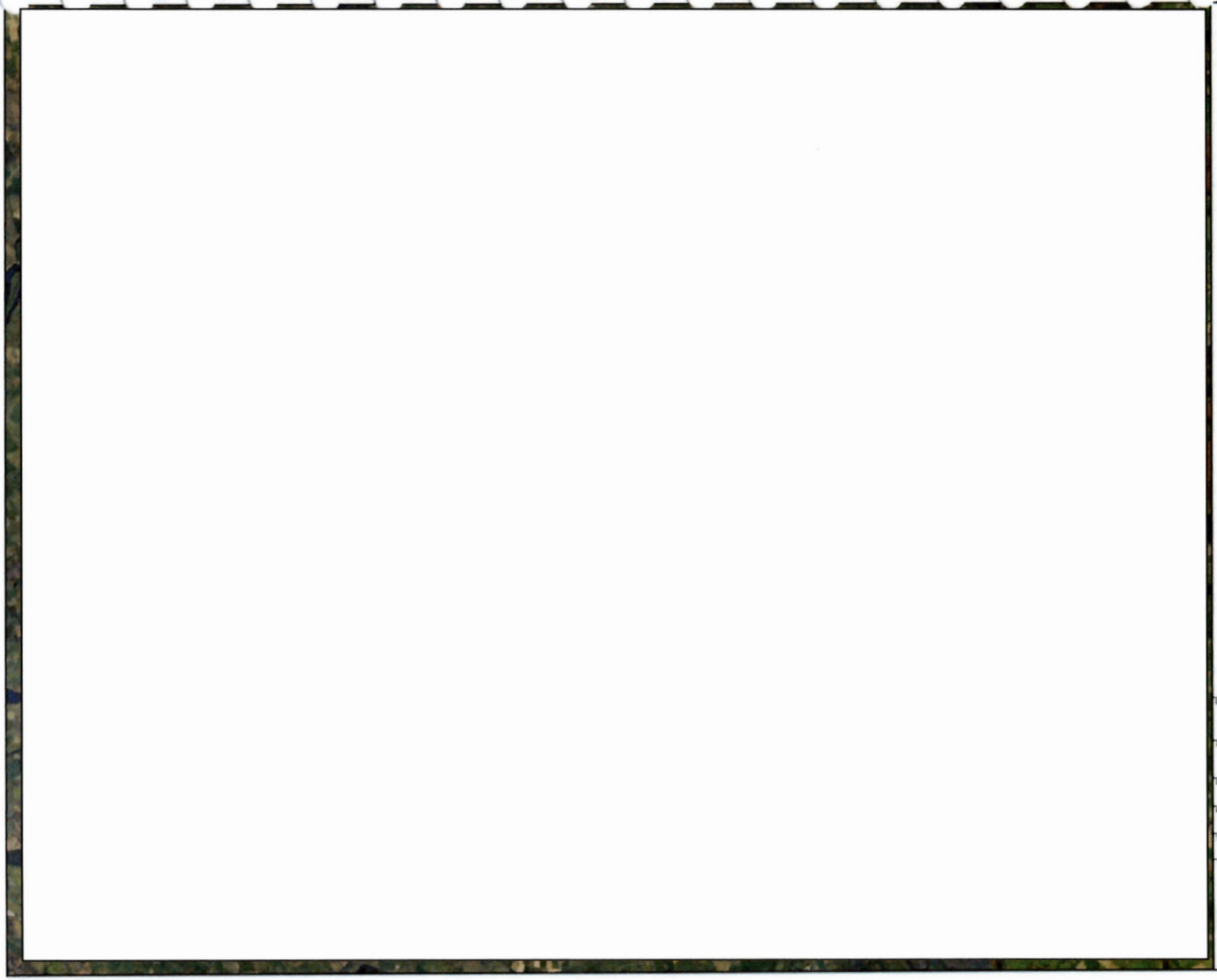
Drawn By	Checked By
D. Woods	P. Cregg
Project No.	Drawing No.
211016-d	Fig. 7.1
Scale	Date
1:80000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkoireland.ie
Website: www.mkoireland.ie


Map Legend
EIAR Site Boundary
Turbine Layout
Observation
N
Microsoft product screen shots reprinted with permission from Microsoft Corporation
White-tailed Eagle Observations
Incidental Records
Carrig Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 7.2
1:80000
29.11.2023
MKO
Planning and
Environmental


Map Legend
EIAR Site Boundary
: Layout
Observation
N
Microsoft product screen shots reprinted with permission from Microsoft Corporation
Lapwing Observations
Incidental Records
Carrig Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 7.3
1:40000
29.11.2023
MKO
Planning and
Environmental
Consultants


Map Legend
EIAR Site Boundary
Turbine Layout
Observation
Microsoft product screen shots reprinted with permission from Microsoft Corporation
N
Curlew Observations
Incidental Records
Carrig Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 7.5
1:40000
29.11.2023
MKO
Planning and



Map Legend

- EIAR Site Boundary
- Turbine Layout
- Observation

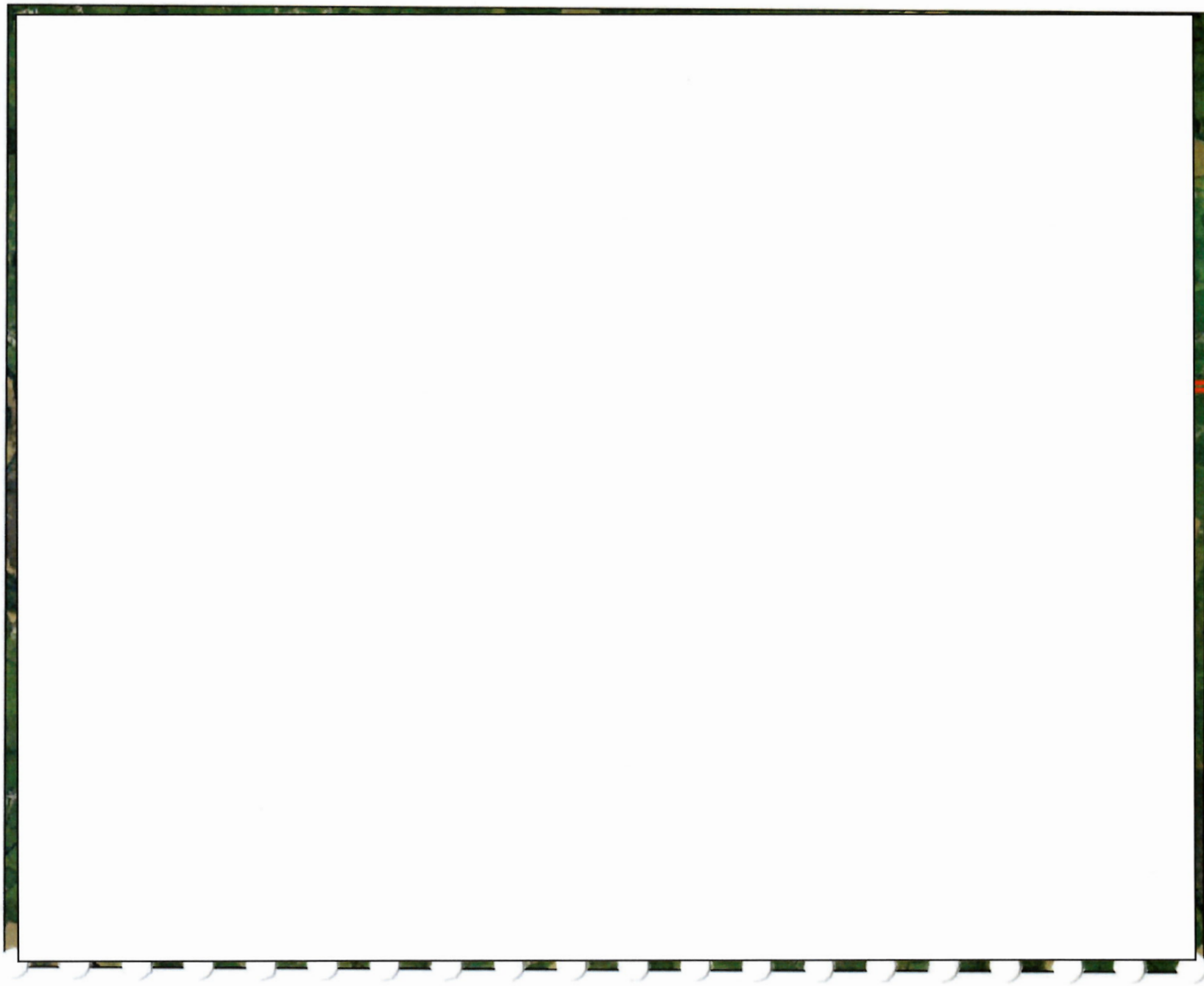
N

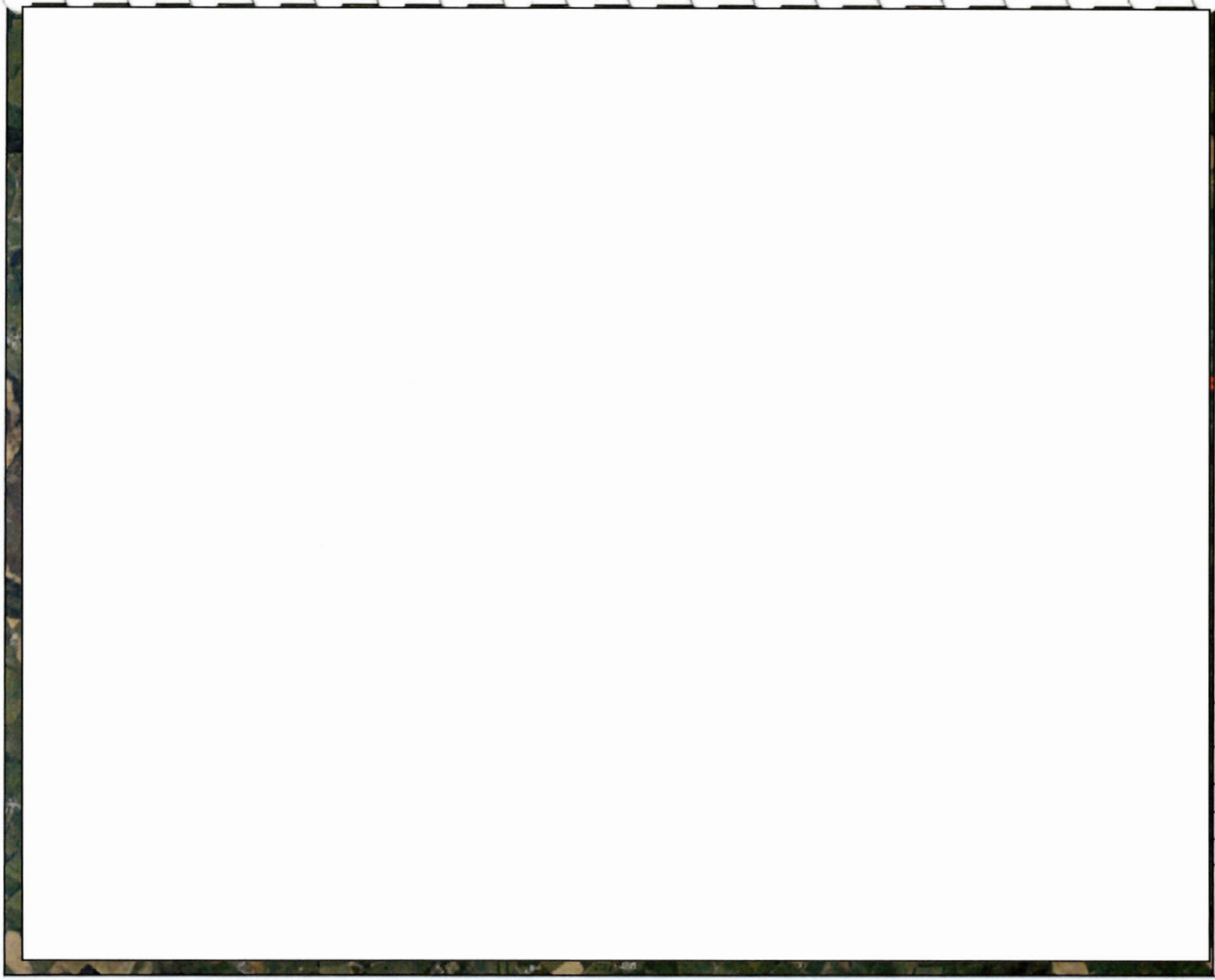
Kestrel Observations Incidental Records

Carrig Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 7.6
1:80000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0)91 735611
email: info@mkoireland.ie
Website: www.mkoireland.ie


Map Legend
EIAR Site Boundary
Turbine Layout
Observation
N
Microsoft product screen shots reprinted with permission from Microsoft Corporation
Snipe Observations
Incidental Records
Carrig Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 7.7
1:40000
29.11.2023
MKO
Planning and
Environmental
Consultants



Map Legend

- EIAR Site Boundary
- urbine Layout
- Observation

Microsoft product screen shots reprinted with permission from Microsoft Corporation

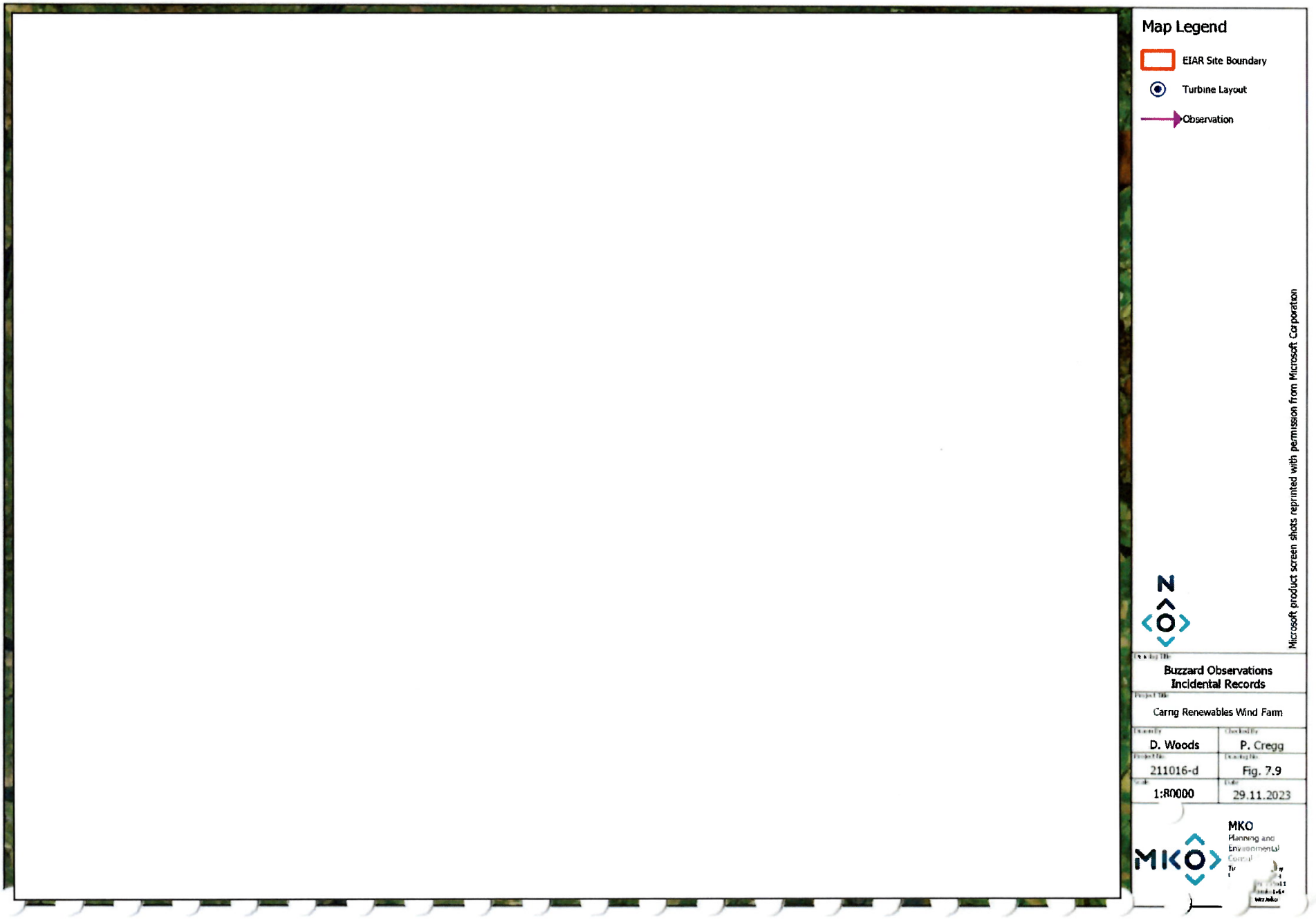
N

Woodcock Observations Incidental Records

Carrig Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 7.8
1:40000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
Website: www.mkoireland.ie


Map Legend
EIAR Site Boundary
Turbine Layout
Observation
N
Microsoft product screen shots reprinted with permission from Microsoft Corporation
Buzzard Observations
Incidental Records
Carng Renewables Wind Farm
D. Woods
P. Cregg
211016-d
Fig. 7.9
1:80000
29.11.2023
MKO
Planning and
Environmental

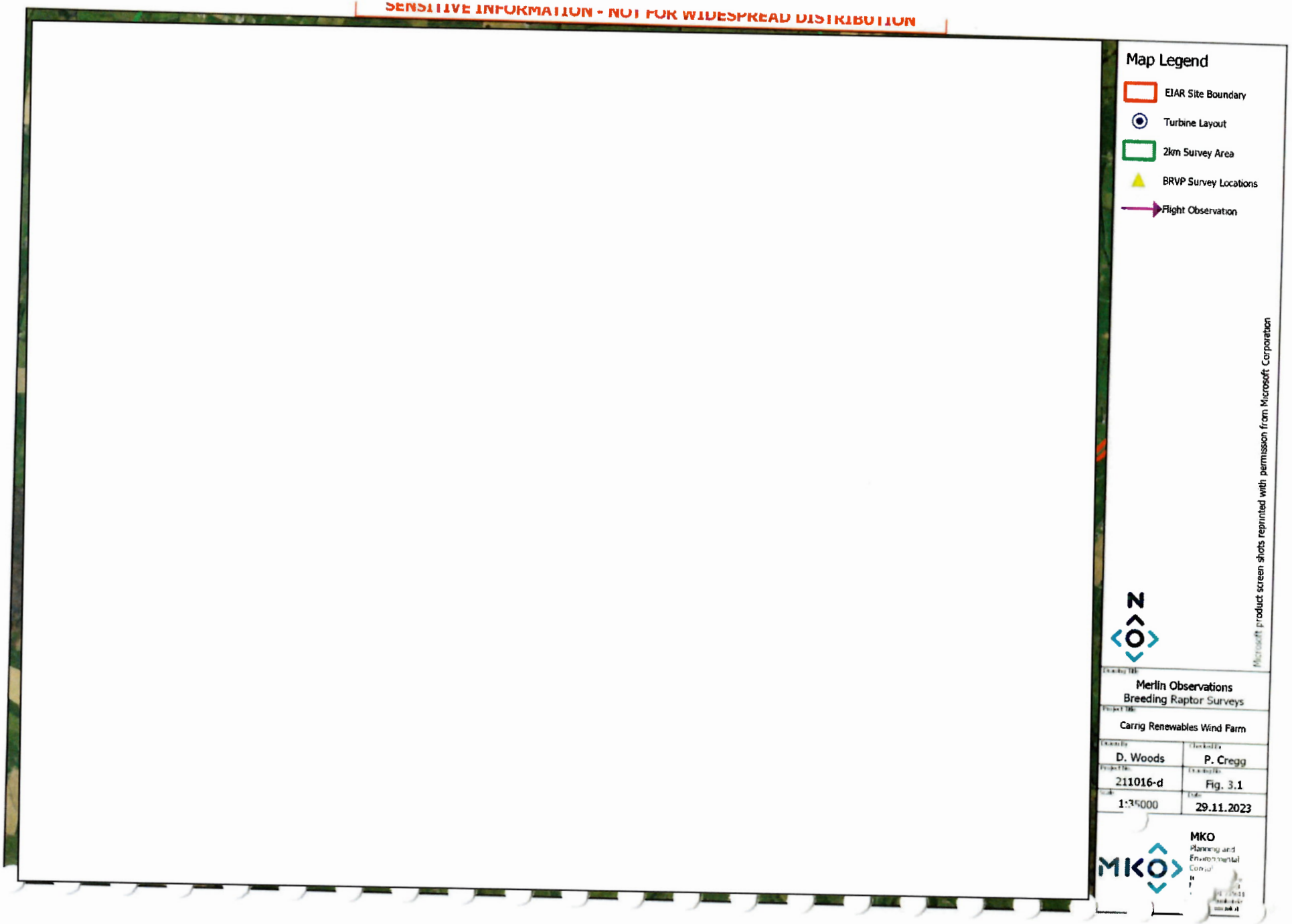
MKO

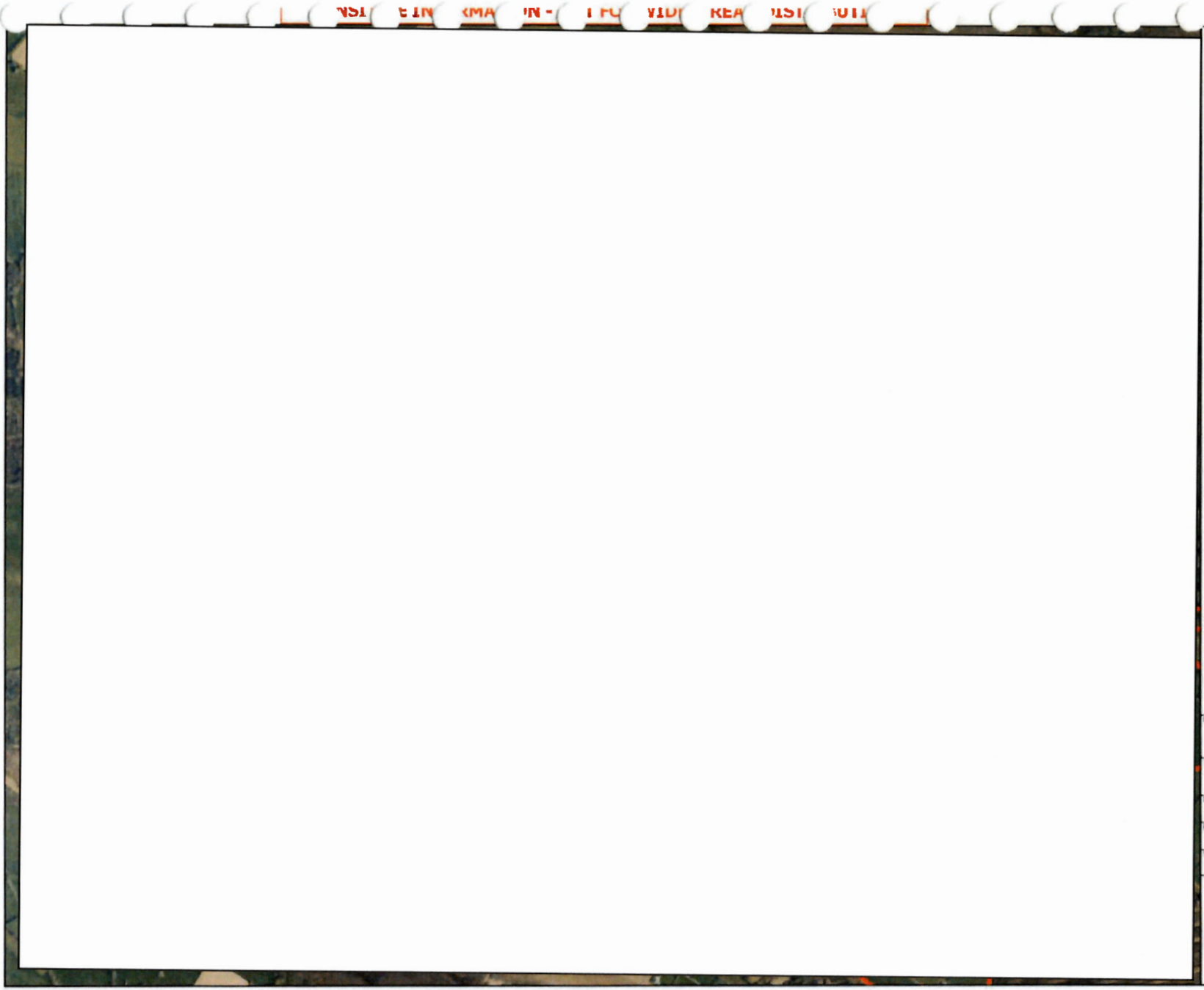
APPENDIX 1-3

CONFIDENTIAL APPENDIX

SENSITIVE INFORMATION – NOT FOR WIDESPREAD DISTRIBUTION

SENSITIVE INFORMATION - NOT FOR WIDESPREAD DISTRIBUTION





Map Legend

- EIAR Site Boundary
- Turbine Layout
- BOVP Locations
- Flight Observation

N

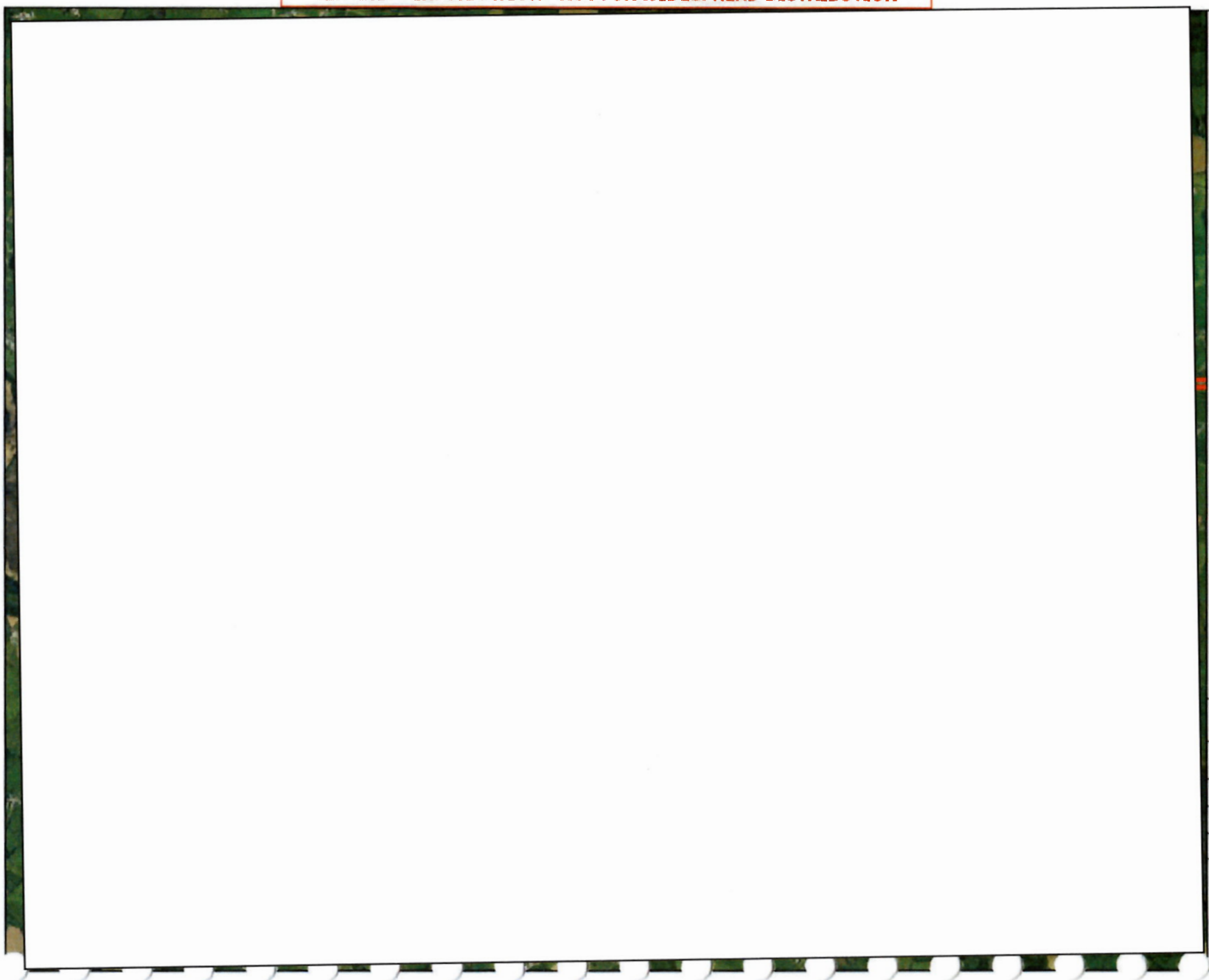
Barn Owl Observations
Breeding Barn Owl Surveys

Carrig Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 5.1
1:15000	29.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkoireland.ie
Website: www.mkoireland.ie

SENSITIVE INFORMATION - NOT FOR WIDESPREAD DISTRIBUTION



Map Legend

- EIAR Site Boundary
- Turbine Layout
- Observation

N

Barn Owl Observations Incidental Records

Carrig Renewables Wind Farm

D. Woods	P. Cregg
211016-d	Fig. 7.4
1:40000	29.11.2023

MKO
Planning and Environmental Consultants

APPENDIX 4

COLLISION RISK ASSESSMENT

MKO Planning and Environmental Consultants

Collision Risk Assessment

Carrig Renewables Wind Farm

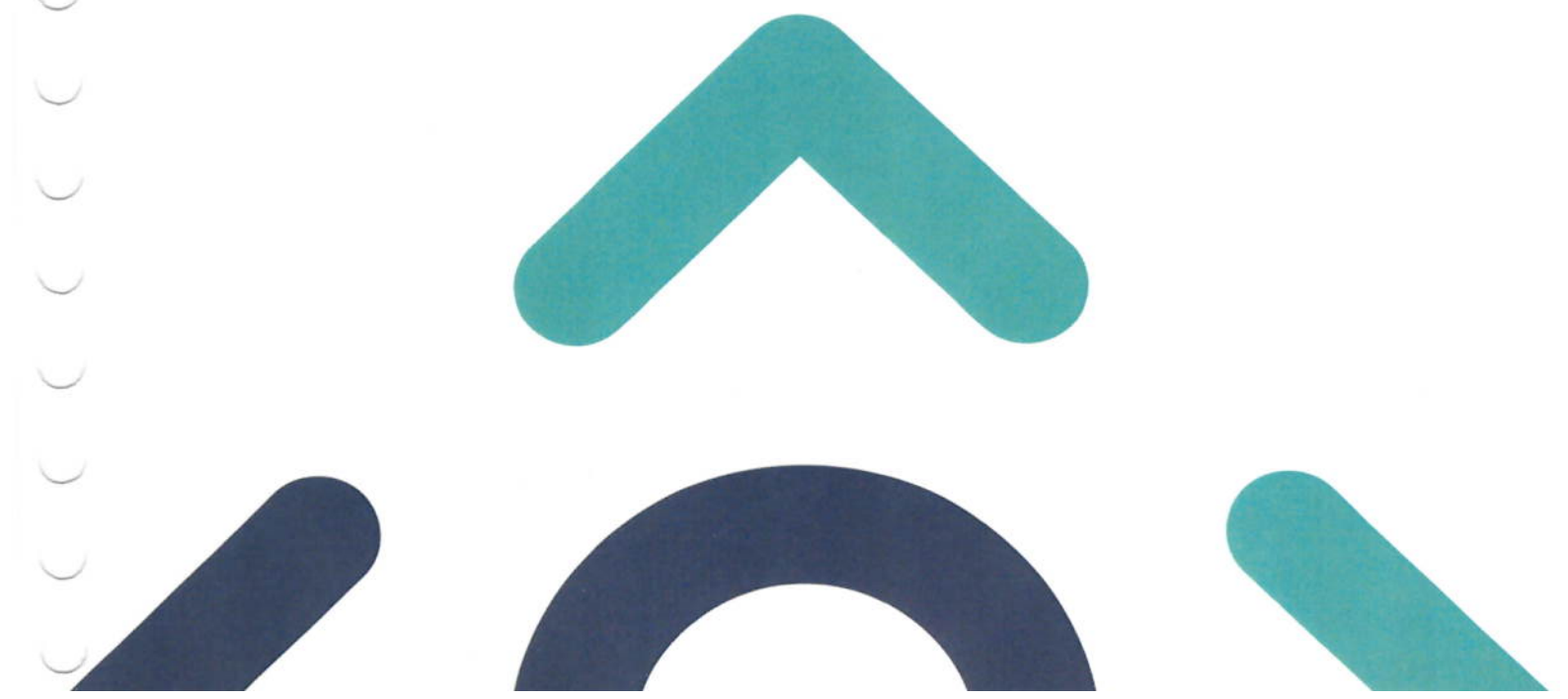


TABLE OF TABLES

RESULTS

Table 1-1 Model input values[1]. Updated values shown in bold text.

Species	Model	Period	Updated bird seconds at PCH (Scenario 1)	Updated bird seconds at PCH (Scenarios 2 & 3)
Golden Plover	random	Winter	121,150	145,870
Hen Harrier	random	Winter	180	80
Peregrine Falcon	random	All	222	855
Whooper Swan	random	Winter	7,652	2,614
Lapwing	random	Winter	40,300	12,880
Black-headed Gull	random	Winter	17,060	13,490
Black-headed Gull	random	Breeding	**648**	**901**
Curlew	random	Winter	80	20
Cormorant	random	Winter	40[2]	100
Cormorant	random	Breeding	300	300
Kestrel	random	All	**13,432**	**7,998**
Snipe	random	All	**1,799**	**1,245**
Buzzard	random	All	**19,765**	**18,093**
Sparrowhawk	random	All	710	535

[1] *Model input values are largely unchanged, the key updates are to the recorded seconds at possible collision height (PCH), number of survey seconds and bird availability. Please refer to the EIAR Appendix 7-5 for further discussion on model inputs.*
[2] *Note: Cormorant flights CA003 – CA017 were omitted from the CRM as they were predictably associated with birds commuting along the River Brosna in an area over 5km from the nearest turbine, and therefore not random in nature.*

The predicted number of transits per year and the collision risk is presented in Table 1-2, along with the final predicted number of collisions per year. Note that for birds that both flap and glide, the average collision risk percentage between flapping and gliding is taken.

Table 1-2 Results of CRM. Updated results shown in bold text.

Species	Survey Period	Model	Transits	Collision Risk			Collision Rate			Estimated Collisions Over Lifetime of Wind Farm	One Bird Collision
				flapping	gliding	overall	without avoidance	avoidance factor	with avoidance		
Scenario 1 (22m - 185m)											
Golden Plover	Winter	random	13838.9	4.24%	no gliding flight	4.24%	586.33	99.8%	1.173	41.06 birds	<1 year
								99.6%	2.345	82.08 birds	<1 year
Hen Harrier	Winter	random	8.5	5.8%	5.69%	5.74%	0.49	99%	0.005	0.18 birds	204 years
Peregrine Falcon	All	random	24	4.57%	4.3%	4.44%	1.07	98%	0.021	0.74 birds	47 years
Whooper Swan	Winter	random	857.8	7.6%	no gliding flight	7.6%	65.16	99.5%	0.326	11.41 birds	3 years
Lapwing	Winter	random	3183.8	4.62%	no gliding flight	4.62%	147.07	98%	2.941	102.94 birds	<1 year
Black-headed Gull	Winter	random	1347.8	4.9%	4.71%	4.81%	64.8	98%	1.296	45.36 birds	1 year
Black-headed Gull	**Breeding**	**random**	**47.5**	**4.9%**	**4.71%**	**4.81%**	**2.28**	**98%**	**0.046**	**1.37 birds**	**22 years**
Cormorant	Winter	random	4	6.17%	no gliding flight	6.17%	0.25	98%	0.005	0.18 birds	201 years
Cormorant	Breeding	random	63.2	6.17%	no gliding flight	6.17%	3.9	98%	0.078	2.73 birds	13 years
Curlew	Winter	random	6.4	4.97%	no gliding flight	4.97%	0.32	98%	0.006	0.21 birds	157 years
Kestrel	**All**	**random**	**655.6**	**4.91%**	**4.83%**	**4.87%**	**31.93**	**95%**	**1.596**	**47.89 birds**	**1 year**
Snipe	**All**	**random**	**160**	**4.08%**	**no gliding flight**	**4.08%**	**6.52**	**98%**	**0.13**	**3.91 birds**	**8 years**
Buzzard	**All**	**random**	**1116.8**	**5.35%**	**5.16%**	**5.26%**	**58.7**	**98%**	**1.174**	**35.22 birds**	**1 year**
Sparrowhawk	All	random	37.8	4.85%	4.79%	4.82%	1.82	98%	0.036	1.26 birds	27 years
Scenario 2 (36m - 185m)											
Golden Plover	Winter	random	11465	4.62%	no gliding flight	4.62%	447.74	99.8%	1.058	37.03 birds	1 year

Species	Survey Period	Model	Transits	Collision Risk			Collision Rate			Estimated Collisions Over Lifetime of Wind Farm	One Bird Collision
				flapping	gliding	overall	without avoidance	avoidance factor	with avoidance		
								99.6%	2.116	74.06 birds	<1 year
Hen Harrier	Winter	random	2.2	6.25%	6.11%	6.18%	0.13	99%	0.001	0.04 birds	742 years
Peregrine Falcon	All	random	132.6	4.98%	4.66%	4.82%	6.39	98%	0.128	4.48 birds	8 years
Whooper Swan	Winter	random	172.9	8.15%	no gliding flight	8.15%	14.09	99.5%	0.07	2.45 birds	14 years
Lapwing	Winter	random	1055.1	5.01%	no gliding flight	5.01%	52.9	98%	1.058	37.03 birds	1 year
Black-headed Gull	Winter	random	674.1	5.32%	5.08%	5.2%	35.05	98%	0.701	24.54 birds	1 year
Black-headed Gull	**Breeding**	**random**	**80.6**	**5.32%**	**5.08%**	**5.2%**	**4.19**	**98%**	**0.084**	**2.52 birds**	**12 years**
Cormorant	Winter	random	10	6.64%	no gliding flight	6.64%	0.66	98%	0.013	0.46 birds	75 years
Cormorant	Breeding	random	32.2	6.64%	no gliding flight	6.64%	2.14	98%	0.043	1.51 birds	23 years
Curlew	Winter	random	2.7	5.38%	no gliding flight	5.38%	0.15	98%	0.003	0.11 birds	339 years
Kestrel	**All**	**random**	**283.5**	**5.32%**	**5.22%**	**5.27%**	**14.93**	**95%**	**0.747**	**22.4 birds**	**1 year**
Snipe	**All**	**random**	**66.1**	**4.43%**	**no gliding flight**	**4.43%**	**2.93**	**98%**	**0.059**	**1.76 birds**	**17 years**
Buzzard	**All**	**random**	**930.7**	**5.79%**	**5.58%**	**5.68%**	**52.89**	**98%**	**1.058**	**31.73 birds**	**1 year**
Sparrowhawk	All	random	20.9	5.24%	5.18%	5.21%	1.09	98%	0.022	0.77 birds	46 years
Scenario 3 (30m – 185m)											
Golden Plover	Winter	random	13850.6	4.01%	no gliding flight	4.01%	555.6	99.8%	1.111	38.89 birds	1 year
								99.6%	2.222	77.77 birds	<1 year
Hen Harrier	Winter	random	2.5	6.09%	5.98%	6.04%	0.13	99%	0.001	0.04 birds	762 years
Peregrine Falcon	All	random	181.7	4.81%	4.52%	4.67%	7.62	98%	0.152	5.32 birds	7 years
Whooper Swan	Winter	random	198.1	7.98%	no gliding flight	7.98%	14.1	99.5%	0.07	2.45 birds	14 years

Species	Survey Period	Model	Transits	Collision Risk			Collision Rate			Estimated Collisions Over Lifetime of Wind Farm	One Bird Collision
				flapping	gliding	overall	without avoidance	avoidance factor	with avoidance		
Lapwing	Winter	random	1406.3	4.86%	no gliding flight	4.86%	61.11	98%	1.222	42.77 birds	1 year
Black-headed Gull	Winter	random	788.7	5.15%	4.95%	5.05%	35.48	98%	0.71	24.84 birds	1 year
Black-headed Gull	**Breeding**	**random**	**110.6**	**4.62%**	**4.37%**	**4.5%**	**4.97**	**98%**	**0.099**	**2.98 birds**	**10 years**
Cormorant	Winter	random	13.2	6.49%	no gliding flight	6.49%	0.76	98%	0.015	0.53 birds	66 years
Cormorant	Breeding	random	36.4	6.49%	no gliding flight	6.49%	2.1	98%	0.042	1.47 birds	24 years
Curlew	Winter	random	3.8	5.22%	no gliding flight	5.22%	0.18	98%	0.004	0.14 birds	284 years
Kestrel	**All**	**random**	**337.3**	**4.59%**	**4.48%**	**4.53%**	**15.28**	**95%**	**0.764**	**22.93 birds**	**1 year**
Snipe	**All**	**random**	**74.4**	**3.82%**	**no gliding flight**	**3.82%**	**2.84**	**98%**	**0.057**	**1.71 birds**	**18 years**
Buzzard	**All**	**random**	**1167.8**	**5.03%**	**4.8%**	**4.91%**	**57.36**	**98%**	**1.147**	**34.42 birds**	**1 year**
Sparrowhawk	All	random	25.3	5.09%	5.03%	5.06%	1.13	98%	0.023	0.81 birds	44 years

Table 1-3 Results Summary. The highest rates of predicted collisions have been written in bold text. Updated results are shown in bold and underlined text.

Species	Survey Period	Collision Risk (with avoidance)			Estimated Collisions Over Lifetime of Wind Farm			One Bird Collision		
		Scenario 1 (22-185m)	Scenario 2 (36-185m)	Scenario 3 (30-185m)	Scenario 1 (22-185m)	Scenario 2 (36-185m)	Scenario 3 (30-185m)	Scenario 1 (22-185m)	Scenario 2 (36-185m)	Scenario 3 (30-185m)
Golden Plover	Winter	**2.345**	2.116	2.222	82.08 birds	74.06 birds	77.77 birds	<1 year	<1 year	<1 year
Hen Harrier	Winter	**0.005**	0.001	0.001	0.18 birds	0.04 birds	0.04 birds	204 years	742 years	762 years
Peregrine Falcon	All	0.021	0.128	**0.152**	0.74 birds	4.48 birds	5.32 birds	47 years	8 years	7 years
Whooper Swan	Winter	**0.326**	0.07	0.07	11.41 birds	2.45 birds	2.45 birds	3 years	14 years	14 years
Lapwing	Winter	**2.941**	1.058	1.222	102.94 birds	37.03 birds	42.77 birds	<1 year	1 year	1 year
Black-headed Gull	Winter	**1.296**	0.701	0.71	45.36 birds	24.54 birds	24.84 birds	1 year	1 year	1 year
Black-headed Gull	Breeding	0.046	0.084	0.099	1.37 birds	2.52 birds	2.98 birds	22 years	12 years	10 years
Cormorant	Winter	0.005	0.013	**0.015**	0.18 birds	0.46 birds	0.53 birds	201 years	75 years	66 years
Cormorant	Breeding	**0.078**	0.043	0.042	2.73 birds	1.51 birds	1.47 birds	13 years	23 years	24 years
Curlew	Winter	**0.006**	0.003	0.004	0.21 birds	0.11 birds	0.14 birds	157 years	339 years	284 years
Kestrel	All	**1.596**	0.747	0.764	47.89 birds	22.4 birds	22.93 birds	1 year	1 year	1 year
Snipe	All	**0.13**	0.059	0.057	3.91 birds	1.76 birds	1.71 birds	8 years	17 years	18 years
Buzzard	All	**1.174**	1.058	1.147	35.22 birds	31.73 birds	34.42 birds	1 year	1 year	1 year
Sparrowhawk	All	**0.036**	0.022	0.023	1.26 birds	0.77 birds	0.81 birds	27 years	46 years	44 years

Table 1-4 below provides a comparison of the collision risk model as outlined in the EIAR as lodged, compared to the updated collision risk model which includes the most up to date survey data (from April 2023 to September 2023). The impact assessment for each species listed in the table below is provided in Section 7.5.2 of the EIAR as lodged. The effect of the collision mortality from the Wind Farm Site was accessed in relation to the county population and the background mortality for each species. The percentage increase in background mortality as outlined in the EIAR, as lodged, and updated increase in background mortality are presented in Table 1-4 below. This change is then assessed to establish if there is a significant change in the collision risk impact for each species.

Table 1-4 Comparison of Results.

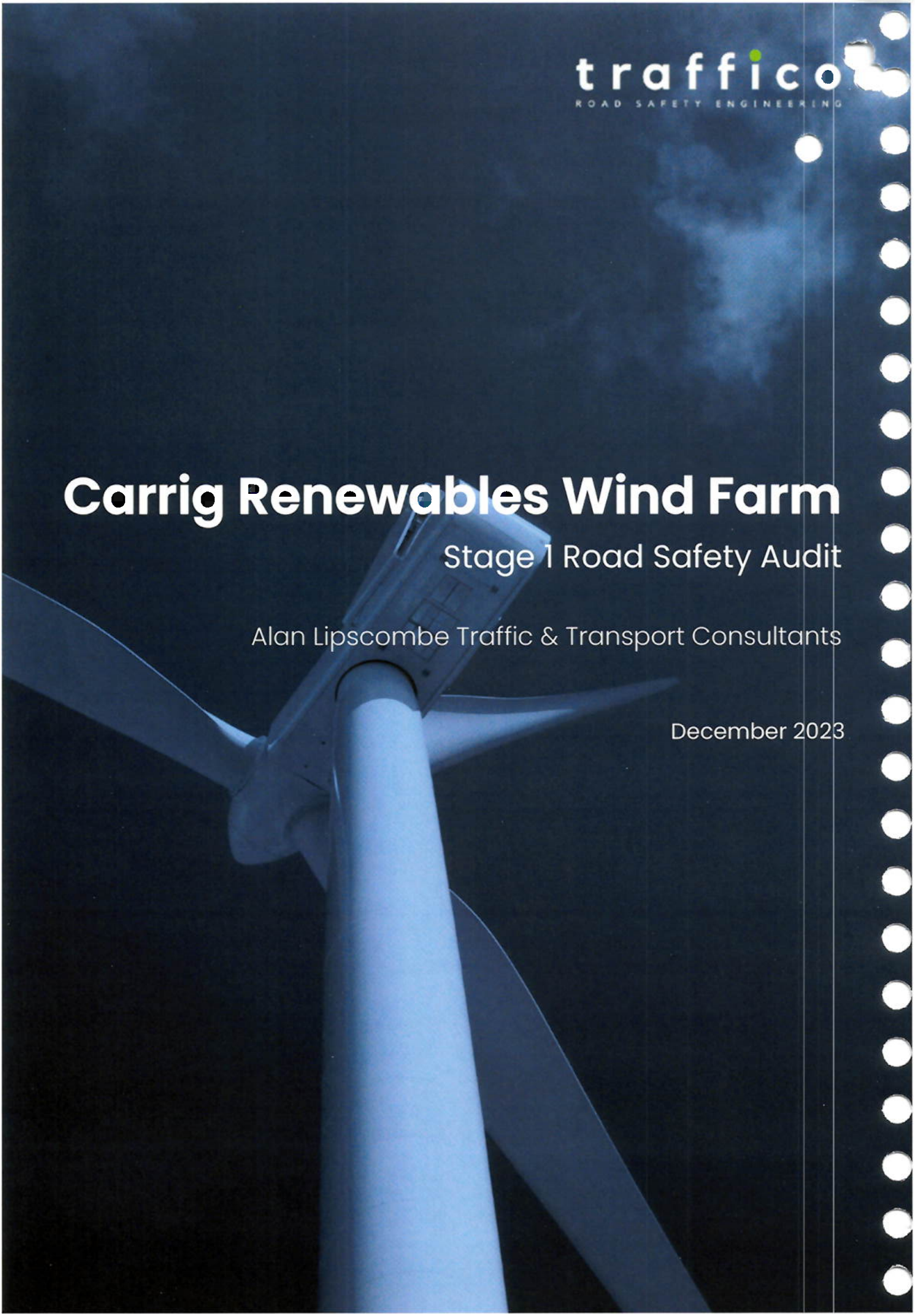
Species	Survey Period	Collision Risk (Sep20 – Mar23) (birds per year)	Updated Collision Risk (Sep20 – Sep23) (birds per year)	Difference (birds per year)	Change in Background Mortality (Original → Updated Collision Risk)	Change to Impact Assessment
Golden Plover	Winter	2.345	2.345	0	No change	No significant change (low (Percival, 2003)/long-term slight negative (EPA, 2022))
Hen Harrier	Winter	0.005	0.005	0	No change	No significant change (very low (Percival, 2003)/long-term imperceptible negative (EPA, 2022))
Peregrine Falcon	All	0.152	0.152	0	No change	No significant change (low (Percival, 2003)/long-term slight negative (EPA, 2022))
Whooper Swan	Winter	0.326	0.326	0	No change	No significant change (very low (Percival, 2003)/long-term imperceptible negative (EPA, 2022))
Lapwing	Winter	2.941	2.941	0	No change	No significant change (low (Percival, 2003)/long-term slight negative (EPA, 2022))
Black-headed Gull	Winter	1.296	1.296	0	No change	No significant change (low (Percival, 2003)/long-term slight negative (EPA, 2022))
Black-headed Gull	Breeding	0.194	0.099	-0.095	0.13% → 0.07%	No significant change (very low (Percival, 2003)/long-term imperceptible negative (EPA, 2022))
Cormorant	Winter	0.015	0.015	0	No change	No significant change (very low (Percival, 2003)/long-term imperceptible negative (EPA, 2022))
Cormorant	Breeding	0.078	0.078	0	No change	No significant change (low (Percival, 2003)/long-term slight negative (EPA, 2022))
Curlew	Winter	0.006	0.006	0	No change	No significant change (negligible – not brought forward as KOR in EIAR)
Kestrel	All	1.848	1.596	-0.252	1.15% → 0.99%	No significant change (low (Percival, 2003)/long-term slight negative (EPA, 2022))
Snipe	All	0.166	0.13	-0.036	0.13% → 0.11%	No significant change (very low (Percival, 2003)/long-term imperceptible negative (EPA, 2022))

Species	Survey Period	Collision Risk (Sep20 – Mar23) (birds per year)	Updated Collision Risk (Sep20 – Sep23) (birds per year)	Difference (birds per year)	Change in Background Mortality (Original → Updated Collision Risk)	Change to Impact Assessment
Buzzard	All	1.491	1.174	-0.317	n/a	No significant change (very low (Percival, 2003)/long-term imperceptible negative (EPA, 2022))
Sparrowhawk	All	0.036	0.036	0	n/a	No significant change (very low (Percival, 2003)/long-term imperceptible negative (EPA, 2022))

APPENDIX 5

ROAD SAFETY AUDIT

traffico
ROAD SAFETY ENGINEERING



Carrig Renewables Wind Farm

Stage 1 Road Safety Audit

Alan Lipscombe Traffic & Transport Consultants

December 2023

traffico

Carrig Renewables Wind Farm

Stage 1 Road Safety Audit

December 2023

Notice

This document and its contents have been prepared and are intended solely for Alan Lipscombe Traffic & Transport Consultants' information and use in relation to the Carrig Renewables Wind Farm.

Traffico assumes no responsibility to any other party in respect of or arising out of or in connection with this document and / or its contents.

Document History

JOB NUMBER: 230104			DOCUMENT REF: 230104RPT001_RSA1_Rev_2			
2	Final Issue	MD	MD	JW	MD	08 Dec 2023
1	Final Issue	MD	MD	JW	MD	07 Dec 2023
0	Draft Issue	MD	MD	JW	MD	30 Nov 2023
Revision	Purpose Description	Originated	Checked	Reviewed	Authorised	Date

Contents

Section

List of Tables

List of Figures

Appendices

1. Introduction

1.1 Report Context

This report describes the findings of a Stage 1 Road Safety Audit associated with the proposed Carrig Renewables Wind Farm.

The Audit has been completed by Traffico on behalf of Alan Lipscombe Traffic & Transport Consultants.

1.2 Extents Examined by Road Safety Audit

This road safety audit has examined the proposed temporary traffic management works at junction of the N52 / L5040 and the construction delivery route along the L5040 between the junction of the N52 / L5040 and the site access (Figure below courtesy of Alan Lipscombe Traffic & Transportation Consultants).

Figure 1.1 – Extents of Road Examined as Part of the Road Safety Audit Process

1.3 Details of Site Inspection

Date	Daylight / Darkness	Weather & Road Conditions
Tuesday 28th December 2023	Daylight	Cloudy with damp roads.

Table 1.1 – Site Inspection Details

1.4 The Road Safety Audit Team

The members of the Road Safety Audit Team have been listed following:

Status	Name / Qualifications	TII Auditor Reference No:
Audit Team Leader (ATL)	**Martin Deegan** BEng(Hons) MSc CEng MIEI	MD101312
Audit Team Member (ATM)	**Jason Walsh** BEng (Hons) PCert (RSA) CEng MIEI	JW3362499

Table 1.2 – Audit Team Details

1.5 Design Information Examined as Part of the Audit Process

The following drawing(s) were examined as part of the Road Safety Audit (RSA) process:

Drawing / Document No.	Drawing Title	Revision
Appendix 15_2 TMP	Traffic Management Plan for Carrig Renewables Wind Farm Development	D
Figure 1 (from TMP)	Section of L-5040 on construction Delivery Route	-
Figure 2 (from TMP)	Proposed HGV Holding Area on site access road	-
Figure 3 (from TMP)	Proposed HGV Holding Area options at east of L-5040	-
Figure 4 (from TMP)	Retention of Visibility Splay at N52 / L-5040	-
Figure 15-28 (from TMP)	Location 11 - N52 / L-5040, blade extended artic (81.5m blade) Swept Path Analysis	-
Figure 15-29 (from TMP)	Location 11 - N52 / L-5040, Tower Extended Artic Swept Path Analysis	-
Figure 15-30 (from TMP)	Location 12 – Access Junction on L-5040, junction layout Swept Path Analysis	-
Figure 15-31 (from TMP)	Location 12 – Access Junction on L-5040, junction layout with Visibility Splay	-

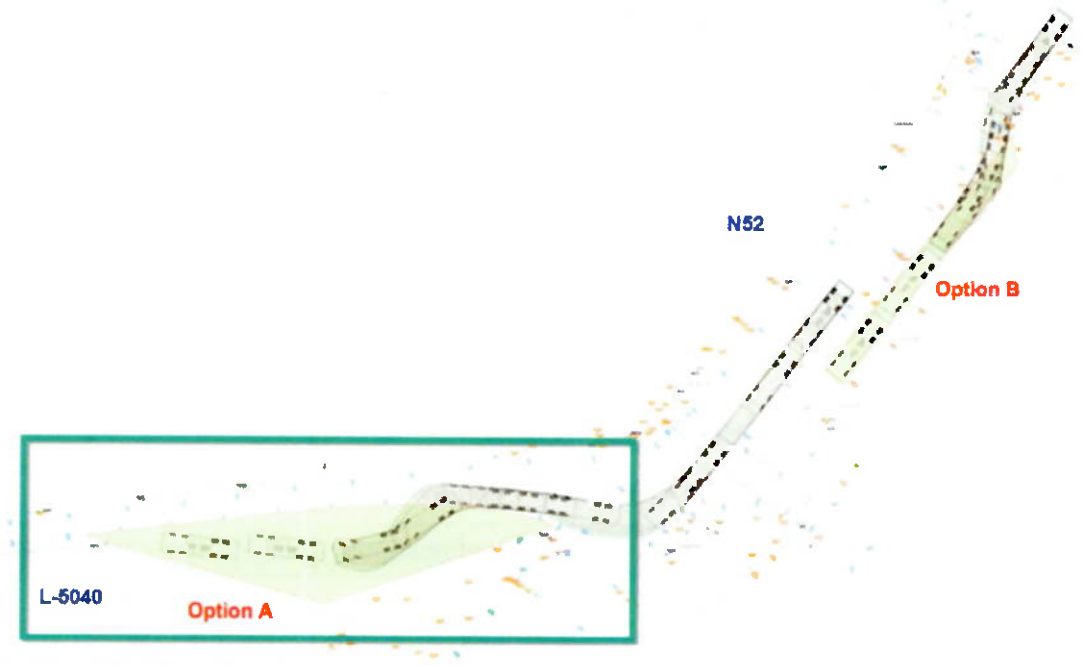
Table 1.3 – Designers Drawing List

1.6 HGV Holding Area at East End of L-5040

This Road Safety Audit Report considers only the preferred HGV Holding Area Option A (Option B has been discounted).

Figure 1.2 – Extract from Traffic Management Plan (Figure 3) Showing Preferred Option A

Figure 3 Proposed HGV holding area options at east end of L-5040



Included at 1:500 at rear of report

1.7 Road Safety Audit Compliance

Procedure and Scope

This Road Safety Audit has been carried out in accordance with the procedures and scope set out in TII publication number GE-STY-01024 - Road Safety Audit.

As part of the road safety audit process, the Audit Team have examined only those issues within the design which relate directly to road safety.

Compliance with Design Standards

The road safety audit process is not a design check, therefore verification or compliance with design standards has not formed part of the audit process.

Minimizing Risk of Collision Occurrence

All problems described in this report are considered by the Audit Team to require action in order to improve the safety of the scheme and minimise the risk of collision occurrence.

2. Road Safety Issues Identified

2.1 Problem: Forward Visibility from Holding Area A to Local Road

Location: **Junction N52 / L5040 - HGV Holding Area Option A to South of L-5040**

Forward visibility between the lead delivery vehicle and (opposing) eastbound traffic travelling on L-5040 was partially obscured by foliage in the field boundary. This could lead to opposition type conflicts and driver frustration, resulting in poor decision making.

Figure 2.1 – Ditch Growth Obscuring Forward Visibility to L5040

Recommendation

Forward visibility should be optimised here by removing foliage within the field boundary.

2.2 Problem: Depleted Priority Control Road Markings

Location: **L-5040 Approach to Junction with N52**

The centre line and stop road markings were heavily depleted and difficult to register when driving on the L-5040 towards the N52 mainline. This could lead to vehicles over-shooting the stop line, placing them at risk of conflict with high speed traffic on the N52.

Figure 2.2 – Depleted Stop Road Markings on L-5040 Approach to the N52

Recommendation

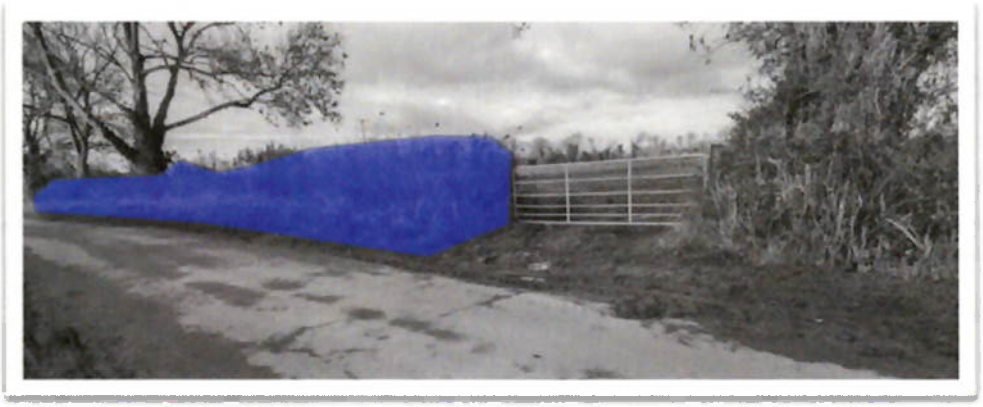
The centre line and stop road markings should be replenished prior to the commencement of the construction work.

2.3 Problem: Sightline for Drivers Looking to Right Obscured

Location: Windfarm Site Construction Access onto L-5040

Visibility looking to the right for drivers leaving the construction site was partially obscured by foliage within the adjacent field boundary. This is likely to increase the risk of a side impact type collision at the wind farm construction access.

Figure 2.3 – Foliage in Ditch Obscuring Sightlines to Right for Emerging Vehicles



Recommendation

Sightlines at the wind farm construction access should be maximised by cutting back and maintaining all boundary foliage falling within the envelope of visibility.

3. Audit Team Statement

3.1 Certification & Purpose

We certify that we have examined the drawing(s) listed in Chapter 1 of this Report.

Sole Purpose of the Road Safety Audit

The Road Safety Audit has been carried out with the sole purpose of identifying any features of the design which could be removed or modified to improve the road safety aspects of the scheme.

3.2 Implementation of RSA Recommendations

The problems identified herein have been noted in the Report together with their associated recommendations for road safety improvements.

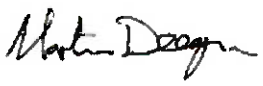
We (the Audit Team) propose that these recommendations should be studied with a view to implementation.

Audit Team's Independence to the Design Process

No member of the Audit Team has been otherwise involved with the design of the measures audited.

3.3 Road Safety Audit Team Sign-Off

Martin Deegan
Audit Team Leader
Road Safety Engineering Team
traffico

Signed: 
Date: 30th December 2023

Jason Walsh
Audit Team Member
Road Safety Engineering Team
traffico

Signed: 
Date: 30th December 2023

4. Designers Response

4.1 How the Designer Should Respond to the Road Safety Audit

The Designer should prepare an Audit Response for each of the recommendations using the Road Safety Audit Feedback Form attached in Appendix A.

When completed, this form should be signed by the Designer and returned to the Audit Team for consideration. See flow-chart following for further description.

Figure 4.1 – Road Safety Audit Sign-Off and Completion Process

4.2 Returning the Completed Feedback Form

The Designer should return the completed Road Safety Audit Feedback Form attached in Appendix A of this report to the following email address:

- Email address: martin@traffico.ie

The Audit Team will consider the Designer's response and reply indicating acceptance or otherwise of the Designers response to each recommendation.

Triggering the Need for an Exception Report

Where the Designer and the Audit Team cannot agree on an appropriate means of addressing an underlying safety issue identified as part of the audit process, an Exception Report must be prepared by the Designer on each disputed item listed in the audit report.

Appendix A

A.1 Road Safety Audit Feedback Form

Road Safety Audit Feedback Form

Scheme: Carrig Renewables Wind Farm

Audit Stage: Stage 1 Road Safety Audit | **Audit Date:** 30th November 2023

Problem Reference (Section 2)	Designer Response Section			Audit Team Response Section
	Problem Accepted (yes / no)	Recommended Measure Accepted (yes / no)	Alternative Measures or Comments	Alternative Measures Accepted (yes / no)
2.1	Yes	Yes	The Design Team agree with this point and confirm that all foliage within the area identified as the Holding Area A will be removed for the duration of the delivery phase of the Proposed Development, in order to maximise forward visibility along the L-5040. In addition, it is noted that all traffic movements leaving the holding area will be managed on site by site staff (flagman) and the holding area will be closed off at all other times by means of fencing.	Comment noted and accepted.
2.2	Yes	Yes	It is acknowledged that the existing road markings on the L-5040 approach to the junction with the N52 are worn. It is confirmed that the Applicant will offer to TCC that these road markings will be renewed prior to construction, and again, following the construction of the Proposed Development.	Comment noted and accepted.
2.3	Yes	Yes	The Design Team agree with this and submit Figure 15-31 of the EIAR for con-sideration in the Audit. The figure shows 3m x 90m visibility splays at the proposed access junction on the L-5040 that will be kept clear of all obstructions during both the construction and operational stages of the Proposed Development.	Comment noted and accepted.

Designer's Name:	Alan Lipscombe	Designer's Signature:		Date:	07/12/2023
Employer's Name:		Employer's Signature:		Date:	7/12/23.
Audit Team's Name:	Martin Deegan	Audit Team's Signature:		Date:	7th December 2023


traffico
e: hello@traffico.ie
w: www.traffico.ie