

# ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED CROAGHAUN WIND FARM, CO. CARLOW

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## VOLUME 2 – MAIN EIAR

## CHAPTER 16 – TELECOMMUNICATIONS AND AVIATION

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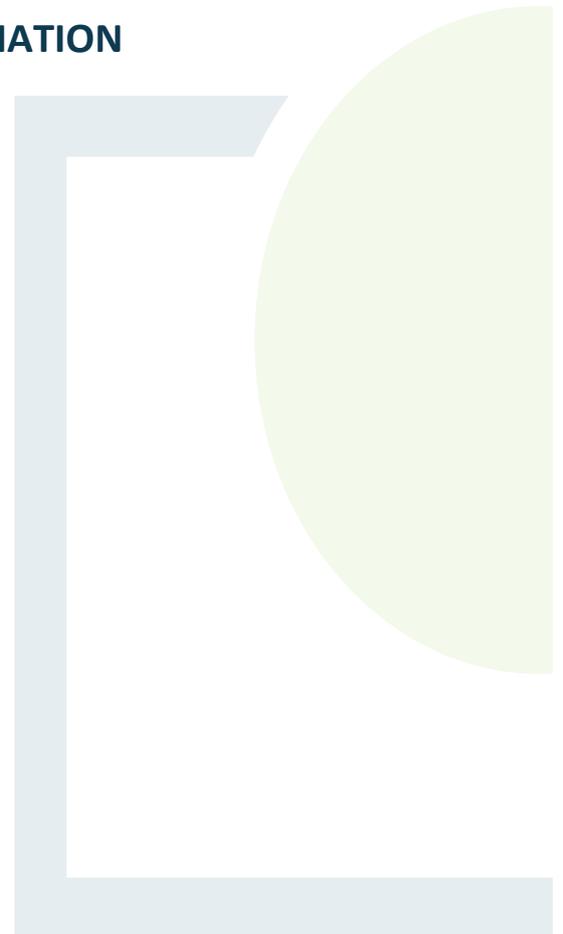
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## 16. TELECOMMUNICATIONS AND AVIATION

### 16.1 Introduction

This chapter has been prepared to examine the potential impacts from the proposed Croaghaun Wind Farm project, County Carlow, from local telecommunications services and aviation. The potential impacts associated with the replanting lands are found in Appendix 3-3 and Appendix 3-4 of Volume 3 of this EIAR. The potential effects of the proposed project are considered without mitigation and the residual effects post mitigation are described.

#### 16.1.1 Project Description

A detailed description of the project assessed in this EIAR is provided in Chapter 3 and is comprised of three main elements:

- The wind farm (hereinafter referred to as the **'main wind farm site'**);
- Turbine delivery route (hereinafter referred to as the **'turbine delivery route'** or **'TDR'**);
- Grid connection (hereinafter referred to as the **'grid connection'**).

The main wind farm site includes the wind turbines, internal access tracks, hard standings, the permanent meteorological mast, recreational amenity trail and associated signage, onsite substation, internal electrical and communications cabling, temporary construction compound, drainage infrastructure and all associated works related to the construction of the wind farm. The grid connection includes the buried grid connection cable route from the on-site substation to the existing grid substation at Kellistown, Co. Carlow and the proposed off-site substation, also at Kellistown. The turbine delivery route includes all aspects of the route from the M11/N30 junction to the site entrance including proposed temporary accommodation works to facilitate the delivery of wind turbine components. Replanting lands at Sroove Co. Sligo and Crag Co. Limerick have also been assessed for cumulative impacts. Reports detailing environmental assessments carried out on these sites are contained in Appendix 3.3 and 4.4 of this EIAR.

#### 16.1.2 Study Area

The study area associated with this assessment focuses on the main wind farm site as described above and in Chapter 3 and as illustrated in Figure 3-1 of this EIAR.

### 16.2 Methodology

This section of the assessment describes the methodology used in assessing the potential impact from the wind farm project on telecommunications and aviation. As part of the EIAR scoping and consultation exercise relevant telecommunication operators and aviation authorities were consulted.



Scoping was carried out in line with draft EPA Guidelines<sup>1</sup> and the ‘*Best Practice Guidelines for the Irish Wind Energy Industry 2012*’<sup>2</sup> which provides a recommended list of telecommunications and aviation stakeholders for consultation.

The following assessment methodology was applied in this assessment:

- Wide ranging consultation with all known telecommunications operators (TO’s) that could potentially be affected by the proposed wind farm.
- Consultation with the Irish Aviation Authority
- Comprehensive data gathering exercise to establish all known telecommunications links in the area
- Preparation of constraint mapping using data collected from the TO’s, to identify separation distance of the project from existing telecommunications links and masts and if necessary identify mitigation measures.
- Identification of aerodromes and airports in proximity to the project.
- Review of turbine delivery route in the context of overhead power and telecommunication lines.

### 16.2.1 Background and Potential Effects

#### 16.2.1.1 *Electromagnetic Interference*

In the context of wind farm development, electromagnetic interference is the impact of a wind farm on existing telecommunication services resulting in an unacceptable negative impact. The rotating blades of a wind turbine can occasionally cause interference to electro-magnetically-propagated signals. Such interference could, in theory, affect all forms of electromagnetic communications including:

- Satellite communications
- RADAR
- Cellular radio communications
- Aircraft instrument landing systems
- Air traffic control
- Terrestrial telecommunication links
- Television broadcasts

Impacts on aviation are considered in Section 16.3 of this Chapter.

For the purposes of the telecommunications impact assessment, point-to-point and point-to-multipoint signals are considered, both are used extensively throughout Ireland.

Point to point (or line of sight) is a wireless telecommunications transmission link between two nodes located at specified fixed points.

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<sup>1</sup> EPA, (2017) ‘Guidelines on the Information to be Contained in Environmental Impact Assessment Reports’

<sup>2</sup> IWEA. (2012). Best Practice Guidelines for the Irish Wind Energy Industry.



The term telecommunications link relates to the wireless transmission of data via radio frequencies between two fixed points. Telecommunications towers are generally used to transmit and receive signals over large distances. Radio frequency bands above 1 GHz are referred to as microwave radio links and are commonly used by telecommunications operators. These 'links' are used mainly by mobile phone operators, broadcasters and utilities or emergency service providers, to provide transmission networks that are flexible and cost effective.

Point to multipoint refers to the situation where a central node transmits to, and receives from, a number of independent locations. This includes television and radio broadcasting and reception, mobile phones (to the mobile phone mast) and land mobile systems. It is possible that houses in the immediate vicinity of turbines could require some remedial measures in relation to television reception.

Section 5.10 of the DoEHLG Planning Guidelines on Wind Energy Developments (2006) [the guidelines] states that:

*“wind turbines, like all electrical equipment, produce electromagnetic radiation, and this can interfere with broadcast communications. The interference with broadcast communication can be overcome by the installation of deflectors or repeaters. Planning authorities should advise the developer to contact the individual broadcasters, both national and local, and inform them of the proposals. A list of the licensed operators is available on the ComReg website at [www.comreg.ie](http://www.comreg.ie). Mobile phone operators should also be advised of the proposed development.”*

Section 7.15 of these guidelines state:

*“Conditions regarding measures to be taken to minimise interference with the transmission of radio and television signals, air and sea transport communications and other transmissions systems in the area may be necessary. Where electromagnetic interference is difficult to predict, conditions may require the developer to consult with the service provider concerned and undertake remedial works to rectify any interference caused.”*

On that basis, consultation was carried out with all known telecommunications operators (TOs) that could potentially be affected by the proposed wind farm.

The telecommunications network is constantly evolving and the potential impact of Croaghaun Wind Farm on local telecommunications signals is difficult to accurately predict for the following reasons:

- The network topology is likely to change significantly over time as a result of technological advances including migration towards 4G and the impending 5G networks
- Network operators are beginning to share services and consolidate the existing network which is likely to lead to an increase in the number of redundant and decommissioned services

#### 16.2.1.2 Broadcast Communications

Wind turbines as with any other large structure, have the potential to interfere with broadcast signals by acting as a physical barrier or causing a degree of interference to microwave links. The most significant effect at a domestic level relates to a possible flicker effect caused by the moving rotor, affecting, for example, radio signals. The most significant potential effect occurs where the wind farm is directly in line with the transmitter radio path.



### 16.2.1.3 Domestic Receivers

Depending on local topography, a domestic receiver may receive broadcast signals from more than one location. The strength of the signals varies with distance from the transmitter, and the receiver's antenna is generally always directed towards the most local, and usually strongest, broadcasting station.

There are two types of potential electromagnetic interference to domestic receivers, depending on the location of the receiver in relation to a wind farm. 'Shadowed' houses are located directly behind a wind farm, relative to the location from where the signal is being received. In this case, the main signal passes through the wind farm and the rotating blades can create a degree of signal scattering. In the case of viewers located beside the wind farm (relative to the broadcast signal direction), the effects are likely to be due to periodic reflections from the blade, giving rise to a delayed signal.

In both cases, i.e. shadowed houses located behind the wind farm and those located to the side of it, the effects of electromagnetic interference may depend to some degree on the wind direction, since the plane of rotation of the rotor will affect both the line-of-sight blockage to viewers located behind the wind farm and the degree of reflection to receivers located to the side.

### 16.2.1.4 Other Signal Types

Wind turbines have the potential to affect other signal types used for communication and navigational systems, for example tower-to-tower microwave communication links, and airborne and ground radar systems. Interference with radar systems occurs when wind turbines are located close to an airport or directly in line with the instrument landing approach. The nearest such operational airport to the main wind farm site is Kilkenny Airport, approximately 36km west of the proposed wind farm.

Potential effects on broadcast communications are generally easily dealt with by detailed micro-siting of turbines in order to avoid alignment with signal paths or by the use of repeater relay link, (i.e. reflective and or refractive panels)

### 16.2.1.5 Relevant Guidance

A review of relevant planning and policy documents was undertaken to identify relevant objectives relating to telecommunication, broadcasting and aviation. The following documents have been reviewed:

- 'Wind Energy Development Planning Guidelines' (WEG2006), published by the Department of the Environment, Heritage and Local Government (2006).
- 'Best Practice Guidelines for the Irish Wind Energy Industry', published by the Irish Wind Energy Association (2012).
- Carlow County Development Plan 2017-2022
- 'Tall structures and their impact on broadcast and other wireless services', published by Ofcom, a regulatory body independent from UK Government (2009).
- 'RF Measurement Assessment of Potential Wind Farm Interference to Fixed Links and Scanning Telemetry Devices', published by ERA on behalf of Ofcom (2009).



### 16.3 Scoping and Consultation

In accordance with the WEG 2006 as part of the EIAR scoping and consultation exercise, FT contacted the relevant national and regional broadcasters, fixed and mobile phone operators, Irish Aviation Authority, Dublin Aviation Authority and other relevant consultees. Consultation was undertaken to provide information on the proposed project to all relevant telecommunications service providers to discuss concerns and the potential for benefits of the proposed wind farm. A Scoping Report was sent as part of this consultation. The service providers were provided with the locations of the proposed turbines and asked to advise whether any impact could occur to their networks. A copy of the letter issued by Fehily Timoney (FT) to ESB Telecoms is provided in Appendix 16.1. A similar letter was sent to the other consultees.

Consulted stakeholders include authorities with associated telecommunication infrastructure, wireless broadcasters, cellular network providers, broadband suppliers and wireless internet service providers (WISP).

The responses received from the telecommunications, broadcasters and aviation consultees are summarised in Table 16.1 following:

**Table 16-1: Telecommunications and Aviation Scoping Consultees**

| Telecommunications Operator                   | Response Date | Impact Identified by Consultee | Further Comments                                   |
|---|---------------|--------------------------------|--|
| Irish Aviation Authority                      |               | No response                    | No response  |
| Telecommunications Section, An Garda Síochána |               | No response                    | No response  |
| IT Department, Carlow County Council          |               | No response                    | No response  |
| Irish Broadband/Imagine                       |               | No response                    | No response  |
| Digiweb Dublin Offices and Data Centre        |               | No response                    | No response  |
| Ripplecom                                     |               | No response                    | No response  |
| Magnet Networks                               |               | ?                              | No response  |
| BT Communications Ireland Ltd                 | 18/12/2020    | N/A                            | Acknowledged Receipt by Email, no further response |
| Dublin Airport Authority                      |               | No response                    | No response  |
| Commission for Communications Regulation      | 18.12.2019    | N/A                            | Acknowledged Receipt by Email, no further response |
| Novatel                                       |               | No response                    | No response  |
| Netshare (Vodafone)                           |               | No response                    | No response  |
| Three   | 20/2/2020     | No impact                      | No potential for interference                      |
| 2RN (RTE)                                     |               | No response                    | No response  |
| Virgin Media Ireland                          |               | No response                    | No response  |
| Eir (Eircom)                                  | 23.12.2019    | No impact                      | No potential for interference                      |



| Telecommunications Operator       | Response Date         | Impact Identified by Consultee | Further Comments              |
|-----------------------------------|-----------------------|--------------------------------|-------------------------------|
| Broadcasting Authority of Ireland | 20/12/2020            | No impact                      | No potential for interference |
| Vodafone                          |                       | No response                    | No response                   |
| Three                             | 10.1.2020 / 20.2.2020 | No impact                      | No response                   |
| ESB Telecoms                      | 20.2.2019             | No impact                      | No potential for interference |
| TETRA Ireland Ltd.                |                       | No response                    | No response                   |
| Premier Broadband                 |                       | No response                    | No response                   |
| Wireless Connect Ltd.             |                       | No response                    | No response                   |
| Irish Telecom                     |                       | No response                    | No response                   |
| TowerCom Ltd.                     |                       | No response                    | No response                   |
| Arra Communications               |                       | No response                    | No response                   |
| Wireless Connect Ltd.             |                       | No response                    | No response                   |

Four of the TOs provided a response. The responses received following consultations with the relevant bodies and the issues that they raised, are summarised in section 16.3.1.1.

### 16.3.1.1 Detailed Scoping Responses

#### Broadcasters

The Broadcasting Authority of Ireland stated that they are “not aware of any issues from existing wind farms into existing FM networks.” BAI also stated that “the proposed windfarms are not located close to any existing or planned FM transmission sites.” No impacts are anticipated on broadcasters.

#### Other Operators

Of the scoping responses received from telephone, broadband and other telecommunications operators, none have indicated that any infrastructure is impacted by the proposed project.

- **Three:** No existing or future links within the main wind farm site area
- **Eir / Eircom:** No transmission services which would be affected by proposed wind farm
- **ESB Telecoms:** there are no current microwave or polling radio links that would be impacted by the proposed wind farm.

All other operators did not respond to the request for a scoping response.



## Aviation

As noted in Table 16.1, FT undertook scoping consultation with the Irish Aviation Authority and the Dublin Airport Authority on 18.12.2019. No response from either the IAA or DAA was received.

## 16.4 Likely Significant Effects

### 16.4.1 Do- Nothing Scenario

If the proposed project were not to proceed, there would be no change to the existing telecommunications, broadcasting and aviation operations in the area.

### 16.4.2 Construction Phase

#### 16.4.2.1 *Telecommunications and Broadcasting*

The potential for electromagnetic interference from wind turbines occurs only during the operational phase of the project. There are no electromagnetic interference impacts associated with the construction phase of the proposed project on telecommunications and broadcasting in the area.

As the proposed grid connection will be constructed underground in the public roadway, there are no construction related impacts for electromagnetic interference and broadcasting interests in the area.

As identified and assessed in Chapter 13 Traffic and Transportation. The delivery of large turbine components has the potential to impact on existing telecommunications lines for a short period of time if services are disconnected or rerouted to facilitate the turbine delivery. Overhead utilities and obstructions will need to be removed at any locations that the blade is raised on the scissor lift. The removal of overhead utilities will be either temporary disconnections or permanent re-routing. Such works will be carried out by the utility providers in advance of turbine delivery to site.

The permanent re-routing of overhead utilities will result in a temporary disruption to power and telecommunications services for existing residents and business and will also involve temporary road works to 'underground' these services. Such works will be carried out over a number of days.

However if the Permanent re-routing of overhead utilities is not possible, temporary disconnections of overhead lines will be required on several occasions to facilitate the delivery of turbine blades and will be carried out during the delivery of the components. Advance disconnection works will be required before the first turbine deliveries. The schedule of turbine component deliveries will be determined by the turbine supplier however it is reasonable to assume that several convoys will be required to deliver all of the turbine components to site over the course of the turbine installation works which is expected to take place over the course of 4 months. It is reasonable to assume a worst-case scenario where temporary disconnections will be required during off peak times, on up to seven different occasions over the course of four months to facilitate convoys, with a duration of several hours between disconnection and re-connection of services on each occasion.

Temporary disconnections of overhead utilities will result in a significantly greater impact on local residents and businesses in terms of disruption to services than permanent diversions.



In some cases, accommodation works are required along the turbine delivery route such as hedge or tree cutting, relocation of powerlines/poles, lampposts, signage and local road widening. Any accommodation works within the public road corridor will be carried out in advance of the turbine deliveries in agreement with the local authority and subject to a road opening license.

The proposed grid connection will be constructed underground primarily along public roads. Such works could impact on underground telecommunication and broadband services. However in advance of the construction phase, records of such services will be obtained from the relevant service providers. Cable detection tools, a ground penetrating radar and slit trenches will be used, as appropriate, to verify the exact locations of existing services. The final locations of the proposed cable routes in the public roads and in the verge along the public road will be within the area indicated and assessed in this EIAR and will minimise conflicts with other services. A minimum separation distance of 300mm will be maintained with existing services. New cable ducts will be laid below existing services wherever possible.

#### 16.4.2.2 Aviation

There is potential for aviation impacts during the late construction phase of a wind farm project and prior to the commissioning of the proposed project as the wind turbines are constructed and placed in situ. The turbines could be considered to be an obstacle to low flying craft. No scoping response was received by the IAA or DAA citing any concerns with the proposed project, the closest airport to the proposed wind farm is Kilkenny Airport, a private licenced facility, c. 33.6km west, followed by Waterford Airport, c. 55.6km southwest. Noting the presence of existing adjacent turbines to the proposed wind farm and the distances to existing airports, it is considered therefore that there will be no significant effect on aviation from the proposed project during the construction phase.

As the proposed grid connection will be constructed underground within the public roadway, there are no construction related impacts on aviation interests in the area.

#### 16.4.3 Operational Phase

##### 16.4.3.1 *Telecommunications and Broadcasting*

Consultation regarding the potential for electromagnetic interference from the proposed project was carried out with the relevant national and regional broadcasters, fixed line and mobile telephone operators and other operators. No existing telecommunications infrastructure was found by the project team during a desk based survey within proximity of the proposed wind farm. According to the Comreg siteviewer<sup>3</sup>, the nearest telecommunication masts are located at Mount Leinster where 4 no. masts are located, approximately 5.4km southwest of the proposed turbines. There are 6 no. masts located at Bunclody, approximately 8km southeast of the proposed turbines. The combination of the findings of the consultation and desk based study confirms there will be no significant electromagnetic interference effect caused by the proposed project.

As set out in the construction impacts sections, with appropriate construction methodologies it is not expected that the proposed grid connection will have any operational related impacts on telecommunications and broadcasting interests in the area.

Impacts on overhead lines will only be during the construction process.

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<sup>3</sup> Comreg Siteviewer. <https://siteviewer.comreg.ie/#explore>



### 16.4.3.2 Aviation

The potential for aviation impacts during the operational phase of the project are similar to those as set out in the construction impact section. Noting that the IAA have not responded to the scoping request, the presence of existing adjacent turbines to the proposed wind farm and the distances to existing airports, it is considered therefore that there will be no significant effect on aviation from the proposed project during the operational phase.

As the proposed grid connection will be operating underground within the public roadway, there are no operational related impacts on aviation interests in the area.

## 16.4.4 Decommissioning Phase

### 16.4.4.1 *Telecommunications and Broadcasting*

As stated in Section 16.3.3.1 above, the potential for electromagnetic interference from wind turbines occurs only during the operational phase of the project. There are no electromagnetic interference impacts associated with the construction or decommissioning phases of the proposed project, and therefore no mitigation required.

The proposed grid connection will be left in situ underground within the public roadway. There are no decommissioning related impacts on telecommunications and broadcasting interests in the area.

If overhead lines have not been undergrounded at the time of decommissioning the impacts will be no greater than those assessed at construction stage.

### 16.4.4.2 Aviation

During the decommissioning phase, the turbines will be dismantled and removed from the site, thereby removing all potential obstacles to aviation interests. There will be no significant effects on aviation.

The proposed grid connection will be left in situ underground within the public roadway. There are no decommissioning related impacts on aviation interests in the area.

## 16.5 Mitigation Measures

### 16.5.1 Telecommunications and Broadcasting

As there is no potential for electromagnetic interference from the proposed project on telecommunications, there are no mitigation measures proposed for the construction, operation or decommissioning phase of the proposed project

The proposed grid connection will be left in situ underground within the public roadway. There are no telecommunications or broadcasting mitigation measures proposed. In advance of the main grid connection works an assessment will be carried out to define the precise alignment of the cable route within the corridor which has been assessed. This will include slit trenching with the aim of avoiding existing services in the road.



Overhead telecommunication lines will be placed underground or reinstated following turbine delivery to the site at the end of the construction phase. No mitigation measures are required.

#### 16.5.1.1 Aviation

No mitigation measures are required. In line with standard practice with wind farm developments the coordinates and elevations for turbines will be supplied to the IAA and DAA at the end of the construction phase. If aviation lighting is required by IAA or DAA for some turbines the developer commits to installing same.

The proposed grid connection will be left in situ underground within the public roadway. There are no aviation related mitigation measures proposed.

## 16.6 Cumulative Impacts

All known existing and proposed projects within the study area that could potentially generate a cumulative impact with the project during construction, operation and decommissioning were identified and examined as part of this assessment. The full list of projects are contained in Chapter 1. There will be no cumulative impacts relation to the proposed project and surrounding projects in relation to telecommunications or aviation.

During the development of any large project that holds the potential to effect telecoms or aviation, the Developer is responsible for engaging with all relevant Telecoms Operators and Aviation Authorities to ensure that the proposals will not interfere with television or radio signals by acting as a physical barrier. In the event of any potential impact, the Developer for each individual project is responsible for ensuring that the necessary mitigation measures are in place. Therefore, as each project is designed and built to avoid impacts arising, a cumulative impact is unlikely to arise.

## 16.7 Residual Effects

### 16.7.1 Telecommunications and Broadcasting

No residual effects are expected.

### 16.7.2 Aviation

No residual effects are expected.



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