

# 16.0 MATERIAL ASSETS: AVIATION, TELECOMMUNICATIONS AND OTHER

# 16.1 INTRODUCTION

The term 'Material Assets' can relate to both finite and renewable resources, which can be of natural or anthropogenic origin. Some of these resources, such as minerals, stone, soil, water, air, traffic and transportation, land use, human health and amenity resources are assessed separately in other chapters of the Environmental Impact Assessment Report (EIAR) (Chapter 6: Population & Human Health; Chapter 9: Land, Soils & Geology; Chapter 10: Hydrology & Hydrogeology; Chapter 11: Air Quality; Chapter 15: Traffic & Transportation and Chapter 18: Climate). Electromagnetism is discussed from a human health perspective in Chapter 6 (Population & Human Health) in Section 6.4.2.2. Therefore, this chapter evaluates and assesses the likely significant effects that the proposed development could have on communications system types in addition to electricity and water infrastructure, and waste services:

- Aviation Communications, Navigation and Surveillance Systems;
- Telecommunications Networks;
- Television Networks; and,
- Other Material Assets: Electricity and water infrastructure, and waste services.

# 16.1.1 STATEMENT OF AUTHORITY

This chapter has been written by Ian Heanue, Project Manager and Energy Engineer in TOBIN. Ian holds a BEng in Energy Engineering and has over 6 years' experience in project management.

This chapter was prepared with input by the Ai Bridges Engineering Department which has in excess of 145-man years of experience in aviation, telecommunications\electromagnetic interference EIAR Studies. The aviation and Telecommunications assessments were completed and managed by Kevin Hayes of Ai Bridges. Kevin is a qualified engineer and holds a B. Eng. Hons and M. Eng Hons in Electronics and Communications Engineering with 23 years of experience in network design, deployment of telecommunications systems and extensive working knowledge of software modelling of telecommunications and aviation networks.

Ai Bridges is a leading supplier of telecommunications solutions and software services for the telecommunications industry in the Irish marketplace. Ai Bridges has designed and commissioned telecommunications projects for clients throughout Ireland and abroad and has worked successfully with leading vendors to bring telecommunications software solutions to market for the renewable energy sector.

Ai Bridges has been supplying telecommunications and aviation assessment solutions to the wind farm industry throughout the Republic of Ireland, Northern Ireland and the rest of the UK since 2007. Aviation, telecommunications and Electromagnetic Interference impact study reports have been undertaken on behalf of wind farm operators on the potential impact on telecommunications networks and transmission networks of proposed wind farm developments. Ai Bridges has also developed a 3D software prediction model that can predict wind farm development interference impacts on television transmission and aviation networks.

This chapter has been reviewed by Orla Fitzpatrick, Technical Director in TOBIN. Orla has 20





years' experience working in the delivery of EIA projects in environmental consultancy. She holds a BSc in Geophysics and MSc in Environmental Consultancy and has considerable experience as a technical approver of environmental deliverables for major infrastructure projects.

# 16.2 ASSESSMENT METHODOLOGY

The methodologies used in Aviation, Telecommunications and other material asset assessments are provided in Sections 16.2.1, 16.2.2 and Section 16.2.3 respectively. The detailed Assessment Methodology for the Aviation assessment is provided within the "Derryadd Wind Farm Aviation Review Statement" which is included in Appendix 16-1. The detailed Assessment Methodology for the Telecoms EMI assessment is provided within the "Derryadd Wind Farm Telecoms Impact Assessment Report" which is included in Appendix 16-2.

This chapter had been guided by IWEA's Best Practice Guidelines for the Wind Energy Industry<sup>1</sup> Chapter 6.3.10 of the Irish Wind Energy Association Best Practice Guidelines for feasibility studies states the following ...

'For aviation, a number of references have been used including the European Organization for the Safety of Air Navigation EUROCONTROL Guidelines<sup>2</sup> as well as UK Civil Aviation Authority (UK CAA) guidelines<sup>3</sup> on the impact of wind turbines on aviation'

The Assessment has also been carried out in accordance with the Environmental Protection Agency's (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022).

# 16.2.1 AVIATION

## Assessment Methodology

There are three primary stages in preparing and compiling an aviation review of the proposed wind farm site and surround environs which are explained in the section below:

- Consultation with relevant aviation authorities;
- Undertaking field surveys of the receiving environment; and,
- Undertake desktop survey network modelling and analysis.

The aviation assessment takes into consideration; controlled, uncontrolled and en-route civil aviation airspace as well as military airspace.

## Aviation Consultations

Consultation commenced with relevant aviation operators in September 2022, and again in October 2024 who are requested to raise any concerns they have regarding the impact of the proposed development on Aeronautical Surfaces, Instrument Flight Procedures, Navigational

<sup>&</sup>lt;sup>3</sup> CAP 764: Chapter 2: Impact of wind turbines on aviation', Appendix A to SUR 13: Guidance on Wind Farm Mitigation Techniques



<sup>&</sup>lt;sup>1</sup> IWEA Best Practice Guidelines for the Irish Wind Energy Industry (March 2012)

<sup>&</sup>lt;sup>2</sup> How to Assess the Potential Impact of Wind Turbines on Surveillance Sensors



Aids, Communications and Radar Surveillance networks. All Consultee responses can be found in Appendix 1-5 (Consultee responses) of this EIAR.

## Aviation Field Surveys

Field surveys of the nearest aeronautical infrastructure\ aerodromes sites were undertaken to assess aviation communications infrastructure. The consultation process is used to assist in identifying aeronautical infrastructure that could be impacted by the proposed wind farm development. (e.g. presence of radar surveillance or VOR systems).

## Aviation Desktop Survey and Analysis

Desktop surveys were conducted, and the relevant aviation infrastructure plotted on a specialised radio planning tool, then shown in relative to the proposed development. The radio planning tool uses GIS and terrain mapping databases to enable accurate 3D modelling. An assessment can then be made to determine if there will be any impacts on aviation communication networks due to the proposed development. Appendix 16-1 Aviation Review Statement further details the reviewed as part of the aviation desktop survey and analysis.

# 16.2.2 TELECOMMUNICATIONS

#### Assessment Methodology

There are three primary stages in preparing and compiling a Telecommunications Study which are explained in the section below:

- Consultation with relevant telecom operator;
- Field Surveys of the Receiving Environment; and,
- Desktop Survey Network modelling and analysis.

A summary of each of these stages is provided below.

#### Telecom Operator Consultations

Consultations commenced with telecom operators in September 2022, with further consultation in October 2024, who are then requested to raise any concerns they have regarding the impact of the proposed wind farm on their networks. The consultation process is used to assist in identifying telecoms infrastructure that could be impacted by the proposed development. This consultation exercise was carried out with the following extensive list of telecommunications stakeholders:

- An Garda Siochana;
- Airwaves
- Broadcasting Authority of Ireland;
- BT Ireland
- Department. Of Defence
- CIE / Irish Rail
- EIR;
- Enet Telecommunications (formally Airspeed);
- ESB Networks;
- Imagine Broadband;





- Irish Aviation Authority;
- Uisce Eireann;
- Longford County Council
- 2RN;
- Tetra Ireland;
- Three Ireland (Hutchison);
- Viatel;
- Virgin Media; and,
- Vodafone.

## Field Surveys

Field surveys of telecom mast-sites in the vicinity of the proposed wind farm are undertaken. Field surveys were undertaken and the co-ordinates of communication masts within 5 km of the proposed wind farm site are recorded. During the field surveys of the communication sites, approximations of antenna size, bearing and height are made for the antennas installed on each of the masts surveyed.

## Desktop Survey Network Modelling and Analysis

A desktop survey was carried out to plot the proposed wind turbines using a specialised radio planning tool. The radio planning tool uses GIS (geographic information system) and terrain mapping databases to enable accurate modelling. The findings from the consultations and field surveys are collated. The communications networks that require further analysis are identified. 3D network modeling is then used to assess the impact of the turbines on the communications networks. The results from the network modeling are used to inform the design of the wind farm and determine if mitigation measures are required.

# 16.2.3 OTHER MATERIAL ASSETS

#### Assessment methodology

In order to assess the potential for effects to electricity, gas and water infrastructure, and waste services, a scoping exercise was carried out to a number of key consultees in September 2022 and October 2024, including Commission for Regulation of Utilities, Water & Energy, ESB, Eirgrid, Uisce Éireann and both Longford County Council and Roscommon County Council. All Consultee responses can be found in Appendix 1-5 (Consultee responses) of this EIAR. Online resources such as 'Dial Before You Dig' from Gas Networks Ireland were also utilised to check for locations of significant services. Full details of the scoping exercise that was carried out are provided in Chapter 1 of this EIAR (Introduction).

## 16.2.4 ASSUMPTIONS AND LIMITATIONS

Due diligence checks are conducted on all data received however, the findings of the Aviation and EMI Telecoms assessments are subject to the accuracy of the information provided to Ai Bridges by the Telecoms Operators (e.g. telecoms mast co-ordinates, radio antenna heights, radio link status etc.). The accuracy of the data received is verified during the field surveys and any inaccuracies found are highlighted by the Telecoms Operators and use of the accurate survey data is agreed with the Telecoms Operators.





# 16.3 EXISTING ENVIRONMENT

# 16.3.1 AVIATION

The nearest significant aviation installations to the proposed wind farm site are Ireland West International Airport, the privately-owned Aerodrome at Abbeyshrule and the Irish Aviation Authority (IAA) Radar Station at Dublin Airport. The Irish Air Corps (IAC) also have a low-level flying route along the N4 national primary road. Distances and locations of these aeronautical surfaces from the proposed wind farm site are detailed in Table 16-1 and can be seen in Figures 16-1 & 16-2. Further detailed are included in appendix 16-1 (Derryadd Wind Farm Aviation Review statement). Additional aviation installations, not listed below, were assessed (i.e. Casement Aerodrome, Baldonnel) and are included in appendix 16-1.

Installation	Description	Approximate Distance from proposed wind farm site	
Ireland West Airport	International Airport Single Runway (Code 4)	61 km	
Abbeyshrule Aerodrome	Privately-owned Aerodrome Single Runway (Code 1)	14 km	
IAA Radar Station (Dublin Airport)	Primary Surveillance Radar (PSR)/ Secondary Surveillance Radar (SSR) station	107 km	
IAA Radar Station (Dooncarton)	AA Radar Station (Dooncarton) Secondary Surveillance Radar (SSR) station		
Shannon Airport Radar	Primary Surveillance Radar (PSR)/ Secondary Surveillance Radar (SSR) station	124 km	
Woodcock Hill Radar	Secondary Surveillance Radar (SSR) station	114 km	
IAC Low-level Flight Route	3 NM restricted area either side of N4	4.2 km	

Table 16-1: Existing Environment - Aviation







Figure 16-1: Aviation Installations in Relation to Proposed Wind Farm Site



Figure 16-2: Radar Surveillance Sites in Relation to Proposed Wind Farm Site





A review of additional aviation systems, including Obstacles Limitation Surfaces (OLS), minimum Sector Altitudes (MSA), Instrument flight procedures and Communications, Navigation and Surveillance System Safeguarding in relation to the proposed wind farm site was carried out. Further details on the assessment carried out for each of these aviation systems can be found in Appendix 16-1 Derryadd Wind Farm Aviation Review Statement.

The nearest military installation to proposed development is Custume Barracks in Athlone. The proposed development is more than 12 km outside the 5 NM restricted area around the military barracks in Athlone. The proposed development is not located in a low flying training area and is over 60 km from the restricted area around Baldonnel Aerodrome.

The Garda Air Support Unit is based at Casement Aerodrome, Baldonnel, approximately 100 km from the proposed wind farm site. The unit consists of one fixed-wing aircraft and two helicopters. The air ambulance service in Ireland is known as the Emergency Aeromedical Service (EAS) and operate two air ambulance bases, Custume Barracks, in Athlone, Co Westmeath and Rathcoole Aerodrome, Rathcoole in Mallow, Co Cork. The nearest base being Custume Barracks in Athlone.

Additional detail regarding the existing aviation environment can be found in Appendix 16-1 Derryadd Wind Farm Aviation Review Statement.

# 16.3.2 TELECOMMUNICATIONS

The Telecommunications assessment found that there are nineteen existing radio links in the vicinity of the proposed wind farm site. A description of each of these radio links is provided in Table 16-2. The radio links are shown relative to the proposed wind farm site in Figure 16-3. Additional detail regarding the existing telecommunications environment can be found in Appendix 16-2 - Derryadd Wind Farm Telecoms Impact Assessment.





#### Table 16-2: Existing Radio Links in vicinity of proposed wind farm site

Operator	Radio Link Description	
Freet	PTP microwave radio link from Cairn Hill to Fermoyle N.S.	
Enet	PTP microwave radio link from Sliabh Bawn to Aughine CC.	
	PTP microwave radio link from Barnacor to Garrycam	
Eir	PTP microwave radio link from Woodlawn to Garrycam	
	PTP microwave radio link from Emoe Cross to Garrycam	
	PTP microwave radio link from Cornadowagh to Garrycam	
ESB Network	PMP UHF radio link from Garrycam to Roscommon	
	PMP UHF radio link Garrycam to Aghamore	
Imagine Broadband	PTP microwave radio link from Barnacor to Cairn Hill.	
	PTP microwave radio link from Cairn Hill to Maghera.	
2RN	PTP microwave radio link from Cairn Hill to Coolderry (#1)	
	PTP microwave radio link from Cairn Hill to Coolderry (#2)	
Three Ireland	PTP microwave radio link from Lanesborough to Sliabh Bawn	
	PTP microwave radio link from Garrycam to Sliabh Bawn	
Virgin Media	Media PTP microwave radio link from Lanesborough N.S. to Sliabh Baw	
Vodafone	PTP microwave radio link from Woodlawn to Garrycam	
	PTP microwave radio link from BnM Mount Dillon to Ballyfeeny.	
	PTP microwave radio link from Lanesborough to Ballyfeeny.	
	PTP microwave radio link from Cornadowagh to Garrycam.	





## Derryadd Wind Farm - EIAR

#### Figure 16-3: Existing Environment – Telecommunications







# 16.3.3 OTHER MATERIAL ASSETS

No response was received from Longford County Council and Roscommon County Council relating to Material Assets. Uisce Éireann responded and specified that they do not have any site-specific concerns relating to water supply networks while other consultees did not provide a detailed response. Further details of the scoping responses that were received are provided in Section 1.13 of Chapter 1 (Introduction) and appendix 1-5 (Consultee Responses) of this EIAR.

## 16.3.3.1 ESB Supply

There are a number of overhead electricity lines within the proposed wind farm site boundary and surround environs, most notably the Lanesborough-Richmond 110kV overhead line, (Figure 16-3) it is also possible that there might be some underground electricity cables discovered during the proposed construction works, particularly near public roads and houses or farmyards (such as along the proposed grid connection route road crossing and the proposed areas of works on the TDR).

## 16.3.3.2 Gas Supply

There were no existing gas network pipes found within the surrounding area of the proposed wind farm site. There was a gas pipe located adjacent to one of the proposed temporary works areas for the TDR on the N6/N61 roundabout in Roscommon, near Athlone Town, see figure 16-4 detailing the existing gas line.

#### *Figure 16-4 Gas Networks Adjacent to N6/N61 Roundabout*







## 16.3.3.3 Waste Management

In 2000 the MountDillion Bog Group, of which the proposed wind farm site is located, fell under Integrated Pollution Control (IPC) Licence P0504-01. Condition 7 of the licence compels Bord na Móna to correctly dispose of waste to licenced facilities. As part of the licence compliance, Bord na Móna must dispose of waste appropriately to licenced waste facilities. Since peat extraction ceased at the Wind Farm Site in 2019, onsite activities have been reduced considerably. However, waste materials continue to be removed off site if recycling is not possible and disposed by licenced waste contractors in accordance with Condition No. 7 of the IPC Licence.

Ordnance Survey Ireland (OSI) historic 6-inch and 25-inch mapping illustrates that in the late 19th and early 20th Century, the proposed wind farm site consisted of largely unaltered raised peat bog, with small islands of agricultural land and fields located on slightly raised ridges within the bog. These areas of agricultural land fall within small islands that are excluded from the proposed development boundary. The OSI aerial imagery (1995-2013) shows the widespread industrial peat extraction across the site, with deep drains and machine cutting in evidence.

A desktop study of available information from the EPA was undertaken to identify any waste or industrial licenced facilities within a 10 km radius of the proposed wind farm site.

No waste sites were identified within the 10 km search area. The nearest licenced waste facilities to the proposed wind farm site is Balldonagh Landfill - W0028, which is situated in Athlone, Westmeath, approximately 25 km south of the proposed wind farm site and Roscommon Landfill Facility – W0073, which is situated just outside Roscommon Town on the N63, approximately 14 km west of the proposed wind farm site.

In terms of industrial licenced (IE / IPC) sites (currently active/licenced) the following sites were identified:

- P0610 Lough Ree Power Station (Approximately 2 km west);
- P1082 JMW Farms (IRL) Limited (Approximately 500 m east);
- P1084 Kepak Longford Unlimited Company (Approximately 9 km south);
- P0408 DDS Brady Farms Limited (Approximately 11.5 km east);
- P0221 Atlantic Mills Limited (Approximately 5.3 km north east);
- P0908 C&D Foods (Approximately 18 km east);
- P0327 Glennon Brothers Timber Limited (Approximately 12 km north east); and,
- P0226 Barbour Threads Limited (Approximately 11 km north east).
- P0855 Kiernan Structural Steel Limited (Approximately 14 km north east)

Other IE / IPC licence records identified in the vicinity of the proposed wind farm site are no longer active (i.e., surrendered status).

#### *16.3.3.4 Water Supply & Distribution*

It is assumed that there are likely to be underground water pipes along public roads (particularly for the proposed areas of work on the TDR) as well as occasionally within agricultural land.

#### *16.3.3.5 Storm/Foul Water Drainage*





While no major storm water or foul water features were highlighted during scoping, it is assumed that there are likely to be underground drainage features along public roads (particularly for the proposed areas of works on the TDR). Pre-construction detailed surveys will help identify the locations of these services.

# **16.4 POTENTIALEFFECTS**

The potential effects on Aviation, Telecommunications and Other Material Assets are provided in Sections 16.4.2 to 16.4.4 which follow.

# 16.4.1 DO-NOTHING SCENARIO

If the proposed development were not to proceed, the site would continue to be managed under the requirements of the relevant IPC licence and therefore the ongoing site management and environmental monitoring, decommissioning activities would continue. In addition, if the proposed development were not to proceed, the implementation of peatland rehabilitation plans as required under IPC License would occur.

In addition, if the proposed development were not to proceed, the potential to impact on material assets, telecommunications and aviation impacts would be removed. However, if the Proposed Development were not to proceed, the opportunity to capture part of Longford's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment and to diversify the local economy would also be lost.

# 16.4.2 CONSTRUCTION PHASE

## 16.4.2.1 Construction Phase – Aviation

Taking into account the works proposed as part of the proposed development, the consultation feedback which was obtained, and the location remote from aviation infrastructure, as assessed in the Derryadd Wind Farm Aviation Review Statement (appendix 16.1), there will be no potential effects expected during the construction phase in relation to aviation.

## *16.4.2.2 Construction Phase – Telecommunications*

The proposed wind farm site layout has been designed to avoid any effects to telecommunications links in the area, therefore, there will be no potential for effects during the majority of the construction phase. During the final stages of construction there may be some crane operations that could lead to radio link-paths being partially obstructed. This could lead to some radio signal degradation. In the absence of any mitigation, this would result in an unlikely slight short-term negative effect.

#### *16.4.2.3 Construction Phase - Material Assets*

## ESB / Water Supply and Distribution

It is proposed onsite substation will connect into the national electricity grid via a loop-in connection to the Lanesborough-Richmond 110kV Overhead Line (OHL) Network which transverses the proposed wind farm site. There is potential for this line to be effected through interference or breakage during the construction phase. This would have a brief negative effect





on electricity supply.

It is not anticipated, although possible, that underground utilities will be encountered during the construction of the proposed development, with the exception of the locations within public road corridors, such as the locations of the works areas along the TDR. A potential effect is damage to existing utilities services within the proposed development. Damaging an underground electricity cable may have the potential to cause serious harm or death (see Chapter 17 – Major Accidents and Natural Disasters). In the unlikely event that any unknown services are discovered, there is potential to affect local network supplies, causing a brief slight negative effect. Severing a water pipe, particularly a public supply pipe has the potential to interrupt local water supply in the area.

#### **Gas Supply**

The accommodation works footprint at the N6/N61 Roundabout does not appear to directly overlap with the gas pipelines at this location, however they are close (within 5 m). During construction the locations of the pipes will be marked by Gas Networks Ireland to ensure there are no ground works within the immediate areas of the gas lines and excavations will be imperceptible (i.e. topsoil/splitter island stripping only).

#### Waste Management

The construction phase will have the potential to produce municipal waste (site office, canteen), wastewater (site welfare facility) and construction waste (wood, packaging, metal, etc.) which will need to be processed at appropriate local licenced waste processing facilities. Details on peat and spoil materials requiring management for the proposed development are provided and assessed as part of Chapter 9 (Land, Soils and Geology).

Based on the EPA Waste National Statistics – Summary Report for 2020, the average annual municipal waste generated per person in Ireland was 645kg<sup>4</sup>. As the municipal waste average accounts for household waste collections, an assumption of 50% of this average has been taken for an employee onsite during construction. Based on a 2-year construction period and an average of 110 construction staff (Chapter 3, Section 3.8.1 references 100-120 staff during peak construction) each year, the maximum municipal waste generated for the proposed development is expected to be in region of 70,950kg. This is a worse-case assessment of the proposed development based on national statistics for the average person. Of this total, according to the national statistics total, 41% will be recycled, 43% thermally treated and 16% disposed to landfill, equating to the following over the construction period for the proposed development:

- 29,089.50kg recycled;
- 30,508.50kg treated; and,
- 11,352kg disposed to landfill.

Waste will be collected by a licensed commercial waste management contractor on a regular basis (as required) over the course of the 2-year construction period. It is proposed to manage wastewater from the staff welfare facilities in the control buildings by means of a sealed storage tank, with all wastewater being tankered off-site by a permitted waste collector to a wastewater

<sup>&</sup>lt;sup>4</sup> National Waste Statistics – Summary report for 2020, EPA. [Accessed February 2025 EPA National Waste Stats Summary Report 2020.pdf]



treatment plant. The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. The wastewater storage tank alarm will be integrated with the on-site electrical equipment for alarm notification that will be monitored remotely 24 hours a day, 7 days per week. Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007 (as amended), will be employed to transport wastewater away from the site.

The average flow rate for design (per person/day) is approximately 60 liter for an open construction site based on the Uisce Éireann 2020 Code of Practice. The maximum total wastewater required for the site, based on this and on construction staff being onsite 48 weeks of a year and an average of 110 construction staff, would be 1.58 million liters, however it is proposed to use low volume flush toilets (such as those in commonly used port-a loos) and low volume sink faucets to significantly reduce the volume of wastewater produced. In addition, the number of staff on site is likely to fluctuate rather than being constant at 110 people per day. Thereby reducing the volume of wastewater produced. Potable water would be supplied in large bottles for the site.

As shown during peak construction the quantities of waste and wastewater are not anticipated to be significant, and so a short-term imperceptible negative effect on local waste services is predicted. This effect will be permanent for any waste that goes to landfill.

# 16.4.3 OPERATIONAL PHASE

# 16.4.3.1 Aviation

An assessment of the aviation infrastructure in the study area indicates that there will be no significant potential effects to aviation as a result of the proposed development. A summary of the main assessment findings is provided in Table 16-3 below. As part of the detailed aviation assessment, a review of each of the aeronautical surfaces in the study area was carried out and the findings are listed in Table 16-3 below. Full details can be found in Appendix 16-1 Derryadd Wind Farm Aviation Review Statement.

Item	Impact	Summary
Annex 14 - Obstacle Limitation Surfaces (OLS)	None	The proposed wind farm site is located outside the OLS Surfaces for Ireland West Airport and Abbeyshrule Aerodrome.
Annex 15 - Aerodrome Surfaces	None	Turbines at the proposed wind farm site would not penetrate the ICAO Annex 15 Aerodrome Surface for Ireland West Airport. All obstacles, if more than 100 meters above terrain for a distance of 45 km from center point of Ireland West Airport, need to be registered in the IAA Air Navigation Obstacle Data Set. The IAA may request that the turbines and met masts be included in the IAA Aeronautical Electronic Obstacle Data Sets. It should be noted that there are other existing tall structures nearer to Ireland West Airport (e.g. Sliabh Bawn wind farm) which are already listed in the IAA Aeronautical Electronic Obstacle Data Sets.

#### Table 16-3: Effects to Aviation





Building Restricted Areas	None	A review shows that the proposed wind farm site is more than 50 km from the BRA for Ireland West Airport. At this distance there would be no impacts as a result of the proposed development.	
Minimum Sector Altitudes (MSA)	None	A review of the Minimum Sector Altitudes (MSA) shows that the proposed wind farm site is outside 25 nautical miles from the VOR/DME at Ireland West Airport. Therefore, the MSA of the relevant sector will not be affected and there will be no impact on the published MSA altitude figures.	
Instrument Flight Procedures	None	A review shows that the instrument flight procedures for Ireland West RWY 08 and RWY 26 standard instrument departures are unlikely to be impacted for precision aircraft.	
Communicatio n and Navigation Systems	None	As the proposed wind farm is approximately 60 km from the Localizer and transmitting antenna at Ireland West Airport, it is very unlikely that the proposed development will have any impact on these ATS communications and radio navigational aids.	
Radar Surveillance Systems Safeguarding	None	The proposed wind turbines would be located in Assessment Zone 4 (EuroControl guidelines) for SSR and PSR instruments and further assessment will not be required.	
Flight Inspection and Calibration	None	The annual Flight Inspection Procedures will not be impacted by the proposed development as a result of both the distance the proposed wind farm site is from the ARP at Ireland West Airport and taking terrain and existing obstacles between both into account.	
Aeronautical Obstacle Warning Light Scheme	Observed	As detailed during consultation with the IAA, in the event of planning consent being granted, the applicant should be conditioned to contact the Irish Aviation Authority to:	
		• agree an aeronautical obstacle warning light scheme for the wind farm development,	
		<ul> <li>provide as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location and</li> </ul>	
		<ul> <li>notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection.</li> </ul>	
DoD Aeronautical Safeguarding	Subject to confirmat ory assessme nt.	As the proposed development is located outside the Irish Air Corps (IAC) / Department of Defence (DoD) Restricted Areas (i.e. Military Installations, Training Areas, Baldonnel restricted airspace, Low Level Flight Routes), there should be no impact to IAC / DoD activities.	
		However, DoD correspondences have made specific observations regarding an Aeronautical Obstacle Warning Light Scheme for the IAC. In the event of planning consent being granted, a review of the specified IAC Aeronautical Obstacle Warning Light Scheme is subject to a further detailed technical assessment.	





Garda Air Support Unit and Emergency None Aeromedical Service	An assessment of the Garda Air Support Unit (GASU) and the Emergency Aeromedical (EAS) operations indicate that they are unlikely to be impacted by the proposed development.
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## 16.4.3.2 Telecommunications

Results from telecom operator consultations and desktop survey analysis indicate that there are nineteen radio links in the vicinity of the study area. These radio links are listed below in Table 16-4, the detail of which is included in Appendix 16-2 (Derryadd Wind Farm EMI Impact Assessment). Each of the radio links have been mapped relative to the proposed wind farm site to effectively constrain turbine locations during the design stage. Turbine locations have been chosen to provide sufficient clearance so as not to impact on radio links.

Each of the radio links have been further modelled in 3D using radio planning software, and plotted relative to the location of the proposed turbines. The clearance distance between the critical Fresnel Zone (cross-sectional surface area of the radio waveform that cannot be obstructed for reliable link operation i.e. 99.995% availability required) of each radio link and the blade-tip of the nearest turbine has been calculated and is also shown in Table 16-4. The clearance calculations further indicate that the proposed turbines would not obstruct any of the radio links (i.e. no potential effects).

The detailed network analysis can be found in Appendix 16-2: Derryadd Wind Farm EMI Impact Assessment Report.

Operator	Radio Link Description	Nearest proposed turbine	Fresnel Zone (F2) Clearance Distance to Blade-tip of Turbine.	Effect of Wind Farm
Enet	Cairn Hill to Fermoyle N.S.	Т08	> 100 m	No Effect
Enet	Sliabh Bawn to Aughine CC.	Т05	> 100 m	No Effect
Eir	Barnacor to Garrycam	T01	60.6 m	No Effect
Eir	Woodlawn to Garrycam	Т10	> 100 m	No Effect
Eir	Emoe Cross to Garrycam	T13	9.2 m	No Effect
Eir	Cornadowagh to Garrycam	Т20	> 100 m	No Effect
ESB	Garrycam to Roscommon (UHF Radio)	T13	32.5 m (0.6F1 Fresnel Zone used for UHF radio links)	No Effect
ESB	Garrycam to Aghamore (UHF Radio)	Т08	> 100 m (0.6F1 Fresnel Zone used for UHF radio links)	No Effect
Imagine Broadband	Barnacor to Cairn Hill.	Т06	27.6 m	No Effect
2RN	Cairn Hill to Maghera.	T14	> 100 m	No Effect
2RN	Cairn Hill to Coolderry	T18	23.7 m	No Effect

## Table 16-4: Effects to Telecommunications





	(#1)			
2RN	Cairn Hill to Coolderry (#2)	T18	28.1 m	No Effect
Three Ireland	Lanesborough to Sliabh Bawn	Т02	> 100 m	No Effect
Three Ireland	Garrycam to Sliabh Bawn	Т05	> 100 m	No Effect
Virgin Media	Lanesborough N.S. to Sliabh Bawn	T02	> 100 m	No Effect
Vodafone	Woodlawn to Garrycam	T10	> 100 m	No Effect
Vodafone	BnM Mount Dillon to Ballyfeeny.	T01	46.1 m	No Effect
Vodafone	Lanesborough to Ballyfeeny.	Т04	> 100 m	No Effect
Vodafone	Cornadowagh to Garrycam.	Т20	> 100 m	No Effect

## 16.4.3.3 Material Assets

## ESB / Gas / Water Supply and Distribution

During the operational phase, there will be no excavation activities, only general wind farm maintenance work will take place on the proposed wind farm site. Therefore, there are no effects on the local underground utility networks including water, gas and electricity predicted.

#### Waste Management

The operational phase is anticipated to have an extremely low rate of production of municipal waste and wastewater (site welfare facility) which will need to be processed at a licenced local waste processing facility. The quantities of these wastes are anticipated to be significantly smaller than the construction phase, on the basis that once operational, it is estimated that the wind farm will support 6-8 full-time long term, high quality technical jobs on site in operation and maintenance.

During the operational phase all waste materials will be removed offsite to an appropriately permitted or licenced waste disposal / recovery facility. All such waste will be transported and disposed of in accordance with relevant waste management legislation (including but not limited to the Waste Management Acts 1996 to 2011).

Therefore, while waste will be generated during the operational phase of the proposed development, all such waste will be managed in accordance with statutory waste management and environmental requirements, regional waste related policy, and best practice waste management guidance.

The maximum municipal waste generated each year for the proposed wind farm site during the operation phase is expected to be in the region of 2,580 kg (based on 8 no. employees). This is a worse-case assessment of the site based on national statistics (EPA Waste National Statistics – Summary Report for 2020) for the average person. Of this total, according to the national statistics total, 41% will be recycled, 43% thermally treated and 16% sent to landfill, equating to the following over the operation phase of the proposed wind farm:





- 1,057.8kg recycled;
- 1,109.4kg treated; and,
- 412.8kg send to landfill.

Based on the Uisce Éireann 2020 Code of Practice average flow rate of 50 litres (per person/per day), wastewater from 8 full-time staff welfare facilities, is estimated to be 96,000 litres/year, however as low-flow toilet cisterns and sink faucets would be used, it is anticipated that this volume will be lower on the proposed wind farm site. Wastewater would be removed as required by a permitted waste collector. There would be a potential long-term imperceptible neutral effect on local waste services.

# 16.4.4 DECOMMISSIONING PHASE

## 16.4.4.1 Aviation and Telecommunications

Following the end of their lifespan, the wind turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the site may be decommissioned fully, with the exception of the electricity substation and amenity access tracks.

There will be a short period while the turbines are being removed where they are still present, and cranes are used to remove them. During this time, there is a potential for similar effects to the operational phase to occur, albeit at a decreasing extent as turbines are removed. These effects will be short term and will have equal or lower significance than the operational phase effects. There are no other effects likely to arise during the decommissioning phase of the proposed wind farm in relation to aviation and telecommunications.

#### 16.4.4.2 Other Material Assets

There are no other effects likely to arise during the decommissioning phase of the proposed development in relation to utility services (e.g., gas, water and electricity supply networks). The turbines will be removed, and work involved in this phase will not involve significant excavations.

The decommissioning phase will have the potential to generate small quantities of municipal waste (site office and canteen), wastewater (site welfare facilities), and demolition waste (metal, etc.) which will require onsite management, and collection by suitably permitted waste collectors and processing at appropriately licensed waste management facilities.

Waste quantities generated during decommissioning will be greater than the construction and operational phases (considering the removal of turbines), however, these are largely composed of metal and other recyclable materials which will be transferred to specialised facilities for processing/recycling.

Turbine blades (fibreglass based), until recently, had limited scope for recycling. However, technology has made significant advancement, and it has recently been announced that recyclable turbine blades have been developed, with plans to phase them in over the next few years. Through these recent developments and ongoing research, it is expected that the turbine blades for the proposed wind farm site will be able to be fully recycled at their end of life. Any other non-hazardous and hazardous wastes (such as oils) will be collected by an appropriately permitted waste collector and transferred to a suitably licenced waste management facility. There will be a potential short-term slight negative effect on local waste services. This effect will be permanent for any fraction of the waste that goes to landfill.





# 16.5 MITIGATION MEASURES

The Mitigation Measure requirements for Aviation, Telecommunications and other material assets are provided in Sections 16.5.1 to 16.5.2 which follow.

# 16.5.1 CONSTRUCTION PHASE

## 16.5.1.1 Aviation

The findings from field and desktop surveys indicate that no significant mitigation measures would be required. The following construction phase mitigation measures will be implemented:

Should the proposed development proceed, it would be a requirement to submit the asconstructed turbine locations (in WGS84 format) and height above ground level and sea level of each turbine (to blade tip) and met masts to the IAA so that they are added to the IAA Aeronautical Electronic Obstacle Data Set as soon as erected. The Applicant is also required to notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection.

In addition, in the event of a grant of planning consent the IAA-ANSP (Irish Aviation Authority – Air Navigation Service Provider) would require to be made aware of the detail on the lighting of the proposed wind turbines in the interest of aviation safe-guarding as the proposed development may be considered as an en-route obstacle. The applicant would be required to implement suitable aeronautical obstacle warning lights in agreement with the IAA-ANSP.

For civil aviation, it is recommended that lighting requirements should be in accordance with Chapter Q – Visual Aids for denoting Obstacles; CS ADR.DSN.Q.851 and GM.ADR.DSN.Q.851 (Pages 729/730) of the EASA Easy Access Rules for Aerodromes (Reg (EU) No. 139/2014).

In addition to the civil aviation light scheme requirements, the Department of Defence (DoD) have made specific observations regarding an Aeronautical Obstacle Warning Light Scheme for the Irish Air Corps (IAC). The appropriate IAC Aeronautical Obstacle Warning Light Scheme is subject to a detailed technical assessment and further consultations with the DoD/IAC should the proposed development be consented.

#### 16.5.1.2 Telecommunications

No telecommunication effects are anticipated for the construction phase of the proposed development. Therefore, no specific mitigation measures related to telecommunications are proposed apart from the mitigation by avoidance which was carried out. In order to ensure there are no issues with construction, all telecom operators will be contacted in advance of construction to check that they have no new links in operation at that time. Prior to construction, Ground Penetrating Radar (GPR) surveys will be undertaken to accurately locate existing underground infrastructure. In the unlikely event that a communication underground cable or link is damaged or interfered with during construction, the operator will be contacted to agree to arrange a repair which will be carried out as soon as possible at the developers' cost. In addition, the developer will sign an agreement with 2RN prior to construction to commit to restoring service to any end users that may have their service disrupted as a result of the proposed development. This is standard industry practice and will eliminate any potential effects in this regard.





## 16.5.1.3 Other Material Assets

The following mitigation measures will be implemented during the construction phase to manage effects on services (electrical/ESB, water/Uisce Éireann, gas/Gas Networks Ireland (GNI));

- Prior to construction, Ground Penetrating Radar (GPR) surveys will be undertaken to accurately locate existing utilities along the boundaries, within the proposed wind farm site and within the public road network. Bord na Móna Powergen Ltd., will liaise with the service provider where such services are identified. Digging around existing services, if present, will be carried out by hand to minimise the potential for accidental damage;
- All proposed works being carried out on overhead or underground electricity cables will be done in consultation with ESB/EirGrid, as required, and will comply with their guidance and best practice.
- Goal posts will be established under the overhead line for the entirety of the construction phase.
- All staff will be trained in operating voltages of overhead electricity lines running within the proposed development. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the sites are made aware of the location of lines before they come on to the proposed development.
- Information on safe clearances will be provided to all staff and visitors.
- Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on site.
- All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan.
- All newly installed utilities/ services will be assessed, tested and certified as required prior to being fully commissioned;
- A copy of all available existing, and as built utility plans will be maintained on site during the construction of the proposed wind farm. Any underground power lines and foul and water mains, located onsite will be clearly marked and all site personnel will be made aware of the known location of any onsite underground or over ground services during the construction phase.

The following mitigation measures will be implemented during the construction phase to manage effects on waste;

- Segregation of waste will be carried out on site to maximise recycling potential and minimise potential effects on waste services. A licensed commercial waste collector will be used to remove any waste generated from construction on site to the nearest appropriate licenced waste processing facility.
- All waste management procedures implemented onsite during the construction phase will be in accordance with the CEMP submitted as part of this planning application, The RWMP to be prepared by the Contractor, in accordance with the 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects' (EPA 2021) will take account of the relevant requirements of the CEMP, the EIAR, NIS and any relevant planning conditions etc., and will be prepared by the Contractor in advance of the commencement of any construction works.





- The contractor will supply all waste containers / skips, as required, for each of the identified waste streams. Waste will be segregated and removed to licenced facilities by licenced haulers and all containers will be emptied before they are full to avoid overflowing. The contractor is to provide a waste forecast for waste types and quantities expected to be generated.
- Good working practices and take back schemes will be used to reduce the amount of waste generated, as an initial step, with waste management routes for each waste stream to be recorded in the site Waste Management Plan. In order to reduce waste generation as far as possible, off cuts, surplus materials and packaging is to be returned to suppliers for closed loop recycling, single used plastics are to be avoided where possible and all materials are to be stored correctly to avoid waste generation from damage and contamination of incorrectly stored materials.
- All waste materials will be segregated onsite into the various waste streams, via. dedicated skips and storage areas. All waste will be removed from site by one or more waste haulage contractor(s) who hold a current valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO). All waste materials generated during the construction phase will be removed offsite to an appropriately permitted or licenced waste disposal / recovery facility. All waste removed offsite will be appropriately characterised (under the correct LoW / EWC code), transported and disposed of in accordance with relevant waste management legislation (including but not limited to the Waste Management Act of 1996 and 2001, as amended and all subsequent waste management regulations). All waste management and disposal / recovery records will be maintained onsite throughout the proposed development and will be made available for viewing by the Client, Employer's Representative and statutory consultees (LCC, RCC, EPA) as required.
- Scheduling and planning the delivery of materials will be carried out on an 'as needed' basis to limit any surplus materials;
- Materials will be ordered in sufficient dimensions so as to optimise the use of these materials onsite, and will be carefully handled and stored so as to limit the potential for any damage;
- Where feasible, sub-contractors will be responsible for the provision of any materials they require onsite in order to help reduce any surplus waste;
- Secure lockable and controlled storage to be provided for the storage of chemicals and other hazardous materials; and,
- The construction compounds will include adequate temporary welfare facilities.

# 16.5.2 OPERATIONAL PHASE

## 16.5.2.1 Aviation

If permitted, Bord na Móna Powergen Ltd., would engage with the IAA and make them aware and agree on a lighting scheme for the proposed wind turbines and met masts in the interest of aviation safe-guarding as the proposed development may be considered as an en-route obstacle. Bord na Móna would be required to implement suitable aeronautical obstacle warning lights in accordance with industry standards. The details for this lighting will be agreed with the IAA and will be applied to the appropriate turbines and met masts. This will ensure the required visibility of the proposed development to any local aircraft. In addition, it would be a requirement to submit the as-constructed turbine locations and height above ground level and sea level of each turbine (to blade tip) to the IAA so that they are added to the IAA Aeronautical





Electronic Obstacle Data Set.

For civil aviation, it is recommended that lighting requirements should be in accordance with Chapter Q – Visual Aids for denoting Obstacles; CS ADR.DSN.Q.851 and GM.ADR.DSN.Q.851 (Pages 729/730) of the EASA Easy Access Rules for Aerodromes (Reg (EU) No. 139/2014).

In addition to the civil aviation light scheme requirements, the Department of Defence (DoD) have made specific observations regarding an Aeronautical Obstacle Warning Light Scheme for the Irish Air Corps (IAC). The appropriate IAC Aeronautical Obstacle Warning Light Scheme is subject to a detailed technical assessment and further consultations with the DoD/IAC.

## 16.5.2.2 Telecommunication

The proposed development is not anticipated to have any effect on telecommunication links in the region due to the distance between the existing links and the proposed turbine locations. Bord na Móna will sign an agreement with 2RN prior to construction to commit to restoring service to any end users that may have their service disrupted as a result of the proposed development. This is standard industry practice and will eliminate any potential effects in this regard.

#### 16.5.2.3 Other Material Assets

## ESB / Gas / Water Supply and Distribution

The proposed development is not anticipated to have any effect on Electric/ESB, Gas and Water supply during the operational phase. Should any maintenance work be required during the operation phase, the mitigation outlined in section 16.5.1 will be implemented.

#### Waste Management

Waste management during the operational phase of the proposed wind farm will be undertaken by private waste contractors (in accordance with statutory waste management and environmental requirements, regional waste related policy, and best practice waste management guidance), and regulated by Longford County Council. Therefore, no further mitigation measures are required with regard to the transport and disposal or recovery of all waste streams which will be generated during the operational phase. Mitigation measures will be implemented as required to further manage the potential effects. There will be no likely significant effects associated with waste management during operation.

## **16.6 RESIDUAL EFFECTS**

Any residual effects on aviation, telecommunication, and other material assets networks associated with the proposed development are expected to be negligible.

## 16.6.1 CONSTRUCTION PHASE

#### 16.6.1.1 Aviation

No effect related to aviation is anticipated during the construction phase, therefore no residual effects are predicted in relation to aviation.

#### *16.6.1.2 Telecommunications*





There will be no residual effect on telecommunications following the implementation of mitigation measures during the construction phase.

## 16.6.1.3 Other Material Assets

Should there be any underground services located during construction, specifically at locations of the proposed temporary road works to accommodate oversize load deliveries, the abovementioned mitigation measures will be used to reduce any potential for effects to being unlikely brief slight negative.

A short-term imperceptible neutral residual effect is predicted with regard to waste services, with this being long term for any waste that goes to landfill.

## 16.6.2 OPERATIONAL PHASE

#### 16.6.2.1 Aviation

With the implementation of the above mitigation measures, the proposed development will have no residual effects.

#### 16.6.2.2 Telecommunications

No effect on telecommunications is anticipated during the operational phase due to the distance between the proposed turbine locations and the existing links in the area, and the requirement to not cause any impact to end users of telecommunication services by way of restoring the service. As such, no residual effect is predicted. In the event that a link/cable/end user had service interrupted, there may be a brief effect until it is fixed, however it will be the developer's responsibility to fix any such issue as soon as possible.

#### 16.6.2.3 Other Material Assets

There will be no residual effects on electrical/ESB, Gas and Water infrastructure during the operation phase.

A long-term imperceptible neutral residual effect is predicted with regard to waste services. This effect would be permanent for any fraction of the waste that goes to landfill.

## 16.6.3 DECOMMISSIONING PHASE

#### 16.6.3.1 Aviation & Telecommunications

There are no effects likely to arise during the decommissioning phase and no specific mitigation measures are proposed. No residual effects are predicted in relation to aviation and telecommunications.

#### *16.6.3.2 Other Material Assets*

A short-term imperceptible neutral residual effect is predicted with regard to waste and infrastructure management/services during the decommissioning phase. This effect would be permanent for any fraction of the waste that goes to landfill.





# 16.7 CUMULATIVE EFFECTS

Based on the detailed Aviation and Telecoms technical assessments carried out, which have been included as Appendix 16-1 and 16-2 respectively, no cumulative effects on aviation and Telecoms networks due to the proposed development are anticipated.

From a review of the planning search results detailed in section 5.4 and 5.5 of this EIAR (Chapter 5 Policy Planning and Development Context), any cumulative effects on other material assets (water, electricity and gas supply, waste services) due to the proposed development are expected to be negligible, waste volumes from the proposed development are anticipated to be generally low, with the exception of the decommissioning phase (primarily in relation to turbines). The majority of waste from decommissioned infrastructure will be recyclable, and the large items (turbines) will be collected and processed by appropriately licenced specialist companies. Overall, there will be no significant cumulative effect on waste services.

# 16.8 SUMMARY

# 16.8.1 AVIATION

The findings of the aviation assessment indicate that there will be no significant effect to aviation as a result of the proposed development. However, should the development proceed, the final turbine layout should be submitted to the IAA so that the turbines can be included in their Aeronautical Electronic Obstacle Data Sets. It would also be a requirement that turbines are fitted with Aeronautical Obstacle Warning Lights in accordance with civil and military aviation industry standards. A detailed assessment of the existing obstacles in the study area have been included in Appendix 16-1 Derryadd Wind Farm Aviation Review Statement, all of which are acceptable obstacles to the IAA-ANSP.

# 16.8.2 TELECOMMUNICATIONS

The findings of the telecommunications assessment indicate that there are nineteen radio links in the study area. Network analysis (2D and 3D) indicate that none of the proposed turbines would impact the operation of these radio links. As the radio links would not be impacted, no mitigation measures are required for telecommunications. A detailed assessment of the study area has been included in Appendix 16-2 Derryadd Wind Farm Telecommunication Impact Assessment.

# 16.8.3 MATERIAL ASSETS

The findings of the above assessment indicate that there will be no significant effect to other material assets (water, gas and electricity supply, waste services) due to the proposed development.

# 16.9 Difficulties encountered

No difficulties were encountered when completing the Aviation, Telecommunications and Other Material Assets impact assessment.

