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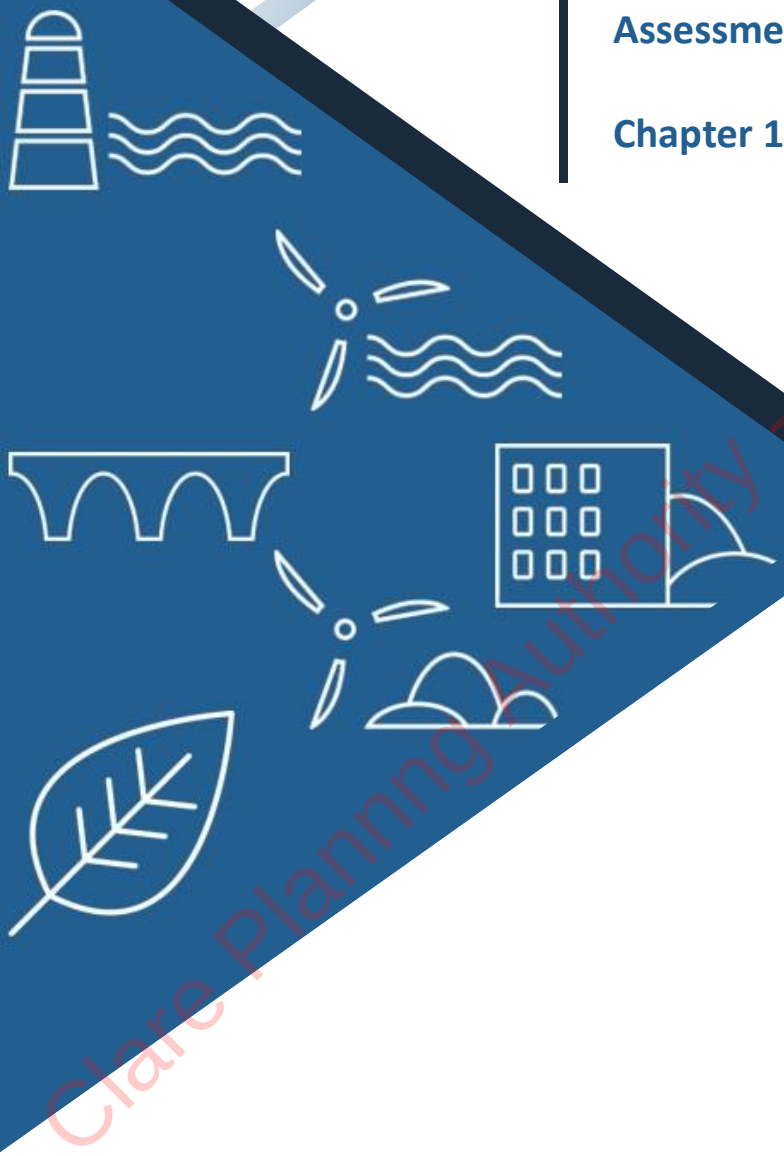
# Illaunbaun Wind Farm - Environmental Impact Assessment Report

## Chapter 17: Material Assets



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# ACRONYMS

| | |
|---|---|
| AA | Appropriate Assessment |
| AMSL | Above Mean Sea Level |
| ATC | Air Traffic Control |
| CEMP | Construction Engineering Management Plan |
| CTA | Control Area |
| DoD | Department of Defence |
| DOEHLG | Department of the Environment, Heritage and Local Government |
| EAS | Emergency Aeromedical Service |
| EASA | European Union Aviation Safety Agency |
| EIA | Environmental Impact Assessment |
| EIAR | Environmental Impact Assessment Report |
| EPA | Environmental Protection Agency |
| ESB | Electricity Supply Board |
| EU | European Union |
| FIR | Flight Information Region |
| GAA | Gaelic Athletic Association |
| GASU | Garda Air Support Unit |
| GCR | Grid Connection Route |
| GDG | Gavin & Doherty Geosolutions Ltd. |
| GNI | Gas Networks Ireland |
| GPS | Global Positioning Satellite |
| HGV | Heavy Goods Vehicle |
| IAA | Irish Aviation Authority |
| ICAO | International Civil Aviation Organization |
| IFP | Instrument Flight Procedure |
| IR | Infrared |
| LED | Light Emitting Diode |
| LGV | Large Goods Vehicle |
| MOA | Military Operating Area |
| mOD | Metres above Ordnance Datum |
| MSA | Minimum Safe Altitude |
| NAVAID | Aeronautical Navigation Aid |
| NBD | Non-Directional Beacon |
| NM | Nautical Miles |
| OSI | Ordnance Survey Ireland |
| OSM | Open Street Map |
| PSR | Primary Surveillance Radar |
| RTÉ | Raidió Teilifís Éireann |
| SEAI | Sustainable Energy Authority of Ireland |
| SSR | Secondary Surveillance Radar |
| TBC | To Be Confirmed |
| TII | Transport Infrastructure Ireland |
| TSO | Transmission System Operator |
| TV | Television |
| UK | United Kingdom |

# 17 MATERIAL ASSETS

## 17.1 INTRODUCTION

This chapter presents the assessment of the likely significant effects (as per the "EIA Regulations") of the Proposed Development on Material Assets arising from the construction, operation and decommissioning of the Proposed Development, both alone and cumulatively with other plans and projects, and was determined following the issue of the *Illaunbaun Wind Farm - Environmental Impact Assessment Scoping Report* to stakeholders described in Chapter 6: Project Scoping and Consultation.

Material assets are defined in the *EPA Draft Advice Notes for Preparing Environmental Impact Statements (2015)* as

> "Resources that are valued and that are intrinsic to specific places… They may be either of human or natural origin. The assessment shall be concerned primarily with ensuring equitable and sustainable use of resources".

The assessment presented is informed by the following technical chapters/appendices:

- Chapter 7: Population and Human Health:
- Construction & Environmental Management Plan

The primary purpose of this chapter is to describe the material assets of the receiving environment within the Study Area and analyse any potential related effects on it.

This chapter comprises of the following elements:

- Summary of relevant policy and guidance;
- Data sources used to characterise the Study Area;
- Summary of consultations with stakeholders;
- Methodology followed in assessing the impacts of the Proposed Development (such as information of the Study Area and the approach taken in assessing the potential impacts);
- Review of baseline conditions;
- Assessment of likely effects arising from the construction and operation of the Proposed Development;
- Identification of further mitigation measures and/or monitoring requirements (if any) in respect of any significant effects (following the 'mitigation hierarchy' of avoidance, minimisation, restoration and offsets in consecutive order); and
- Summary of residual impact assessment determinations in the case of any additional mitigation measures identified during this process.

After a review of the Proposed Development and the suggested topic areas set out in the EPA Guidelines (2022), the consideration of the project impact on materials assets provided within this

chapter is discussed in the context of built services in proximity of the Proposed Development. Therefore, this chapter of the EIAR assesses the following material assets:

**Table 17-1: Material Assets considered in this chapter**

| Material Assets |
|---|
| Electrical Infrastructure |
| Telecommunications |
| Gas and Oil Fuels |
| Water Supply and Foul Drain Network |
| Aviation |
| Waste management |

### 17.1.1 RELEVANT LEGISLATION AND GUIDELINES

The following policy, legislation, plans and guidance are considered applicable to this chapter.

- Circular Economy And Miscellaneous Provisions Act 2022;
- The Waste Management (Collection Permit) (Amendment) (No. 2) Regulations 2023;
- European Union (Waste Licensing) (Amendment) Regulations 2019;
- Waste Management (Packaging) Regulations 2014 to 2022 (as amended);
- Waste Management (Planning) Regulations 1997 (as amended) (S.I No. 137/1997);
- Southern Region Waste Management Plan 2015-2021;
- Waste Management (Landfill Levy) (Amendment) Regulations 2023;
- Waste Management (Food Waste) Regulations 2009 – 2015 (as amended);
- Waste Management (Hazardous Waste) Regulations 1998 to 2000;
- Waste Management (Shipments of Waste) Regulations 2007 (as amended) (S.I. No. 419/2007);
- Waste Management Act 1996 (as amended) (Act No. 10/1996);
- Environmental Protection Agency Acts 1992 – 2011 (as amended);
- Protection of the Environment Act 2003 (as amended) (Act No 27/2003);
- Litter Pollution Acts 1997 to 2009 (as amended);
- Planning and Development Act 2000 - 2023 (as amended) (Act No. 30/2000).
- The Planning and Development Regulations 2001-2024 (as amended);
- Irish Aviation Authority's, Obstacles to Aircraft in Flight, Order SI 215/2005;

- 'Best Practice Guidelines for the Irish Wind Energy Industry' by the Irish wind Energy Association (2012);
- Sustainable Energy Authority of Ireland's, 'Investigation of the Impact of Wind Turbines on Radar' (2004);
- International Civil Aviation Organisation, Convention on International Civil Aviation; Annex 14, Aerodromes;
- UK Civil Aviation Authority CAP 764: Policy and Guidelines on Wind Turbines;
- Irish Aviation Authority Statutory Instruments; S.I 72 of 2004, Rules of the Air Oder 2004;
- Irish Aviation Authority Statutory Instruments; S.I 423 of 1999, En-route Obstacles to Air Navigation;
- International Civil Aviation Organisation (ICAO) guidance;
- CS ADR-DSN.Q.851 Marking and Lighting of wind turbines (Regulation (EU) No. 139/2014); and
- EASA Easy Access Rules for Aerodromes (current version – Dec'24)

## 17.2 ASSESSMENT METHODOLOGY

This chapter of the EIAR has been prepared in accordance with the guidance criteria set out in section 3.3.6 of the Environmental Protection Agency's (EPA) Guidelines on the Information to be Contained in Environmental Impact assessment Reports (referred to as the 'EPA Guidelines') which outlines the consideration of material assets as the following:

> "In Directive 2011/92/EU, this factor included architectural and archaeological heritage. Directive 2014/52/EU includes those heritage aspects as components of cultural heritage. Material assets can now be taken to mean built services and infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils."

In accordance with the above, Archaeological, Architectural and Cultural Heritage is assessed in detail in Chapter 16 of this EIAR. Material assets of natural origin are addressed separately in other relevant chapters, such as:

- Chapter 8: Biodiversity and Ornithology
- Chapter 10: Hydrology, Water Quality and Flood Risk
- Chapter 11: Air Quality
- Chapter 12: Climate
- Chapter 16: Archaeological and Culture Heritage
- Chapter 19: Traffic and Transport
- Chapter 20: Forestry

A brief technical overview will be covered as a topic in this chapter for a comprehensive assessment. While Traffic and Transport may interact with or affect certain material assets (such as roads or local infrastructure), it is not classified as a material asset in the context of this EIAR. Due to the scope and complexity of the associated assessment, Traffic and Transport is addressed separately in Chapter 19.

### 17.2.1 STATEMENT OF COMPETENCE

Founded in 2010, GDG is a specialist renewable energy consultancy headquartered in Dublin, with additional offices in Cork, Belfast, London and Edinburgh. Since 2021, GDG has been part of the Venterra Group, an international organisation bringing together key elements of the renewable energy supply chain to support the accelerated deployment of renewable energy required to meet European and global climate and electricity targets.

GDG has extensive experience in delivering environmental and engineering services for renewable energy projects, including EIA and Appropriate Assessment (AA) Screening, EIA Scoping, feasibility studies, concept design, survey design, and the procurement and management of environmental and ecological surveys.

As a trusted advisor under the SEAI Enabling Community Renewables Framework, GDG also supports local communities through all stages of onshore renewable development, including planning, environmental assessment, & preliminary design.

The company's in-house expertise includes ecology, environmental science, EIA, AA, hydrogeology, planning, environmental consenting, survey coordination, civil infrastructure design, and emerging energy technologies.

The members of the GDG EIA team involved in this assessment include:

- David Cahil, an Environmental Scientist at Gavin & Doherty Geosolutions (GDG). David holds a Bachelor's degree in Environmental Science and a Master's degree in Sustainable Energy Engineering, both from University College Cork. He has 2 years of professional experience in the preparation of Environmental Impact Assessment Reports (EIARs) and Scoping Reports for both onshore and offshore wind energy developments.

### 17.2.2 CONSULTATION

Consultation was undertaken as part of the EIA Scoping Report for the Proposed Development. The EIA Scoping report was sent to relevant stakeholders, and their responses were considered during the preparation of this EIAR. The following responses relevant to Material Assets were received:

**The Department of Defence requested:**

- All turbines should be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. Obstacle lighting should be incandescent or, if LED or other types are used, of a type visible to Night Vision Equipment, Obstacle lighting used must emit light at the near Infrared (IR) range of the electromagnetic spectrum, specifically at or near 850

nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.

**Irish Aviation Authority:**

- 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 Authority of intention to commence crane operations with at least 30 days prior notification of their erection.

**Shannon Airport Authority:**

- Regard must be had by the applicant to the Irish Aviation Authority (IAA) Obstacles to Aircraft in Flight Order, 2005 (S.I. No. 215 of 2005), as amended, which specifies the criteria used to determine whether any object anywhere in the State is deemed to be an obstacle affecting aircraft operations. Also, in order to assure the safety and efficiency of aircraft operations in the vicinity of airports, the International Civil Aviation Organisation (ICAO) has defined a volume of air space above which new objects are not permitted to interfere.
- We will require a technical assessment to be carried out of the potential effects of whatever no. of wind turbines are to be located on the Illaunbaun site. If you could confirm (based on GPS data for individual turbine locations plus Above Mean Sea Level (AMSL) data and stated turbine design heights), then we can undertake our OLS assessment to see if this proposed development has any effects on Shannon Airports OLS.
- The applicant should engage with the Air Nav Ireland – ANSP (Cathal.MacCriostail@airnav.ie) to assess the possible impact of the development on flight procedures and communication, navigation and surveillance equipment as well as any potential impacts on en route communications, navigation and surveillance equipment.
- The turbines fixed locations if/when construction starts, will need to be notified to the IAA Aerodromes Division (David.McCann@IAA.ie), as Area 1 obstacles and for inclusion on the 1:500000 and 1:250000 Aeronautical Charts.
- Notify the Authority of the intention to commence crane operations with at least 30 days prior notification of their erection.
- Finally, the developer would also have to apply the following standard: Chapter Q (Visual Aids for Denoting Obstacles) of the Certification Specifications contained within the EASA Easy Access Rules for Aerodromes (current version – Dec'24) CS ADR-DSN.Q.851 Marking and Lighting of wind turbines (Regulation (EU) No. 139/2014) for this proposed wind turbine project.

The consultation responses received have been given adequate consideration in the planning of the Proposed Development and in the contents of this EIAR. The policies requested for consideration have been included in section 17.1.1 and in the preparation of this chapter. The mitigation measures related to the required lighting of the wind turbines have been considered in the preparation of this

chapter and will be implemented during the construction and operation of the Proposed Development

### 17.2.3 DATA SOURCES

Information on existing infrastructure and utilities was obtained through requests made to the utility companies, and service providers. For more details on the consultation process with these stakeholders, please refer to Chapter 6: Project Scoping and Consultation. The utility information relevant to the study area was provided by the following service providers:

- Gas Networks Ireland Dial Before You Dig Maps
- ESB Dial Before You Dig Maps
- EIR eMaps open Eir Civil Engineering Infrastructure Service
- Irish Water Utility Mapping
- Uisce Éireann (formerly Irish Water)
- EirGrid
- Telecommunications providers such as Eir and Virgin
- EMODnet Map viewer
- OSI, 2024
- Open Street Map (OSM), 2025
- Saorview, 2025

A full utility survey will be carried out before construction and all required diversions of existing utilities, or temporary works will be confirmed ahead of construction commencing.

### 17.2.4 STUDY AREA

This chapter covers a range of material assets, including electrical infrastructure, telecommunications, television, gas infrastructure, water supply and wastewater networks, aviation, and waste management infrastructure. As the nature, spatial extent, and potential impact pathways vary across receptor types, receptor-specific study areas have been adopted accordingly.

In some cases, such as telecommunications or aviation, potential impacts may arise within the boundary of the Proposed Development even where no physical infrastructure is present within the site itself. For example, the Proposed Development has the potential to impact radio signals that traverse the site, even though the relevant receptors (e.g. telecommunications towers) may be located well beyond 1 km away from the site boundary.

Due to these variations, a single study area cannot be applied across all receptor types. The assessment, therefore, adopted a receptor-specific approach, defining study areas based on the spatial characteristics and sensitivities of each asset type, and considering the location and nature of the nearest potentially affected infrastructure.

**Table 17-2: Receptors Study Areas**

| Receptor | Study Area | Justification |
|---|---|---|
| Electrical Infrastructure | 600 m buffer around the Proposed Development Boundary | A 600 m buffer was applied to allow for potential impacts during construction, particularly due to the height of turbines and the use of large machinery and cranes. |
| Telecommunications signals | Proposed Development Boundary | The site boundary was considered appropriate, as potential impacts were limited to locations where turbine structures could obstruct signal paths. |
| Television signals | Close proximity to the Proposed Development Boundary | The assessment focused on nearby receptors, as signal interference was expected only in the immediate vicinity of the turbines. |
| Gas infrastructure | Proposed Development Boundary | The study area was limited to the site boundary, as construction and operational activities were only likely to affect infrastructure within the site. |
| Water Supply and Wastewater Networks | 1 km buffer around the Proposed Development Boundary | A 1 km buffer was applied due to the sensitivity of water-related infrastructure and the potential for indirect impacts. |
| Aviation signals | Close proximity area around the Proposed Development | A flexible study area was adopted, as potential interference depended on aircraft flight paths and proximity to the site. |
| Waste Management infrastructure | Proposed Development Boundary | The assessment was confined to the site boundary, as no impacts were expected beyond the development area. |

### 17.2.5 LIMITATIONS OF ASSESSMENT

The assessment of Material Assets presented in this chapter is based on the best available information at the time of writing. Where data limitations or uncertainties exist, a precautionary approach has been applied to ensure the assessment remains robust. Where project design elements may be subject to refinement, a reasonable worst-case scenario has been considered to avoid underestimating potential effects on material resources. Impact Assessment Methodology

The assessment of likely significant effects of the Proposed Development on material assets has been undertaken, having regard to the EPA Guidelines. The assessment includes the following which are of particular relevance to the Proposed Development:

- The potential significant effects on public utilities and the need to ensure their protection during the construction and operational phase.
- The requirements for connecting to public utilities during both the construction and operational phases.

- The possibility of temporary or permanent changes in current land use or zoning designations.

There are no specific criteria for assessing the significance of effects on existing utilities. Therefore, professional judgement and consultations with utility providers have been used to establish the significance criteria. The likely impacts on existing utilities are assessed based on the functionality of the utilities and the potential consequences of their disruption. Determination of the quality of effect, significance of the effect, probability of effect and duration of the effect will be made in accordance with the criteria and terminology outlined in the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports EIAR (EPA, 2022), outlined in Table 17-3 to Table 17-5.

**Table 17-3: Criteria for Rating Quality of Effect (EPA, 2022)**

| Quality of Effects | Criteria |
|---|---|
| Positive Effects | A change which improves the quality of the environment (for example, by increasing species diversity, improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities). |
| Neutral Effects | No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error. |
| Negative Effects | A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, damaging health or property or causing nuisance). |

**Table 17-4: Significance of Effect (EPA, 2022)**

| Significance Level/Degree of Impact | Definition |
|---|---|
| Profound | Occurs where a non-agricultural property or other material asset of national orregional importance is acquired and/or demolished |
| Very Significant | Occurs where part, or all, of a non-agricultural property or other material asset, is acquired, which may result in the demolition of the property or removal of more than one asset in the area, e.g. a cluster of properties in one area are proposed to be demolished or impact to a substantial community asset, or where acquisition results in loss of employment and total loss of the business |
| Significant | Occurs where part, or all, of a non-agricultural property or other material asset,is acquired, which may result in the demolition of the property or removal of the asset, e.g. a single dwelling in one area is proposed to be demolished orremoval of a business, or where acquisition results in partial loss of the business or total loss of the business without loss of employment |
| Moderate | Occurs where part, or all, of a non-agricultural property or other material asset isacquired, resulting in a major change to the environment of the property or material asset, e.g. the full acquisition of a property or a large |

| Significance Level/Degree of Impact | Definition |
|---|---|
| | portion of land taken from the property or where acquisition results in partial loss of the business or potential business |
| Slight | Occurs where part of a non-agricultural property or other material asset is acquired, resulting in little change to the environment, e.g. a small portion of land taken from a property |
| Not significant | Occurs where there is a change, such as the removal of a boundary wall or entrance to a property or the diversion of low and medium voltage ESB network, telecommunications or water supply and foul sewer services |
| Imperceptible | Occurs where part of a non-agricultural property or other material asset is acquired, resulting in minimal changes to the environment of the property or material asset. This includes impacts on properties which are currently occupied by a public right-of-way. These lands are in the ownership of the adjacent property; however, they are occupied by existing roads. |

**Table 17-5: Criteria for Rating Probability of Effect (EPA, 2022)**

| Duration of Effects | Criteria |
|---|---|
| Temporary Effects | Effects lasting less than a year. |
| Short-term Effects | Effects lasting one to seven years. |
| Medium-term Effects | Effects lasting seven to fifteen years. |
| Long-term Effects | Effects lasting fifteen to sixty years. |
| Permanent Effects | Effects lasting over sixty years. |
| Reversible Effects | Effects that can be undone, for example, through remediation or restoration. |
| Irreversible Effects | Effects that cannot be undone, for example, through remediation or restoration. |

## 17.3 BASELINE: MATERIAL ASSETS IN RECEIVING ENVIRONMENT

There are currently no specific guidelines or criteria to define the size of this study area for the assessment of material assets. For the purpose of this assessment, the material assets study area has been defined as the geographic area within which direct or indirect impacts on built services may reasonably be expected to occur as a result of the Proposed Development.

Considering the nature and location of the Proposed Development, the study area for material assets is confined to the development footprint, with the inclusion of a 1 km buffer for some sensitive receptors.

Telecommunications and Aviation receptors occur outside of the site boundary; however, the potential for interference may occur within the site boundary. For this reason, receptors in proximity

to the Proposed Development are highlighted, and any potential impacts on these are considered due to the Proposed Development.

In the case of telecommunications and aviation, their infrastructure lies outside the boundary of the Proposed Development, although there is the potential for impacts to occur due to infrastructure within the development boundary through the interception of radio waves. As this is the case, receptors in close proximity to the Proposed Development have been considered and assessed where relevant.

### 17.3.1 SITE LOCATION

The Proposed Development site is situated approximately 4.2 km northeast of Milltown Malbay on a site currently occupied by coniferous forestry and open peatland. Land use in the wider landscape comprises a mix of agriculture, low-density housing, wind farms and commercial forestry.

The Proposed Development is located 2.9 km from the west coast of Co. Clare and 5.2 km southeast of Lahinch. It is in the townlands of Tooreen, Slievenalicka, Illaunbaun, Lackamore and Drumbaun in County Clare.

The altitude within the site boundary ranges from 115 meters above Ordnance Datum (mOD) in the east, rising to just over 200 mOD in the west and north, where two hills are present. Lough Keagh is situated within the south of the Proposed Development area at between 180 mOD and 185 mOD. Four watercourses drain the Proposed Development (EPA names: Illaunduff, Ballinphonta, Drumbaun, Derrymore).

Another waterbody, Lough Abullaunduff, appears on historical mapping, however, it is now not apparent on the site (satellite imagery). It has likely been drained in the past.

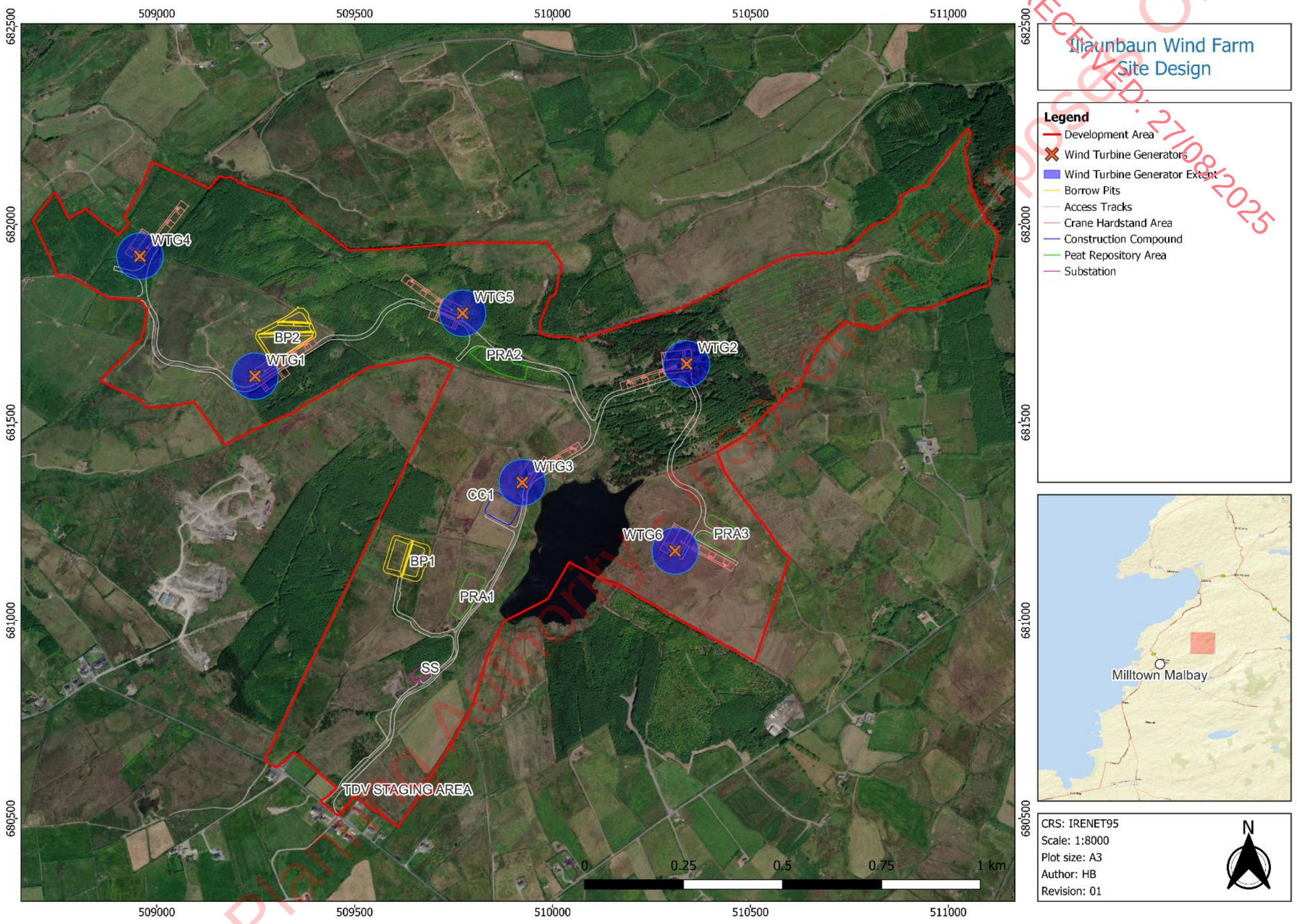



**Figure 17-1: Proposed Development site layout and associated infrastructure**

### 17.3.2 ELECTRICAL INFRASTRUCTURE

EirGrid is the national electricity Transmission Systems Operator (TSO) in Ireland and is responsible for the planning and operation of the grid infrastructure required to support the development of Ireland's economy. EirGrid's *Transmission Development Plan2018-2027* sets out the strategic development of the Irish transmission network and interconnection over the ten-year period from 2018.

The Proposed Development will include an onsite 38 kV electricity substation, which will include one control building and associated electrical infrastructure required to collect, consolidate, and transmit the electricity generated by the wind turbines to the national grid.

The baseline electrical infrastructure has been assessed within a 600 m radius of the Proposed Development boundary, reflecting the anticipated zone of influence for potential direct or indirect impacts on existing grid infrastructure. This distance was considered sufficient to identify any nearby substations, overhead lines, or underground cables that could be affected by construction or operation activities. The extent of this assessment is illustrated in Figure 17-2. One electrical mast was identified within the Study Area.

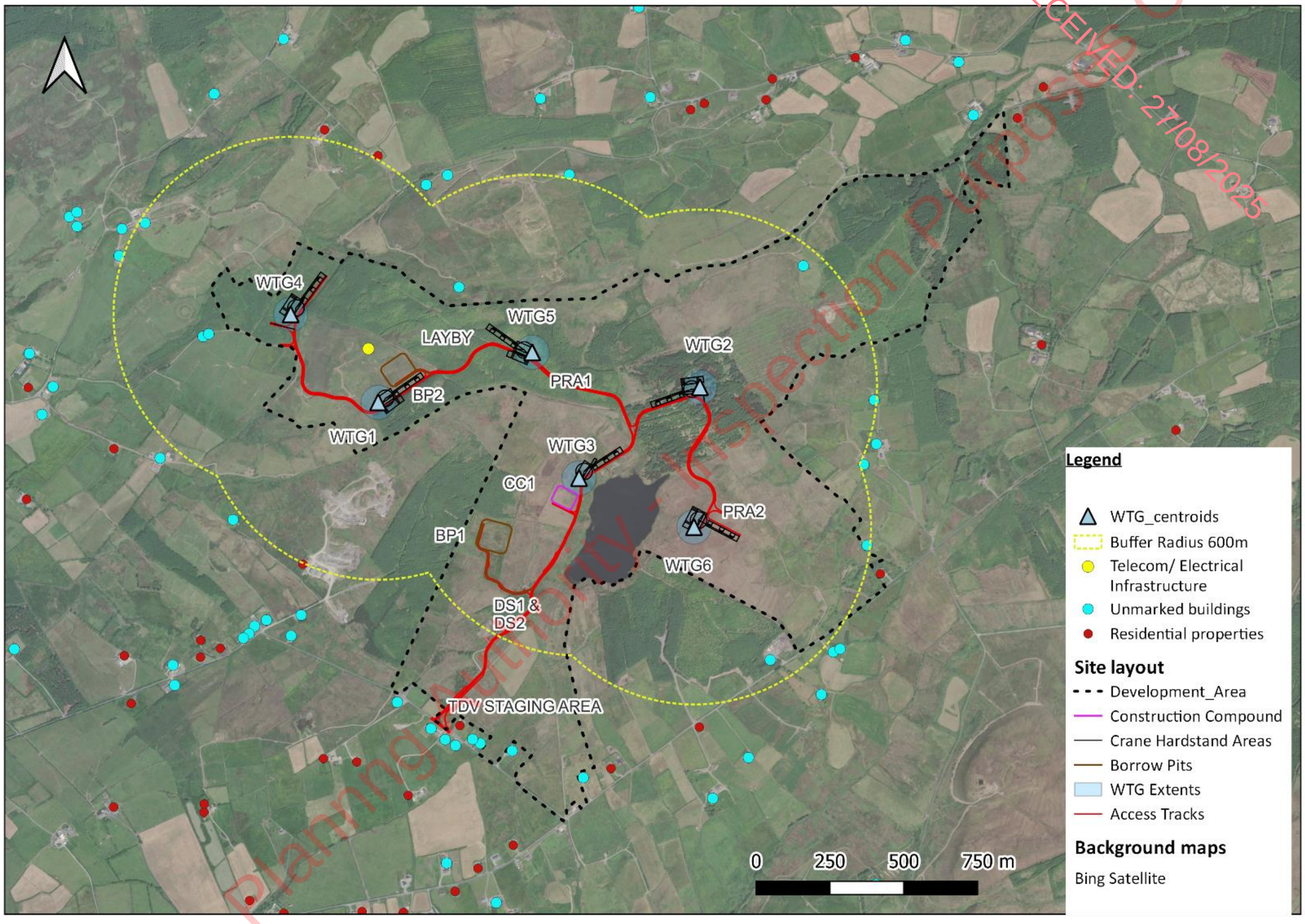



**Figure 17-2: Baseline Electrical Infrastructure and Electrical Infrastructure Study Area.**

### 17.3.3 TELECOMMUNICATIONS

The baseline telecommunications infrastructure has been assessed with reference to potential signal paths intersecting the Proposed Development boundary, reflecting the zone of influence for potential interference with existing telecommunications infrastructure. This approach was considered appropriate given the nature of point-to-point microwave links, which may be affected by obstructions within their transmission path even in the absence of physical infrastructure on-site.

As illustrated in Figure 17-3, five point-to-point microwave radio links have been identified as passing through the footprint of the Proposed Development.

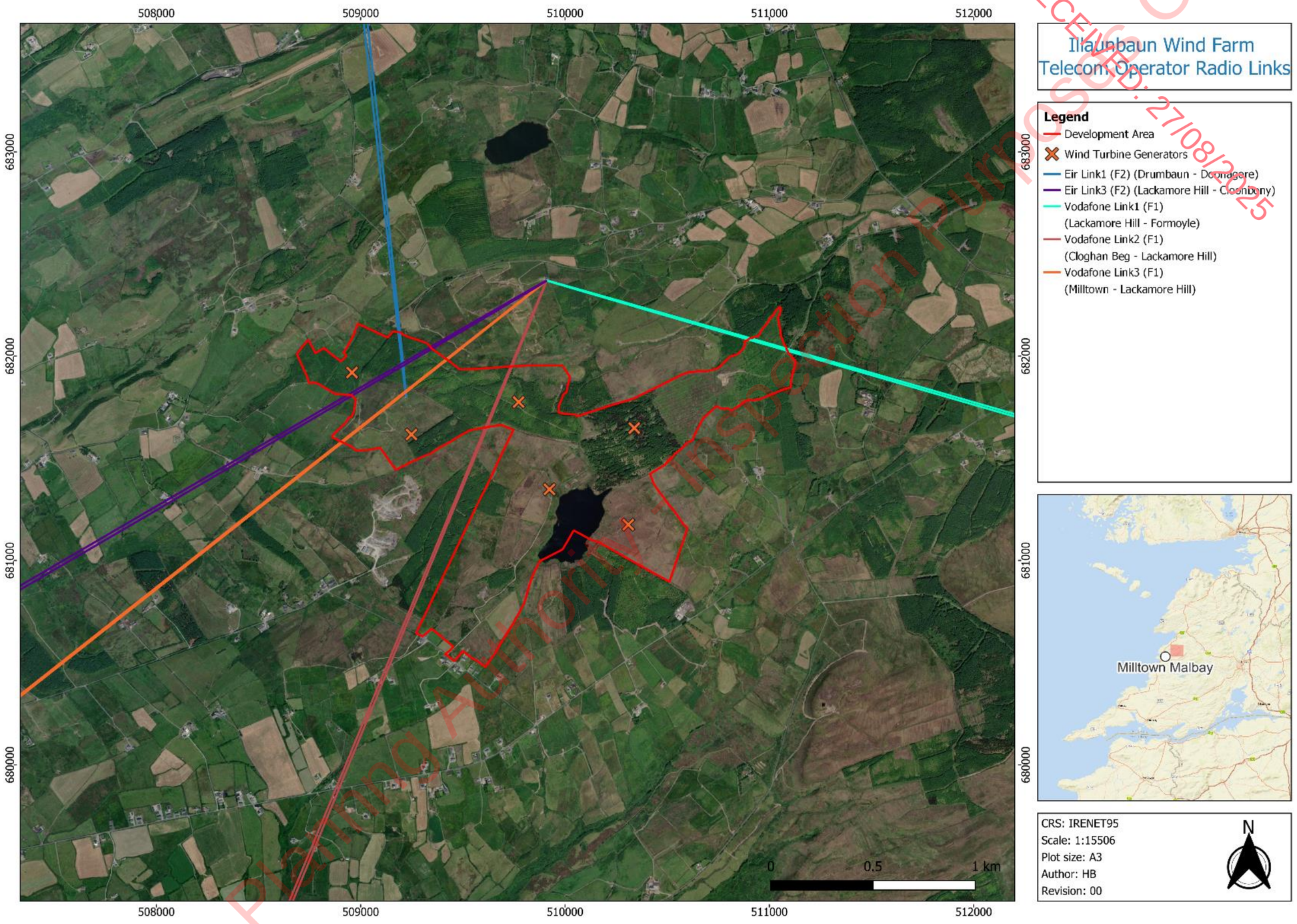



**Figure 17-3: Telecommunications Operator networks shown relative to the Illaunbaun Wind Farm.**

#### 17.3.3.1 BROADCAST COMMUNICATIONS

Wind turbines are large vertical structures and, like all such features, have the potential to interfere with broadcast signals. This can occur either by acting as a physical barrier in the line-of-sight between transmitters and receivers, or through the scattering or reflection of microwave signals.

The most significant domestic effect relates to a possible flicker effect, which is caused by the rotating blades, potentially disrupting radio signals. The potential for interference is generally greatest when a wind farm is located directly within the path of a broadcast transmission signal.

#### 17.3.3.2 DOMESTIC RECEIVERS

Depending on local topography, domestic receivers may receive broadcast signals from multiple locations. Signal strength varies depending on the distance from the transmitter, and the receiver's antenna is typically directed towards the nearest, and usually strongest, broadcasting station.

Wind farms have the potential to cause two different types of electromagnetic interference to domestic receivers, depending on the location of the receiver in relation to the wind farm. 'Shadowed' houses are those located directly behind a wind farm, relative to the location that the signal source. In such cases, the main signal will pass through the wind farm, and the rotating blades can create a scattering of the signal. When these effects are experienced for houses which are located adjacent to the wind farm (again relative to the broadcast signal direction), the observed interference is more likely due to periodic reflections from the blades, resulting in a delayed secondary signal.

For both scenarios (properties located behind and beside the wind farm), the effects of electromagnetic interference may also vary with wind direction, since the rotor's pane of rotation influences both the line-of-sight obstruction and the degree of reflection experienced by nearby receivers.

#### 17.3.3.3 OTHER SIGNAL TYPES

Wind turbines have the potential to affect other types of signals used for communications and navigational systems, including tower-to-tower microwave communication links, as well as airborne and ground-based radar systems.

Turbines can interfere with radar systems when located in close proximity to airports or directly in line with the instrument landing approach. This effect can be easily dealt with by detailed micro-siting of turbines in order to avoid direct alignment with signal paths, or by the use of signal divertors or relay links positioned out of line with the wind farm.

#### 17.3.3.4 PREVENTING ELECTROMAGNETIC INTERFERENCE: NATIONAL GUIDELINES

The *Wind Energy Development Guidelines for Planning Authorities* (Department of the Environment, Heritage and Local Government, 2006) state that interference with broadcast communications can be overcome by the installation of deflectors or repeaters where required. When proposing a wind farm development, developers are advised to engage with relevant local and national broadcasters, as well as mobile phone operators, to inform them of the proposals to develop wind farms. Both the adopted 2006 and the 2019 draft *Wind Energy Development Guidelines for Planning Authorities*

produced by the Department of the Environment, Heritage and Local Government (DOEHLG) state that the interference with broadcast or communications may be resolved through appropriate mitigation measures such as the installation of deflectors or repeaters.

### 17.3.4 TELEVISION

Data obtained from Saorview in 2025, was used to produce Figure 17-4, which identifies the Television transmitters in proximity to the Proposed Development.

The map suggests that the television coverage for Saorview may be limited at the south of the Proposed Development area, likely due to the distance to the nearest TV transmitters.

### 17.3.5 GAS

Based on data acquired from Gas Networks Ireland (GNI, 2025), there are no gas transmission lines located within the footprint of the Proposed Development, as illustrated in Figure 17-5. This conclusion is based on a review of available national gas infrastructure datasets and verified against GNI schematic mapping. A search buffer extending beyond the site boundary was used to ensure that no nearby transmission infrastructure would be affected by the Proposed Development.

### 17.3.6 WATER SUPPLY AND WASTEWATER NETWORK

Based on data acquired from the EPA website (EPA, 2020), there are no existing watermains or wastewater infrastructure located within 1 km of the Proposed Development, as seen in Figure 17-6.

The closest Wastewater Infrastructure is 4.6 km to the west of the Site Boundary.

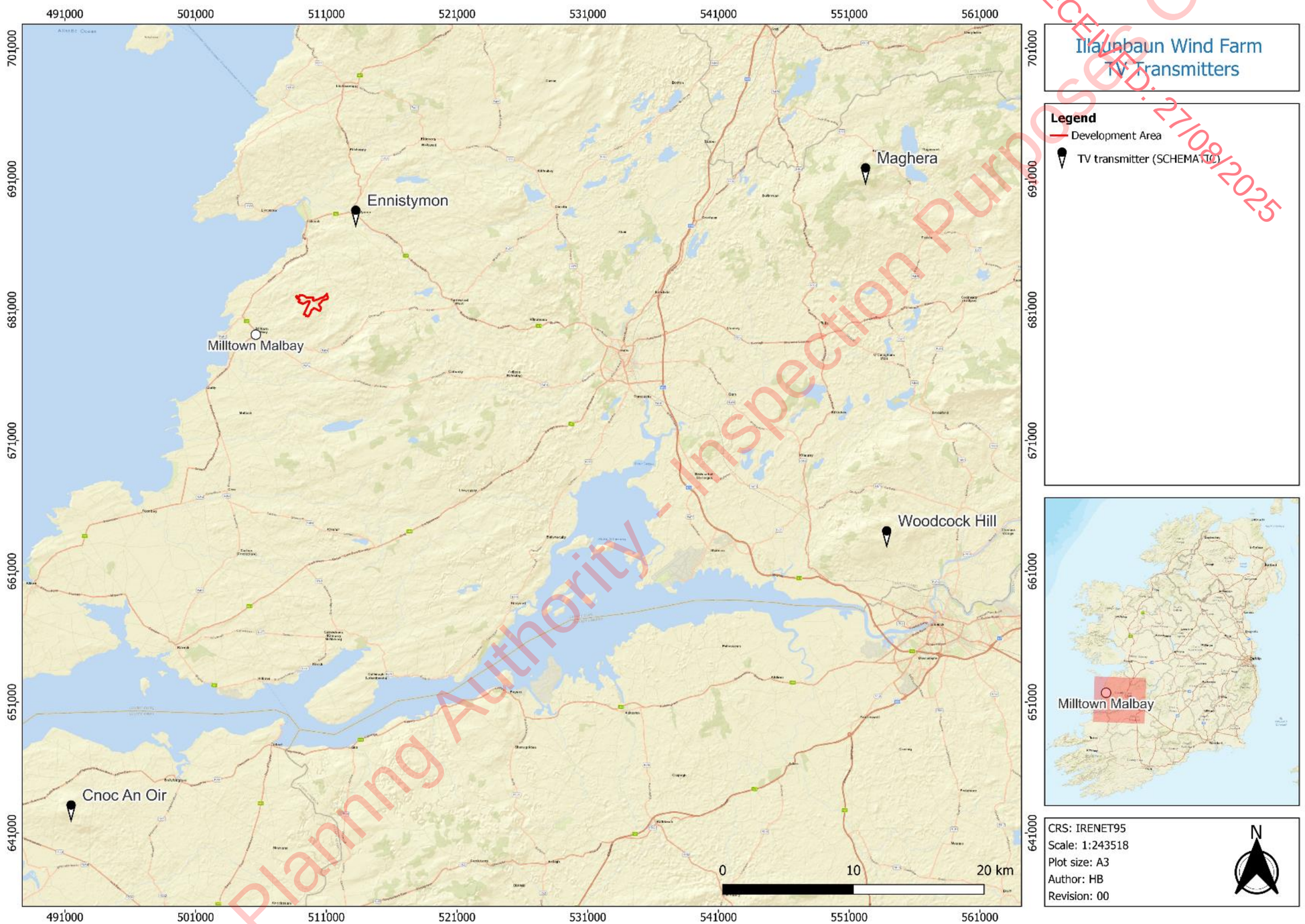



**Figure 17-4: TV Transmitters in proximity to the Proposed Development**

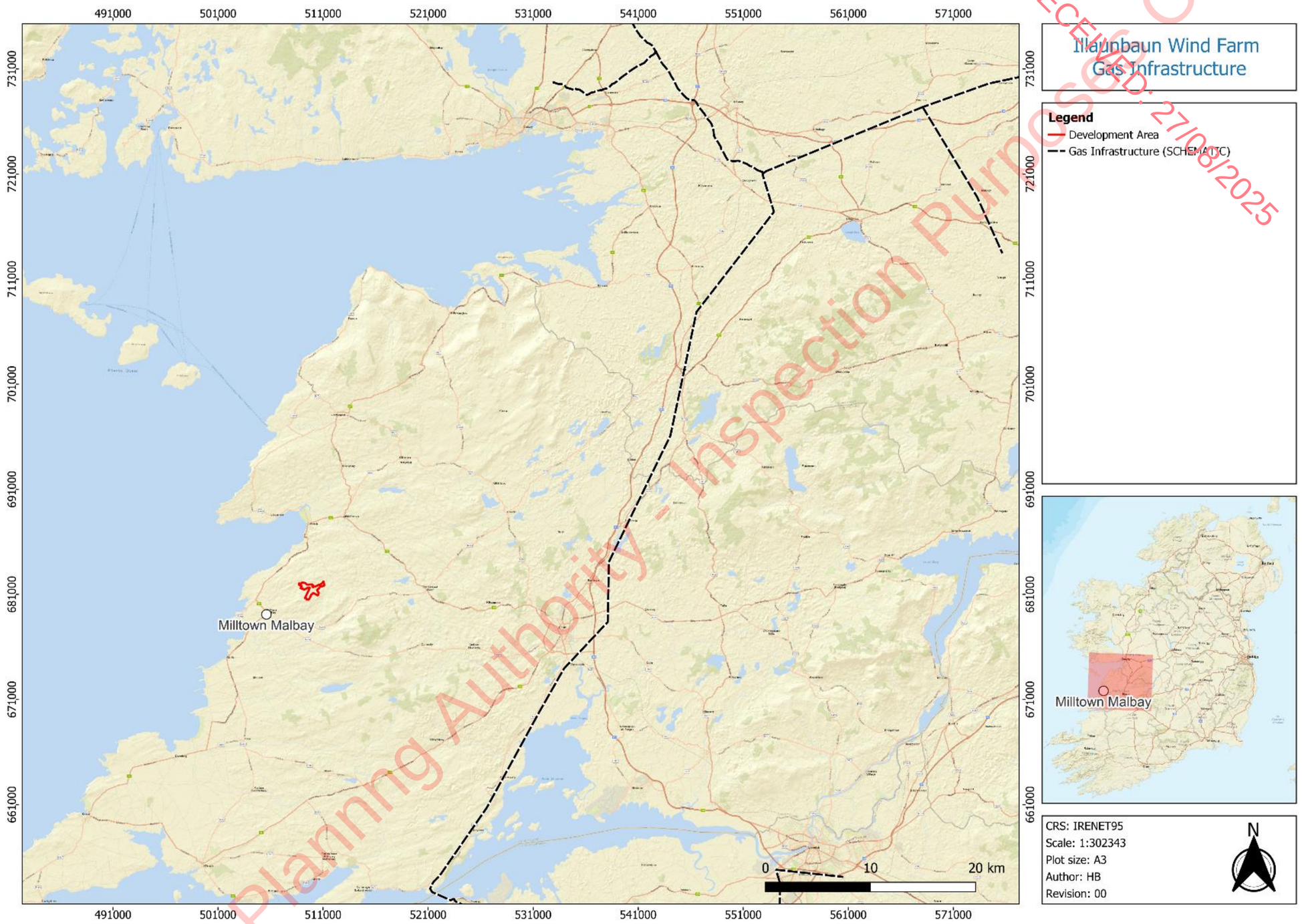



**Figure 17-5: Gas Infrastructure Map in proximity to the Proposed Development**

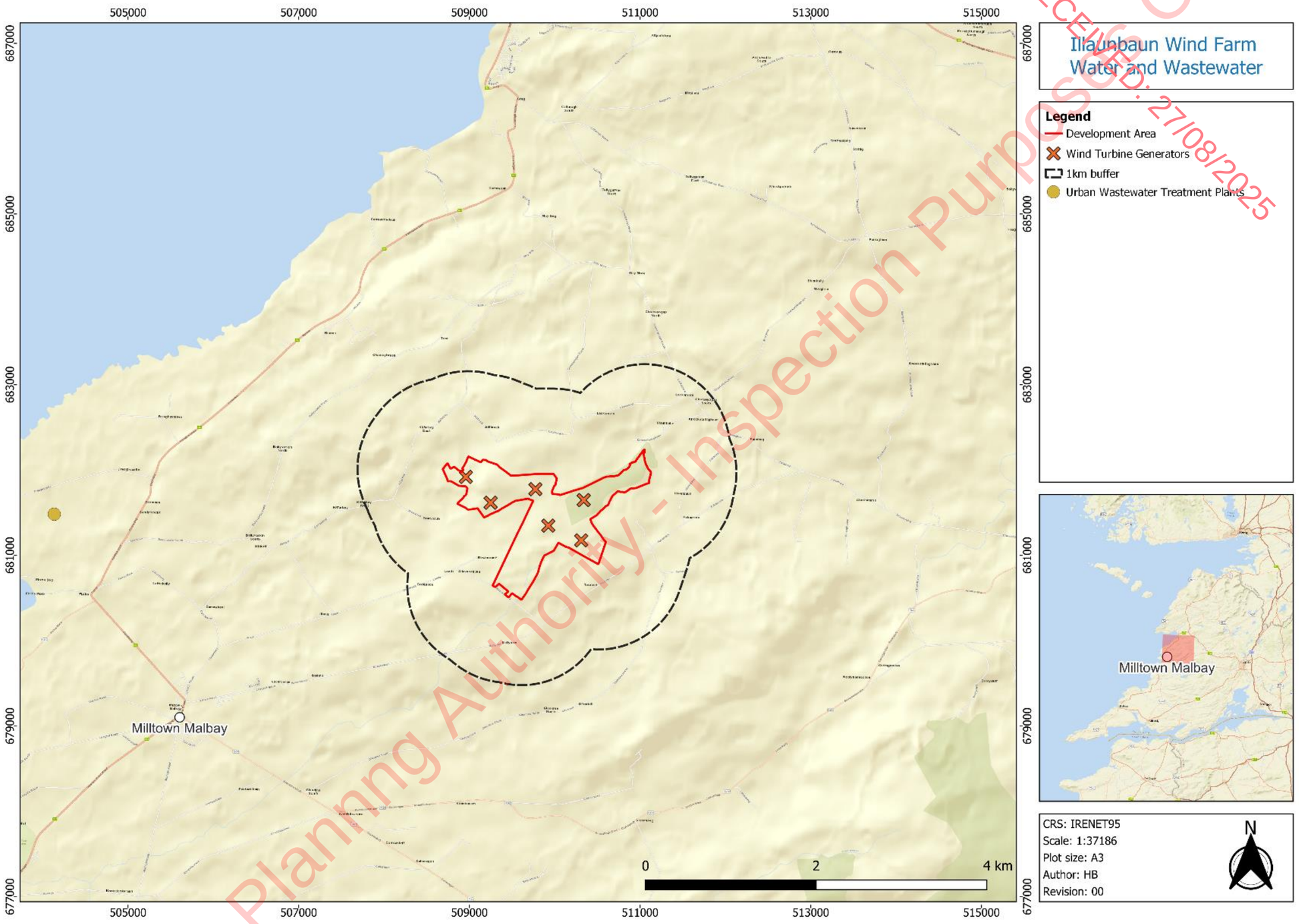



**Figure 17-6: Water and Wastewater Infrastructure in proximity to the Proposed Development**

### 17.3.7 AVIATION

The development of large energy projects has the potential to impact air services and operations in proximity to the Proposed Development. Wind turbines located close to airports or beneath flight paths can affect aviation operations either directly, by posing physical obstructions to flight safety or airspace requirements, or indirectly, by interfering with radar systems and other navigational aids.

**Table 17-6: Aviation facilities in proximity to the Proposed Development**

| Location | Installation | Description |
|---|---|---|
| Shannon, Co. Clare | International Airport | Single asphalt runway<br>Airspace: Class C |
| Spanish Point Rd, Spanish Point, Co. Clare | Private Unlicensed Airstrip | Single grass-strip runway (code 1)<br>Airspace: Class G |

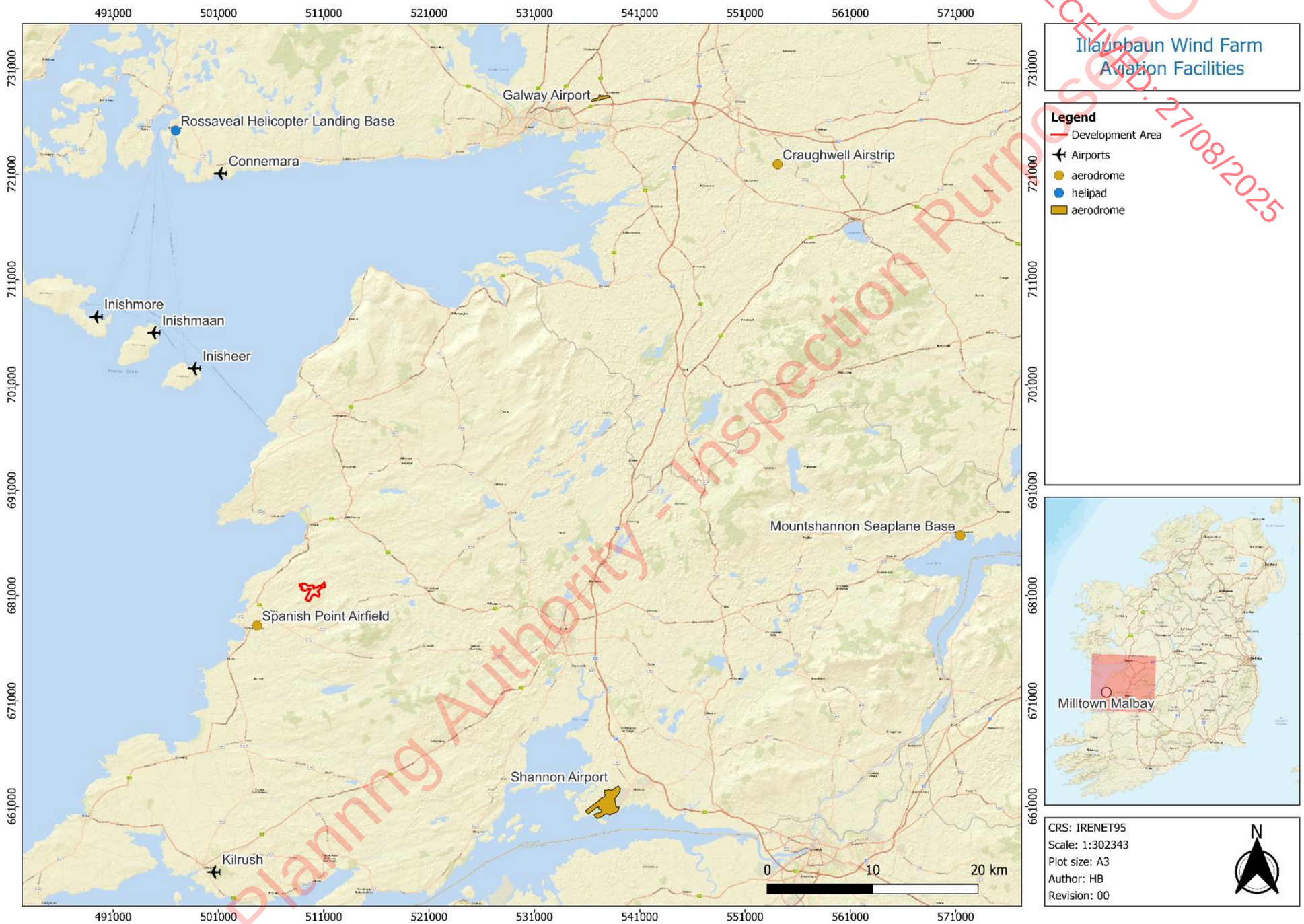
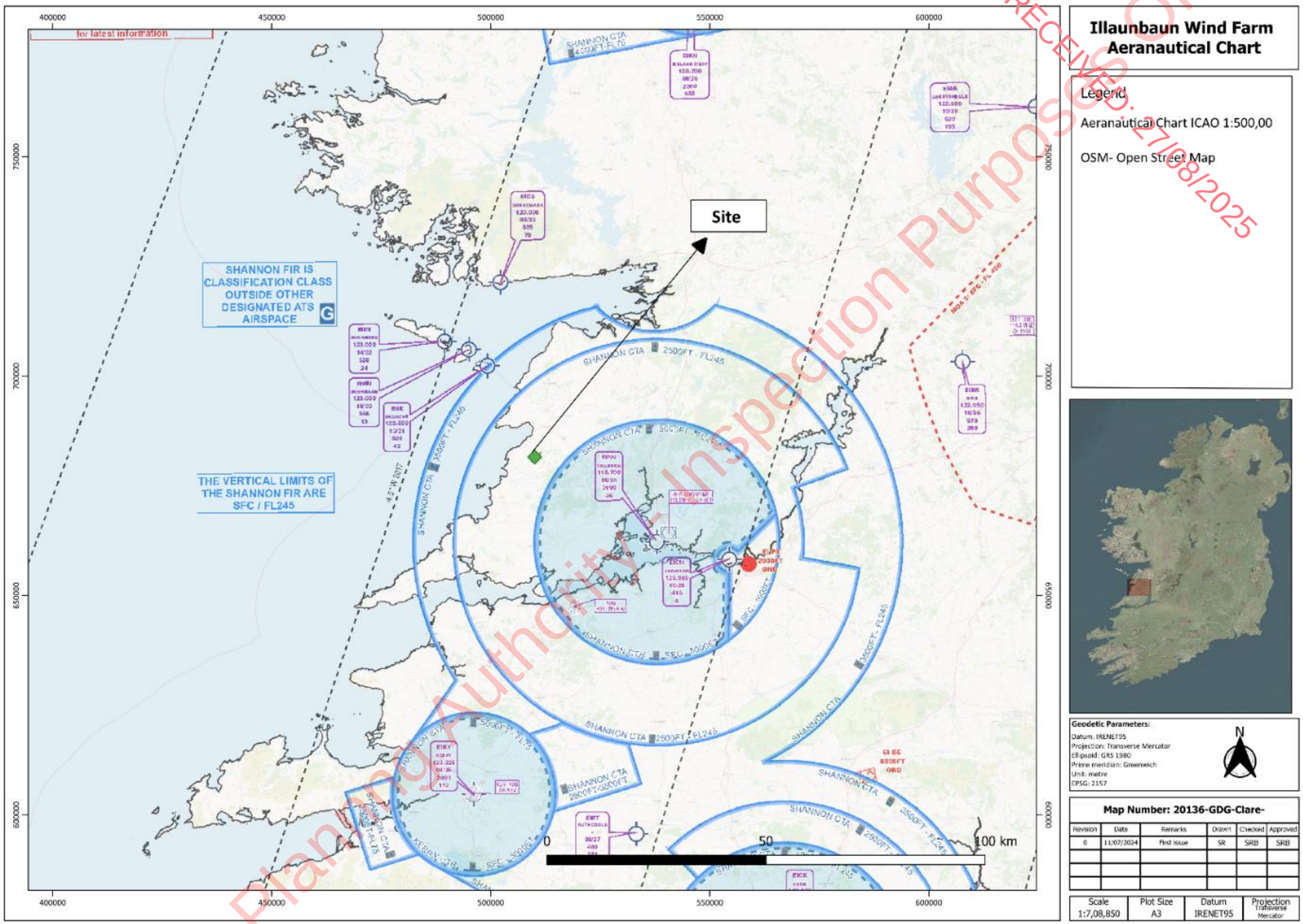



**Figure 17-7: Aviation Facilities in proximity to the Proposed Development**




**Illaunbaun Wind Farm**
**Aeranautical Chart**

Legend

Aeranautical Chart ICAO 1:500,00

OSM- Open Street Map



**Geodetic Parameters:**
Datum: IRENET95
Projection: Transverse Mercator
Ellipsoid: GRS 1980
Prime meridian: Greenwich
Unit: metre
EPSG: 2157

N

**Map Number: 20136-GDG-Clare-**

| Revision | Date | Remarks | Drawn | Checked | Approved |
|---|---|---|---|---|---|
| 0 | 11/07/2024 | First Issue | SR | SRB | SRB |
| | | | | | |
| | | | | | |
| | | | | | |

| Scale | Plot Size | Datum | Projection |
|---|---|---|---|
| 1:7,08,850 | A3 | IRENET95 | Transverse Mercator |

**Figure 17-8: Aeronautical Chart**

#### 17.3.7.1 AIRSPACE DESIGNATIONS

The Study Area is located underneath the Shannon Control Area (CTA) (Figure 17-8), within which the IAA is the main provider of air navigation services. In line with international aviation regulations, airspace in Ireland is categorised into seven classifications (Class A to Class G); the services provided within each classification are based on speed limitations, types of flights and rules for separation of aircraft. The Study Area is in an area of Class C controlled airspace and is established from the surface up to 5,000 feet (ft) above mean sea level (amsl). Part of the Array Area on the western side is in an area of Class C controlled airspace, which is established from the surface up to 2,500 ft amsl. Above this altitude, Class C controlled airspace is established up to Flight Level (FL) 245 (24,500 ft), which forms part of the Shannon CTA. Within these classifications of airspace, the following rules apply:

- Class C Airspace: aircraft operating within Class C controlled airspace must be in receipt of an ATS from an appropriate Air Traffic Control (ATC) unit. Both instrument flight rules (IFR) and visual flight rules (VFR) flights are permitted, and both require ATC clearance and separation service is to be provided by (ATC) (IAA, 2023).

The Proposed Development is located entirely in Irish airspace and within the Shannon Flight Information Region (FIR). A FIR is the airspace within which an air traffic control authority's responsibility is bounded. The FIR boundary between Irish and UK airspace is located 116 nautical miles (nm) (215 km) to the southeast of the Study Area, where the Shannon FIR borders the London FIR (Figure 17-9).

#### 17.3.7.2 MILITARY AVIATION OPERATIONS, EXERCISE AND TRAINING AREAS

The Irish Air Corps *Air Corps Wind Farm/Tall Structures Position Paper* published on 08th August 2014 (Appendix B), states that the Air Corps are likely to oppose any wind farm / tall structure in the following restricted areas:

- Lands underlying military airspace for flying activity. (Areas contained in Danger Areas EI-D1, EI-D5, EI-D6, EI-D13, EI-D14, Restricted Areas EI-R15, EI-R16 within 20 NM of Baldonnel, MOAs 3 and 4 within 20 NM of Baldonnel.
- Low Flying Training Areas within MOA 4 in the areas of; Blessignton, Edenderry/Allenwood/Rathangan, Kilmeague/Newbridge.
- Low Flying Training Area West – LFTA WEST.
- A distance of 5 NM or less from military installations.
- Critical low level flying routes in support of Air Corps operation requirements, as described in section (2) c) of the above-mentioned document.

Ireland's Department of Defence (DoD) Air Corps operates a fleet of fixed and rotary wing aircraft providing military support to the Army and Naval services, together with non-military tasks such as Garda air support, air ambulance, fisheries protection and the Ministerial Air Transport Service. The nearest of the Air Corps restricted areas to the Proposed Development is the 5 NM restricted Zone around the Army Barracks at Renmore, Co Galway.

#### 17.3.7.3 IRISH AIR CORPS ACTIVITIES

The nearest operational DoD aerodrome to the Study Area is the Casement Aerodrome, Baldonnel, 105 NM (195 km) to the northeast. The nearest military exercise and training area is the military operating area (MOA) 5, located 47 NM (87 km) to the east of the Study Area. This is an active MOA used for military flying training with an upper limit of 4,500 ft AMSL/SFC (IAA, 2024).

#### 17.3.7.4 CIVIL AIRPORTS

The nearest major civil airport to the Study Area is Shannon Airport, located 17.8 NM (33 km) to the southeast. Shannon Airport is one of Ireland's primary international airports and plays a key role in supporting the economy, tourism, and transport links in the west of Ireland. As seen in Figure 17-7, the Proposed Development is located approximately 33 km from Shannon Airport. In addition, the site is located approximately 6 km from the Spanish Point Airfield, a small private airstrip (see also Figure 17-7).

As defined in the scoping report for the Proposed Development, a study area has been defined and is depicted in the aeronautical chart (Figure 17-8). The figure displays all aeronautical information within the proposed Study Area; however, only airspace designations relevant to the Proposed Development are labelled.

#### 17.3.7.5 CIVIL RADAR

Civil airspace and air traffic surveillance and management infrastructure is comprised of the following systems:

- Primary Surveillance Radar (PSR)
- Secondary Surveillance Radar (SSR)
- Aeronautical Navigation Aids (NAVAIDs)

*Primary and Secondary Surveillance Radar*

Primary Surveillance Radar (PSRs) are used for non-co-operative surveillance and to provide ATS to aircraft arriving and departing to/from aerodromes and airports, and in the transit phase of flight. The IAA use PSR primarily for civil airport and military airfield operations in Ireland. There are three PSRs in Ireland located at Cork, Dublin and Shannon airports. The nearest PSR to the Study Area is located at Shannon Airport, approximately 17.8 NM (33 km) to the south.

SSR is used in conjunction with PSR to provide additional information about aircraft. SSR is used for cooperative surveillance of aircraft arriving and departing to/from aerodromes and airports, and in the transit phase of flight. Only aircraft with a transponder can be detected by SSR.

The nearest SSR to the Study Area is located at Shannon Airport (Air Navigation Services Ireland, 2022), 17.8 NM (33 km) to the south. The potential impact on SSR will be assessed in line with the relevant safeguarding distances as per ICAO EUR DOC 015 (ICAO, 2015) and CAP 670 (UK Civil Aviation Authority, 2019).

The EUROCONTROL Guidelines require a 16 km safe distance for a "Zone 4 - No Assessment" condition, and detailed assessments are required for any Proposed Development within 16 km of a secondary surveillance radar (Table 17-7).

**Table 17-7: PSR and SSR zone arrangements (Irish Aviation Authority, 2024)**

| Zone | | Description | Assessment Requirements |
|---|---|---|---|
| PSR | Zone 1 | 0 – 500 m | Safeguarding |
| | Zone 2 | 500 m – 15 km, and in the radar line of sight | Detailed assessment |
| | Zone 3 | Further than 15 km and in the radar line of sight | Simple assessment |
| | Zone 4 | Not in the radar line of sight | No assessment |
| SSR | Zone 1 | 0 – 500 m | Safeguarding |
| | Zone 2 | 500 m – 16 km but within maximum instrumented range and in radar line of sight | Detailed assessment |
| | Zone 4 | Further than 16 km and not in radar line of sight | No assessment |

*NAVAIDS*

A Non-Directional Beacon (NBD) Navigational aid (NAVAID) is located at Shannon Airport near the Study Area (Dauntless Aviation, 2024). The potential impact on this NAVAID will be assessed in line with the relevant safeguarding distances as per ICAO EUR DOC 015 (ICAO, 2015) and CAP 670 (UK Civil Aviation Authority, 2019).

#### 17.3.7.6 MILITARY RADAR

In Ireland, military ATS are provided by the Irish Air Corps using radar data fed directly from IAA-operated PSRs. At Casement Aerodrome (105 NM (195 km) to the east of the Study Area), military controllers provide ATS using radar data from the Dublin Airport PSR. Ireland's DoD has no dedicated PSRs that require safeguarding from the potential effects of the Study Area.

#### 17.3.7.7 METEOROLOGICAL RADAR

Meteorological radar detects precipitation and estimates its type, severity and motion. The nearest Met Eireann meteorological radar is at Shannon Airport, one of two radars which are part of the national weather radar network (the other at Dublin Airport). No meteorological radar has been identified within 20 km of the Proposed Development, which is the recognised consultation distance for a radar of this nature.

#### 17.3.7.8 HELICOPTERS

Helicopters must avoid vessels and structures by keeping a minimum distance of 500 ft lateral separation. In visual conditions, pilots may use designated helicopter routes, or they may opt to fly direct to their destination in open air space. When operating in poor weather, pilots must fly in accordance with Instrument Flight Rules (IFR) in which helicopters require a Minimum Safe Altitude (MSA) of 1,000 ft height clearance from obstacles within 5 NM (9 km) of the aircraft. The nearest possible helicopter landing sites are Spanish Point Helipad, St Joseph's GAA Field and Moy GAA Field. These are located approximately 10 km, 9 km and 4 km from the Proposed Development.

#### 17.3.7.9 IRISH COAST GUARD

In Ireland, the Irish Coast Guard operates five helicopters deployed at bases in Dublin, Waterford, Shannon and Sligo, which respond to emergencies at sea, inland waterways, offshore islands and the mountains of Ireland. The nearest base to the Proposed Development is the Shannon base, which is approximately 30 km away.

#### 17.3.7.10 GARDA AIR SUPPORT UNIT (GASU)

The Garda Air Support Unit (GASU) is based at Casement Aerodrome, Baldonnel and is typically deployed to incidents in the following cases:

- Immediate threat to life
- Incidents of a criminal, terrorist or other nationally important nature
- Immediate threat of serious public disorder
- Tasks leading to the prevention or detection of crime
- Evidence gathering
- Intelligence gathering
- Photographic tasks
- Traffic Management/Monitoring

The unit consists of one fixed-wing aircraft (a Pilatus Britten-Norman BN 2T-4S Defender 4000) and two helicopters (Eurocopter EC 135 T2). The Casement Aerodrome in located approximately 200 km away from the Proposed Development.

#### 17.3.7.11 THE EMERGENCY AEROMEDICAL SERVICE

The Emergency Aeromedical Service (EAS) is based in and operates from the Custume Barracks in Athlone. The aircraft utilised by the EAS is an Irish Air Corps Euro-copter 135 and is used for time-critical medical emergencies. Figure 17-9 shows the flying times from the EAS base at Athlone.

The Proposed Development is located approximately 4 km northeast of Milltown Malbay and in an area that is relatively sparsely populated. Helicopter landings are highly unlikely to occur in the subject area due to the location's forested/boggy terrain.

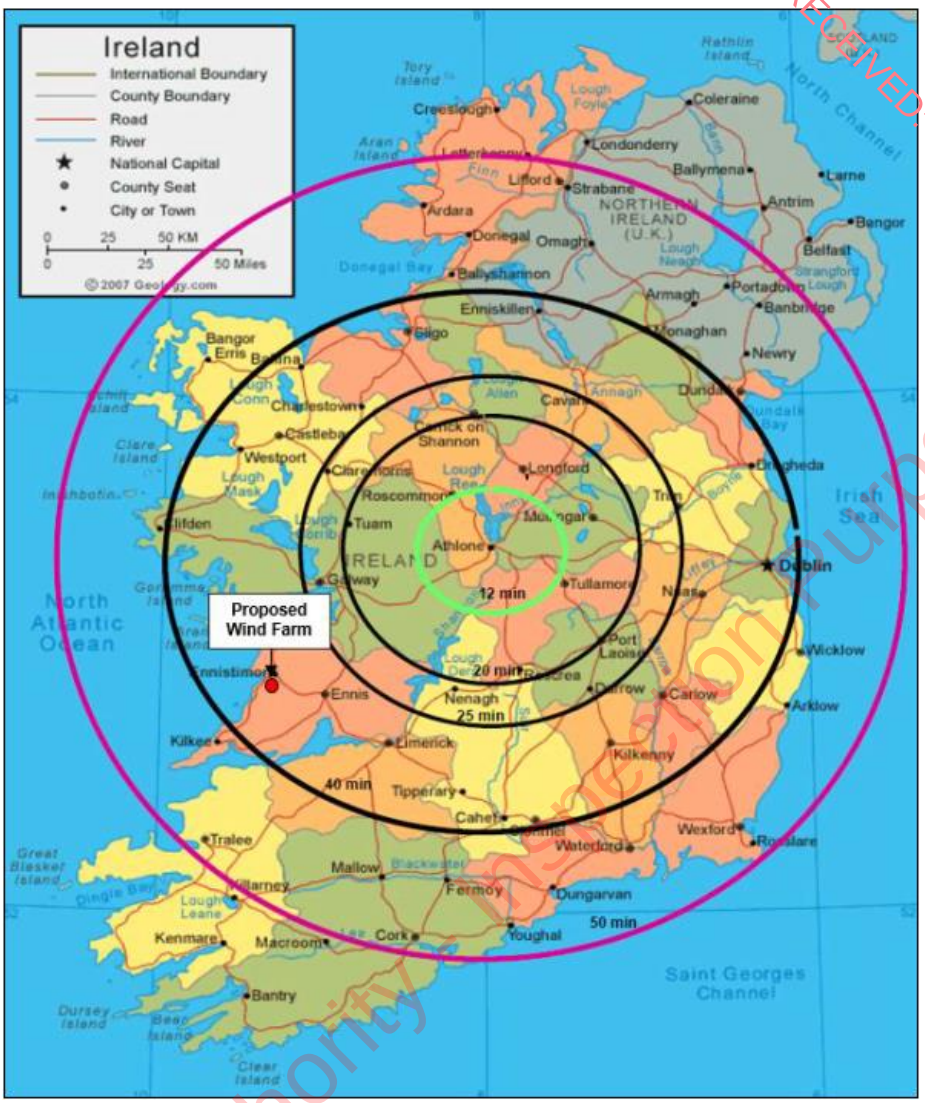



**Figure 17-9: EAS flying times from Athlone**

### 17.3.8 WASTE MANAGEMENT

There are no EPA-licensed or local authority-authorised waste facilities or activities located within the proposed site boundary. The nearest landfill site is Doora Landfill Site which is located approximately 24 km from the Proposed Development.

## 17.4 ASSESSMENT OF EFFECTS

### 17.4.1 'DO-NOTHING' SCENARIO

If the Proposed Development were not to proceed, no changes would occur to existing built services, telecommunications or aviation operations in the Study Area. The baseline condition of material assets would remain unchanged, with no new infrastructure introduced and no risk of interference or disruption to existing networks.

### 17.4.2 CONSTRUCTION PHASE

#### 17.4.2.1 ELECTRICAL INFRASTRUCTURE

During the construction phase, disruptions to the electricity supply are not anticipated. However, if required, temporary works associated with the grid connection may necessitate brief, planned interruptions. These would be managed by EirGrid and/or ESB Networks, who will balance the network loading to minimise any potential effects and ensure continuity of service to existing users.

The grid connection route for the Proposed Development is shown in Figure 17-10.

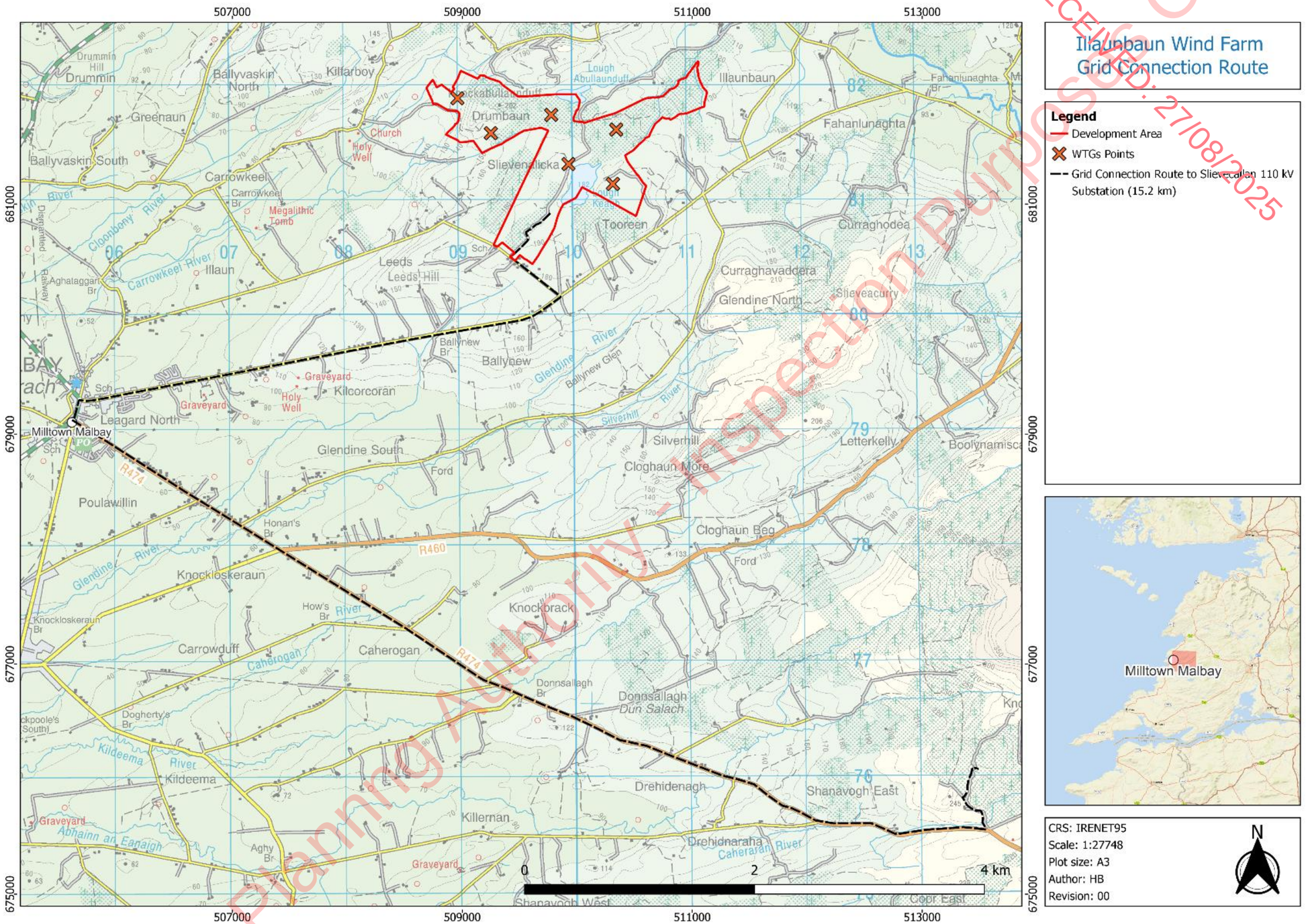



**Figure 17-10: Proposed Grid connection route for the Proposed Development**

In the absence of mitigation, the construction phase will have a *negative, not significant* and *temporary* effect on the grid capacity and electrical infrastructure in the local area.

#### 17.4.2.2 TELECOMMUNICATIONS

Electromagnetic interference from wind turbines arises only during the operational phase, due to the movement of the turbine blades. Therefore, no interference with telecommunications infrastructure is expected during the construction phase of the Illaunbaun Wind Farm. In the absence of specific mitigation, construction works may result in a *negative*, *not significant* and *temporary* effects. for example, due to temporary site activity in the vicinity of existing telecommunications assets.

#### 17.4.2.3 TELEVISION

As with telecommunications, any potential effects from the Illaunbaun Wind Farm on television will come in the form of electromagnetic interference. The potential for electromagnetic interference from wind turbines occurs only during the operational phase of the development; thus this will not occur during the construction phase of the Illaunbaun Wind Farm.

In the absence of mitigation, the construction phase will likely have a *negative*, *not significant* and *temporary* effect.

#### 17.4.2.4 GAS

The Proposed Development does not require any connections to the gas network, and as no gas transmission infrastructure is present within the footprint of the Proposed Development, there will be *no effects* on gas infrastructure during the construction phase.

#### 17.4.2.5 WATER SUPPLY AND WASTEWATER NETWORK

As seen previously in Figure 17-6, no water or wastewater infrastructure occurs within 1 km of the site boundary.

Water needs for construction activities will be low and limited to truck washing, wheel washing, dust suppression and sanitary facilities. It is proposed that this water requirement will be sourced from on-site rainwater collection systems and settlement ponds. It is estimated that up to approximately 3,000 litres per day of potable water will be required during peak construction for construction employees. It is proposed that this water requirement will be imported in bulk water tanks.

During the construction time period, sanitary wastewater, estimated to be 3,000 litres per day, will be collected in portable toilets. Disposal of sanitary wastes will be managed through a contract with a licensed waste contractor.

Given that the proposed development is not in the footprint of existing water/wastewater infrastructure, adverse effects on existing water infrastructure are not likely.

In the absence of mitigation, there is potential for proposed development to have a *neutral*, *imperceptible,* and *not significant* effect on existing water/wastewater infrastructure.

#### 17.4.2.6 AVIATION

Due to the height of the proposed turbines, there is potential for interaction with aviation operations. The turbines can both directly and indirectly impact aviation receptors, directly by posing a physical obstruction to flight safety or airspace requirements, and indirectly by interfering with radar systems and other navigational aids.

Prior to turbine construction, JC Mont-Fort will agree an appropriate aviation obstacle lighting scheme with the Department of Defence and the Irish Aviation Authority (IAA)/AirNav Ireland. In line with standard practice for wind farm developments in Ireland, the developer will also provide final turbine coordinates and tip elevations to the relevant authorities post-consent. Mitigation measures addressing potential impacts on aviation receptors are detailed in the dedicated Mitigation section of this EIAR (please see section 17.5.2.6).

In the absence of mitigation, the construction phase of the Proposed Development is expected to have a *slight adverse, short-term effect* on aviation receptors and this is *not expected to be significant* in EIA terms.

### 17.4.3 OPERATIONAL PHASE

#### 17.4.3.1 ELECTRICAL INFRASTRUCTURE

Once operational, the Proposed Development will be connected to the national electricity grid and will export renewable electricity via the designated grid connection infrastructure. The connection point and routing will be determined in consultation with the relevant transmission and distribution system operators, ensuring alignment with existing network planning frameworks.

The operational phase of the Proposed Development is not expected to give rise to any direct or indirect impacts on existing electrical infrastructure. The grid connection will be designed and implemented in accordance with current technical standards and the requirements of EirGrid and/or ESB Networks. No significant reinforcement of the existing grid is anticipated to facilitate the export of electricity from the Proposed Development.

The Proposed Development will not result in overloading or physical interference with existing infrastructure, and it does not require the decommissioning, relocation or modification of any existing assets. Therefore, the impact on existing electrical infrastructure during the operational phase is assessed as *neutral, not significant and long term*.

#### 17.4.3.2 TELECOMMUNICATIONS

As seen in Figure 17-3, five Telecom links operate in the vicinity of the Proposed Development, passing through the Proposed Development Boundary. According to the 3D modelling assessment report undertaken as part of this EIAR, the operational phase of the Proposed Development will have a *negative, slight and long-term effect* on telecommunications in the local area and will *not be significant* in EIA terms.

#### 17.4.3.3 TELEVISION

It is unlikely, given that the Proposed Development does not appear to be located between receptors and TV transmitters, that receptors in the vicinity of the Proposed Development could experience interference with television reception.

A signed Protocol between the JC Mont-Fort and RTÉ will be in place in which JC Mont-Fort will be responsible to resolve any issues of interference with television reception as a result of the Proposed Development.

Taking this into consideration, the operational phase of the Proposed Development will likely have *no effects* on existing television infrastructure.

#### 17.4.3.4 GAS

The Proposed Development does not require any connections to the gas network, therefore *no effects* to existing gas infrastructure will occur during the operational phase.

#### 17.4.3.5 WATER SUPPLY AND WASTEWATER NETWORK

During the operational phase, only one or two persons are expected to be on site occasionally for maintenance purposes. As such, potable water requirements would be minimal, typically limited to small volumes (e.g., bottled water) brought in as needed. This level of demand would have no measurable impact on local water supply infrastructure. During the operational phase, wastewater generation from any welfare facilities on site is expected to be minimal, as only one or two maintenance personnel are anticipated to visit the site occasionally. Any wastewater will be drained to integrated holding tanks associated with the toilet units. The stored effluent will be collected periodically by a fully licenced and permitted waste contractor and transported to a licenced waste facility for appropriate treatment and disposal. The operational phase of the Proposed Development will likely have a *neutral, imperceptible* and *long-term and not significant* effect on the existing water and wastewater infrastructure.

#### 17.4.3.6 AVIATION

The only potential effects on aviation associated with the Proposed Development are associated with the erection of the wind turbines on site. During the operational phase of the Proposed Development, the wind turbines will not have any effects on aviation receptors as the turbines will have suitable aviation obstacle warning lights to alert any aircraft to their presence. Therefore, the operational phase of the Proposed Development is expected to have *no effects* on aviation.

#### 17.4.3.7 WASTE MANAGEMENT

Once the Proposed Development is operational, minimal amounts of solid waste will be generated, which will be collected onsite and transported to a licenced disposal or recycling facility by a full licenced and permitted waste hauling contractor. Any hazardous materials such as gear and hydraulic oils used in the operation of the wind turbines and mineral oils used in transformers, will be disposed of in accordance with all applicable laws and regulations including those outlined in Chapter 2 of this EIAR and Section 17.1.1 of this EIAR chapter.

The types of waste to be generated would be different to those generated during the construction of the Proposed Development. The waste generated during the operational phase will primarily come in the form of plastic waste and packaging from contractors and maintenance employees visiting the site. Waste volumes are not likely to be significant as to require new permitted treatment, storage and disposal facilities.

The use of non-permitted waste contractors or unauthorised facilities during the operational phase could lead to inappropriate management of waste and result in adverse environmental effects in the form of waste pollution. The waste generated on site will be collected and disposed of regularly by fully-licensed waste management professionals. Therefore, it is expected that the operational phase of the Proposed Development will have *no effects* on the local area.

### *17.4.4 DECOMMISSIONING PHASE*

The process of removing a wind turbine during any decommissioning phase would follow a similar process to the delivery of the wind turbines for the construction phase, with similar LGV traffic volumes and impacts. The total volume of HGV traffic will be slightly reduced compared to the construction phase.

The wind turbines for the Proposed Development have a lifespan of approximately 30-35 years, which may have increased before the decommissioning phase commences due to constant advancements in technology and ongoing research. Once the turbines have reached the end of their 'useful life', the turbines may be replaced with new turbines, depending on the planning requirements at that time, or the Proposed Development may be entirely decommissioned. It is most likely that the substation will remain in place and will be taken in charge by the system operator, after the wind farm is connected to the national electricity grid.

During the decommissioning phase of the Proposed Development, the wind turbines will be disassembled in the reverse order in which they were erected. It is likely the turbines will be disassembled using a similar model of crane to that which erected the turbines during the construction phase. The turbines will also likely follow the transport route and methods in which they were transported to the site during the construction phase. It is expected that approximately 85% of the turbine components will be reused or recycled, including steel, copper wire, electronics and gearing. At present, the fiberglass blades are difficult to recycle and are usually disposed of via landfill. This disposal via landfill would be a *moderate, negative, temporary and not significant* effect of the Proposed Development and is likely to require a new treatment technology and/or facility.

Current best practice is to leave the turbine foundations in-situ, covering them with earth and reseeding them as appropriate. This is considered a more environmentally sustainable method than removing the large volume of reinforced concrete from the ground which would lead to environmental emissions through noise, dust and vibrations.

The proposed access tracks to the site are most likely to be left in-situ, however they can also be removed if they are confirmed to be of no practical use in the future. Any underground cabling will be removed, with the ducting left in place. Overall, the effect of the decommissioning phase is likely to be *slight* and *negative* and of *short-term* duration and will *not be significant* in EIA terms.

#### 17.4.4.1 ELECTRICAL INFRASTRUCTURE

During the decommissioning of the Proposed Development, there is not expected to be any effects to or downtime of electrical infrastructure, but there is a minor possibility for downtime in the local area as a precautionary measure, all this will be done as per the EirGrid/ESB instructions and supervision. As there would be a greater environmental impact from removing the underground cables, it is proposed that the underground cables associated with the Proposed Development are left in-situ. These impacts will have a *slight, negative* and *short-term* effect on the local area and are considered *not significant* in EIA terms.

#### 17.4.4.2 TELECOMMUNICATIONS

During the decommissioning phase of the Proposed Development, no effects on telecommunications are anticipated, as potential interference with signals only arises during the operational phase The decommissioning activities will not introduce any new obstructions to telecommunication signals. Therefore, the decommissioning phase of the Proposed Development will have *no effects* on telecommunications.

#### 17.4.4.3 TELEVISION

The decommissioning phase of the Proposed Development will not have any effects on television receptors, as any potential interference would only occur during operation, when turbine structures may obstruct signal paths. No such obstruction will be present during decommissioning. The decommissioning phase of the Proposed Development will have *no effects* on television receptors.

#### 17.4.4.4 GAS

As no gas infrastructure lies within the development area, there will be *no effects* on gas infrastructure during the decommissioning phase of the Proposed Development.

#### 17.4.4.5 WATER SUPPLY AND WASTEWATER NETWORK

As seen in Figure 17-6, no water supply or wastewater network infrastructure occurs within the 1 km buffer around the Proposed Development. Due to the absence of infrastructure, *no effects* on water supply and wastewater network infrastructure will occur during the decommissioning phase of the Proposed Development.

#### 17.4.4.6 AVIATION

The only potential effects on aviation associated with the Proposed Development are associated with the tall machinery required to decommission the wind turbines. The relevant authorities will be notified of the decommissioning process in advance in order to prevent the risk of any incidents occurring.

#### 17.4.4.7 WASTE MANAGEMENT

The decommissioning phase of the Proposed Development will result in the disposal of the site infrastructure, including turbine components, which will be separated and removed off-site for re-use, recycling and appropriate waste disposal at licensed waste facilities.

At this stage, it is anticipated that the turbine foundations and hardstanding areas may be left in place and covered with topsoil. Similarly, the retention of access roads in-situ at the end of the decommissioning phase at the end of the decommissioning phase will be considered. This approach is currently viewed as potentially causing less environmental disturbance than full removal and recycling of these elements. However, if removal is ultimately deemed more appropriate, all infrastructure will be dismantled and removed, with mitigation measures similar to those employed during the construction phase applied during decommissioning.

## 17.5 MITIGATION MEASURES

### 17.5.1 EMBEDDED MITIGATION

With due reference to the baseline assessments and the EIAR Scoping Report, the design of the Proposed Development has followed an iterative process which best accounts for the sensitivity of key material assets receptors.

As a result of this, where possible, sensitive receptors have been avoided during the initial design of infrastructure components to minimise any potential impact which may arise from works associated with the construction, operational and decommissioning phases of wind farm development.

Specific embedded or designed-in mitigation measures which have dictated infrastructure design and which the developer has committed to implement in full and are outlined below. Those activities that still have the potential to cause potential impacts on the sensitive receptors after embedded mitigation has been accounted for and are outlined below.

### 17.5.2 CONSTRUCTION PHASE

#### 17.5.2.1 ELECTRICAL INFRASTRUCTURE

The successful contractor will be responsible for putting measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with ESB Networks.

Ongoing consultation with ESB Networks will take place when any works in close proximity to ESB infrastructure are taking place. In addition, all works will be in compliance with any requirement or guidelines that the ESB may have, including procedures to ensure safe working practices are implemented when working near ESB infrastructure, such as overhead wires, is taking place.

#### 17.5.2.2 TELECOMMUNICATIONS

JC Mont-Fort are committed to working with telecommunications providers to resolve any interference which may potentially occur due to the Proposed Development, although it is not expected that there will be any effects on telecommunications during the construction phase of the Proposed Development.

Contractors will be required to adhere to good practice measures outlined in the Construction Environmental Management Plan (CEMP), which accompanies this report, to prevent any impacts to telecommunications from occurring.

#### 17.5.2.3 TELEVISION

JC Mont-Fort are committed to working with television service providers to resolve any interference which may potentially occur due to the Proposed Development.

Contractors will be required to adhere to good practice measures outlined in the CEMP which accompanies this report, to prevent any impacts to television broadcasts from occurring.

#### 17.5.2.4 GAS

No mitigation measures are required for gas infrastructure.

#### 17.5.2.5 WATER SUPPLY AND WASTEWATER

All wastewater during the construction phase will be taken off-site by an authorised waste contractor and brought to an authorised waste facility. Contractors will be required to adhere to good practice measures outlined in the CEMP which accompanies this report.

#### 17.5.2.6 AVIATION

JC Mont-Fort will agree on an acceptable aviation obstacle warning lighting scheme with the Department of Defence and IAA/AirNav Ireland ahead of turbine construction and will supply the coordinates and elevations for built turbines, as is standard for wind farm developments.

After consultation with the Department of Defence, it has been requested that all turbines be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. JC Mont-Fort will adhere to this request and install the required lighting on each turbine in the Proposed Development.

During the scoping consultation, the IAA also requested that JC Mont-Fort contact the IAA (should planning consent be granted) regarding;

- Agreement of aeronautical obstacle warning light scheme for the Proposed Development;
- To provide as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location; and
- Notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection.

JC Mont-Fort also received a scoping consultation response from the Shannon Airport Authority, the response included the following requests:

- JC Mont-Fort give consideration to the IAA Obstacles to Aircraft in Flight Order, 2005 (S.I. No. 215 of 2005), as amended.
- JC Mont-Fort must ensure that the Proposed Development satisfies the requirements of the International Civil Aviation Organisation (ICAO) and Shannon Airport Authority DAC which both have defined a volume of airspace above which objects are not permitted to interfere.

- Shannon Airport Authority require the locations of the turbines based on GPS data plus Above Mean Sea Level (AMSL) data and stated turbine heights in order for them to undertake a series of obstacle limitation surfaces (OLS) assessment.
- JC Mont-Fort must also engage with the Air Nav Ireland - ANSP to assess the possible impact of the Proposed Development on flight procedures and communications, navigation and surveillance equipment.
- The Shannon Airport Authority also requested that JC Mont-Fort apply the Chapter Q (Visual Aids for Denoting Obstacles) of the Certification Specifications contained within the EASA Easy Access Rules for Aerodromes (current version – Dec'24) CS ADR-DSN.Q.851 Marking and Lighting of wind turbines (Regulation (EU) No. 139/2014) for the Proposed Development.

JC Mont-Fort will ensure each of these requests from the IAA, Shannon Airport Authority and Department of Defence are satisfied through consideration of the requested guidance documents throughout the Proposed Development's lifetime and engagement with the relevant authorities as requested.

#### 17.5.2.7 WASTE MANAGEMENT

The construction phase of the development will have the potential to produce a number of different types of waste: municipal waste (site, canteen, office) and wastes from demolition/construction (wood, rubble, metal etc.), which must be processed at a local waste processing facility. Waste materials will be required to be temporarily stored on site whilst awaiting collection from a waste contractor. There will be dedicated waste areas on site for skips, bins etc. In order to prevent spills and litter, the dedicated waste areas need to be clearly labelled and easily accessible to waste collection vehicles.

Activities at the site will adhere to the guidance in the Waste Management Act 1996 and its subsequent amendments, which will ensure that waste management, recycling and recovery are carried out in a suitable manner. The Waste Management Act 1996 also provides a regulatory framework for meeting higher environmental standards set out in other national and EU legislation. It is required under the Waste Management Act 1996 that any waste related activity must have all necessary licenses and authorisations. The Waste Manager on the site will be required to make sure all contractors hired to remove waste from the site have valid waste collection permits to ensure that the waste is delivered to a licensed and permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits and authorisations. Poor waste management has the potential to cause a short-term moderate negative effect.

*Mitigation Measures*

A Construction Waste Management Plan (CWMP) has been prepared and forms part of the Construction and Environmental Management Plan (CEMP), which accompanies this EIAR.

The CWMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the Proposed Development of waste will be a last resort. The

mitigation measures associated with the CWMP can be found in the CEMP which accompanies this document.

### 17.5.3 OPERATIONAL PHASE

#### 17.5.3.1 ELECTRICAL INFRASTRUCTURE

No mitigations are required for electrical infrastructure during the operational phase of the Proposed Development.

#### 17.5.3.2 TELECOMMUNICATIONS

Appropriate mitigation measures will be determined in consultation with the relevant authorities and statutory bodies. Following agreement, the identified measures will be implemented in accordance with regulatory requirements and best practice standards.

#### 17.5.3.3 TELEVISION

Appropriate mitigation measures will be determined in consultation with the relevant authorities and statutory bodies. Following agreement, the identified measures will be implemented in accordance with regulatory requirements and best practice standards.

#### 17.5.3.4 GAS

No mitigation measures are required for gas infrastructure during the operational phase of the Proposed Development.

#### 17.5.3.5 WATER SUPPLY AND WASTEWATER

All wastewater produced during the operational phase of the Proposed Development will be taken off-site by an authorised and fully licenced waste contractor and brought to an authorised and fully licenced waste facility for appropriate disposal.

#### 17.5.3.6 AVIATION

As outlined in Section 17.5.2.6, the requests of the consultees have been considered, and the required lighting will be installed on the turbines, which will remain as a mitigation measure for the operational phase of the Proposed Development.

#### 17.5.3.7 WASTE MANAGEMENT

Once the Proposed Development is operational, minimal amounts of solid waste will be generated, which will be collected onsite and transported to a licenced disposal or recycling facility by a full licenced and permitted waste hauling contractor. Any hazardous materials such as gear and hydraulic oils used in the operation of the wind turbines and mineral oils used in transformers, will be disposed of in accordance with all applicable laws and regulations, including those outlined in Chapter 2 of this EIAR and Section 17.1.1 of this EIAR chapter. This is outlined in greater detail in the CEMP, which accompanies this report.

## 17.6 ASSESSMENT OF RESIDUAL EFFECTS

The residual effect is considered the remaining effect after mitigation measures have been implemented. As seen in Table 17-8, there are no residual effects expected to occur once the proposed mitigation measures for each potential effect have been implemented.

## 17.7 MONITORING

Monitoring measures will be implemented to ensure that the mitigation measures outlined in this chapter are effectively carried out during the construction, operational, and decommissioning phases of the Proposed Development. These measures are designed to prevent or reduce significant adverse effects on material assets and to confirm that no unforeseen impacts arise.

All monitoring activities will be overseen by the Site Environmental Manager or other designated personnel, and results will be documented and, where necessary, reported to the relevant authorities or stakeholders in accordance with planning conditions.

The monitoring programme will be refined and expanded, where appropriate, in the final CEMP to be prepared and agreed with the planning authority prior to construction commencement.

## 17.8 SUMMARY

**Table 17-8: Summary Table of Chapter Findings**

| Potential Effect | Phase | Beneficial /Adverse/ Neutral | Extent (Site/Local/National/Transboundary) | Short-term/ Long-term | Direct/ Indirect | Permanent/ Temporary | Reversible/ Irreversible | Significance of effect | Proposed Mitigation | Residual Effects |
|---|---|---|---|---|---|---|---|---|---|---|
| Electrical downtime | Construction | Adverse | Local | Short-term | Direct | Temporary | Reversible | Not significant | ESB consultation | N/A |
| Telecommunication signal interference | Construction | Adverse | Local | Short-term | Direct | Temporary | Reversible | Not-significant | CEMP and good practice guidelines | N/A |
| Television signal interference | Construction | Adverse | Local | Short-term | Direct | Temporary | Reversible | Not-significant | CEMP and good practice guidelines | N/A |
| Damage to gas infrastructure | Construction | Neutral | Local | N/A | N/A | N/A | N/A | No effects | N/A | N/A |
| Wastewater load increase | Construction | Neutral | Local | Short-term | Direct | Temporary | Reversible | Not-significant | N/A | N/A |
| Aviation receptor obstruction and signal interference | Construction | Adverse | Local | Short-term | Direct | Temporary | Reversible | Not-significant | Consultation with stakeholders | N/A |
| Interference with electrical infrastructure | Operational | Neutral | Local | Long-term | Direct | Permanent | Not reversible | Not significant | N/A | N/A |
| Interference with Telecommunications Signals | Operational | Adverse | Local | Long-term | Direct | Permanent | Not-reversible | Not significant | Consultation with stakeholders | N/A |

| Potential Effect | Phase | Beneficial /Adverse/ Neutral | Extent (Site/Local/National/Transboundary) | Short-term/ Long-term | Direct/ Indirect | Permanent/ Temporary | Reversible/ Irreversible | Significance of effect | Proposed Mitigation | Residual Effects |
|---|---|---|---|---|---|---|---|---|---|---|
| Interference with Television signals | Operational | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects |
| Damage to gas infrastructure | Operational | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects |
| Increased load to wastewater network | Operational | Neutral | Local | Long-term | Indirect | Temporary | Reversible | Not significant | N/A | N/A |
| Interference with aviation infrastructure and equipment | Operational | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects |
| Effects to waste management receptors | Operational | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects |
| Effects on waste management facilities | Decommissioning | Adverse | Local | Short-term | Direct | Temporary | Reversible | Not significant | Use of fully licensed waste disposal contractors and facilities | N/A |
| Electrical downtime | Decommissioning | Adverse | Local | Short-term | Direct | Temporary | Reversible | Not significant | Adherence to ESB instructions | N/A |
| Telecommunications signal interference | Decommissioning | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects |

| Potential Effect | Phase | Beneficial /Adverse/ Neutral | Extent (Site/Local/National/Transboundary) | Short-term/ Long-term | Direct/ Indirect | Permanent/ Temporary | Reversible/ Irreversible | Significance of effect | Proposed Mitigation | Residual Effects |
|---|---|---|---|---|---|---|---|---|---|---|
| Interference with television signals | Decommissioning | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects |
| Damage to gas infrastructure | Decommissioning | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects |
| Effects on water supply and wastewater infrastructure | Decommissioning | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects | No effects |
| Interference with Aviation infrastructure and equipment | Decommissioning | TBC | TBC | TBC | TBC | TBC | TBC | TBC | TBC | TBC |

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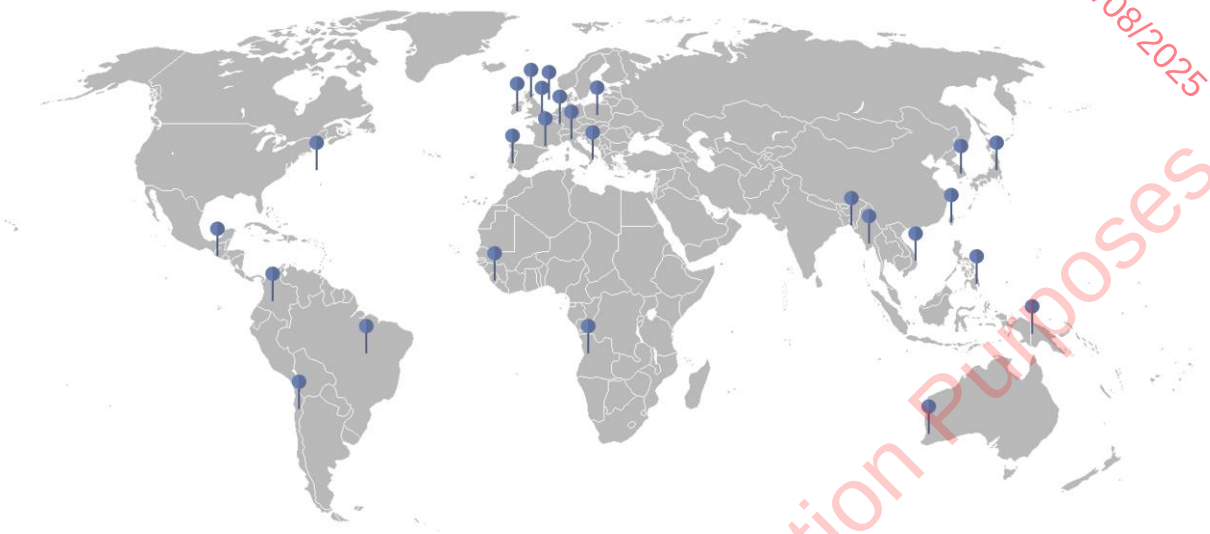
## GLOBAL PROJECT REACH



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