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ENVIRONMENTAL SCIENCE &
PLANNING

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED COUNNAGAPPUL WIND FARM, CO, WATERFORD

VOLUME 2 - MAIN EIAR

CHAPTER 17 - MATERIAL ASSETS, TELECOMMUNICATIONS AND
AVIATION

Prepared for:
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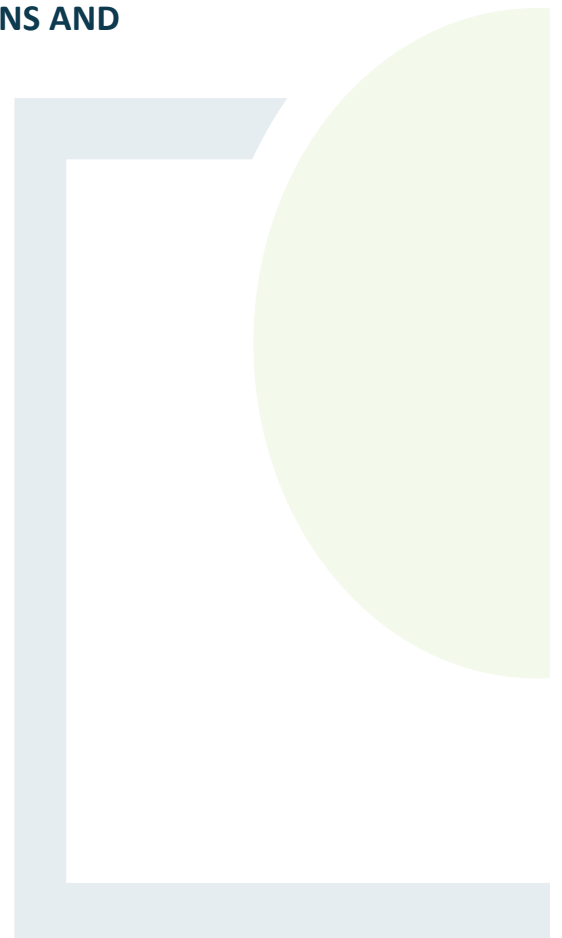


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17 MATERIAL ASSETS INCLUDING TELECOMMUNICATION AND AVIATION

17.1 Introduction

This Chapter describes material assets, telecommunications and aviation that might potentially be affected by the Project. The potential effects of the Project are initially considered without mitigation and the residual effects post mitigation are described. The assessment considers the potential effects during all phases of the development: construction, operation and decommissioning.

Material assets, as defined in EPA (2022) '*Guidelines on the information to be contained in Environmental Impact Assessment Reports*' refer to built services, roads and traffic and waste management. This chapter assesses:

- Power and Electrical Supply;
- Telecommunications;
- Aviation;
- Water supply; and
- Foul drainage infrastructure.

The potential for the Project to impact roads and traffic is addressed in Chapter 14 - Traffic & Transportation. Potential for effects on land use is addressed in Chapter 6 - Population and Human Health. Material assets with respect to natural resources are considered in Chapter 11 - Lands, Soil and Geology. Assets of Archaeological, Architectural, and Cultural Heritage are considered in Chapter 15 of this EIAR.

A full description of the proposed Project assessed in this EIAR is provided in Chapter 2 - Development Description and comprises the following elements:

- The wind farm site (referred to in this EIAR as the 'Site');
- The grid connection (referred to in this EIAR as the 'GCR');
- The turbine delivery route (referred to in this EIAR as the 'TDR').

The general layouts of the proposed wind farm site (Site), grid connection (GCR) and turbine delivery route (TDR) are presented in Figures 3.2 to 2.4 in Volume IV.

This assessment considers a single turbine model which has been selected for the project as described in Chapter 2 - Development Description. The plans and particulars submitted with this application for consent are precise and provide specific dimensions for the turbine structures. The turbine specifications will have a hub height of 104 m and a rotor diameter of 162 m with a tip height of 185 m.



17.2 Statement of Authority

This chapter has been prepared by Ms. Sinéad Lynch and Ms. Rita Mansfield of Fehily Timoney and Company.

Sinéad Lynch is a Civil Engineer with a MEng in Civil, Structural and Environmental Engineering from University College Cork. She is member of the Institution of Engineers of Ireland (MIEI). Sinéad has experience working on various renewable energy projects preparing chapters of the EIAR for wind farms including traffic and transport, air and climate, telecommunications and aviation chapters.

Rita Mansfield has worked in environmental consultancy for 19 years' and has obtained a Bachelor (Hons) Degree in Applied Ecology from University College Cork and a Higher Diploma in Environmental Protection and Pollution Control from the Sligo Institute of Technology. She has managed the statutory consent and environmental assessment for large scale public infrastructure projects in the energy, water (including flood relief schemes) and transport sectors throughout Ireland.

This chapter was reviewed by Jim Hughes (BA, EIA/SEA Dip, MSc), Director Energy and Planning with Fehily Timoney and Company. Jim is a professional Town Planner with almost 20 years' experience in managing large complex infrastructure projects. Jim has extensive Strategic Infrastructure Development experience having being Project Director / Project Manager for the submission of numerous SID Wind Farm Projects and the submission of multiple no. SID applications for onshore electrical infrastructure under Section 182 of the P&D Act.

17.3 Methodology

This section of the assessment describes the methodology used in assessing the potential effects from the Project on material assets, telecommunications and aviation. The potential effects from wind farm developments on telecommunications and aviation which are considered in this Chapter are set out hereunder.

Electromagnetic Interference

In the context of wind farm development, electromagnetic interference from the wind farm on existing telecommunication services can result in an unacceptable negative effect. The rotating blades of a wind turbine can occasionally cause interference to electro-magnetically propagated signals.

Not all signals are affected in the same way and some signals are more robust than others, however, such interference could, in theory, affect all forms of electromagnetic communications including:

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

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



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

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

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

Broadcast Communications

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

Domestic Receivers

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

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

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

Other Signal Types

Wind turbines have the potential to affect other signal types used for communication and navigational systems, for example tower-to-tower microwave communication links, and airborne and ground radar systems. Interference with radar systems occurs when wind turbines are located close to an airport or directly in line with the instrument landing approach. The nearest such operational airport to the Site is Waterford Airport, approximately 37km south east of the Site.

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



17.3.1 Consultation

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

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

Section 7.15 of DoEHLG Planning Guidelines on Wind Energy Developments (2006) state:

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

On that basis, consultation was carried out with all known telecommunications operators (as well as aviation and utility providers) that could potentially be affected by the Project.

Initially, a desktop examination of resources and infrastructure was conducted in the area of the Site, GCR and TDR. This desktop study provided initial constraints for analysis and also identified potential stakeholders for consultation.

As part of the EIAR scoping and consultation exercise relevant utility, resource and telecommunication operators and aviation authorities were consulted. Scoping was carried out in accordance with the EPA Guidelines¹ and the 'Best Practice Guidelines for the Irish Wind Energy Industry 2012'² which provides a recommended list of stakeholders for consultation, in addition to updated lists of stakeholders provided by the Commission for Communications Regulation and the Irish Aviation Authority through consultation.

The following assessment methodology was applied:

- Wide ranging consultation with all known utility and telecommunications operators that could potentially be affected by the Project (see Chapter 5 EIA Scoping and Consultation);
- Consultation with the Irish Aviation Authority and Airport Authorities;
- Comprehensive data gathering exercise to establish all known telecommunications links and utility infrastructure in the area;
- Preparation of constraint mapping using data collected from the operators, to identify separation distance of elements of the Project from existing infrastructure and if necessary, identify mitigation measures;
- Identification of aerodromes and airports in proximity to the project, and any associated infrastructure;
- Review of turbine delivery route in the context of overhead power and telecommunication lines;
- Review of grid connection route in relation to underground utility infrastructure.

¹ EPA, (2022) 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'

² IWEA. (2012). Best Practice Guidelines for the Irish Wind Energy Industry.



This assessment has considered the turbine arrangements and dimensions as described in Chapter 2 of this EIAR.

17.3.2 Relevant Guidance

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

- 'Wind Energy Development Planning Guidelines' (WEG2006), published by the Department of the Environment, Heritage and Local Government (2006).
- 'Best Practice Guidelines for the Irish Wind Energy Industry', published by the Irish Wind Energy Association (2012).
- 'Tall structures and their impact on broadcast and other wireless services', published by Ofcom, a regulatory body independent from UK Government (2009).
- 'RF Measurement Assessment of Potential Wind Farm Interference to Fixed Links and Scanning Telemetry Devices', published by ERA Technology Ltd on behalf of Ofcom (2009).
- Waterford City and County Development 2022 - 2028

17.4 Baseline Environment

This section provides a comprehensive overview of the material assets of the receiving environment in order to provide an understanding of the potential effects which the Proposed Development may have on renewable and non-renewable resources, and utility infrastructure.

As part of the scoping and consultation process for the Project, searches of existing utility services were carried out to identify areas where major assets exist such as high voltage electricity cables or gas mains. Private / State utility companies were also consulted during this period. Consulted was also carried out with telecommunication stakeholders including authorities with associated telecommunication infrastructure, wireless broadcasters, cellular network providers, broadband suppliers and wireless internet service providers (WISP).

Material responses received are Detailed in Chapter 5 – EIA Scoping and Consultation and confirmed no microwave transmission links or Point to Point Radio network which might be affected by the Project. Similarly no affect on flight or ATM procedures for national airports was confirmed through consultation.

There are no major utility infrastructure identified within the Site.

There are underground electricity and water utility services within the road which will be interacted with by the GCR. Services encountered will be crossed using an undercrossing or overcrossing method, which will be selected based on the cover available above the service. Service crossing methodology as show in Appendix 2.1, Volume III have been designed in line with ESB specifications. All relevant stakeholders will be contacted to verify the existence of services prior to any construction works taking place.

The delivery of turbine components to the Site will require temporary accommodation works along the TDR (as set out in Chapter 2 – Development Description) which will include the requirement to remove utility poles. Such works will be agreed and carried out by the service provider in advance of turbine delivery.



Planning permission has been granted to NBI - National Broadband Ireland for Section 254 Licence for overground electronic communications infrastructure and associated physical infrastructure along public roads including: 1) The erection of new overground fibre optic cables on existing timber poles. 2) The erection of new poles and associated fibre optic cables in Comeragh MD Co. Waterford, approximately 1.5km north-west of the Site.

The 2013 Sustainable Energy Authority of Ireland (SEAI) Wind Speed Atlas identifies the site as having an average wind speed of between 8.6 m/s and 9.1 m/s at 150 m above ground level. There are three operational wind developments, one permitted development and one development submitted for planning located within 20 km of the proposed Coumragappul Wind Farm. Locations of these developments is presented in Figure 2.6 Appendix IV.

Table 17-1: Wind developments located within 20 km

| Wind Farm Name | Number of turbines | Distance and Direction from proposed site | Status |
|----------------------------|--------------------|---|------------------------|
| Tierney Single Turbine | 1 | 5.1km west of Site | Operational |
| Kilnagrance Single Turbine | 1 | 14km east of Site | Operational |
| Woodhouse Wind Farm | 8 | 17.2km west of Site | Operational |
| Knocknamona Wind Farm | 8 | 17.6 km west of Site | Permitted |
| Dyrick Hill Wind Farm | 12 | 7.9 km south west of Site | Proposed (at planning) |

17.5 Assessment of Likely Significant Effects

17.5.1 Do- Nothing Scenario

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

17.5.2 Construction Phase Effects

17.5.2.1 *Utility Infrastructure*

There is no utility infrastructure within the Site boundary that would be effected by the Project.

The Proposed Development will connect to the existing Dungarvan 110 kV substation. Where the CGR Grid interacts with existing watermains and it is necessary to divert the mains, the utility provider will turn off the supply to allow the diversion. The section of existing pipe will be removed and will be replaced with a new pipe along the new alignment of the service. The works will be carried out in accordance with the relevant utility standards. The risk of encountering asbestos water mains will be determined through consultation with the utility provider and where the need to interact with asbestos pipes is identified, this must be carried out in accordance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations, 2006 (S.I. No. 386 of 2006) and Safety, Health and Welfare at Work (Exposure to Asbestos) (Amendment) Regulation 2010 (S.I. No. 589/2010).



Appendix 2.2 of Volume III of this EIAR includes the Turbine Delivery Route Survey Report. This report details where overhead utilities, poles and lighting columns will require temporary removal to accommodate the delivery of wind turbine components.

Construction of the GCR and accommodation works for the delivery of turbine components to Site will likely result in disruption to water supply and to power supply in the locality. Such effects will be brief to temporary non-significant negative effects on dwellings and commercial/industrial activities within the catchment of the services.

Turbine delivery and GCR works could potentially cause traffic disturbance and damage to road infrastructure if not properly planned and assessed. Potential impact on road infrastructure is detailed in Chapter 14: Traffic & Transportation. A traffic management plan will be in place for the duration of the works.

17.5.2.2 Telecommunications and Broadcasting

The potential for electromagnetic interference from wind turbines occurs only during the commissioning and operational phase of the Project. There are no potential electromagnetic interference effects associated with the construction phase or decommissioning phase of the Project on telecommunications and broadcasting in the area.

As the proposed grid connection will be constructed underground in the public roadway, there are no potential construction related effects for electromagnetic interference and broadcasting interests in the area. Additionally, proposals by National Broadband Ireland for infrastructure in the locality do not coincide with the GCR or TDR.

As identified and assessed in Chapter 14: Traffic and Transportation, the delivery of large turbine components has the potential to effect existing telecommunications lines for a short period of time if services are temporarily disconnected or rerouted to facilitate the turbine delivery. The removal of overhead lines will be either a temporary disconnection or permanent re-routing. The works will be carried out by the utility providers in advance of turbine delivery to Site.

The permanent re-routing of overhead lines will result in a temporary disruption to power and telecommunications services for existing residents and business and will also involve temporary road works to 'underground' these services. In addition, a traffic management plan will be agreed with Waterford City and County Council in advance of any such works. Any trenching and road reinstatement works associated with utility diversions will be subject to a road opening license and can be carried out in such a way as to ensure one lane of traffic will be open to vehicles on the road at all times. Such works will be carried out over a number of days.

However if the Permanent re-routing of overhead lines is not possible, temporary disconnections of overhead lines will be required on several occasions to facilitate the delivery of turbine blades and will be carried out during the delivery of the components. Advance disconnection works will be required before the first turbine deliveries. The schedule of turbine component deliveries will be determined by the turbine supplier however it is reasonable to assume that several convoys will be required to deliver all of the turbine components to site over the course of the turbine installation works which is expected to take place over the course of 5 months.

It is reasonable to assume a worst-case scenario where temporary disconnections will be required during off peak times, on up to five different occasions over the course of five months to facilitate convoys, with a duration of several hours between disconnection and re-connection of services on each occasion.



Temporary disconnections of overhead lines will result in a significantly greater impact on local residents and businesses in terms of disruption to services than permanent diversions. It will also result in greater disruptions to traffic flows as the delivery of components through the town on each occasion will take slightly longer due to additional temporary works each time.

The proposed grid connection will be constructed underground primarily along public roads. The works have potential to impact on underground telecommunication and broadband services. No telecommunication and broadband services in the public road along the grid route were identified during consultation with telecommunications and broadband providers, therefore it is unlikely that there will be a negative effect on telecommunications and broadband infrastructure along the grid route. However, in advance of the construction phase, further consultation will be sought with service providers as installation of such services in the public road may occur prior to the construction of the proposed project. Cable detection tools, a ground penetrating radar and slit trenches will be used, as appropriate, to verify the exact locations of existing services (if any). The final locations of the proposed cable routes in the public roads and in the verge along the public road will be within the area described and assessed in this EIAR and will minimise conflicts with other services. A minimum separation distance of 300mm will be maintained with existing services. New cable ducts will be laid below existing services, if encountered.

17.5.2.3 Aviation

The proposed turbines and cranes required for their installation can be an obstacle to low flying craft. However, no impacts are anticipated following consultation with IAA's Air Navigation Service Provider (ANSP), Cork Airport and Waterford Airport

As the proposed grid connection will be constructed underground within the public roadway, there are no construction related impacts on aviation interests in the area. The temporary accommodation works associated with the turbine delivery route will not affect aviation interests in the area.

17.5.3 Operational Phase Effect

17.5.3.1 Renewable, Non-Renewable Resources and Utility Infrastructure

Once the Coumna­gappul Wind Farm is operational, the potential for negative effects on material assets is minimal. Maintenance of access tracks and infrastructure may require small amounts of imported fill, however, the impact of this is likely to be slight/imperceptible.

No impact on existing major utility infrastructure is expected at the wind farm site during the operational phase. There is potential for brief disconnection of overhead lines during the decommissioning phase if large turbine components are required to be removed from the wind farm site. This has potential to cause a brief slight negative impact to telecommunication services where overhead lines require disconnection. There is also potential for broadcasting to be affected at receivers close to the wind farm site during the operational phase, i.e. nearby dwellings.

The direct effect of electricity generated by the proposed development will give rise to a reduction in the quantity of fossil fuels required for electricity generation across the State. This will give rise to a long-term slight positive impact on renewable energy resource and will contribute to reducing Ireland's dependency on imported fuel resources.



17.5.3.2 Telecommunications and Broadcasting

Consultation regarding the potential for electromagnetic interference from the proposed project was carried out with the relevant national and regional broadcasters, fixed line and mobile telephone operators and other operators. A desktop study was carried out using Comreg siteviewer³ to locate telecommunications infrastructure in close proximity to the site. The closest telecommunications mast is located approximately 4.5km north of T2. Three operate from this mast, Three were contacted during the consultation process and no potential impacts were identified. No other telecommunications infrastructure was found during the desk based survey within 5km of the proposed wind farm.

There is potential for negative impact to domestic broadcasting receivers due to signal scattering or signal delay as a result of the introduction of wind turbines to the landscape. Providers have not identified potential impacts to their services however, there is potential for slight negative long-term effects to broadcasting services in the area of the Site. This may depend on wind speed and direction as detailed in section 16.2.1.3. Mitigation is set out in section 16.5 to avoid this potential negative impact.

The remaining findings of the consultation and desk based study confirms there will be no significant electromagnetic interference effect caused by the proposed project.

The grid connection is not expected to impact on telecommunications during the operational phase. Impacts on overhead lines as a result of turbine delivery is only associated with the construction process. There is potential that overhead lines may require brief disruption in the unlikely event that a turbine component requires replacement - in this case the turbine delivery route is required to be used during the operational phase. The effects on overhead telecommunications services would be similar to those described in Section 16.4.2.1. This would result in a brief slight negative impact to telecommunications services along the TDR.

17.5.3.3 Aviation

Wind turbines within 30 km of a radio navigation aid have the potential to lead to electro-magnetic interference with these signals. Waterford Airport is located approximately 37km south east of the proposed wind farm, therefore there will be no effects on aviation.

As the proposed grid connection will be operating underground within the public roadway, there are no operational related impacts on aviation interests as a result of the operation of the GCR.

17.5.4 Decommissioning Phase

17.5.4.1 Utility Infrastructure

The potential impacts associated with decommissioning phase will be similar to those associated with construction but of a reduced magnitude.

Decommissioning works will include removal of above ground structures including the turbines and met masts. Turbine foundations and access tracks will be left in situ. The proposed on-site substation building will be taken in charge of by Eirgrid / ESB which will have a long-term slight positive impact on electricity infrastructure provision in the area. Similarly, the underground grid cable will remain in situ and will become a part of the national grid resulting in a long-term slight positive impact on electricity infrastructure provision in the area.

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



There will be no significant negative impacts on renewable and non-renewable resources during the decommissioning phase. No likely negative impacts on utility infrastructure are expected during the decommissioning phase.

Increased traffic numbers on the local, regional and national roads will have a temporary slight negative impact on the road network due to increased traffic.

17.5.4.2 Telecommunications and Broadcasting

The potential for electromagnetic interference from wind turbines occurs only during the commissioning and operational phase of the project. There are no electromagnetic interference impacts associated with the decommissioning phases of the proposed project, and therefore no mitigation is required.

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

There is potential for brief disconnection of overhead lines during the decommissioning phase if large turbine components are required to be removed from the wind farm site. This has potential to cause a brief slight negative effect to telecommunication services where overhead lines require disconnection.

17.5.4.3 Aviation

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

17.6 Mitigation Measures

17.6.1 Utility Infrastructure

Existing services along the proposed GCR have been predicted through a desktop study and will be confirmed in the pre-construction surveys prior to construction. This will minimise the impact in terms of disruption or damage to existing utilities. Where possible, the cable will be laid above or below existing services as opposed to having to divert the existing services. Communication with service providers will be maintained for the duration of the construction works as necessary.

Where services are required to be interrupted to accommodate turbine delivery or construction of the GCR, residents and business in proximity to the works will be informed in advance. Additionally the service providers will notify the public of any such interruptions or changes in water pressure, as is current practice (e.g. <https://www.water.ie/help/supply/no-water-or-low-pressure/?map=supply-and-service-updates> and <https://www.esbnetworks.ie/power-outages>).

The comprehensive turbine delivery procedure which will be implemented between the Port of Waterford (Belview) and the Site will include safety procedures and Garda escort in accordance with the Traffic Management Plan contained in Appendix 2.1.

The procedure will avoid impact on the roads involved with the TDR including the N29, N25, N72, R672 and local roads leading to the site. It is likely that turbine delivery will take place outside of regular travelling/commuting hours in order to avoid potential traffic impacts on major routes.



17.6.2 Telecommunications and Broadcasting

Mitigation measures consist of mitigation by design to avoid impacts on telecommunication links. As there is no potential for electromagnetic interference from the proposed project on telecommunications, there are no mitigation measures proposed for the construction, operation, or decommissioning phase of the proposed project.

There is potential for broadcasting to be affected at receivers close to the Site during the operational phase, i.e. nearby dwellings. Mitigation by design has achieved a setback of over 800m between the proposed turbines and the nearest dwelling which will reduce potential effects on receivers.

The GCR will be left in situ underground within the public roadway. In advance of the main grid connection works an assessment will be carried out to confirm the precise alignment of the cable route within the corridor.

Overhead telecommunication lines along the TDR will be briefly disconnected during turbine delivery during the construction phase. Any interference to service will be brief (lasting less than 1 day) and potential effects to service will be communicated in advance to those affected. Notice will be provided to all stakeholders affected prior to works commencing.

17.6.2.1 *Aviation*

In line with standard practice for wind farm developments, the coordinates and elevations for turbines will be supplied to the IAA at the end of the construction phase. An aeronautical obstacle lighting scheme will be agreed with IAA in line with IAA's consultation response and applied to the proposed turbines.

17.7 **Cumulative Impacts**

The Proposed Dyrick Hill Wind Farm (see Table 17-1) will share a section of their proposed turbine delivery route with that of the TDR for the Coumragappul Wind Farm. Similarly the Dyrick Hill Wind Farm is proposed to connect to the Dungarvan 110 kV station. As such there is a coincidence in alignment of GCR for both Developments.

Both Proposed Developments intend to receive turbines through Waterford Port. The delivery of the turbines for both Developments would be unlikely to occur at the same time given the lead in time for manufacture of turbines and logistics with shipping. There is potential for interruption of services along the TDR during turbine delivery for both projects and as such there is potential for cumulative effects on the affected residential and commercial properties affected. Any interference to service will be brief (lasting less than 1 day) and potential effects to service will be communicated in advance to those affected. Notice will be provided to all stakeholders affected prior to works commencing.

Similarly, it could be assumed that the GCR for both Proposed Developments could be constructed at different times. As such, there is potential for cumulative effects on the residential and commercial properties affected by interruption of service. Such effects will be brief to temporary non-significant negative effects.

As the GCR will be constructed underground, there are no construction or operational related impacts for electromagnetic interference and broadcasting interests in the area. As the GCR will be left in situ underground, there are no decommissioning related impacts on telecommunications and broadcasting interests in the area.



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

17.8 Residual Effects

17.8.1 Utility Infrastructure

The proposed on-site substation and underground grid route cable will be taken in charge of by Eirgrid or ESB following decommissioning, providing a long-term slight positive residual impact on electricity infrastructure in the area.

17.8.2 Telecommunications and Broadcasting

Following the implementation of mitigation measures, no significant residual effects are expected on telecommunications and broadcasting as a result of the proposed Coumnagappul Wind Farm.

17.8.3 Aviation

Following the implementation of mitigation measures, no residual effects are expected on aviation as a result of the proposed Coumnagappul Wind Farm.



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