15. MATERIAL ASSETS, TELECOMMUNICATIONS & AVIATION

15.1 INTRODUCTION

This chapter examines the existing environment and assesses any likely significant effects on material assets arising from the proposed project.

The term 'material assets' can relate to both finite and renewable resources, which can be of natural or anthropogenic origin. Some of these resources, such as minerals, stone, soil, water, air, traffic and transportation, land use, human health and amenity resources are discussed in other chapters of the Environmental Impact Assessment Report (EIAR) (Chapter 5 (Population and Human Health); Chapter 8: Land, Soils and Geology; Chapter 9 (Hydrology and Hydrogeology); Chapter 10 (Air Quality), Chapter 14 (Traffic and Transport) and Chapter 17 (Climate). Electromagnetic interference is discussed from a human health perspective in Chapter 5 (Population and Human Health). The likely interactions between this assessment and other technical assessments are presented in Chapter 19 (Interaction of the Foregoing) of this EIAR.

This chapter of the EIAR deals with aviation and telecommunications in addition to utility infrastructure (electricity, gas, and water), and waste services.

The components of the proposed project are shown in Figure 1-1, of Chapter 1 (Introduction) of this EIAR and described in detail in Chapter 2 (Description of the Proposed Project).

15.1.1 Statement of Authority

This chapter was prepared by the TOBIN environmental team, led by Oonagh Fleming, with specialist input from Ai Bridges. The chapter has been reviewed by Orla Fitzpatrick and John Dillon, who have extensive experience in EIAR assessment. Ai Bridges were responsible for carrying out a Telecommunications and Aviation Assessment for the proposed project.

Ai Bridges are an established company with extensive experience in telecommunications and aviation consultancy. Ai Bridges is a leading supplier of innovative broadband & telecommunication solutions and services for the telecommunication's industry. The Ai Bridges input, which includes an Aviation Review Statement and a Telecommunications Impact Study was carried out by Kevin Hayes. Kevin has over 20 years of professional experience.

Oonagh holds a B.A. in Geography and Sociology. She has over three years of experience as an environmental consultant in wind energy developments and preparing EIAR chapters, including material assets, for renewable energy projects.

This chapter has been reviewed by Orla Fitzpatrick and John Dillon of TOBIN. Orla is a Technical Director in TOBIN. Orla has over 20 years' experience working in the delivery of EIA projects in environmental consultancy. She holds a BSc in Geophysics and MSc in Environmental Consultancy and is a Chartered Environmentalist. She has considerable experience as technical approver of environmental deliverables for major infrastructure projects. John Dillon is an Associate Director and hydrogeologist with 18 years geological/ hydrogeological experience in groundwater development, wind farm and major infrastructure developments.

15.1.2 Policy and Guidance

This EIAR chapter and the assessment contained within has been carried out in accordance with the appropriate guidance documentation as follows:

- Environmental Protection Agency's (EPA) Guidelines on the information to be contained in the Environmental Impact Assessment Reports (2022) (hereafter referred to as the 'EPA EIAR Guidelines (2022)');
- European Union (2017) Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report
- Department of the Environment, Heritage and Local Government (DoEHLG), Wind Energy Development Guidelines (2006) (hereafter referred to as the 2006 WEDGs);
- Department of Housing, Planning and Local Government (DoHPLG), *Draft Revised Wind Energy Development Guidelines* (WEDGs) (2019) (hereafter referred to as the 'Draft Revised 2019 WEDGs');
- Irish Wind Energy Association, Best Practice Guidelines for the Irish Wind Energy Industry 2012; and
- European Commission, Guidance document on wind energy development and EU nature legislation (November 2020).

It will adhere to the updated version of the Draft Revised 2019 WEDGs, should they be published before a decision is made on the planning application.

The classification and description of effects in this EIAR chapter follows the terms provided in Table 3-4 of the EPA EIAR Guidelines (2022) and are duplicated in Table 1-1 of Chapter 1 (Introduction) in this EIAR for reference. Refer to the Planning statement in relation to relevant policy.

15.2 METHODOLOGY

15.2.1 Consultation

As part of the EIA scoping process, an Environmental Impact Assessment (EIA) Scoping Report was prepared and submitted to relevant statutory and non-statutory bodies in April 2024 for review and comment. The Environmental Impact Assessment Scoping Report was accompanied by a cover email introducing the proposed project and inviting comments or observations within a period of six weeks from the date of the email. Table 1-4, Section 1.9 of Chapter 1 (Introduction) provides a summary of the consultees and responses received (or not received). A copy of the latest 2024 Environmental Impact Assessment Scoping Report is provided in Appendix 1-2 of this EIAR.

Responses received in relation to the material assets topic were primarily in relation to aviation, telecommunications, and utilities/resources/waste. Relevant responses are outlined in Section 1.9.2 Chapter 1 (Introduction) which provides a summary of the consultees and responses received (or not received).

All EIA scoping responses can be found in Appendix 1-3 of this EIAR, which compiles the full responses received from consultees, which have been considered in the preparation of this chapter and elsewhere in the EIAR.

Public engagement was also carried out in the local area as described in Chapter 1 (Introduction), Chapter 2 (Description of the Proposed Project) and Chapter 5 (Population and

Human Health) of this EIAR, and the feedback obtained during this exercise has been reviewed and reflected where appropriate in the preparation of this chapter.

15.2.2 Scope of the Assessment

Aspects which the EPA EIAR Guidelines (2022) state should be examined as part of the environmental assessment of material assets include;

"Material assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes transport infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils."

This chapter will consider the potential impact to material assets in terms of telecommunications (i.e., telecommunications and communications infrastructure and links), aviation activity and infrastructure, built services infrastructure (i.e., other utilities including electricity infrastructure, gas network infrastructure, and water utility infrastructure), and waste management, as a result of the proposed project.

The primary potential sources of effects of the proposed project on the sensitive material assets receptors have been identified as follows:

- Interference with telecommunications activity (construction, operational and decommissioning phases);
- Interference with aviation activity (construction, operational, and decommissioning phases);
- Interference and/or disruption to existing utility assets and provision of services/supply (construction and decommissioning phases); and
- Waste generation and management activity (construction, operational and decommissioning phases).

The study area for this chapter is discussed in Section 15.2.3 below.

Traffic is separately assessed in Chapter 14 (Traffic and Transport).

15.2.2.1 Telecommunications

In order to assess if there would be any potential effects on the existing telecommunications networks Ai Bridges completed a Telecommunication Impact Study, See Appendix 15-1.

A comprehensive description of the methodology is provided in the report (Appendix 15-1). It outlines four main stages: consultations with telecommunications operators, field surveys, desktop-based network modelling analysis, and report generation.

Telecommunications providers and stakeholders were sent information about the proposed project and were asked to inform the project team of any communication links or infrastructure that they have in the area, or if they had any other comments/concerns relating to the proposed project. Feedback/observations received from the above, was compiled into a datasheet. Further information was supplied where requested. Further information on telecommunication consultees and responses can be found in Appendix 15-1.

15.2.2.2 Aviation

The construction of large wind turbines near airports may have the potential to pose a physical hazard for frequently used flight paths, as well as pose an issue for nearby airport operations in relation to Obstacle Limitation Surfaces (OLS), Instrument Flight Procedures (IFPs) and

Instrument Landing System (ILS) Calibration. Consultation is used as the primary method of understanding the potential for effects on aviation.

In order to assess potential effects on the existing aviation networks an Aviation Review Statement was completed, See Appendix 15-2.

A consultation exercise commenced in April 2024. This included:

- AirNav Ireland;
- Department of Defence;
- Irish Aviation Authority (IAA);
- Shannon Airport; and
- Ormand Flying Club (Birr Aerodrome).

15.2.2.3 Other Material Assets

The installation of infrastructure has the potential to interact with existing utility assets/services. This has the potential to occur where unidentified assets are present and uncovered during activities such as excavation/groundworks.

Scoping consultation responses received in relation utility assets/services, primarily related to consideration of presence of built services and infrastructure (e.g., within the road network), including potential interaction with or disruption to assets/services, potential service diversions, minimisation of impacts of the road network, requirements related to cable routing, consultation/approvals with relevant stakeholders and service providers, compliance with relevant guidelines/codes of practice/standard details, liaison with Offaly and Tipperary County Council, planning conditions and relevant licence requirements (e.g., road opening licence, road closures/diversions), surveys to determine the location of assets, and separation distances between assets and proposed structures.

In terms of waste/waste management, where responses referenced waste, this primarily related to management of waste streams, waste segregation, and waste disposal issues, which can also impact the perception of an unspoiled environment. Furthermore, some responses referenced management of wastewater, making reference to proposals for the sanitary disposal of wastewater.

The online maps[1] of the nationwide gas networks were reviewed to check the location of mains gas pipelines.

The assessment of other material assets in this chapter will focus on the potential for interaction/disruption to utility assets and provision of related services, and impacts in terms of waste generation and management, associated with the construction, operational and decommissioning phases of the proposed project.

15.2.3 Study Area

The study area in relation to the assessment of aviation and telecommunications links is based on the proposed turbine locations and dimensions.

The assessment of material assets in relation to 'other material assets', primarily relates to the presence of utility infrastructure and possible interaction with such (i.e., electrical

[1] https://www.gasnetworks.ie/home/safety/dial-before-you-dig/dbyd/ (accessed March 2026)

infrastructure, water services, gas networks infrastructure and telecommunications infrastructure) within the area of the proposed project. The study area considered electrical infrastructure, water services, gas networks infrastructure and telecommunications infrastructure (cables etc.) occurring within or immediately surrounding the proposed wind farm site and along the proposed grid connection route (GCR), as this is where any effects on utility infrastructure are likely to occur.

In relation to the proposed turbine delivery route (TDR), utility infrastructure at each of the pinch point locations (see Chapter 2 for further details) will be identified at pre-construction stage. A confirmatory survey of all existing utility services at these locations will be carried out prior to construction to verify the assumptions in this report and identify the precise locations of any services. Where assets/services are identified, the Applicant will liaise with the service provider and efforts will be made to limit disruption to service. The study area for radar surveillance systems is 20km and 10km for aerodromes. Further details are included in Appendix 15-2.

The assessment of 'other material assets' also considers the proximity of the proposed wind farm site to mineral resources (i.e., quarries) and waste management infrastructure within County Offaly and Tipperary and its surrounding counties.

15.3 Existing Environment

The proposed wind farm site is situated at the border of County Tipperary and Offaly, 5 km south of Birr and 3.6 km north of Shinrone.

The proposed wind farm site encompasses approximately 355 hectares, primarily consisting of agricultural land, forestry, and peatland. The site predominantly comprises raised bog, cutover bog, wet grassland, mixed broadleaved woodland, oak-birch-holly woodland, bog woodland, and scrub. The surrounding area has a relatively high density of individual residential developments.

The proposed GCR spans approximately 12.23 km, running north from the proposed Ballincor Wind Farm 110 kV Substation in County Tipperary to the existing ESB Dallow 110 kV Substation in County Offaly.

It is proposed that turbine components will be delivered to the site via Foynes Port, Co. Limerick. The route heads west along the N69, where it will join the N18 on the outskirts of Limerick. The route continues onto the M7, through Roscrea and towards Sharavogue where it turns left onto the R492 and continues southwest to the proposed wind farm site entrance.

15.3.1 Telecommunications Links

As described in Section 15.2 above, a comprehensive list of telecommunication operators were consulted to identify any likely effects to existing telecommunication links in the area.

Consultations were conducted with 19 stakeholders including telecommunications operators, 2RN, An Garda Síochána, Coimisiún na Meán, BT Ireland, CIE, Dept. of Defence, Eir, Enet, ESB Networks, Imagine Broadband, IAA/AirNAv Ireland, Uisce Éireann, Offaly County Council, Tipperary County Council, Tetra Ireland, Three Ireland, Viatel, Virgin Media and Vodafone, across 2020, 2022 and 2025. Telecommunication scoping responses can be reviewed in Appendix 15-1.

An Garda Síochána, Coimisiún na Meán, BT Ireland, Dept. of Defence, ESB Networks, Imagine Broadband, IAA/AirNav Ireland, Uisce Éireann, Offaly County Council, Tipperary County

Council, Tetra Ireland, Viatel, Virgin Media and Vodafone reported no concerns regarding potential impacts to their networks.

2RN reported no issues but requested that a protocol document be signed should the wind farm go ahead (regarding the TV broadcast service in the area). The Applicant will sign an agreement with 2RN prior to construction to commit to restoring service to any end users that may have their service disrupted as a result of the proposed project. This is standard industry practice and will eliminate any potential effects in this regard.

CIE have stated that the proposed wind farm would be located within the "*Coordination Zone*" of their GSM-R network (Mobile Network for Railways). The nearest rail line to Ballincor is 7.5 km away (Nenagh – Roscrea line) and at this distance there will be no impact to the GSM-R network.

Eir Mobile noted in March 2020 that a transmission link within the proposed area could be at risk and recommended a 100-meter buffer, while in July 2022 they confirmed the revised layout posed no risk to their mobile or fixed wireless networks. In 2025 Eir highlighted two Licensed PTP microwave radio links in the vicinity of the proposed wind farm.

Enet raised a concern regarding one Licensed PTP microwave radio link in 2022 and 2025.

Three Ireland raised a concern regarding one Licensed PTP microwave radio link.

The Irish Aviation Authority (IAA) also noted the proximity of the site to Birr Aerodrome and recommended notifying the aerodrome operator (this is discussed further below in relation to aviation). Further details regarding the telecommunications scoping exercise are available in Appendix 15-1.

Based on the findings of the consultation process, three telecommunications operators with networks in the vicinity of the proposed wind farm were identified and required a detailed technical analysis. A desktop analysis was carried out to assess the accuracy of the network information (radio link co-ordinates, antenna heights etc.) provided by the telecom operators, field surveys of the telecom-mast sites in the vicinity of the proposed wind farm were carried out. During the field surveys, radio antennas with bearings in the direction of the wind farm were recorded. Analysis was performed for the three telecom operators with networks near the wind farm:

Eir Network

- Eir_L1 PTP microwave radio link from Knockshe to Ballyegan
- Eir_L2 PTP microwave radio link from Knockshe to Coolderry

Enet Network

- Enet_L1 PTP microwave radio link from VDF Nealstown to Carrig N.S.

Three Ireland Network

- 3IRL_L1 PTP microwave radio link from Birr to Knockshe

Birr I-LOFAR

I-LOFAR is a low-frequency radio telescope array located within the grounds of Birr Castle, County Offaly. It forms part of the wider European LOFAR network, spanning over 2,000 km from Ireland to Poland, and is used for detecting extremely weak cosmic radio signals. Due to

the sensitive nature of its equipment, I-LOFAR operates in a radio-quiet zone and has requested restrictions on nearby developments that could generate electromagnetic interference. I-LOFAR request that there is a 5 km exclusion zone surrounding the I-LOFAR. T1 is at the edge of this buffer (circa 4.96 km from I-LOFAR to closest turbine distance) while the substation and all other turbines are >5 km. Consultation was undertaken with the observatory to inform the assessment of potential impacts. At the time of writing, in relation to Ballincor Wind Farm, no response had been received.

15.3.2 Aviation

The requirement for an assessment of the likely significant effects on aviation is set in the Wind Energy Development Guidelines for Planning Authorities 2006 (and Draft Revised Wind Energy Guidelines 2019) which state: *'The siting of wind turbines may have implications for the operations of communications, navigation and surveillance systems used for Air Traffic Control for the separation and safety of aircraft. Wind turbine siting may also have implications for the flight paths of aircraft.'.*

The nearest airfield to the proposed project is Birr Airfield, located approximately 4 km northwest of the proposed wind farm site. There are no other small airfields or air strips within 10 km of the proposed wind farm site. The proposed wind farm site is located approximately 75 km northeast of Shannon Airport. The consultation responses relating to the aviation consultees are detailed in Section 1.9 of Chapter 1 of this EIAR (Introduction).

Key details from the scoping exercise undertaken are Section 1.9 of Chapter 1 of this EIAR (Introduction) and provided in Appendix 1-3.

The Irish Aviation Authority responded to the consultation advising that the Applicant engage with Birr Airfield. They also requested that in the event of permission being granted, they be notified of the aeronautical warning light scheme and position of the constructed turbines.

Birr Airfield responded to the consultation to request the location of the turbines. These documents were sent to Birr Airfield for comment on 17th July 2024. No further comment was received.

Shannon Airport noted that the proposed project will not affect the Shannon Aerodrome. They consulted with AirNav and noted that they share the concerns of our colleagues in AirNav Ireland specifically relating to radar systems/ navigational aids and Instrument Flight Procedures (IFP's) and the potential impacts of wind farm developments on these systems and advised consultation with IAA take place.

AirNav Ireland responded to note that Shannon airport and DME Navaid at Wolftrap, Co. Laois are both likely unaffected and noted that the wind turbines should be reported to the IAA as new aviation obstacles.

The Department of Defence noted lighting requirements for wind turbines and request they be informed as the proposed project continues.

The Irish Hang Gliding and Paragliding Association (IHPA) was contacted during the scoping consultation and noted that the proposed project does not impact their activities of hang gliding and paragliding.

15.3.3 Other Material Assets

Utilities

Electrical

A review of ESB network data was undertaken[2]. No High Voltage (<38kV) ESB infrastructure was identified within the proposed wind farm site. There were a number of low voltage lines to the north of the proposed wind farm near T2/T3.

There are a range of utilities surrounding the proposed wind farm site, proposed GCR and proposed works areas along the proposed TDR.

To the east and north of the proposed wind farm site, and at the permanent works area along the proposed TDR at Sharavogue there are a number of 20 kV and 230 V Overhead Lines (OHLs) accompanied by poles[3]. It will be necessary to remove the existing OHL poles near T2/T3, some poles will be reused, and others will need to be added, as well as sections of underground cable. ESB will be consulted on what might be required to divert the existing LV OHL lines.

To the north of the proposed wind farm site, beyond Birr, there are number of lines that connect to the Dallow 110 kV substation. A 110kV OHL runs to the east of the site. The proposed GCR traverses the 100kV OHL along the R439. A 220kV OHL runs to the west of the proposed wind farm site.

Water

Uisce Éireann responded with some general EIAR considerations were included for consideration. Uisce Éireann also noted that the proposed cabling route may interact with their underground network infrastructure within the public roads. TLI have designed the grid route to avoid likely significant impact. Separation distances from pipework will be maintained in accordance with Uisce Éireann's (2025) Code of Practice for Water Infrastructure. The details the proposed GCR construction methodology are available in Appendix 2-5.

The Commission for Regulation of Utilities did not respond with any specific requirements for any utility supply networks. Further details of the scoping responses that were received are provided in Chapter 1 of this EIAR (Introduction).

Gas Network

Data was reviewed in relation to gas networks infrastructure, including information obtained from the Gas Networks Ireland (GNI) 'dial before you dig service'. No gas network infrastructure was identified within or immediately surrounding the proposed wind farm site, proposed GCR or proposed TDR works area.

Waste Management

A desk study of available information from the EPA was undertaken to identify licensed waste and industrial facilities within a 10 km radius of the proposed wind farm site. The nearest licensed waste site identified is the Ballaghveny Landfill situated approximately 12 km south at Ballymackey, Co. Tipperary. The Shannon Vermicomposting facility (SVF) is the closest to the proposed wind farm, located approximately 8 km northwest at Coolross, Rathcabin, Co.

[2] https://www.eirgrid.ie/grid/how-grid-works/irelands-grid (accessed October 2025)
[3] https://openinframap.org/#9.9/53.0351/-7.9562/A,B,I,L,O,P,T,W (accessed October 2025)

Tipperary. As of February, last year, 12%[4] of the waste remained at the SVF site, and waste from this facility was transferred to Ballaghveny Landfill[5].

Other facilities identified were beyond 10 km from the proposed wind farm site. Licenced waste facilities identified within County Offaly and County Tipperary, as well as other facilities identified within the surrounding counties were beyond 10 km from the proposed wind farm site, outlined in Table 15-1.

Table 15-1 Waste Licence Facilities in County Offaly, County Tipperary and surrounding counties

County	Licence No.	Name	Operator	Location	Status
Offaly	W0110	Peat Ash Ltd.		Cloniffeen, Shannonbridge, Co. Offaly, Offaly	Other
Offaly	W0029	Derryclure Landfill	Offaly County Council	Derryclure and Killeigh, Tullamore, Offaly	Licensed
Tipperary	W0209	Shannon Vermicomposting		Coolross, Rathcabin, Tipperary	Other
Tipperary	W0240	Bord Na Móna Recycling Limited	Bord Na Móna	Solsborough, Springfort Cross, Nenagh, Tipperary, E45EH57	Licensed
Tipperary	W0078-03	Ballaghveny Landfill	Tipperary County Council	Ballymackey, Tipperary	Licensed
Westmeath	W0028	Ballydonagh Landfill	Westmeath County Council	Ballydonagh, Dublin Road, Athlone, Westmeath	Licensed
Galway	W0027	Pollboy Landfill Facility - Ballinasloe Town Council	Ballinasloe Town Council	Pollboy, Ballinasloe, Galway, H91H6KX	Licensed

In relation to EPA licensed industrial sites, IPC/ IEL sites, the nearest identified sites are; Grant Engineering (Ireland) Unlimited Company (P0294), approximately 3.5km north-east of the proposed wind farm site, Mr Michael Monagle (Sharragh Pig farms) (P0437), approximately 4.5 km north-west of the proposed wind farm site and T & J Standish (Roscrea) Limited (P0320), approximately 7.5 km east of the proposed wind farm site.

Natural Resources - Minerals and Aggregates and Quarries

A number of quarries, concrete and aggregate facilities were identified in vicinity of the proposed project and the wider area, including:

- Loughnane Concrete Limited - Tullamore Rd, Birr Co. Offaly;

[4] https://www.offalyexpress.ie/news/midland-tribune/1416575/shannon-vermicomposting-rathcabbin-saga-is-very-near-its-end.html (Accessed October 2025)

[5] https://www.nenaghguardian.ie/2024/01/30/end-in-sight-for-rathcabbin-cleanup/> (Accessed October 2025)

- Banagher Precast Concrete Ltd - Queen Street Birr, Co. Offaly;
- Farrell Concrete – Stonepark, Endrim, Ferbane, Co. Offaly;
- Condron Concrete – Arden Road, Tullamore, Co. Offaly;
- Kilsaran – Bunaterin, Tullamore, Co. Offaly;
- Loughnane Concrete – Nenagh, Co. Tipperary;
- Carroll Quarry Ltd. -Aghafin, Portlaoise, Co. Laois;
- Kilsaran – Portlaoise, Rathleague, Co. Laois;
- Booth Concrete – Clonminham industrial Estate, Portlaoise, Co. Offaly;
- Lisduff Quarry - Errill, Portlaoise, Co. Laois.

The nearest of these sites identified to the proposed wind farm site is Loughnane Concrete Limited along the Tullamore Rd, Ballynaguilsha, Birr County Offaly, situated approximately 10 km northeast of the proposed wind farm site.

Effects on Mineral/Aggregate Resources associated with the proposed project are discussed in Chapter 8 (Land, Soils and Geology).

15.4 Assessment of Effects

15.4.1 Do Nothing Scenario / Future Baseline

In the Do-Nothing Scenario, should the proposed project not be constructed, there will be no likely significant effect on aviation or telecommunications services, or other material assets. The existing lands will continue to be used for current/existing land uses, including agriculture and forestry, with little or no changes in the baseline at the proposed wind farm site, the proposed GCR, and the proposed TDR works areas.

15.4.2 Construction Phase

15.4.2.1 Telecommunications Links

Interference with telecommunication links is unlikely for the majority of the construction phase. Any interference or impact will be very limited and confined mainly to the final stages of construction when cranes are used to erect turbines and prior to commissioning of the turbines. These cranes will be beside the proposed turbines. There is an interference effect with the route of the Eir_L2 link (discussed in detail below, Section 15.4.3.1) particularly during crane operations and turbine erection. Any interference or impact will be similar to those that may arise during the operational phase of the proposed project.

The construction of the proposed GCR and proposed TDR works areas do not have the potential to impact telecommunication links.

15.4.2.2 Aviation

This section assesses the likely significant effects on aviation as a result of the construction phase of the proposed project. The requirement for an assessment of the likely effects on aviation is set in the Wind Energy Development Guidelines for Planning Authorities 2006 (and Draft Revised Wind Energy Guidelines 2019). The assessment in terms of aviation is based on the proposed turbine locations and dimensions.

Considering the works proposed as part of the proposed project (including the wind farm site, along the proposed GCR or at the works area along the proposed TDR), the consultation feedback obtained and the proposed project's distance from aviation infrastructure, (Section 15.3.2 of this chapter), significant effects during the construction phase in relation to aviation are considered unlikely.

At the very end of the construction works, there is potential for the use of cranes and erection of the turbines to have effects similar to the operational phase (see Section 15.4.3.1 below). Any potential effects will be unlikely, brief to temporary, not significant to slight, and negative.

15.4.2.3 Other Material Assets

Utilities

Construction works requiring excavation have the potential to disrupt utility assets, particularly where utilities are present underground. Based on a review of utility data for the within the study area for 'other material assets', it is not anticipated that any significant underground utilities will be encountered during the construction of the proposed project, with the exception of the locations within public road corridors, such as the locations of the proposed TDR works area or associated with proposed GCR. The proposed GCR construction methodology is described in Appendix 2-5 (of this EIAR) and mitigation is detailed below.

In the unlikely event that any unknown utility assets are discovered, there is potential to affect local network supplies, causing a direct, temporary, slight, negative effect.

Gas

No gas network infrastructure was identified within the study area for 'other material assets'.

Gas Networks Ireland (GNI) will be re-consulted prior to commencement of construction. During construction, the locations of the any identified infrastructure will be marked to ensure there are no ground works within the immediate areas of the gas lines. Should any gas infrastructure be identified, any excavation within the area of this will require a special permit from GNI and be subject to appropriate wayleaves.

It is unlikely that unknown underground gas network infrastructure will be encountered during the construction of the proposed project. In the unlikely event that any unknown services are discovered during excavation works, there is potential to have an effect on local network supplies, causing a temporary, slight, negative effect.

Water

TLI have designed the grid route to avoid significant impact. The details of the proposed GCR construction methodology are available in Appendix 2-5. Location of water network services will be re-consulted prior to commencement of construction.

Should any water network infrastructure be identified, any excavation required in the vicinity this will require consultation with Uisce Éireann and be subject to appropriate wayleaves.

It is unlikely that unknown underground water network utilities will be encountered during the construction of the proposed project. In the unlikely event that any unknown services are discovered during excavation works, there is potential to have an effect on local network supplies, causing a temporary, slight, negative effect.

In terms of water consumption, the average flow rate for design (per person/day) is approximately 60 litres for an open construction site[6] based on the Uisce Éireann 2020 Code of Practice. The maximum total wastewater required, based on this and on construction staff being onsite 48 weeks of a year and an average of 120 construction staff, will be approximately 1.9million litres per year. Over a 24-month construction period, this equates to approximately 3.8 million litres in total. Wastewater will be removed off site as required by a permitted waste collector. Potable water will be supplied in large bottles for the wind farm site.

As shown during peak construction the quantities of wastewater are not anticipated to be significant, therefore a short-term, imperceptible, negative effect on local wastewater management services is predicted.

Electricity

There are a range of utilities surrounding the proposed wind farm site, proposed GCR and proposed works areas along the TDR. There are no likely significant effects predicted in relation to known infrastructure.

Location of ESB/electricity network services will be re-consulted prior to commencement of construction.

During construction, the locations of the any identified infrastructure will be marked to ensure there are no ground works within the immediate areas of the ESB/electricity infrastructure. Should any ESB/electricity infrastructure be identified, any excavation within the area of this will require consultation with ESB, adhere to ESB/EirGrid requirements, and be subject to appropriate wayleaves.

It is unlikely that unknown underground ESB/electricity network infrastructure will be encountered during the construction of the proposed project. In the unlikely event that any unknown services are discovered during excavation works, there is potential to have an effect on local network supplies, causing a temporary, slight, negative effect.

Waste and Natural Resources

During the construction phase, quantities of municipal waste (site office, canteen), wastewater (site welfare facilities) and construction waste (soil and stones, wood, packaging, metal, etc.) will be generated, requiring management and collection and transport to appropriate waste management facilities.

The EPA reports on national waste generation statistics on a regular basis. The latest reference year available in terms of Construction and Demolition (C&D) waste statistics is 2022, released in September 2024. The EPA reports that 8.3 million tonnes of C&D waste was managed in Ireland in 2022, a decrease of 9% on the previous year (9 million tonnes) (EPA, 2024b). The overall composition of C&D waste generated has changed slightly between 2021 and 2022.

In 2022, soil and stones (and similar material) made up the vast majority (82%) of C&D waste collected, remaining at a similar level as 2020 (85.1%). The next largest C&D waste types generated in 2022 were concrete, brick, tile and gypsum waste at 7% (remaining similar to 2020

[6] Code of Practice for Wastewater Infrastructure, Uisce Éireann, July 2020 (Revision 2) - https://www.water.ie/sites/default/files/docs/connections/faqs/Wastewater-Code-of-Practice.pdf

at 6.7%), and mixed C&D waste at 7% (an increase on 4% in 2021). The proportion of segregated (wood, paper, glass, plastic and metal) waste collected remained small at 4% (EPA, 2024b).

In Ireland, the vast majority of C&D waste (94%) underwent final treatment in Ireland in 2022, with 6% exported abroad for final treatment. Most C&D waste was backfilled (81%), with only 10% recycled and 7% and sent for disposal. Recycling was the main treatment operation for metals at a 100% recycling rate. In terms of non-hazardous C&D waste other than soil and stone, Ireland achieved 82% material recovery (EPA, 2024b).

C&D waste can vary depending on the nature of the project, and waste types and volumes can vary significantly from one project to another, depending on project type and the waste management practices employed on-site. The assessment of management of cut/fill volumes (soil and stone volumes requiring management) are addressed in Chapter 8 (Land, Soils and Geology). Volumes of other C&D waste types (e.g., concrete, brick, tile and gypsum waste, mixed C&D waste, and wood, paper, glass, plastic and metal) are anticipated to be small and will be segregated and managed appropriately on site and will be removed off site to a suitably licenced facility by a permitted waste collector.

In terms of municipal waste, the amount generated in Ireland was 3.19 million tonnes in 2022, up slightly by 0.6% from the 2021 figure of 3.17 million tonnes (CSO, 2025). Due to population growth, the municipal waste per capita figure fell from 625 kg per capita in 2021 to 615 kg per capita in 2022[7] (CSO, 2025). As the municipal waste average accounts for household waste collections, an assumption of 50% of this average has been taken for an employee during construction (615kg). Based on a 24-month construction period (assuming on site for 48 weeks per year) and a peak of 120 construction staff (Chapter 2, Section 2.8) each year, the maximum municipal waste generated for the proposed project is expected to be in region of 73,705 kg over 2 years. This is a worse-case assessment based on national statistics for the average person.

Of this total, according to the National Waste Statistics figures for treatment of municipal waste in 2022, approximately 26% will be recycled, 43% will undergo energy recovery, 15% will be composted/undergo anaerobic digestion (AD), and 14% will be sent to landfill[8] (EPA, 2024a).

Under the assumption that waste generated during the construction phase will undergo similar management and treatment, over the construction period for the proposed project the following is anticipated, approximately:

- 19,163 kg will be recycled;
- 31,693 kg will be treated through energy recovery;
- 11,056 kg will be composted/undergo AD; and
- 10,319 kg will be sent to landfill.

During peak construction, the quantities of municipal waste and other C&D waste types (e.g., concrete, brick, tile and gypsum waste, mixed C&D waste, and wood, paper, glass, plastic and metal) are not anticipated to be significant. A short-term, negative, not significant effect on waste management services is predicted. This effect will be permanent for any waste removed from site to landfill.

[7] Latest reporting year for National Waste Statistics - https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/ (Accessed October 2025)
[8] EPA National Waste Statistics for 2022 note that the remaining 2% of municipal waste is 'unmanaged' or undergoes 'other recovery' - https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/municipal/ (Accessed October 2025)

Details of required construction materials and any subsequent waste generated (i.e., cut/fill (soil and stone volumes requiring management)) from the construction phase are provided and assessed as part of Chapter 8 (Land, Soils and Geology) of this EIAR. Effects on Mineral/Aggregate Resources associated with the proposed project are also discussed/assessed in Chapter 8. During peak construction, the quantities of natural resources (i.e., minerals/aggregates) required are not anticipated to be significant. A long-term to permanent, imperceptible, not significant effect on natural resources is predicted.

15.4.3 Operational Phase

15.4.3.1 Telecommunications Links

Turbines can interfere with microwave communications link systems, as they can cause electro-magnetic interference and/or reflect and physically block microwave link signals.

The telecommunications impact assessment identified, following consultation, three Telecom Operators (four links) with networks in the vicinity of the proposed wind farm that require a detailed technical analysis.

The telecommunications impact assessment identified potential effects on one link.

The 3D analysis indicated that turbines T11 would obstruct the Fresnel Zone of the Eir 'Eir_L2' potentially affecting its operation. This will have interference effect. In the absence of mitigation, this interaction could result in degradation of signal quality and a reduction in service reliability for the affected link. The resulting impact is characterised as a moderate, negative effect prior to mitigation. This effect is expected to be localised in extent and would persist for the operational lifespan of the turbine if unmitigated. Mitigation measures are discussed below.

No potential impacts were identified in relation to the Eir_L1, Enet (Enet_L1) or Three Ireland (3IRL_L1) links.

The operation of the proposed GCR or TDR will have no potential to impact telecommunication links.

Birr I-LOFAR

Wind farms have the potential to generate radio frequency interference (RFI) through components such as power inverters, substations, and certain lighting systems. Reflections or emissions from turbines and ancillary infrastructure could, in some cases, affect the performance of radio astronomy equipment, particularly if located in close proximity. While T1 is at the edge the I-LOFAR's requested 5 km buffer, it still falls within the broader 10 km consultation radius within which turbine height and technical specifications may be of concern. As such, the proposed project has the potential to contribute, albeit marginally, to cumulative RFI levels in the region, depending on the final design and technologies used.

15.4.3.2 Aviation

This section assesses the likely significant effects on aviation as a result of the operational phase of the proposed project. Considering operational phase activity, the consultation feedback obtained and the proposed projects distance from aviation infrastructure, significant effects during the operational phase in relation to aviation are considered unlikely.

The consultation exercise did not raise any specific operational phase concerns for the proposed project in relation to aviation. There would be potential for the proposed wind farm site to form

a physical obstacle for air traffic in the local area. Local air traffic is limited and infrequent; Birr Airfield, located approximately 4 km northwest of the proposed wind farm site. There are no other small airfields or air strips within 10 km of the proposed wind farm.

The operation of the proposed GCR or TDR will have no potential for any likely significant effects on aviation.

15.4.3.3 Other Material Assets

No significant excavations or works are proposed during the operational phase, therefore no effects on underground services are predicted.

It is estimated that the operational phase of the proposed project will support 2-3 long term, high quality technical jobs in operation and maintenance. Based on the Uisce Éireann 2020 Code of Practice[9] average flow rate of 50 litres (per person/activity/per day for 'Office/Factory without canteen'), wastewater for 3 no. staff using welfare facilities visiting the site once er month, is estimated to be 1,800 litres/year (based on up to three staff working 1 days per month). However as low-flow toilet cisterns and sink faucets will be used and the number of staff required for visits may vary, it is anticipated that this volume will be lower. Wastewater will be removed as required by a permitted waste collector.

The operational phase is anticipated to have an extremely low rate of production of municipal waste (compound office, canteen) and wastewater (site welfare facility) which will need to be processed at local waste processing facilities. The quantities of these wastes are anticipated to be significantly smaller than the construction phase, on the basis that there will be up to 3 no. staff working at the site periodically once operational.

Based on the latest National Waste Statistic data for Ireland (2022), the maximum municipal waste generated each year for the proposed project is expected to be in the region of 922.5 kg (based on 3 no. employees). This is a worse-case assessment for the proposed project based on national statistics for the average person.

Of this total, according to the national statistics total, approximately 26% will be recycled, 43% will undergo energy recovery, 15% will be composted/undergo anaerobic digestion (AD), and 14% will be sent to landfill, equating to the following estimated waste volumes over the construction period for the proposed project:

- 240 kg will be recycled;
- 423 kg will be treated through energy recovery;
- 138 kg will be composted/undergo AD; and
- 129 kg will be sent to landfill.

The operation of the proposed GCR or TDR will have no potential for likely significant effects to other material assets infrastructure (i.e., utility services) or resources (i.e., minerals/aggregates/quarries) during the operational phase. There will be a potential long-term, imperceptible, negative effect on local waste services related to any waste generated during the operation and maintenance of the proposed project. This effect will be permanent for any waste that goes to landfill.

[9] https://www.water.ie/sites/default/files/docs/connections/faqs/Wastewater-Code-of-Practice.pdf

During the operational period, the requirements for natural resources (i.e., minerals/aggregates) are not anticipated to be significant. A long-term, neutral, not significant effect on natural resources is predicted.

15.4.4 Decommissioning Phase

The wind turbines are expected to have a lifespan of 35-years. Following the end of their useful life, the wind turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the site will be decommissioned fully, with the exception of the electricity substation and site roads and drainage.

Upon decommissioning of the proposed wind farm project, the wind turbines will be disassembled in reverse order to how they were erected. All above ground turbine components will be separated, cut up to allow them fit on a standard articulated lorry and removed off-site for recycling. The BESS will be disassembled and removed off-site for recycling.

Turbine foundations will remain in place underground and along with hardstands will be allowed to revegetate naturally. Leaving the turbine foundations and hardstands in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete and stone from the ground could result in potentially needless environment nuisances such as noise, dust and/or vibration. There will be no real environmental benefit from removing the foundations, as the concrete is underground, stable and inert if untouched. The site roadways will be in use for additional purposes to the operation of the wind farm (e.g. for forest/agricultural access) by the time the decommissioning of the project is to commence, and therefore it is more appropriate to leave the site roads in situ for future use.

The on-site substation, and 110 kV grid connection will not be removed at the end of the useful life of the wind farm project as it will form part of the national electricity network. Therefore, the substation will be retained as a permanent structure and will not be decommissioned.

Should decommissioning be required, the activities required to facilitate wind turbine decommissioning and removal from site will be similar to those outlined for the construction phase, albeit in reverse and to a lesser extent and duration than during the construction stage. Therefore, for the purpose of this assessment, it is anticipated that the impacts on telecommunications, aviation and other material assets receptors associated with decommissioning phase will be no greater than those identified for the construction phase, and accordingly there will be no likely significant effects arising from decommissioning.

15.5 Mitigation Measures

15.5.1 Embedded Mitigation

The design of the proposed wind farm has included a minimum setback distance of four times the tip height from a proposed turbine to the curtilage of any residential property (with the exception of an involved landowner, see Chapter 5). A minimum set back of 720 m has been included in the design which is in excess of the minimum setback requirements stated in the 2006 WEDGs and Draft Revised 2019 WEDGs.

Extensive consideration has been given to the layout of the proposed wind farm site and the positions of the 11 no. turbines in ensuring sufficient set-back distances from sensitive receptors and adjustment for telecommunication links and aviation impacts. Extensive

consideration has been given to the proposed project design and proposed GCR, and proposed TDR works areas to minimise the potential for likely significant effects.

During the construction phase, wastewater from the staff welfare facilities will be managed by means of a sealed storage tank, with all wastewater being tankered off-site occasionally (as required) by a permitted waste collector to a wastewater treatment plant. The permitted waste collector will also be responsible for ensuring clean water storage tanks are topped up. The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. It is proposed to use low volume flush toilets (such as those in commonly used port-a-loos) and low volume sink faucets to significantly reduce the volume of wastewater produced. In addition, the number of staff is likely to fluctuate rather than being constantly at 120 people per day, thereby reducing the volume of wastewater produced.

During the operational phase, a low-flush cistern will be fitted to reduce the volume of wastewater produced and a rainwater harvesting system will be used as the source of water for this and hand-washing basin, with all potable water being brought onsite in bottles.

15.5.2 Construction Phase

15.5.2.1 Telecommunications

Significant interference to communication links during the construction phase are unlikely. Any interference will be very limited and only possible in the final stages of construction when cranes are being used to erect the turbines, and when the turbines have been erected (prior to commissioning). In relation to the Eir_L2 link, mitigation measures as described below in Section 15.5.3.1 will be implemented as required during this phase. This would have the potential for a brief to temporary, slight, negative effect.

In order to ensure there are no issues at construction, all telecommunications operators will be contacted in advance of construction to check that they have no new links in operation at that time. In the unlikely event that new links are identified or interfered with during construction, the operator will be contacted to be made aware, and where disrupted, agree repair/restoration which will be carried out as soon as possible at the Applicants cost.

In addition, the Applicant will sign an agreement with 2RN (who run Ireland's principal digital terrestrial television and radio broadcast networks) prior to construction to commit to restoring service to any end users that may have their service disrupted as a result of the proposed project. This is standard industry practice and will eliminate any likely significant effects in this regard.

15.5.2.2 Aviation

No likely significant effects on aviation are anticipated during the proposed construction phase Therefore no specific mitigation measures are proposed in terms of aviation. However, the following standard practices will be undertaken:

- An aeronautical warning light scheme will be agreed with the IAA and Irish Air Corps;
- The final as-constructed coordinates and dimensions of each turbine be mapped and provided to Tipperary and Offaly County Council and other stakeholders, including the IAA and Irish Air Corps prior to erection of turbines to ensure that maps and databases are up to date for flight navigation;

- 30 days' notice will be given to the IAA prior to any crane operations commencing during the construction phase.

15.5.2.3 Other Material Assets

Utilities

Location of water network services will be re-consulted prior to commencement of construction. It is likely the proposed GCR will interact with Uisce Éireann's underground network particularly as it approaches Birr on its route to Dallow substation.

Uisce Éireann also noted that the proposed cabling route—though yet to be confirmed—is very likely to have several interactions with their underground network infrastructure within the public roads, particularly as it approaches Birr on its route to Dallow substation. Consequently, prior to construction, the applicant will submit a diversion enquiry to Uisce Éireann and receive a Confirmation of Feasibility (COF) letter from the Diversions Department. Appendix 2-5 (of this EIAR) details the proposed GCR construction methodology.

Should any water network infrastructure be identified, any excavation required in the vicinity will require consultation with Uisce Éireann and be subject to appropriate wayleaves.

No significant effects on utilities are anticipated during the proposed construction phase. Therefore, no specific mitigation measures are proposed in terms of utilities. However, as with any excavations, particularly in the public road network, there is a potential to disrupt local underground services if present. Standard measures/practices to avoid or otherwise minimise impacts to existing utility assets and/or services provision will be undertaken, including:

- Prior to the commencement of the construction phase, there will be engagement with all utility asset owners/service providers;
- A confirmatory survey of all existing services (electrical/ESB, water/Uisce Éireann, gas/Gas Networks Ireland (GNI), telecommunications cables etc.) will be carried out prior to construction to verify the assumptions in this report and identify the precise locations of any services. Where assets/services are identified, the Applicant will liaise with the service provider;
- Utility assets/services (underground and overhead) will be identified and clearly marked prior to any pre-construction (site clearance)/construction/demolition activity occurring;
- No excavations will take place without prior consultation with relevant utility asset owners/service providers;
- Digging around existing services, if present, will be carried out as per best practice/guidance[10] by hand to minimise the potential for accidental damage;
- Prior to any mechanical excavation taking place ESBN will be consulted with and the exact locations of all underground electricity cables established and verified;
- All works undertaken in the vicinity of underground assets will be carried out in accordance with current HSA guidance, namely the HSA 'Code of Practice for Avoiding Danger from Underground Services';
- All works will be undertaken with in accordance with the exclusion and safe operating distances around electricity infrastructure as set out in the ESB Code of Practice, as well

[10] https://www.gasnetworks.ie/home/safety/dial-before-you-dig/
Transmission Policies and Standards (eirgridgroup.com)/ Publications (esbnetworks.ie)

as HSA guidance including the 'Code of Practice for Avoiding Danger from Overhead Electricity Lines';
- Any proposed works will require a minimum clearance distance of 1 m either side of electrical cables[11];
- Liaison with asset owners/service providers will continue as required throughout the construction phase.

Waste

No significant effects on waste/waste management are anticipated during the proposed construction phase. Therefore, no specific mitigation measures are proposed in terms of waste/waste management.

Appropriate waste management practices will be employed. Segregation of waste will be carried out to maximise the potential for waste recycling and minimise any likely significant effects on waste services. Suitably permitted commercial waste collectors will be employed to remove any waste arisings generated from construction to the nearest appropriately licensed waste management facilities.

Waste management measures are set out within the CEMP Appendix 2-3 of this EIAR.

15.5.3 Operational Phase

15.5.3.1 Telecommunications

To offset the potential impact of T11 on the Eir radio link (Eir_L2) from Knockshe to Coolderry, three potential mitigation options have been identified:

Option 1 – Relay via existing Eir Mast-Site

The service to/from Coolderry could be relayed via an existing Eir mast-site. The existing telecoms mast at Brosna has been identified as a mast, which could potentially be used for this purpose. Radio link path profiles and link budgets indicate that the proposed radio links (required for this mitigation measure solution) would meet the Radio Link Availability Criteria required by ComReg for radio licensing.

Option 2 – Relay Mast located within the Proposed Wind Farm Site

A relay mast at the location shown in the figure below could be used to offset any possible impact of turbine T11 on the Eir radio link between Knockshe and Coolderry. Radio link path profiles and link budgets indicate that the proposed radio links (required for this mitigation measure solution) would meet the Radio Link Availability Criteria required by ComReg for radio licensing.

Option 3 - Re-route service to Coolderry via an alternative Eir Mast-site

The service to Coolderry could be delivered (re-routed) via an alternative Eir mast-site. The existing telecoms mast-site at Roscrea has been identified as a site, which could potentially be used for this purpose. Preliminary radio link analysis (path profile and link budgets) indicates that the proposed radio link (required for this mitigation measure solution) would meet the Radio Link Availability Criteria required by ComReg for radio licensing; however, additional investigations and technical analysis would be required to confirm this.

[11] ESB Networks – Code of Practice for Avoiding Danger from Underground Services (2022)

As the proposed project progresses further consultations with Eir will be undertaken to discuss and agree on the technical details of the chosen proposed mitigation measure solution.

The Applicant would agree to cover the costs associated with the implementable and viable mitigation measure.

As mentioned, the applicant will sign an agreement with 2RN prior to commencement of construction to commit to restoring service to any end users that may have their service disrupted as a result of the proposed project. This is standard industry practice and will eliminate any likely significant effects in this regard.

In recognition of the sensitivity of I-LOFAR's operations, early consultation was undertaken with the observatory to inform the assessment of potential impacts. At the time of writing, for Ballincor Wind Farm, no response had been received. Should the project progress to planning approval, further engagement will be pursued to ensure that any technical concerns are addressed.

15.5.3.2Aviation

No likely significant effects on aviation are anticipated during the proposed operational phase Therefore no specific mitigation measures are proposed in terms of aviation. However, the following standard practices will be undertaken:

- The turbines will be required to be included in the IAA Electronic Air Navigation Obstacle Dataset;
- Lighting of the proposed wind turbines in the interest of aviation safe-guarding (i.e., an aeronautical warning light scheme), as the proposed project would be considered as an en-route obstacle, will be required, will be agreed with the IAA, and Irish Air Corps;
- As-constructed coordinates of the turbines will be provided to the IAA;
- 30 days' notice will be given to the IAA prior to any crane operations commencing during the operational phase.

As mentioned, the details regarding lighting will be agreed with the IAA and Irish Air Corps and will be applied to the appropriate turbines and met mast. This will ensure the required visibility of the proposed project to any local aircraft during the operational phase. The final locations and dimensions of each turbine will have been mapped and provided to Offaly and Tipperary County Councils and other stakeholders (including the IAA and Irish Air Corps) prior to erection of turbines to ensure that maps and databases are up to date for flight navigation.

15.5.3.3 Other Material Assets

No likely significant effects on utilities are anticipated during the proposed operational phase. Therefore, no specific mitigation measures are proposed in terms of utilities.

No likely significant effects on waste/waste management are anticipated during the proposed operational phase. Therefore, no specific mitigation measures are proposed in terms of waste/waste management.

Appropriate waste management practices will be employed. Segregation of waste will be carried out during operation of the proposed wind farm site to maximise the potential for waste recycling and minimise any potential for likely significant effects on waste services. A licensed waste collector will be used to remove any waste that does occur as part of the operation of the proposed wind farm site.

15.5.4 Decommissioning Phase

Should decommissioning be required, the activities required to facilitate wind turbine decommissioning and removal from site will be similar to those outlined for the construction phase, albeit in reverse and to a lesser extent and duration than during the construction stage.

Therefore, mitigation measures proposed for the decommissioning phase will be proposed at the time of decommissioning and will be similar than those identified for the construction phase.

15.6 Residual Effects

This section summarises the residual effects associated with the proposed project.

15.6.1 Construction Phase

15.6.1.1 Telecommunications

There will be no residual effect on telecommunications following the implementation of mitigation and communication with telecommunications operators during the construction phase. Furthermore, an agreement with 2RN will be signed by the Applicant.

15.6.1.2 Aviation

No likely significant effect related to aviation is anticipated during the construction phase and no specific mitigation measures are proposed, other than the embedded mitigation by design.

It is noted that in the event of a grant of planning consent:

- The turbines would be required to be included in the IAA Electronic Air Navigation Obstacle Dataset; and
- Lighting of the proposed wind turbines in the interest of aviation safe-guarding, as the proposed project would be considered as an en-route obstacle, will be required.

As such, no residual effect is predicted in relation to aviation.

15.6.1.3 Other Material Assets

No likely significant effect related to utilities is anticipated during the construction phase. Should any existing underground services be encountered during construction, particularly along the proposed GCR, or at the locations of the proposed TDR works areas, the standard measures/practices discussed (see Section 15.5.2.3) in relation to underground services will be undertaken to reduce any unanticipated effects to unlikely, brief, negative, not significant effects.

A short-term, imperceptible, neutral, residual effect is predicted with regard to waste services, with this being permanent with regard to any waste generated which requires disposal at landfill. Waste management measures are set out within the CEMP Appendix 2-3 of this EIAR.

15.6.2 Operational Phase

15.6.2.1 Telecommunications Links

Following the implementation of mitigation measures discussed in Section 15.5.3.1, no significant residual effect on telecommunications is anticipated during the operational phase.

In the event that a link/cable/end user had their service interrupted, there may be a temporary, not significant, negative effect until it is resolved, however, it will be the Applicant's responsibility to fix any such issue as soon as possible.

Wind farms have the potential to generate radio frequency interference (RFI) through components such as power inverters, substations, and certain lighting systems. Reflections or emissions from turbines and ancillary infrastructure could, in some cases, affect the performance of radio astronomy equipment, particularly if located in close proximity. While T1 is at the edge the I-LOFAR's requested 5 km buffer, it still falls within the broader 10 km consultation radius within which turbine height and technical specifications may be of concern. As such, the proposed project has the potential to contribute, albeit marginally, to cumulative RFI levels in the region, depending on the final design and technologies used. No significant residual effect is anticipated.

15.6.2.2 Aviation

No significant residual effects related to aviation are anticipated.

15.6.2.3 Other Material Assets

No significant residual effects related to utilities or natural resources are anticipated.

A long-term, imperceptible, neutral residual effect is predicted with regard to waste services related to any waste generated during the operation and maintenance of the proposed project. This effect will be permanent for any portion of the waste generated that goes to landfill.

15.6.3 Decommissioning Phase

No significant effects are anticipated during the decommissioning phase and no specific mitigation measures are proposed. No significant residual effects are predicted in relation to aviation, telecommunications and other material assets (i.e., utilities, waste and natural resources).

15.7 Cumulative Effects

In the assessment of cumulative effects, any other existing, permitted, or proposed projects in the surrounding area have been considered where they have the potential to generate in-combination or cumulative effects with the proposed project in terms of material assets. A list of projects was compiled based on a review of the relevant local authority planning registers documented in Offaly and Tipperary County Councils and An Coimisiún Pleanála websites was conducted (see Chapter 4 for list of cumulative projects considered).

The cumulative effect associated with existing and proposed wind farms in the study area have been assessed (Carrig (Lacka), Carrig (AIR) and Skehanagh Wind Farm). Carrig Wind Farm (AIR) north-west of the proposed wind farm site, which was granted permission on 30/06/25.

In terms of cumulative effects on telecommunication links, overhead services (telecommunication and electricity lines), underground services (telecommunications, gas, water and electricity) and aviation, constraints are typically based on fixed infrastructure or well defined areas (i.e. these do not move) and any individual project either has a likely effect which it is required to mitigate, or it does not.

As described above, a comprehensive list of consultees were contacted to establish the likely effects that the proposed project could have. The responses from these consultees were used

to ensure that the proposed project will not have any likely significant effect on these services. In the unlikely event that any unforeseen effect does occur, it will be the responsibility of the Applicant to mitigate that effect (i.e., restoring communication and utility services (e.g., electricity, water etc.)).

In the same manner, it is the responsibility of each Applicant for all projects considered in Section 4.3 of Chapter 4 and Appendix 4-1 of this EIAR to ensure that their project does not impact these services. Therefore, likely significant cumulative effects identified for any part of the proposed project (including the proposed wind farm, proposed GCR, or at the location of the proposed TDR works), are not anticipated.

Other projects considered have the potential to create varying volumes of waste from a number of waste categories, depending on the project. It is anticipated that each of these projects will be managed in accordance with legislation, licenced waste contractors etc. as will be done with this proposed project, which lessens potential for cumulative effects. Waste volumes from the proposed project are anticipated to be generally low, with the exception of the decommissioning phase should it occur (primarily associated with the removal of turbines and met mast). Many waste streams generated from the decommissioning phase will be recyclable and will be managed appropriately. Large items, such as turbines and the met mast, will be collected and processed by appropriately licensed specialist companies. Overall, a significant cumulative effect in relation to waste is not anticipated.

The developments/projects/activities identified during the material assets cumulative assessment are not anticipated to have a significant cumulative effect on material assets topics due to their type, scale and/or location with respect to the proposed project.

Overall, significant cumulative effects from the proposed project on material assets when considered alongside the other developments/projects/activities in the area are not anticipated.

15.8 Conclusion/Summary

Following consultation with material asset stakeholders (i.e., aviation, telecommunication and service operators), and a review of other material assets present in the local and wider area (i.e., water, electricity supply, gas, waste services, mineral/aggregates/quarry sites etc.), a number of potential areas of effects were identified and assessed. With the application of the embedded mitigation measures and further mitigation measures outlined in this chapter, it is not anticipated that the proposed project will result in likely significant effects in relation to the material assets described at any stage (i.e., construction, operational and decommissioning phases).

Design stage considerations, such as turbine locations, proposed GCR and TDR works areas locations, and embedded mitigation measures outlined in this chapter, other relevant technical chapters, the CEMP, and further mitigation measures outlined in this chapter, will be put in place to ensure that effects from the proposed project are mitigated for and in compliance with the relevant standards and agreements to ensure that there will be no significant negative effects on material assets.

Overall, following consideration of the residual effects as set out in Section 15.6, it is considered that the proposed project will not result in any significant negative effects on material assets in the local or wider area. In summary, there are no likely significant effects or significant negative effects during the construction, operation or decommissioning phases.

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