

## 11.0 MATERIALS ASSETS: AVIATION AND TELECOMMUNICATION

### 11.1 INTRODUCTION

The term ‘Material Assets’ can relate to both finite and renewable resources, which can be of a natural or anthropogenic origin. Some of these resources, such as minerals, stone, soil, water, air, traffic & transportation, land use, human health and amenity resources are discussed in other chapters of the EIAR (Chapter 5: Population & Human Health; Chapter 8: Land, Soils & Geology; Chapter 9: Hydrology & Hydrogeology; Chapter 14: Air Quality & Climate; and Chapter 16: Traffic & Transportation). Electromagnetism is discussed from a human health perspective in Chapter 5 (Population & Human Health). This chapter of the EIAR deals primarily with Aviation and Telecommunications in addition to other material assets.

#### *11.1.1 Proposed Development*

The proposed development will comprise a 21 no. turbine wind farm and all associated infrastructure, as described in Chapter 2 of this EIAR (Description of the Proposed Development).

#### *11.1.2 Statement of Authority*

This assessment has been carried out by TOBIN Consulting Engineers with input from the following specialist sub-consultants:

- **Pager Power** has been providing assessments of aviation and radio issues for wind developers and consultants since 2002. Pager Power has extensive knowledge and experience of technical mitigation solutions necessary in terms of aviation impacts as well as the complex planning and aviation publications that govern the practicalities of implementing such solutions.

The Pager Power input was carried out by Danny Scrivener, Michael Sutton and Mike Watson. Danny Scrivener BSC (Hons), has over eight years’ experience within the wind industry having completed assessments for over 300 proposed building, wind and solar developments and has overcome numerous military and civil radar issues both in the UK and internationally. Danny has experience assessing wind developments of various scales, from single turbines to large offshore wind farms. Michael Sutton BSC (Hons), has over one year’s experience undertaking technical impact assessments for various development types including building, solar and wind developments. Michael Watson CEng MIET is the Pager Power founder with over 15 years’ experience within the wind energy industry assessing the impact of wind turbines on aviation operations, radar and navigation infrastructure. Michael has resolved various UK and international radar wind farm objections since 2002 having developed custom software for the various issues encountered.

Pager Power were responsible for carrying out an Aviation Impact Assessment for the proposed development, particularly in relation to Waterford Airport. This also included an Instrument Landing System (ILS) Calibration Flight Impact Assessment.

- **Captain Fintan Richard Ryan**, ME, Eur Ing, MIEI, FRAeS was an airline pilot with Aer Lingus for 22 years, the last five as a senior captain and has total flight hours circa 9000. He has completed courses on accident investigation and safety assessment of aircraft systems at Cranfield University, UK. While employed as a pilot by Aer Lingus, he investigated a number of major air accidents and was an "Accredited Accident Investigator" for The International Federation of Airline Pilots' Association.



Captain Ryan prepared an Aeronautical Technical Briefing Note for the proposed development in response to concerns raised by the Department of Defence (Air Corps) with regard to development within 3 nautical miles of the M9.

This Chapter has been drafted (using the input of the above-mentioned specialist sub-consultants) by Dr John Staunton, Senior Project Manager and Environmental Scientist in TOBIN. John has more than eleven years' postgraduate experience in both environmental research and consultancy. John holds a BSc and PhD in Environmental Science and has considerable experience in project managing and carrying out wind energy development assessments including the preparation of material asset impact assessment EIAR sections. He has co-ordinated scoping exercises with aviation authorities and telecommunication providers in numerous wind farm developments.

## 11.2 METHODOLOGY

This EIAR chapter and the assessment contained within has been carried out in accordance with the appropriate guidance documentation as outlined in Chapter 1 (Introduction), including:

- Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (2017)<sup>1</sup>;
- Guidelines on information to be contained in Environmental Impact Statements (2002)<sup>2</sup>; and,
- Draft Advice Notes for Preparing Environmental Impact Statements (2015)<sup>3</sup>.

### 11.2.1 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 seen as the primary method of assessing the potential for impacts on aviation. In order to determine any potential impacts that the proposed development might have on aviation, the nearest airfields/airports were determined using an airfield catalogue<sup>4</sup>, and a consultation exercise was carried out with key stakeholders. These included:

- Irish Aviation Authority;
- Department of Defence;
- Waterford Airport (closest significant airport to the scheme); and
- Kilkenny Airport (nearest airfield).

Following this, a number of specialist assessments and reports were commissioned from Pager Power and Captain Fintan Richard Ryan. These reports looked at a number of items relating to aviation, specifically the potential for impact upon aviation activity associated with Waterford Airport, and the potential impacts to restricted airspaces. Further details on these can be found

<sup>1</sup> <https://www.epa.ie/pubs/advice/ea/drafteiarguidelines.html>

<sup>2</sup> <https://www.epa.ie/pubs/advice/ea/guidelines/>

<sup>3</sup> <https://www.epa.ie/pubs/consultation/reviewofdrafteisguidelinesadvicenotes/Draft%20Advice%20Notes%20for%20preparing%20an%20EIS.pdf>

<sup>4</sup> [http://woodair.net/UK\\_Airfield\\_Catalogue/Airfields\\_Ireland.htm](http://woodair.net/UK_Airfield_Catalogue/Airfields_Ireland.htm)



in Appendix 11-1 (Aviation Impact Assessment), Appendix 11-2 (ILS Calibration Flight Impact Assessment) and Appendix 11-3 (Aeronautical Technical Briefing Note).

### *11.2.2 Telecommunications*

In order to assess if there would be any potential impacts on the existing telecommunications networks, a consultation exercise was carried out where a list of providers and stakeholders were sent information about the proposed development, 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 development. This consultation exercise was carried out with the following extensive list of telecommunications stakeholders:

- ComReg
- ESB Telecom Services
- RTE NL / 2RN
- Community Radio Kilkenny City
- Spirit Radio
- WLRFM
- KCLR 96FM
- Shannonside FM
- EIR
- Ripplecom
- OpenEir
- Eureka
- Europasat
- Broadcasting Authority of Ireland
- Enet (formerly Airspeed)
- Viatel
- Magnet Networks
- Premier Broadband
- Pure Telecom
- Carnsore Broadband
- Host Ireland
- Fast Com
- Imagine Networks Services
- Three Ireland Hutchison

Once feedback was received from the above, it was compiled into a datasheet. Further information was supplied where requested. Any transmission links or sites were noted and constrained out of the site layout with appropriate buffers to ensure there is no potential for impacts. Further information on telecoms responses can be found in Appendix 11-4.

### *11.2.3 Other Material Assets*

In order to assess the potential for impacts to electricity and water infrastructure and waste services, a scoping exercise was carried out to a number of key consultees, including ESB, Irish Water and Local Authorities. Full details of the scoping exercise that was carried out is provided in Chapter 1 of this EIAR (Introduction).



## 11.3 EXISTING ENVIRONMENT

### 11.3.1 Aviation

The nearest significant airport to the proposed development is Waterford Airport, located approximately 23 kilometres south of the proposed wind farm site. Kilkenny Airport, which is an airfield with a grass runway is located approximately 22 kilometres to the northwest of the proposed development. The consultation responses relating to the aviation consultees are detailed in Section 1.9 of Chapter 1 of this EIAR (Introduction).

Waterford Airport responded to the consultation to request an aeronautical assessment of the safety impact on the airport instrument approach flight procedures, the mandatory aerodrome safety surfaces, and any effects on the safety calibration flights' ability to conduct the required flight checking programme for the navigational aids and instrument landing systems at Waterford Airport. Following further consultation including a meeting, it was discovered that Waterford Airport also had concerns about the potential impact that the proposed development might have on the operation of their proposed runway extension. Further information on this can be found in Appendix 11-1 (Aviation Impact Assessment) and Appendix 11-2 (ILS Calibration Flight Impact Assessment). These documents were sent to Waterford Airport. No response was received from Kilkenny Airport.

The Irish Aviation Authority responded to the consultation advising that the Department of Defence should be consulted, and requested that in the event of permission being granted, they be notified of the aeronautical warning light scheme and position of the constructed turbines.

The Irish Defence Forces provided a combined response with the Air Corps to the consultation to express their concern at the location of the proposed development in relation to the M9 motorway, and the associated potential for impacts on their flight paths. Further information on this can be found in Appendix 11-3 (Aeronautical Technical Briefing Note).

Further details of these scoping responses can be seen in Appendix 1-3 of this EIAR.

### 11.3.2 Telecommunications

As described in Section 11.2 above, a comprehensive list of telecommunication operators were consulted to assess for any potential impacts to existing telecommunication links in the area. Table 11-1 provides information on all the responses received during this exercise, and any actions taken by the project design team resulting from these responses. Telecommunication scoping responses can be seen in Appendix 11-4.

*Table 111-1: Telecommunication Providers Consultation information*

| Telecommunication Provider/Stakeholder | Consultee Response  | Project Team Response to Comments Received                        |
|--|---|---|
| ComReg                                 | Provided a list of operators who may be affected by the proposed development. | All operators were consulted                                      |
| ESB Telecom Services                   | Information was provided on radio links in the area (8 no. in total).         | The locations of these links were considered in the design of the |



| Telecommunication Provider/Stakeholder | Consultee Response  | Project Team Response to Comments Received  |
|--|---|---|
|  |   | proposed development to avoid any potential impacts.  |
| RTE NL / 2RN                           | The proposed development is clear of their distribution network. Request for developer to sign protocol agreement to protect their customers in the event of any problems to their service. | Developer has signed a protocol agreement to ensure that all customers are protected.                               |
| Community Radio Kilkenny City          | No reply to date  | n/a   |
| Spirit Radio                           | Reply received indicating no impact anticipated   | n/a   |
| WLRFM                                  | Provided details of a possible issue with a link.   | The locations of this link was considered in the design of the proposed development to avoid any potential impacts. |
| KCLR 96FM                              | Reply received indicating no impact anticipated   | n/a   |
| Shannonside FM                         | Reply received indicating no impact anticipated   | n/a   |
| EIR                                    | No reply to date  | n/a   |
| Ripplecom                              | No reply to date  | n/a   |
| OpenEir                                | Reply received indicating no impact anticipated   | n/a   |
| Eurona                                 | Reply received indicating no impact anticipated   | n/a   |
| Europasat                              | No reply to date  | n/a   |
| Broadcasting Authority of Ireland      | Scoping request acknowledged, but no reply to date  | n/a   |
| Enet (formerly Airspeed)               | No reply to date  | n/a   |
| Viatel                                 | Scoping request acknowledged, but no reply to date  | n/a   |
| Magnet Networks                        | No reply to date  | n/a   |
| Premier Broadband                      | No reply to date  | n/a   |
| Pure Telecom                           | No reply to date  | n/a   |
| Carnsore Broadband                     | No reply to date  | n/a   |
| Host Ireland                           | No reply to date  | n/a   |
| Fast Com                               | No reply to date  | n/a   |
| Imagine Networks Services              | Reply received indicating no impact anticipated   | n/a   |
| Three Ireland Hutchison                | Reply received indicating no impact anticipated   | n/a   |



Following receipt of the above telecom scoping responses, the design of the proposed development was reviewed and revised, as necessary, to minimise any potential for impacting on telecommunications networks. This was carried out by inputting all the constraint data that was received into GIS mapping software and ensuring that the proposed turbine locations would not be located within the appropriate buffers. These constraints, along with others gathered as part of the EIAR (such as ecological, hydrological and proximity to sensitive receptors, etc.) were used when refining the site layout. Previous design iterations are discussed in Chapter 3 (Reasonable Alternatives).

### *11.3.3 Other Material Assets*

No response was received from Irish Water or Waterford County Council. Kilkenny County Council and ESB responded but did not specify any concerns relating to existing electricity supply networks, water supply networks or waste services. Further details of the scoping responses that were received are provided in Chapter 1 of this EIAR (Introduction).

While there are some overhead electricity lines within the EIAR study area (Figure 1-1 of this EIAR), it is also possible that there might be some underground electricity cables discovered during the proposed works, particularly near public roads and houses or farm yards. Damaging an underground electricity cable may have the potential to cause serious harm or death. All proposed works being carried out on overhead or underground electricity cables will be done in consultation with ESBN/EirGrid, as required. It is assumed as a worst-case scenario that there are likely to be underground water pipes along public roads as well as occasionally within agricultural land. Severing a water pipe, particularly a public supply pipe has the potential to interrupt local water supply in the area.

A desk study of available information from the EPA did not identify any waste facilities, illegal waste activities, chemical monitoring points or industrial EPA licensed facilities within a 2km radius of the wind farm site. The nearest waste facilities to the proposed wind farm site are near Kilkenny City.

## **11.4 POTENTIAL EFFECTS, MITIGATION AND RESIDUAL EFFECTS OF THE PROPOSED PROJECT**

### *11.4.1 Do-Nothing Scenario*

Should the proposed development not be constructed, there will be no potential for impact on aviation or telecommunications services.

### *11.4.2 Construction Phase*

#### *11.4.2.1 Aviation*

#### **Pre-mitigation impact**

Taking into account the works proposed as part of the proposed development, there are no significant impacts likely to arise during the majority of the construction phase in relation to aviation. The potential for impacts will only begin with the erection of turbines. This short period (until the wind farm is fully commissioned and the project enters the operational phase) will have the same potential impacts as the operational phase, as described in Section 11.4.3.



### Mitigation

There are no potential impacts on aviation anticipated for the majority of the proposed construction phase, and so there are no mitigation measures required. Towards the end of the construction phase, prior to the erection of turbines, the mitigation measures described in Section 11.4.3 will be implemented.

### Residual Impact

It is anticipated that there will be no impact to aviation during the construction phase following the implementation of the mitigation measures described in Section 11.4.3.

#### *11.4.2.2 Telecommunications*

### Pre-mitigation impact

Should there be any underground telecommunication services located within the proposed works areas, including along the route of the proposed grid connection, or at the locations of the proposed temporary road works to accommodate oversize load deliveries, there may be a potential to damage these, and therefore interrupt the local service provision. This would have a potential temporary slight negative impact.

The wind farm layout has been designed to avoid any impacts to the telecommunications links in the area, and there will be no potential for impacts during the construction phase.

### Mitigation

There are no telecommunication impacts anticipated for the construction phase of the proposed development, so there are no mitigation measures required.

### Residual Impact

It is anticipated that there will be no impact on telecommunications during the construction phase.

#### *11.4.2.3 Other Material Assets*

### Pre-mitigation impact

It is not anticipated that there would be any significant underground utilities encountered during the construction of the proposed project, with the exception of the locations within the public road corridors. In the unlikely event that any unknown services are discovered, there is the potential to impact on local network supplies, causing a potential brief slight negative effect. The construction phase will have the potential to produce municipal waste (site office, canteen), wastewater (site welfare facility) and construction waste (wood, packaging, metal, etc.) which will need to be processed at local waste processing facilities. The quantities of these wastes are not anticipated to be large, and so there would be a potential short-term imperceptible negative impact on local waste services.

### Mitigation

As with any excavations, particularly in the public road network, there is a potential to disrupt local underground services. A confirmatory survey of all existing services will be carried out



prior to construction to verify the assumptions in this report and identify the precise locations of any services. The developer will liaise with the service provider where such services are identified. Digging around existing services, if present, will be carried out by hand to minimise the potential for accidental damage. Segregation of waste will be carried on site to maximise the potential for waste recycling and minimise any potential for impacts on waste services. A licensed waste collector will be used to remove any waste that does occur on site.

There are no other impacts likely to arise during the construction phase, and therefore no other mitigation measures are required.

### **Residual Impact**

Should there be any underground services located along the route of the proposed grid connection, or at the locations of the proposed temporary road works to accommodate oversized load deliveries, the above-mentioned mitigation measures will be used to reduce any potential for impacts to being unlikely brief slight negative. There will be an imperceptible short-term negative impact on waste services.

## ***11.4.3 Operational Phase***

### ***11.4.3.1 Aviation***

#### **Pre-mitigation impact**

As raised during the consultation exercise, there were a number of specific operational phase concerns assessed for the proposed development in relation to aviation. Further details of the scoping responses that were received are provided in Chapter 1 of this EIAR (Introduction).

Waterford Airport raised a concern that the proposed development might cause an issue with the operation of airport activity, particularly in relation to Obstacle Limitation Surfaces (OLS), Instrument Flight Procedures (IFP) and ILS Calibration flights. Following consultation with the Airport management which included a virtual meeting, an Aviation Impact Assessment and an ILS Calibration Flight Impact Assessment were commissioned by independent specialist consultants Pager Power to assess the potential impacts that the proposed project might have on operations associated with both the existing Waterford Airport, and the proposed extended runway there. The Aviation Impact Assessment Report and ILS Calibration Flight Impact Assessment Report found that the proposed wind farm is unlikely to have a significant impact upon the existing aviation activity associated with Waterford Airport. Further details are provided in Appendices 11-1 and 11-2, and summarised as follows:

- **Obstacle Limitation Surfaces:** The proposed wind development does not infringe any of Waterford Airport's OLSs. This conclusion remains the same considering the proposed larger runway. No impacts are therefore predicted.
- **Instrument Flight Procedures:** The assessments show that the clearance distances between the assessed procedures and the proposed turbines exceed all relevant clearance minima. With respect to potential new IFPs as a result of the runway extension, a worst case 2,000ft DME 12nm arc has been assessed. Considering an existing wind farm (Ballymartin/Rahora), a 1,000ft clearance would not be possible. Therefore, the minimum altitude would need to be increased and taken into account in the design of new IFP's for the extended runway. In doing so, steps could be taken to accommodate the proposed wind farm to ensure minimum clearance distances.





- ILS Calibration:** The horizontal clearance between aircraft flying the test trajectories and the turbines is circa 7.4 times the minimum horizontal clearance distance of 150 metres applicable for VFR (Visual Flight Rules) flights in Ireland. The proposed turbines will therefore not directly affect aircraft flying ILS test trajectories and should be therefore tolerable.

The Irish Defence Forces (including the Air Corps) raised a concern about the potential impact that the proposed project might have on Air Corps flight activity accessing regional areas. An independent report was commissioned to look at this potential issue, which found that the proposed development would have no significant impact on Air Corps flight operations in the area. The report states that:

*“All manoeuvres that might be carried out while using the relatively straight stretch of the M9 as an aid for visual navigation can be comfortably carried out within a distance of less than a half a nautical mile from the motorway centreline. In addition, the locations of the turbines, the closest to the motorway being 1.5 nautical miles, are on high hills to the east of the motorway where the visibility and cloud base will almost inevitably be less than on the motorway or to the west of it.”*

The report also states that the proposed turbines might provide a visual landmark for aircraft, thereby providing a beneficial effect. Further details are provided in Appendix 11-3.

### **Mitigation**

The proposed development will require certain lighting requirements for tall structures. This will increase the visibility of the proposed development to any local aircraft. The final locations and dimensions of each turbine will be mapped and provided to the local authority and stakeholders (such as the Irish Aviation Authority) prior to erection to ensure that maps and databases are up-to-date for flight navigation. Further details are provided in Appendices 11-1 and 11-2.

In order to avoid any impacts on the Instrument Flight Procedures: The assessments show that the clearance distances between the assessed procedures and the proposed turbines exceed all relevant clearance minima. With respect to potential new IFPs as a result of the runway extension, a worst-case 2,000ft DME 12nm arc has been assessed. Considering an existing wind farm (Ballymartin/Rahora), a 1,000ft clearance would not be possible. Therefore, the minimum altitude would need to be increased and taken into account in the design of new IFP's for the extended runway. In doing so, steps could be taken to accommodate the proposed wind farm to ensure minimum clearance distances.

### **Residual Impact**

The implementation of the above mitigation measures, which are discussed in further detail in Appendices 11-1 and 11-2, mean that the proposed development will have no residual impact.

#### ***11.4.3.2 Telecommunications***

### **Pre-mitigation impact**

In relation to telecommunications, 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 most effective way to research the presence of telecommunication



links in the area is through consultation with the providers and ComReg, as described above. Based on this consultation exercise, and the fact that the proposed layout has been designed to avoid any impacts to the links which were determined to be in the area, it is therefore not anticipated that the proposed development will have any impact on telecommunication links in the area.

In addition to major telecommunication links, wind turbines have the potential to impact on delivery of telecommunication signals to the end users, for example by preventing the radio or television signal going to a house from a transmitter through electro-magnetic interference or physically blocking the signal. This would be an unlikely slight long-term negative impact in the absence of any mitigation.

### **Mitigation**

The proposed development is not anticipated to have any impact on any telecommunication links in the region due to the distance between the existing links and the proposed turbine locations. The developer has signed an agreement with 2RN (Appendix 11-5) to commit to restoring service to any end users that may have their service disrupted as a result of the proposed development. This is standard industry practice and will eliminate any potential impacts in this regard.

### **Residual Impact**

It is anticipated that there will be no impact to telecommunications during the operational phase due to the distance between the proposed turbine locations and the existing links in the area, and the requirement to not cause any impact to end users of telecommunication services by way of restoring the service.

#### ***11.4.3.3 Other Material Assets***

### **Pre-mitigation impact**

There are no significant excavations or works proposed during the operational phase, therefore there are no impacts anticipated on the local underground utility networks including water and electricity.

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. There would be a potential long-term imperceptible neutral impact on local waste services.

### **Mitigation**

Segregation of waste will be carried on site to maximise the potential for waste recycling and minimise any potential for impacts on waste services. A licensed waste collector will be used to remove any waste that does occur on site. A low-flush cistern will be fitted to reduce the volume of wastewater produced.

### **Residual Impact**

There will be a potential long-term imperceptible neutral impact on local waste services.

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#### *11.4.4 Decommissioning Phase*

There are no impacts likely to arise during the decommissioning phase of the proposed development in relation to aviation, telecommunications or other Utilities (Water and electricity supply networks). The tall structures will be removed and work involved in this phase will not involve significant excavations.

The decommissioning phase will have the potential to produce municipal waste (site office, canteen), wastewater (site welfare facility) and demolition waste (wood, packaging, metal, etc.) which will need to be processed at local waste processing facilities. The quantities of these wastes are anticipated to be larger than other phases (considering the removal of turbines, met mast and other structures), however these are largely composed of metal and other recyclable materials which would be brought to specialised facilities for processing/recycling such items. Turbine blades (fibreglass based) which currently have limited scope for recycling would be removed and processed by specialised companies. Any other wastes (such as oils) would be collected by an appropriately licensed waste collector. There would be a potential short-term moderate negative impact on local waste services.

#### **Mitigation**

Segregation of waste will be carried on site to maximise the potential for waste recycling and minimise any potential for impacts on waste services. Appropriately licensed waste collectors will be used to remove any municipal waste, wastewater or general demolition waste that does occur on site. The majority of wastes from decommissioned infrastructure will be recyclable, and the large items (turbines, met mast) will be collected and processed by appropriately licensed specialist companies with the capability to process these items correctly.

#### **Residual Impact**

There will be a potential short-term slight negative impact on local waste services.

#### *11.4.5 Cumulative Impacts*

A cumulative assessment was carried out for the proposed development, to include the consideration of projects discussed in Section 4.6 of this EIAR. This included other wind farms in the region such as Ballymartin Wind Farm and Rahora Wind Farm. Smaller scale development such as one-off dwellings and agricultural developments were also considered.

Telecommunication links, overhead services (telecommunication and electricity lines), underground services (telecommunications, 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 potential impact which it is required to mitigate, or it does not. As described above, a comprehensive list of consultees were contacted to ascertain the potential impact that the proposed project could have. The responses from these consultees was used to ensure that the proposed project will not have any significant impact on these services. In the unlikely event that any unforeseen impact does occur, it will be the responsibility of the developer to mitigate that impact (i.e. restoring telecommunication /television /water/electricity services). In the same manner, it is the responsibility of each developer for all projects considered in Section 4.6 of this EIAR to ensure that their project does not impact these services. Therefore, there were no potential cumulative impacts identified.



Other projects considered (from Section 4.6 of this EIAR) have the potential to create varying volumes of waste from a number of waste categories, depending on the project. Waste volumes from the proposed development are anticipated to be generally low, with the exception of the decommissioning phase (primarily in relation to turbines and met mast). The majority of wastes from decommissioned infrastructure will be recyclable, and the large items (turbines, met mast) will be collected and processed by appropriately licensed specialist companies. Overall, there will be no significant cumulative impact on waste services.

The forestry replanting sites assessed in Appendix 2-5 of this EIAR were also considered cumulatively, but due to the remote proximity to the proposed development, and the nature of the works at the replanting sites, there was no potential for cumulative impacts in relation to Material Assets.

## 11.5 CONCLUSION

Following consultation with aviation and telecommunication stakeholders, a number of potential areas of impacts were identified. From this, specialist assessments were carried out by Pager Power and Captain Fintan Richard Ryan. These reports found that once the appropriate mitigation is applied, the proposed development will not cause any significant issues in relation to aviation.

Based on the above assessment, there will be no significant effects on aviation, telecommunications or other material assets (Water and electricity supply, waste services) at any stage of the proposed development.

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