

15 MATERIAL ASSETS

15.1 INTRODUCTION

This chapter describes the Material Assets that are potentially impacted by the proposed Drumnahough Wind Farm, a 12 turbine wind energy development in Co. Donegal. A full description of the proposed development, development lands and all associated project elements is provided in Chapter 2 of this EIAR. The purpose of this assessment is to identify relevant Material Assets that are within the vicinity of the proposed development site or will be utilised by the development, determine the impact, if any, on these resources, and propose mitigation where necessary to ensure that they are used in a sustainable manner.

15.1.1 Scope of the assessment

The following EPA publications were consulted as part of the preparation of this assessment.

- *Draft Guidelines on Information to be contained in environmental impact assessment reports (2017)*,
- *Advice Notes for Preparing Environmental Impact Statements (Draft 2015)* were also consulted.
- *European Commission Guidance on the Preparation of the Environmental Impact Assessment Report (2017)*.

Material assets are defined in the draft Advice Notes for Preparing Environmental Impact Statements (2015) as “Resources that are valued and that are intrinsic to specific places, are called material assets. They may be either of human or natural origin. The assessment shall be concerned primarily with ensuring equitable and sustainable use of resources’. **Table 15-1** outlines the topic areas which these guidelines suggest may be cross referenced as part of the Material Assets study.

Table15-1: Types of Material Assets

Topics for consideration
- Population and Human Health
- Water
- Air
- Soil and Geology
- Noise
- Vibration
- Climate

The definition of Material Assets in the revised draft EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports published in August 2017, differs slightly to built services and infrastructure and excludes material assets such as cultural heritage, land resource and air quality, which are covered by other topics in an Environmental Impact Assessment Report (EIAR). **Table 15-2** outlines the topic areas to be examined when considering the impact of a development on Material Assets, as recommended in the 2017 draft EPA Guidelines.

Table 15-2: Material Assets and topics to be covered

Material Asset	Topics to be Covered
Roads & Traffic	Construction Phase Operational Phase Unplanned Events (i.e. Accidents)
Built Services	Electricity Air Navigation Television and Telecommunications Water Supply and wastewater Infrastructure Waste Management

Based on a review of the proposed development and the suggested topic areas set out in the Draft EPA guidelines (2017), the consideration of the projects impact on Material Assets provided within this Chapter is discussed in the context of built services. This includes transport infrastructure, electricity supply and infrastructure, aviation, television and telecommunications, water and wastewater infrastructure and waste management.

Other topic areas which are closely related are considered in other sections of this EIAR and therefore reference should be made to the associated chapters as follows:

- Assimilative capacity of the air resource is considered in the assessment provided in **Chapter 8 Air and Climate**. No further assessment on this topic is included in this chapter.
- The assessment on the land and geological resource is presented in **Chapter 9 Lands and Soils**. No further assessment on this topic is included in this chapter.
- Water resources are considered in the assessment on the surface water and groundwater resource provided in **Chapter 10 Water**. No further assessment on this topic is included in this chapter.
- The assessment on Cultural Assets is provided in **Chapter 13 Archaeology and Cultural Heritage**. No further assessment on this topic is included in this chapter.
- Traffic assessment is provided in **EIAR Volume 3 Appendix H-1 Traffic and Transportation Assessment** and **Appendix H-2 Preliminary Traffic and Management Plan**.

15.1.2 Methodology

The methodology used for this study included consultation and desk based research of published information on the relevant potentially impacted material assets.

A summary of consultation with respect to Roads and Traffic and Air navigation on the development is provided in **Table 15-3**.

Table 15-3 Summary of Consultations

Consultee	Response
Irish Aviation Authority (IAA)	Proposed turbine tip height of 167.5m does not have any material impact
Transport Infrastructure Ireland (TII)	Identify methods/techniques proposed for any works traversing/proximity to the national roads network, note locations of existing and future national road schemes, suggest consultation with Local Authority /National Roads Design Office. Consideration of laying cables along private lands adjoining national roads, identify haul route and assess network to be traversed, traffic and transport assessment to be completed.
Roads Department - Donegal County Council	Discussion's outlined road infrastructure which may be temporarily affected by the development

15.2 RECEIVING ENVIRONMENT

The existing receiving environment (baseline environment) has been examined under the following sections; Road and Traffic and Built Infrastructure.

15.2.1 Road and Traffic

The proposed development is located within a rural upland area of central Donegal. It is located west of the N13 between Drumkeen and Letterkenny, north east of the R252 from Cloghan and southeast of the R250 road between Letterkenny and Fintown. The proposed development can be accessed via Local road L-10142 (Junction A) to the south east of the site and local road L-1622-1 (Junction B) to the north west of the site as shown in **Figure 15-1**.

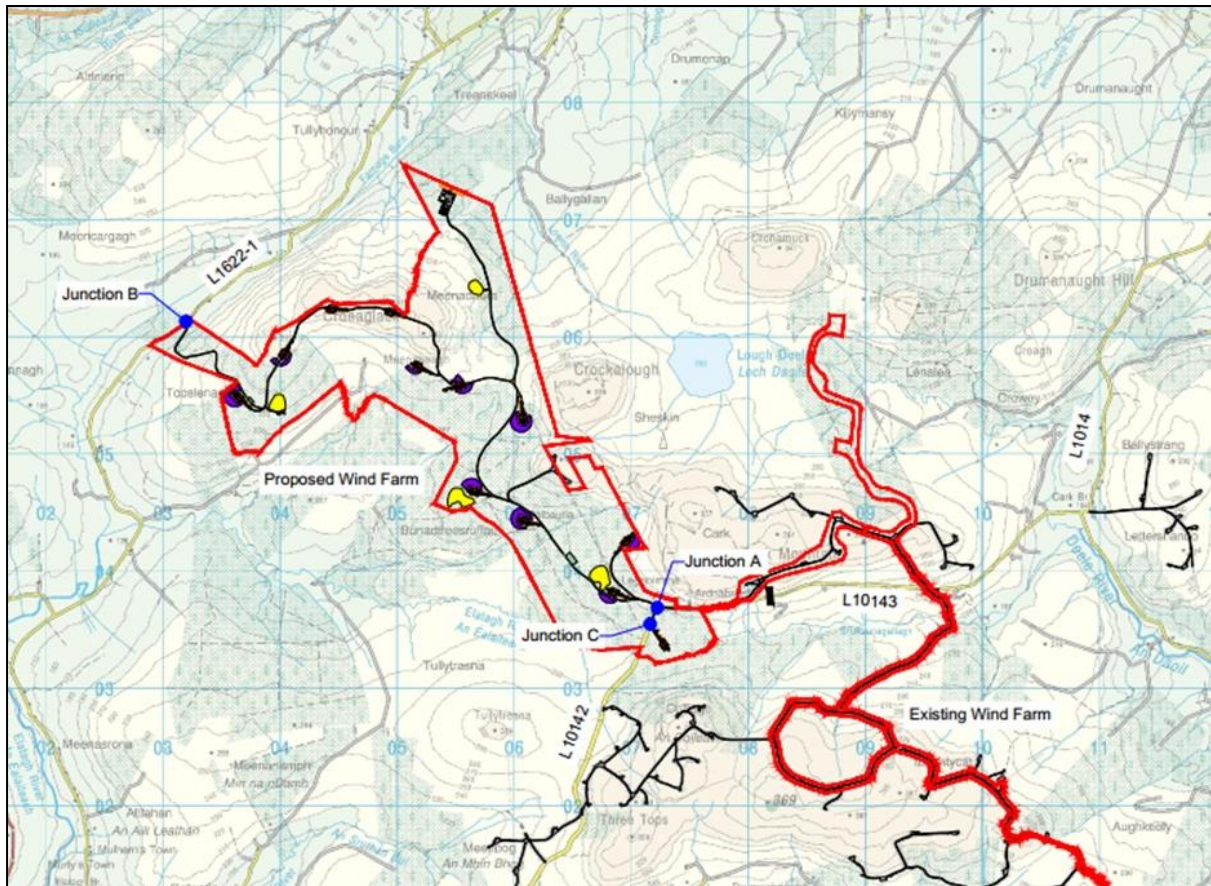


Figure 15-1 Proposed Development Site Access

Existing baseline traffic of roads along the proposed turbine delivery route has been determined on the basis of a review of previous traffic volumes submitted as part of planning applications to Donegal County Council as outlined in **EIAR Volume 3 Appendix H-1**. Existing Heavy Good Vehicles (HGV) peak traffic and Annual Average Daily Traffic (AADT) for roads in proximity to the proposed development have been summarised in **Table 15-4** below.

Table 15-4 Existing Traffic Volumes

Road Location	Total Vehicles			
	2019 Peak Hour (HGV)		2018 AADT (%HGV)	
N15	668	(50)	7,223	5.7%
N13	1,148	(42)	10,176	4.0%
L2744	30	(1)	300	1.0%
R251	130	(5)	1,300	3.4%
R250	100	(4)	1,000	3.2%
L2073	30	(1)	500	1.0%
L1114	30	(1)	500	1.0%
LP1044	30	(1)	500	1.0%
L1034	30	(1)	500	1.0%

15.2.1.1 Turbine Delivery Route

The proposed delivery route from Killybegs Port to the eastern site entrance at Drumnahough will be along the following route:

- Starting at Killybegs Port;
- Travelling northbound along the Shore Rd (R263) to the junction between R263 to N56;
- Follow the N56 eastbound to the junction with the N15 near Donegal town;
- Follow the N15 north / northeast to the junction with the N14 in Lifford;
- Follow the N14 north / northwest to the junction with the N13;
- Follow the N13 west and then south to the junction with the L2744 local road;
- Follow L2744 westbound to the entrance of the existing Meentycat;
- Follow existing windfarm roads through the Meentycat and Cark Wind Farms to the L10142.
- Follow the L10142 westbound to the site entrance, Junction A.

The proposed route has been assessed with an AutoTrack model which was developed for a 71m long blade with a 12m overhang on a bogie trailer in accessing the route from Killybegs to Drumnahough. Pinch points along the route were identified using aerial photography and topographical survey information where available as discussed in **EIAR Volume 3 Appendix B-3 Turbine Delivery Route Assessment Report**.

15.2.2 Built Infrastructure

Built Infrastructure in the vicinity of the proposed development has been included in the following sections.

15.2.2.1 Electricity Supply and Infrastructure

Existing electricity infrastructure includes a 110kV overhead line, running between Letterkenny and Binbane substations and an overhead 38kV line, west of proposed T1, running between the existing Cark and Cuilliagh substations. A map of existing overhead electricity infrastructure is shown in **Figure 15-2**.

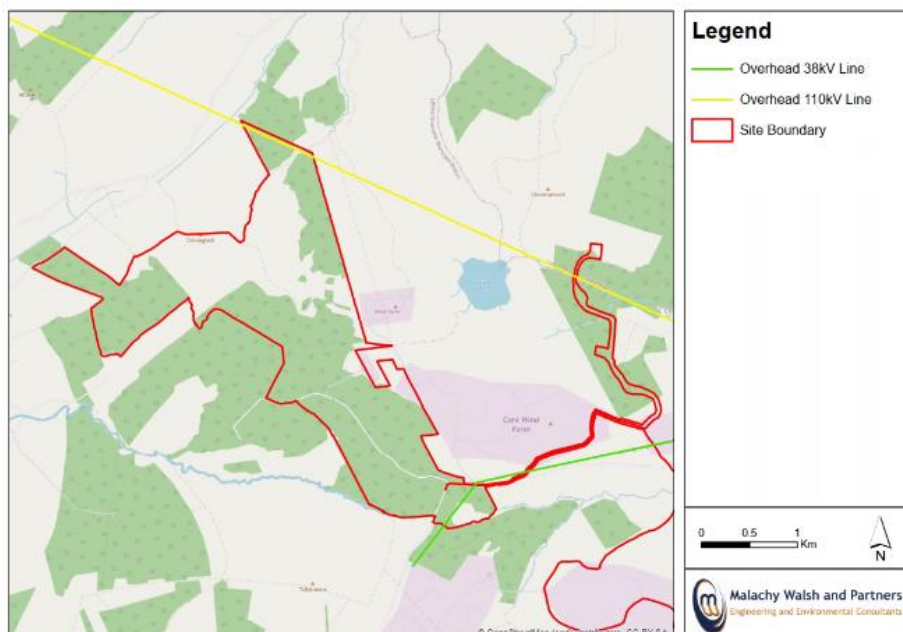


Figure 15-2 Drumnahough Existing Overhead Electricity Infrastructure

15.2.3 Aviation

Airports are valuable transport, tourism, employment, and business assets for the local and national economy. The development of large energy projects has the potential to impact air service and operations (airports, landing strips, etc.) within a project area. Developments around airports and under flight-paths can constrain operations, either directly where they conflict with safety/operational requirements, or indirectly where they interfere with radar or other navigational aids.

There are three aviation centres within 50 km of the proposed development; Donegal Airport to the west northwest, Ruskey Airfield and Finn Valley Flying Club to the southeast as shown in **Figure 15-3**.

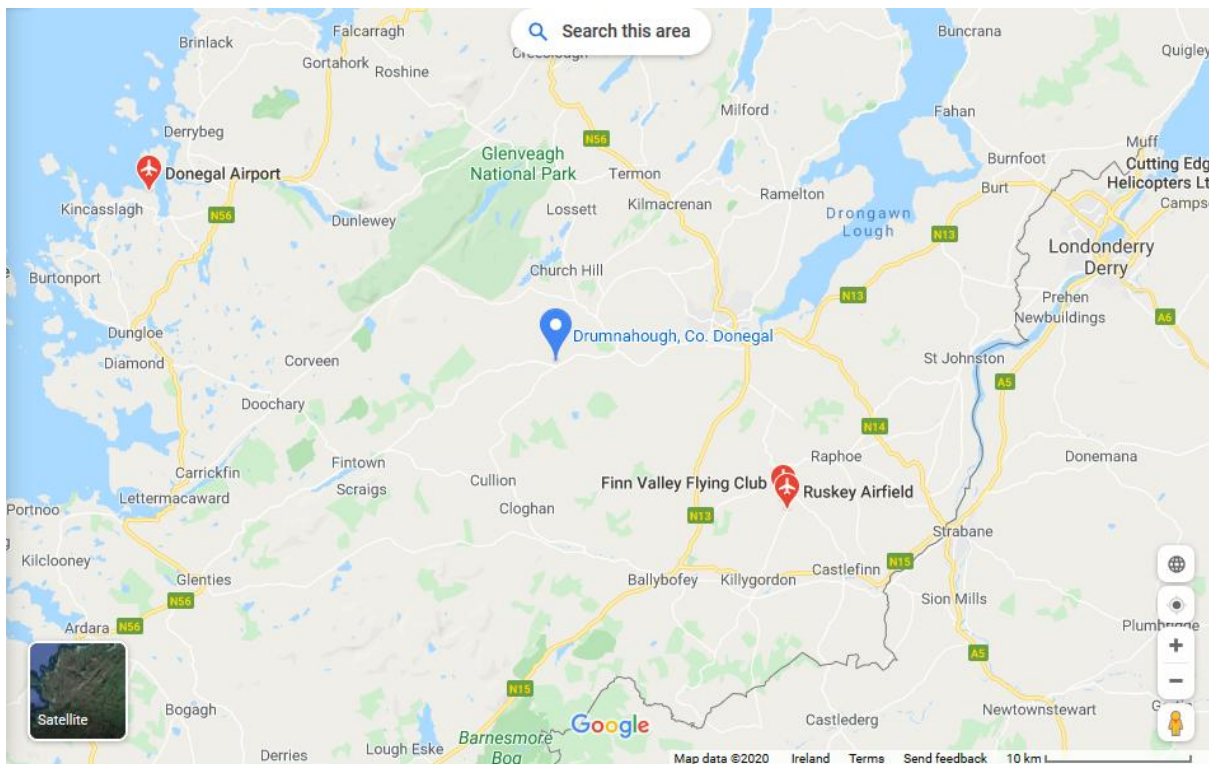


Figure 15-3 Aviation Locations

Consultation with Irish Aviation Authority (IAA) was completed. The IAA confirmed that the proposed development will not have any material impact on aviation. Copies of consultation responses are included in **EIAR Volume 3 Appendix A-2**.

15.2.4 Television and Telecommunications

RTE's analogue service was turned off in October 2012 and was replaced by a new Digital Terrestrial Television (DTT) service, commonly known as Saorview TV. The digital Saorview service is still provided from the large RTE transmission sites and a number of new transmission sites have also been built. A review of the Saorview coverage map indicates that TV reception in the area is principally received from the following transmitters:

House locations to the north of the proposed development; receive transmission from Holywell Hill transmitter circa 33km east. House locations to the north and east of the proposed development either received transmission from Ballybofey transmitter 9km southeast or from Letterkenny transmitter which is circa 18km east. Truksmore transmitter, circa 66km southwest of the proposed development, provides transmission to houses on the south of the development. Saorview coverage was noted as 'challenging' for house locations adjacent to local Road L2073, southwest of the development. TV transmitter locations in proximity to the proposed development are shown in



Figure 15-4 TV Transmitters in proximity to Drumnahough

The Saorview coverage map also indicates that Saorview service coverage is currently a challenge in some areas south of the development site, as shown in **Figure 15-5**.



Figure 15-5 Saorview Coverage in proximity to Drumnahough
(<https://www.saorview.ie/en/get/coverage>)

A review of the Commission for Communications Regulation (ComReg) site map shows that mobile network operators with masts and communication links in the area include Meteor, Vodafone and Three, see **Figure 15-6**.

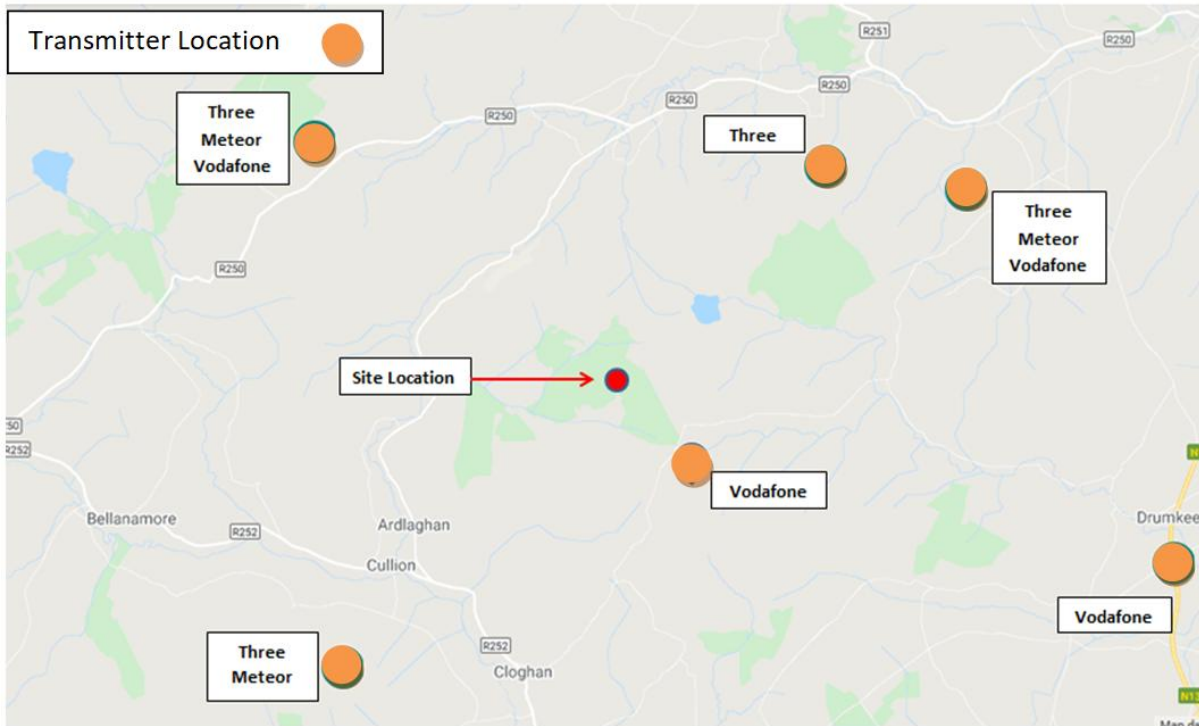


Figure 15-6 Communication Infrastructure in proximity to Drumnahough
(Source: <https://siteviewer.comreg.ie/#explore>)

15.2.5 Water and wastewater Infrastructure

There is currently no wastewater or water supply infrastructure within the subject site.

15.2.6 Waste Management

There is currently no construction phase waste within the subject site.

15.2.7 Forestry Resources

Forests are an important renewable resource with a role to play in sustainable rural economic development. Timber production is the principal objective and economic benefit of forestry resource. The proposed wind farm development lands are located predominately within existing commercial conifer forestry that is owned and managed by Coillte, the Irish State Forestry Board, for timber production. There are two dominant tree species across the site. These include the Lodgepole pine and Sitka Spruce. The plantation is certified to the Forest Stewardship Council (FSC) scheme, which demonstrates that it is well managed in accordance with strict environmental, social and economic criteria.

15.3 LIKELY SIGNIFICANT EFFECTS

Likely significant effects are predicted on the basis of the proposed project are discussed below.

15.3.1 Roads and Traffic

As outlined in **EIAR Volume 3 Appendix H-1** Transportation and Traffic, subject to receiving planning permission, it is envisaged that work would commence at the site once the relevant permits and funding are in place in 2023, with duration of approximately 14 months. During the operational phase, there will be periodic maintenance on site. This will generate a relatively low volume of vehicles, including occasional heavy vehicles. The proposed operational phase will have imperceptible to not significant traffic effects.

15.3.1.1 Vehicles and Site Access

During the construction phase, it is expected that the majority of upfill material will be using site won stone. Where materials are required from off site, it is expected they will be sourced from local quarries. These are currently 8 No. licensed facilities in the surrounding 30 km likely to include, but are not limited to Letterkenny Concrete and Quarry, located on the N14 approximately 18km east of the site, Churchill Stone, located on the R251 north of the site and Bonar's Quarry, located off the N56, approximately 5km north of Letterkenny and other existing quarries in the surrounding area.

Construction materials' delivery vehicles routes are likely to include the Regional Roads R250, R251 and Local Roads L-2744, L-1622-1, L-1114, L-1044, L-1034, L-1014 and L-10142. The wind turbine component deliveries will be via the south east entrance only (Junction A). The predicted traffic volumes associated with the proposed development have been proportioned accordingly across the access points to the site. It has been assumed for the purpose of the traffic assessment that the construction traffic volumes for Junction A will be assigned equally across the two likely routes, (Route B and Route C). The 14 month construction programme will require the importation of up to 13,070 loads of construction materials. This will include delivery vehicles for the 12 No. wind turbines including their abnormal loads. A total of 120 delivery vehicles will be required for the 12 turbines, which have been included in the number HGV deliveries for Route C. This could result in temporary delays for other location traffic during the off-peak traffic delivery periods. Proposed site access and delivery routes are shown in **Figure 15-7**.

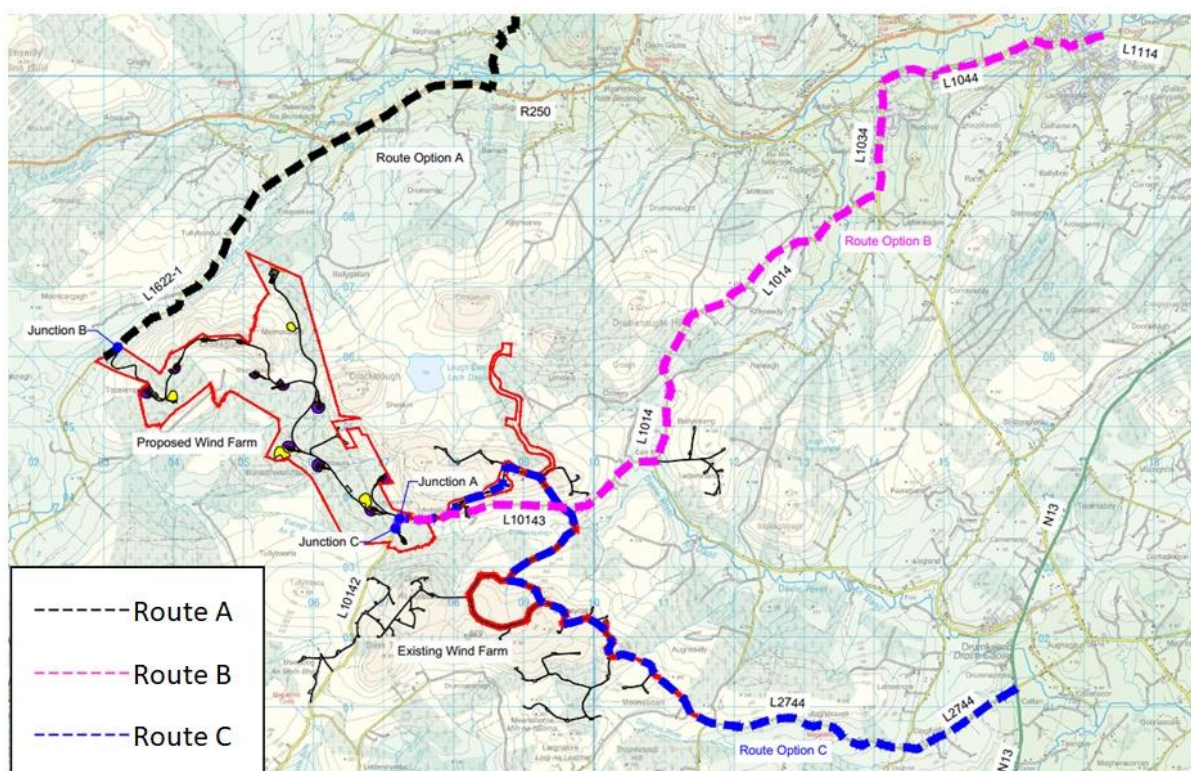


Figure 15-7 Proposed Delivery Routes (General Construction)

15.3.1.2 Traffic Management

The predicted AADT volumes are based on a 14 month construction programme. As discussed in **EIAR Volume 3 Appendix H-1** Traffic and Transportation Assessment, single lane closures may be required on the L-10142, as part of the grid connection construction works, if Grid Connection to consented Lenalea substation is selected. The Single lane closure will be controlled by way of either a stop-go system, a priority yield system or by temporary traffic lights. It is envisaged that 100-200m of the cable route will be construction each day and therefore single lane closures will move with the works (with a total construction length of 750m). Heavy vehicle traffic volumes generated by the proposed development construction could result in damage to existing and proposed road pavements on public roads, including at vehicle turning, accelerating and decelerating locations.

15.3.1.3 Turbine delivery route

Along the TDR, a total of 22 Nodes/ pinch points of works required have been identified. In summary work will include the following:

- Nodes 1-8 works are limited to minor temporary disturbances, such as removal of fences, lighting poles, telecoms poles, signs and other street furniture. These disturbances will be completed in one day and will not impact on electricity supply in the area.
- Node 9 will require temporary removal of crash barriers, lighting poles, telecoms poles, signs and other street furniture and removal of trees in centre of roundabout.
- Node 10 will require temporary removal of lighting poles, telecoms poles, signs and other street furniture.
- Node 11 -22 will require minor works to harden areas of soft verge with granular fill. Any existing drains in areas requiring stone to be piped. Existing bank to the north of the road to be removed locally. Widening of embankment to the south of the road into a field. Telecoms poles, electrical

poles, overhead cables, fences to be removed temporarily. Hardening of soft verge with compacted granular material. Any existing drains in areas requiring stone to be piped. Temporary removal of telecoms poles.

Temporary removal of telecom poles, electrical poles, overhead cables, fences as discussed above will be limited to approximately one day. Electrical works will be completed with minor temporary disruptions to local electricity supply. Fences, signs and other street furniture will be replaced on same day of completing works. The effects of works along the TDR are considered to be short term and not significant.

15.3.2 Grid Capacity and Electrical Infrastructure

The proposed development will assist in meeting increases in electricity demand nationally by exporting electricity into the electricity market. It will contribute to ensuring that adequate electricity supplies are available to support economic activity and growth.

To facilitate a connection to the National Electricity Grid (NEG) for the twelve (12) No. turbines, it is being proposed that the wind farm's underground medium voltage collector circuit cables will connect into the consented Lenalea 110kV Substation (DCC PL Ref. 09/50116), and the consented loop-in connection at Lenalea (DCC PL Ref. 18/50312) and this connection forms part of the proposed development.

An alternative grid connection method to the NEG considered by the Applicant comprises the wind farm's underground medium voltage collector circuit cables connecting to a new 110kV substation within the site, with a new loop in / loop out connection to the existing Binbane to Letterkenny 110kV overhead line. This new substation would also include a battery energy storage system (BESS), which would discharge to the grid as required. While the Applicant is currently not seeking permission for this alternative grid connection option as part of the planning application, this EIAR considers both potential grid connection options.

The inclusion of energy storage infrastructure at Drumnaough is aligned with the provisions relating to grid system flexibility requirements as set out in the Climate Action Plan 2019. The battery storage system proposed adjacent to proposed 110kV substation will provide flexibility to the power system through the ability to store energy at times when supply outstrips national energy requirements and will allow for the provision of other necessary ancillary services to the national grid.

The wind farm proposal does not pose a permanent risk to the local electricity infrastructure. There will temporary impact on an existing 38kV overhead line which passes through the proposed location of T1. This line will either require diversion of the line either underground or diversion to the east of its current location via the installation of new poles to carry the 38kV line. An underground diversion will follow the existing 38kV route. An overhead diversion will require timber poles founded on concrete bases as shown in **Figure 15-8**. There is currently sufficient capacity and infrastructure in place to accommodate the additional renewable energy to be generated. Therefore, the effects on grid capacity and electrical infrastructure are considered to be long term and moderate.

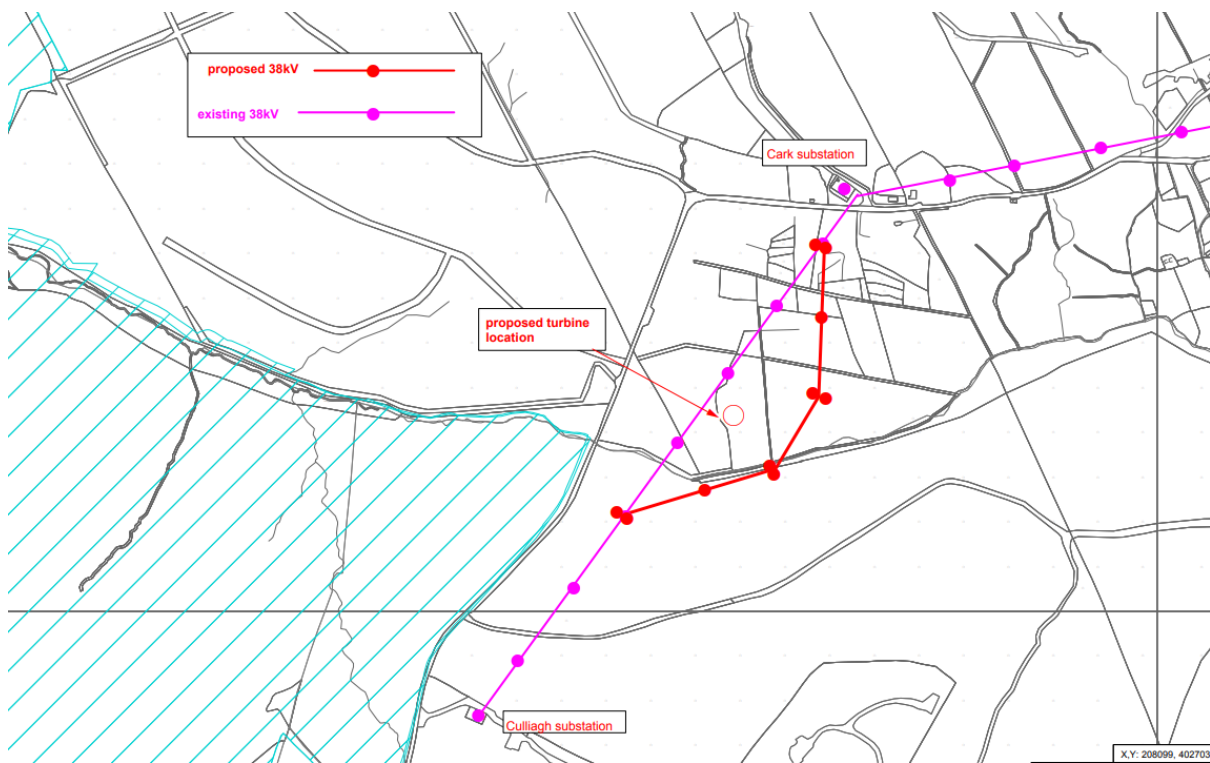


Figure 15-8 Potential overhead diversion route of 38kV cable

15.3.3 Aviation

The proposed development is located within an area currently surrounded with operational wind farms. Consultation with the Irish Aviation Authority (IAA) concluded that the proposed turbine locations and turbine tip height will not impact on aviation in the area. A copy of the consultation correspondence with the IAA is attached as **EIAR Volume 3 Appendix A-2**. Therefore, the effects on aviation are considered to be not significant.

15.3.4 Television and Telecommunications

As noted in **Figure 15-5** Saorview service coverage is currently a challenge in some areas south of the development site. Correspondence from Broadcasting Authority of Ireland (BAI) has indicated that they are not aware of any issues from existing wind farms with existing Frequency Modulation (FM) networks. Furthermore the proposed development is not located close to any existing or planned FM transmission sites. All correspondence relating to this issue has been included in **EIAR Volume 3 Appendix A-2**.

It is unlikely, given that the wind farm is not located close to any existing or planned FM transmission sites, that receptors in the vicinity of the wind farm could experience interference with television reception. Furthermore, the presence of existing operational wind farms in proximity to the proposed development, demonstrate the low potential risk of television and telecommunications interference from the location.

Notwithstanding this, as is standard practice, a signed Protocol between the developer and RTE will be put in place, in which the developer will be responsible to resolve any issue of interference with television reception as a result of the proposed development.

This study was otherwise unsuccessful in obtaining a response from other telecommunication providers and subsequently is not conclusive in determining if certain communication links are likely to be affected by the proposed wind farm. Notwithstanding this, it is anticipated that any potential interference with links can be suitably overcome. Therefore, effects on telecommunication assets considered to be not significant. Suitable mitigation, if required, would need to be carried out in consultation with the operations provider.

15.3.5 Water and wastewater Infrastructure

No public water or wastewater utility infrastructure is required at the wind farm site.

Water needs for construction activities will be low and limited to truck washing, wheel wash, dust suppression and sanitary facilities. It is proposed that this water requirement will be sourced from on-site rainwater collection systems and settlement ponds. It is estimated that up to approximately 3,000 litres per day of potable water will be required during peak construction for construction employees. It is proposed that this water requirement will be imported in bulk water tanks. Potable water during the operational and maintenance phase is estimated to be approximately 50 litres per day. This water will be supplied as bottled water. The volumes of water required are minimal and will have a negligible impact on the water supply utilities.

During the construction time period, sanitary wastewater, estimated to be 3,000 litres per day, will be collected in portable toilets during construction. Disposal of sanitary wastes will be managed through a contract with a licensed waste contractor. There are 10 no. of licensed facilities within 45km of the proposed development. These are likely to include, but are not limited to Stranorlar wastewater plant 13km southwest, Clady wastewater treatment plant 25.44km southeast, Castledearg wastewater treatment 29km southeast and other wastewater facilities in the surrounding area. During the operational phase, wastewater from welfare facilities on site will drain to integrated wastewater holding tanks associated with the toilet units. The stored effluent will then be collected on a regular basis from site by a permitted waste contractor and removed to a licensed waste facility for treatment and disposal. The volumes of wastewater requiring disposal are minimal and will have a negligible impact on the capacities of external treatment facilities. Therefore, the effects on water and waste water infrastructure are considered to be Imperceptible.

15.3.6 Waste Management

During the course of the project, a certain amount of waste will be produced. **Table 15-5** below outlines the anticipated types of major waste streams that will be generated by the project

Table 15-5 Anticipated waste arisings on site

Waste item
Waste from Welfare Facilities
Waste Chemicals, Fuel and Oils
Packaging
Concrete
Waste Metals
Excavated Materials

In accordance with the waste hierarchy in Council Directive 98/2008/EC on waste and section 21A of the Waste Management Act 1996, as amended, waste management will be undertaken in order of priority, as follows:

(a)Prevention; (b)re-use; (c)Recycling; (d)Other recovery (including energy recovery); and (e) Disposal;

Waste generation is principally avoided through planning and management of activities and good housekeeping. The procurement of material inputs are generally in bulk. By bulk procurement, the generation of small-sized containers and packaging is largely avoided and thus minimises the generation of unnecessary waste requiring recycling or disposal.

In line with the Waste Hierarchy, wherever possible, packaging will be returned to originator for reuse ahead of recycling or disposal. Otherwise waste packaging will be segregated and stored on site in appropriate skips within the construction compound and disposed of in accordance with waste management regulations. Skips will be clearly labelled for plastics, timber, steel and other waste materials to ensure segregation. Materials will be placed in these and can be reused as required during construction

Construction phase waste may consist of hardcore, concrete, spare steel reinforcement, cable wires, shuttering timber and building materials. This waste will be stored in the construction compound and collected at the end of the construction phase and taken off site to be reused, recycled and disposed of in accordance with best practice procedures at an approved facility. Plastic waste will be taken for recycling by an approved contractor and disposed or recycled at an approved facility. Hazardous materials, such as fuels and lubricant oils, used during construction that require disposal will be disposed of in accordance with all applicable laws and regulations. Domestic type waste generated by contractors will be collected on site, stored in an enclosed skip at the construction compounds and disposed of at a licensed landfill facility. Surplus spoil may be generated through construction of access tracks, crane hardstands, construction compound, turbine foundations and substation compound. Any surplus spoil material generated during construction will be transported back to deposition areas via articulated dumper trucks or tractor and trailer for subsequent reuse in the permanent reinstatement of the borrow pits as outlined in **Chapter 3 Civil Engineering**.

During the operational phase, minimal amounts of solid waste will be generated, which will be collected onsite and transported to a licensed disposal, potential facilities are listed in **Table 15-6**, or recycling facility by a waste hauling contractor. Hazardous materials, such as gear and hydraulic oils used in the operation of the wind turbines and mineral oils used in transformers, will be disposed of in accordance with all applicable laws and regulations.

Table 15-6 Licensed Waste Facilities

Waste Type	EWC code	Facility	Location
Excavated Soils from public roads	17 03 01	Belgard Quarry	Tallaght Dublin
	17 03 02	Burrishoole Community Partnership Ltd	Newport, Co. Mayo
		RDC Contracts	Clondalkin Dublin
		Mullafarry Quarry Ltd	Killala, Co Mayo
Domestic Wastewater	20 03 04	Donegal Waste and Recycle	Glenties
		Enviro Grind Ltd	Pettigo, Co. Donegal
		Donegal Waste and Recycle	Laghey, Co. Donegal
C&D waste	17 01 07	Donegal Waste and Recycle	Glenties
		Donegal Waste and Recycle	Laghey, Co. Donegal
		Dorrian Construction Ltd	Letterkenny, Co. Donegal
		Ulster Environmental Management Services Ltd	Burnfoot Co. Donegal
Waste oils	13 02 08	Stranorlar Civic Amenity Site	Stranorlar, Co. Donegal
		Letterkenny Civic Amenity Site	Letterkenny Co. Donegal
		Letterkenny Skip Hire,	Letterkenny Co. Donegal
Domestic waste	20 03 01	Bryson Recycling Ltd Letterkenny Skip Hire	Letterkenny Co. Donegal
		Donegal Waste and Recycle	Laghey, Co. Donegal
		Donegal Waste and Recycle	Glenties
Oil interceptors	13 05 01	Clare Drains Environmental Ltd	Quin , Co. Clare
	13 05 02	KPA (Ballinalack Limited)	Co Westmeath N91 ATYO
	13 05 03	K Fahy Waste Facility Ltd	Co. Limerick
	13 05 06	John Conaty Limited	Kells Co Meath
	13 05 08		

The types of wastes to be generated will be similar to established construction waste streams and will not require unusual or new treatment options. Waste volumes will not be significant as to require new permitted treatment, storage and disposal facilities as there is sufficient capacity at licensed disposal or recycling facilities in proximity to the proposed development, see **Figure 15-9**. Waste Management procedures have been included in the Construction Environmental Management Plan (CEMP) in **EIAR Volume 3 Appendix B-2**.



Figure 15-9 Disposal and Recycling Facilities near Drumnahough

On decommissioning about 85% of turbine components, including steel, copper wire, electronics and gearing, can be recycled or reused. The fibreglass blades however are difficult to recycle and currently are generally disposed of by landfill. There are existing options available to developers for blade reuse and recycling in the form of artificial reefs, playgrounds or street furniture, cement co-processing for the glass fibre component, and blade recycling through pyrolysis and gasification (Wind Europe, 2017).

This would be a moderate negative impact of the development and likely to require provision of new treatment technologies and/or facilities. Therefore, the effects of waste management are considered to be moderate negative.

15.3.7 Forestry Resources

The main impact on the existing forestry resource will be the requirement for permanent tree felling to facilitate construction of the wind turbines and associated infrastructure so that both energy and timber production can occur on the site. Overall felling of approximately 37.2ha of forestry will be required. This represents approximately 15,619 ha of the forestry resource in Co. Donegal. Therefore, the amount of forestry that will be lost as a result of the development is minimal and will be insignificant, resulting in imperceptible effects, relative to the size of the forestry resource nationally of 731,650 ha (NFI 2012).

Notwithstanding this, in accordance with felling licence requirements for the planting of trees to replace those felled, replacement planting of forestry for all forestry removed as part of the proposed development will be undertaken. As outlined in Chapter 2, the proposed replacement forestry lands have previously been granted Technical Approval by the Forest Service for afforestation, and these lands will be used for replanting should the proposed development receive planning permission. Therefore, the proposed development will have a negligible impact, resulting in imperceptible effects, on the national forestry resource.

Conventional felling has taken place and will continue to take place at the site independent of the wind farm proposal. This felling has and will continue in accordance with strict environmental guidelines including the Forest Service, Forestry and Water Quality Guidelines (2000) and Forest Harvesting and Environmental Guidelines (2000). Coillte must adhere to strict environmental conditions in order to maintain its Forest Stewardship Council (FSC) Certification. Any felling to facilitate the wind farm construction and operation will continue to operate within the safeguards set out in these guidelines. Similarly, replanting activities will be undertaken in accordance with FSC Certification practices. Therefore, no significant negative effects on the receiving environment will occur.

The wind farm development will not impede or deter either existing or future use of the local forestry resources.

15.3.8 Cumulative Effects

The cumulative effects of the proposed development have been assessed with existing and permitted developments in the surrounding area. Much of the surrounding area accommodates residential dwelling, agricultural buildings and neighbouring wind farm developments. Cumulative effects

Forestry operations in the wider area may use the delivery routes during the construction period for ongoing maintenance. The overall impact is assumed to be of low volume with regards to traffic volumes. The effects on traffic are considered not significant.

Cark Wind Farm, located in the vicinity of the proposed development, may be due for decommissioning in the coming years. There are no details at this time of how the site will be decommissioned. There are 25 No. wind turbines due for decommissioning. The overall decommissioning impact is assumed to be of low volume with regards to traffic volumes. If the turbines are removed intact, approximately 10 No. abnormal load trips will be required per wind turbine. If the blades and turbines are cut on site for removal, it is estimated there will be 20 to 25 No. HGV loads per wind turbine. In the event that decommissioning of Cark is concurrent with construction phase of the proposed development, there may be some local traffic delays. Therefore, the effects on traffic are considered to be moderate negative.

To facilitate construction of the proposed development, a 38kV overhead line located west of T1 will need to be temporary diverted. The line may be diverted east of the proposed development, or diverted to an underground line. It is estimated that works will take approximately one day and that there will be no disturbance to electricity supply in the area.

15.4 MITIGATION

Mitigation measures have been outlined below to reduce or eliminate potential effects on the receiving environment.

15.4.1 Roads and Traffic

A Traffic Management Plan has been prepared and outlined in **EIAR Volume 3 Appendix H-2**. Construction activities associated with the proposed development will adapt working practices to ensure the safety and convenience of all road users during the construction of the development as detailed previously. This includes pedestrians, cyclists and other traffic.

Pre-construction and post-construction surveys will be carried out to verify the structural integrity of the proposed haulage route road network. Repairs will be carried out on the public roads as necessary during the construction phase to ensure that the condition does not deteriorate below an acceptable standard. Following completion of construction, the condition of the public road will be of at least the same standard as it was prior to commencement of construction.

Drumnaough DAC is committed to providing a high level of communication to the general public and business community regarding the extent and duration of the project. Prior to construction works, the developer / appointed contractor will provide advice to the public in relation to:

- Commencement and duration periods for the works.
- Current and proposed road closures or other traffic management tools.
- Alternative routes.
- Provision for access / egress.

15.4.1.1 Turbine Delivery Route

Prior to construction phase, a schedule of street furniture alterations required will be compiled and formally agreed with Donegal County Council (DCC) and Transport Infrastructure Ireland (TII). Consultation will be completed with all relevant authorities such as DCC and An Garda Síochána regarding possible traffic restrictions when transporting components. A utility survey will be completed to confirm the clearance requirements of street lighting, telephone poles, overhead lines etc. for turbine components along the TDR. Consultation will be made with EIR and ESB Networks about temporary removal of their services during delivery as necessary.

15.4.2 Grid Capacity and Infrastructure

Mitigation by design has been adopted whereby the grid connection methodology at Drumnaough has been selected to utilise existing built infrastructure as discussed in **Chapter 4 Alternatives**. Ecological, field and desktop assessments have been applied to determine project development infrastructure locations and mitigation by avoidance of any constraints, see **EIAR Volume 3 Appendix C-1**. Cables will be laid underground to avoid effects on roadside hedgerows and disturbance to nesting birds.

There is no anticipated effect upon the grid network outside of the infrastructure for the proposed development itself. The proposed development will not result in any significant effects on grid capacity but will provide a potentially positive effect of the electricity supply infrastructure. No specific mitigation measures are proposed.

15.4.3 Aviation

Whilst the proposed development will not impede aircraft, IAA Electronic Air Navigation Obstacle Data sets has identified obstacles as objects whose height above ground level is 90m or higher, affecting air navigation. Irish Wind Energy Association (IWEA) Guidelines¹ have set out the following measures to ensure that pilots of aircraft are fully aware of the presence of wind turbines.

- All turbines and meteorological masts having a height of 90m or more are promulgated in the Irish Air Navigation Obstacle database;
- Wind turbines or any structure exceeding 90m in height may require appropriate aviation warning lighting as agreed with IAA;
- The IAA should be informed 30 days in advance of the erection of any structure exceeding 45m in height.

Having regard to the above:

- The developer will agree an aeronautical obstacle warning light scheme for the wind farm development with the IAA;
- The developer will provide the IAA with as-constructed coordinates in WGS84 format together with ground and tip height elevations at each wind turbine location;
- The developer will notify the IAA of intention to commence crane operations with a minimum of 30 days prior notification of turbine erection.

15.4.4 Television and Telecommunications

In the event of interference to television and telecommunication services arising from the wind farm development Drumnaough DAC is committed to work with telecommunication providers to remedy any issues of interference to affected communication links. Appropriate mitigation measures can be implemented such that there will either be an imperceptible effect, or no effect, on surrounding reception as a result of the proposed development, with the solution to interference with TV reception or communication links dependent on where the residence receives signal from.

As standard practice, a signed Protocol between the developer and RTE will be put in place, in which the developer will be responsible to resolve any issue of interference with television reception as a result of the proposed development.

15.4.5 Water and Wastewater Infrastructure

All wastewater to be taken off-site is to be undertaken by an authorised waste contractor and brought to an authorised waste facility.

¹ IWEA Best Practice Guidelines for the Irish Wind Energy Industry (2012)

15.4.6 Waste Management

Waste will be managed in accordance with the waste hierarchy in Council Directive 98/2008/EC on waste and section 21A of the Waste Management Act 1996, as amended, as follows: (a) Prevention; (b) re-use; (c) Recycling; (d) Other recovery (including energy recovery); and (e) Disposal;

All waste for offsite treatment/disposal is to be stored temporarily in appropriate dedicated storage areas. The areas in which wastes are stored on site are segregated to prevent material and contaminated surface water runoff entering local surface water drains.

All chemical, hydrocarbon or other controlled wastes will be stored in designated areas in appropriate approved containers within bunds or on spill pallets, as required.

All waste to be removed from site will be undertaken by authorised waste contractors and transported to an authorised facility in accordance with best practice and the site waste management plan as discussed in the CEMP as included in **EIAR Volume 3 Appendix B-2**

15.4.7 Forestry Resources

At the Drumnaough site, Coillte has maintained and will continue to maintain its FSC Certification through safeguards and by implementing among others the Forestry Service Guidelines to control erosion, minimise forest damage and protect water resources.

The impact of the wind farm on forestry operations and the potential impact of forestry felling on the environment will continue to be controlled by strict environmental controls, practices and guidelines as described by the relevant Forest Service Guidelines.

Any tree felling required to facilitate the construction and operation of the wind farm will be kept to a minimum and under the terms of felling licences, SSE & Coillte will fulfil its obligations to replant clearfell areas.

The proposed project will not result in any significant adverse impacts on forestry resources requiring additional mitigation.

15.5 RESIDUAL EFFECTS

Residual effects section outlines the degree of environmental change that will occur after the proposed mitigation measures have taken effect.

15.5.1 Roads and Traffic

The proposed construction and decommissioning works will have slight to moderate short-term negative effects.

15.5.2 Grid Capacity and Electrical Infrastructure

The effects on grid capacity and electricity infrastructure are considered to be imperceptible as a result of the proposed development.

15.5.3 Aviation

The residual effects on aviation anticipated as a result of the proposed development are considered to be not significant.

15.5.4 Television and Telecommunications

In the event that interference is established and following the implementation of suitable mitigation measures in full; the residual effects on television services or telecommunication services are considered to be imperceptible as a result of the proposed wind farm development.

15.5.5 Water and wastewater Infrastructure

The residual effects on water and wastewater infrastructure assets are considered to be imperceptible as a result of the proposed development.

15.5.6 Waste Management

The disposal requirements for turbine blades are considered a moderate negative residual effect.

15.5.7 Forestry Resources

While the losses of the forestry resource to the wind farm represent a minor economic loss in terms of wood production at a local level, the development proposal includes for replanting of the forestry resource elsewhere, as required for the tree felling licence, resulting in no net loss. The effects on forestry resources are considered to be imperceptible as a result of the proposed wind farm development.

15.6 CONCLUSION

There is no evidence to suggest that the proposed development will have significant effects on material assets in the area.

The operational wind farm will not cause any damage and does not pose any polluting or hazardous threat that will result in the devaluation or damage to valued material assets of the region.

Any unexpected impacts on TV and Telecommunication reception in areas can be suitably addressed under agreement between the applicant and any affected Telecommunication provider.

Any tree felling required to facilitate the construction and operation of the wind farm will be kept to a minimum and under the terms of felling licences, the applicant will fulfil its obligations to replant clearfell areas under licence.

During decommissioning approximately 85% of turbine components, including steel, copper wire, electronics and gearing, can be recycled or reused. Decommissioning will be a moderate negative impact of the development and likely to require provision of new treatment technologies and/or facilities.

The operation of the turbines will make a positive contribution to the supply of renewable energy. In terms of Material Assets, the proposal presents an opportunity for a positive effect in the use of Renewables as it can contribute to a reduction in the use of fossil fuels. It will contribute to ensuring that adequate electricity supplies are available to support economic activity and growth.

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