

MWP

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Chapter 14 Material Assets
Ballynisky Wind Farm

Ballynisky Green Energy Ltd.

December 2025

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14 Material Assets

14.1 Introduction

This chapter describes the Material Assets that have the potential to be impacted by the proposed development, a six (6) turbine wind energy development in Co. Limerick. A full description of the proposed development, development lands and all associated proposed development elements is provided in **Chapter 03 Description of the Proposed Development** 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 potential effect, if any, on these resources, and propose mitigation where necessary to ensure that they are protected as far as possible and used in a sustainable manner. The nature and probability of effects on material assets arising from the overall proposed development has been assessed. The assessment comprises:

- A review of the existing receiving environment;
- Prediction and characterisation of likely impacts;
- Evaluation of effects significance; and
- Consideration of mitigation measures, where appropriate.

14.1.1 Competency of Assessors

The assessment was completed by Ilyaas Adams (MWP), Ai Bridges and Valerie Heffernan (MWP).

Ilyaas Adams is a Senior Traffic and Transportation Engineer for MWP. He holds a Bachelor of Science in Engineering (BSc Eng. Hons) and has completed multiple masters' courses (Level 9) in the field of transport engineering and project assessment. He is a Chartered Engineer through Engineers Ireland for the field of traffic and transportation engineering. He is also a certified Professionally Registered Engineer (PrEng) in accordance with the Engineering Council of South Africa. Ilyaas has gained both contracting and consulting engineering experience in the construction, management and design of public transport networks, with a wide range of experience in planning, impact assessments (EIAR's) and analysis of the operation of transport infrastructure.

The Telecommunications and Aviation assessments were completed by the Engineering Department of Ai Bridges, a company with extensive experience in aviation and telecommunications/electromagnetic interference impact assessment studies for EIA's. Ai Bridges have extensive experience in the wind farm industry and have previously worked with many utility companies under Framework Agreements for Telecommunications Signal Interference Surveying and Remediation Services. They are a leading supplier of telecommunications solutions and software services for the telecommunications industry in the Irish marketplace. They have been supplying telecommunications solutions to the renewable energy sector and the wind farm industry throughout Ireland, Northern Ireland and the UK since 2007. They have undertaken aviation, telecommunications and electromagnetic interference impact studies on behalf of wind farm operators on the potential impact on telecommunications networks and transmission networks of proposed wind farm developments. Ai Bridges has also developed a 3D software prediction model that can predict potential wind farm development interference impacts on television transmission and aviation networks.

Valerie Heffernan is an Environmental Scientist with MWP. She holds a B.Sc., M.Sc. in Environmental Science and has worked as an environmental professional since graduating in 2015. She has considerable experience in wind

and solar development and has had input in a variety of projects. She has been a contributing author to EIAR's for Galway Wind Park Phase 3, Co. Galway, Drumnahough Wind Farm, Co. Donegal and Cordal Wind Farm, Co. Kerry.

14.1.2 Scope of Assessment

The assessment considers the entirety of the proposed development including the wind turbines, and associated infrastructure, the on-site substation, met mast and the grid connection options. It considers the effects of the construction, operation, and decommissioning of the proposed development in terms of how it could potentially affect the material assets relevant to the proposed development.

The following publications were consulted to determine the material assets relevant to the proposed development.

- EPA Advice Notes for Preparing Environmental Impact Statements (Draft 2015);
- European Commission Guidance on the Preparation of the Environmental Impact Assessment Report (2017); and
- EPA Guidelines on Information to be Contained in Environmental Impact Assessment Reports (2022).

The 2022 EPA Guidelines describes 'Material Assets' to be taken to mean 'built services and infrastructure', it includes traffic, as traffic consumes transport infrastructure. **Table 14-1** outlines topic areas to be examined when considering the impact of a development on Material Assets, as recommended in the 2022 Guidelines.

Table 14-1: Material Assets & Topics to be Covered

Material Asset	Topics to be Covered
Roads & Traffic	Construction Phase Operational Phase Unplanned Events (i.e., Accidents)
Built Services	Electricity Telecommunications Gas Water Supply Infrastructure Sewerage
Waste Management	Construction Waste Operational Waste

Based on a review of the proposed development and the suggested topic areas set out in the 2022 EPA Guidelines, the following topics are included in this Material Assets impact assessment chapter:

- Roads and Traffic;
- Grid Capacity and Electrical Infrastructure;
- Telecommunication and Aviation;
- 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:

- The assessment on the land and geological resource is presented in **Chapter 09 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 08 Water**. No further assessment on this topic is included in this chapter;
- The assessment on Cultural Assets is provided in **Chapter 13 Cultural Heritage**. No further assessment on this topic is included in this chapter; and
- Assimilative capacity of the air resource is considered in the assessment provided in **Chapter 10 Air and Climate**. No further assessment on this topic is included in this chapter.

The scope of the Assessment for Roads and Traffic includes the following:

- Existing and expected future road and transport network;
- Existing and predicted future baseline traffic volumes on the surrounding local road network;
- Predicted proposed development construction, operational and decommissioning traffic volumes and likely impacts; and
- Proposed mitigation measures.

14.1.3 Assessment Criteria

The method of impact assessment and prediction follows the EPA (2022) *Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)*. The methodology and approach outlined in the EPA Guidelines was used to determine whether the proposed development had the potential to cause significant effects on material assets and is as set out in **Table 1-2, Chapter 01 Introduction**.

Existing baseline traffic volumes on the surrounding local road network have been established on the basis of on-site traffic surveys by MWP.

14.2 Methodology

The study included desk based research of published information and site visits to assemble the information on the local receiving environment and the proposed development.

14.2.1 Legislation, Policy and Guidance

The legislation, policy and guidance applicable to the assessment for waste is as follows:

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018);
- Environmental Impact Assessment of Projects, Guidance on the preparation of the Environmental Impact Assessment Report (EU,2017);
- A Waste Action Plan for a Circular Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025 (Government of Ireland);
- Landfill Directive (2018/850) (EU, 2018a);

- The European Union Waste Framework Directive (2018/851) (EU, 2018b); and
- The European Commission's 'Circular Economy Action Plan' (EC, 2020).

National waste management regulations in Ireland include the following:

- Circular Economy and Miscellaneous Provisions Act 2022;
- Southern Region Waste Management Plan 2015-2021;
- National Waste Management Plan for a Circular Economy 2024-2030;
- The Waste Management (Collection Permit) (Amendment) (No. 2) Regulations 2023;
- European Union (Waste Licensing) (Amendment) Regulations 2019;
- Waste Management (Packaging) Regulations 2014 to 2022 (as amended);
- Waste Management (Planning) Regulations 1997 (as amended) (S.I No. 137/1997);
- Waste Management (Landfill Levy) (Amendment) Regulations 2023;
- Waste Management (Food Waste) Regulations 2009 – 2015 (as amended);
- Waste Management (Hazardous Waste) Regulations 1998 to 2000;
- Waste Management (Shipments of Waste) Regulations 2007 (as amended) (S.I. No. 419/2007);
- Waste Management Act 1996 (as amended) (Act No. 10/1996);
- Environmental Protection Agency Acts 1992 – 2011 (as amended);
- Protection of the Environment Act 2003 (as amended) (Act No 27/2003);
- Litter Pollution Acts 1997 to 2009 (as amended); and
- Planning and Development Act 2000 - 2023 (as amended) (Act No. 30/2000).

The legislation, policy and guidance applicable to the Traffic Infrastructure assessment included the following:

- Limerick Development Plan 2022-2028;
- Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections; and
- The Transport Infrastructure Ireland (TII) Traffic and Transport Assessment (TTA) Guidelines PE PDV 02045 May 2014.

14.2.2 Study Area

The study area includes the area of the proposed development, as well as built services, infrastructure and waste management that adjoins the planning boundary of the proposed development, refer to **Section 3.4 of Chapter 03 Description of the Proposed Development**.

14.2.3 Desk Study

The study including desk-based research was carried out during the EIA process, starting in 2021, with a final search in April 2025 of published information and site visits to assemble the information on the local receiving environment and the proposed development. The desk study included the following activities:

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- Review of Ordnance Survey Mapping and aerial photography to establish existing land use and settlement patterns within the study area;
- Review of Limerick Development Plan 2022-2028 to identify the local authority's planning policies relevant to the proposed development site and surrounding area; and
- Review of Limerick City and County Council's Planning Register to identify relevant future development and planning applications within the proposed development area and surrounding locations.

Review of the following sources for information regarding existing utilities:

- Gas Networks Ireland Dial Before You Dig Maps (DBYD);
- ESB Dial Before You Dig Maps (DBYD); and
- Uisce Éireann Utility Mapping.

For the roads and traffic assessment specifically, the following guidance was consulted:

- Limerick Development Plan 2022-2028;
- The Transport Infrastructure Ireland (TII) Traffic and Transport Assessment (TTA) Guidelines PE-PDV-02045 May 2014;
- TII's Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections PE-PAG-02021 October 2021;
- Environmental Protection Agency (EPA) Guidelines on the Information to be contained in an Environmental Impact Assessment May 2022;
- NRA Project Appraisal Guidelines Unit 16.2: Expansion Factors for Short Period Traffic Counts; and
- TII's Rural Road Link Design DN-GEO-03031 May 2023.

14.2.4 Consultation

The methodology used for this study included consultation on the relevant potentially impacted material assets.

Limerick City and County Council Roads Department and Transport Infrastructure Ireland (TII) were consulted in regards to potential impacts on road infrastructure and traffic from the proposed development. Roads, traffic and access were discussed during a pre-planning meeting with Limerick City and County Council on 10th November 2022 and further consultation was undertaken with the local roads engineer on 24th January 2023. A second meeting was held with LCCC on the 17th July 2024.

Consultation was also undertaken by Ai Bridges with telecoms operators who were requested to raise any concerns they have regarding any potential impact of the proposed wind farm on their networks. The consultation process is used to assist in identifying telecoms infrastructure that could be impacted by the proposed wind farm development.

The outcomes of the consultations relating to relevant individual topic areas are discussed in **Section 14.3 Baseline Environment**, **Section 14.4 Impact Assessment** and **Section 14.5 Mitigation**.

A summary of consultee responses with utilities/infrastructure within the planning application boundary and surrounding area has been provided in **Appendix 1B of Volume III**.

14.2.5 Field Surveys

On-site classified road traffic counts were recorded by MWP on Tuesday 25th October 2022. These counts were used to establish base line existing traffic and transportation conditions in the vicinity of the development. The surrounding environment and available traffic infrastructure allows for the reasonable assumption that the data recorded will still be relevant in 2025 using the TII Publication “Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections”.

Field surveys for the telecoms assessment involved approximations of antenna size, bearing and height for the antennas installed on each of the masts surveyed and the co-ordinates of communication masts were recorded.

As part of the Stage 1 Road Safety Audit, MWP Road Safety Auditors inspected the site on 1st October 2024. This included an on-site review of the proposed access points on the L1219 Local Road, with measurements and photographic records taken to support the assessment of local road design speed and stopping sight distance.

For the bridge assessments presented as **Appendix 3B** and **3C** of **Volume III**, inspections of Sroolane North Bridge and Ahacronane Culvert were conducted on 6th December 2024.

14.2.6 Statement on Limitations and Difficulties Encountered

No limitations or difficulties were encountered in the production of this chapter.

14.3 Baseline Environment

The existing receiving environment (baseline environment) is described in **Sections 14.3.1 to 14.3.6** below.

14.3.1 Roads and Traffic

The proposed development is a 6-turbine wind farm, with a 38kV on-site substation and an underground grid connection within the townlands of Ballynisky, Graigoor, Ballyegny More, Kilbradran, Ballysteen, Dunmoylan, Carrons and Lisbane, to the west of Coolcappa, Co. Limerick. The site lies approximately 9km north of Newcastle West and 6km northwest of Rathkeale.

Access to the site will be via the Local Road network with two site entrances. A permanent site entrance utilising an existing farm access track will be located on the L1219 local road to the north of the site for access during the operational life of the wind farm. A temporary site entrance also on the L1219 but further to the west of the permanent entrance will be used for the construction phase only. The site entrance locations are illustrated in **Figure 14-1**.

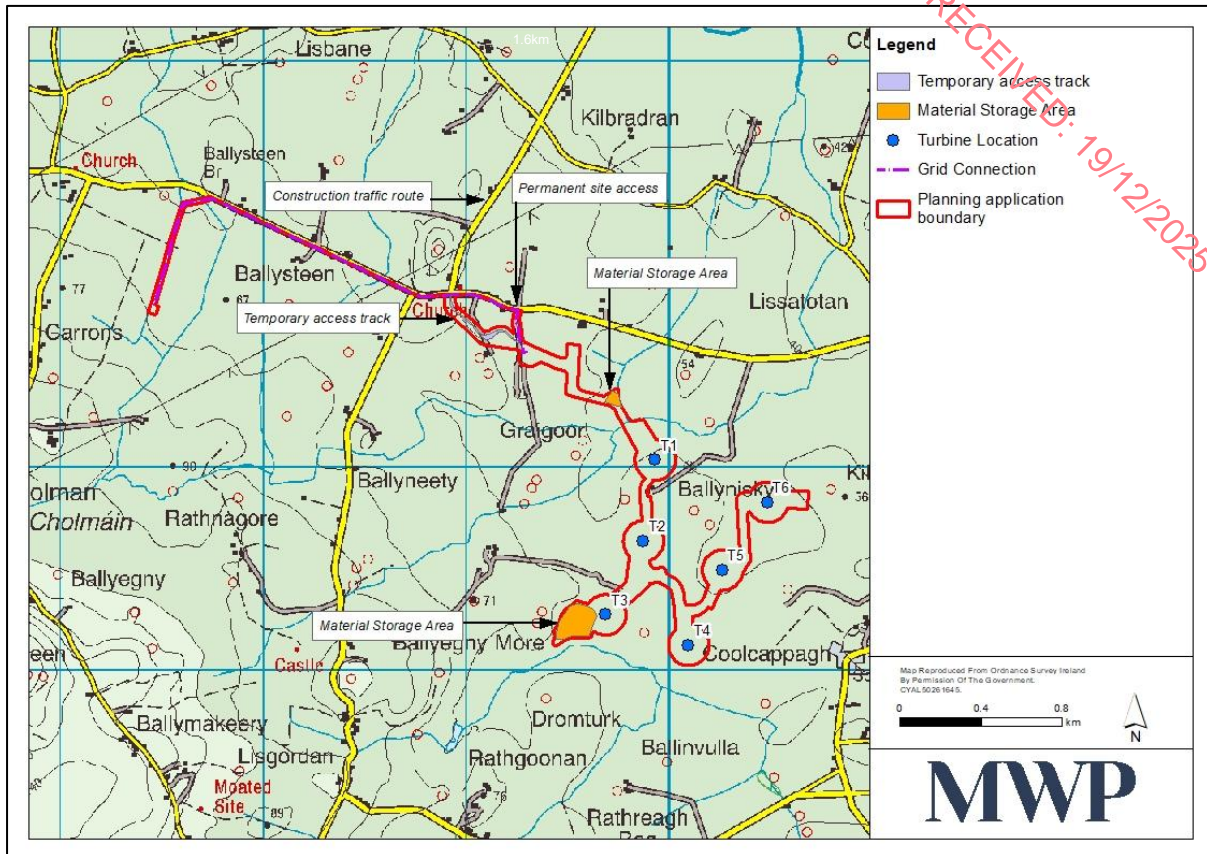


Figure 14-1: Proposed Temporary & Permanent Site Access Locations

The L1219 Local Road extends along the proposed site access in an east – west direction. The road extends approximately 1.6 km to the east from the permanent access to a priority junction with another local road. The junction operates with a yield control on the northern approach, allowing free-flow movement between the western approach (Lissatotan Road) and the southern approach. The frontage road (L1219) extends circa 0.6 km to the west to a T-Junction with the L1220 local road linking to Creeves Cross as shown in **Figure 14-1**. The T-junction currently operates with a stop control on the northern approach allowing free-flow movement in the east-west directions.

The local access road along the proposed site frontage has a typical carriageway width of approximately 5.5 m wide with no hard shoulder or centre lines along its length. The lightly trafficked local road provides access to a nominal amount of residential and farm homes operating with sufficient reserve capacity along the entirety of its length throughout all periods of the day.

To establish the existing vehicular volumes surrounding the proposed development, on-site classified junction turning counts were recorded by MWP on a typical weekday period. The counts were undertaken on Tuesday the 25th of October 2022, adjacent to the proposed permanent site access and along the route of the proposed construction traffic. On-site classified road traffic volumes were recorded by MWP on Tuesday 25th October 2022, at the proposed temporary entrance (for construction traffic access) which is opposite the junction of the L1219 and L1220 Local roads. The baseline peak hour traffic counts were determined to be between 07:45 – 08:45 with volumes as shown in **Figure 14-2**.

The number of heavy good vehicles (HGVs) have also been noted navigating through the existing junction to determine a percentage of HGVs of the total traffic. The percentage of HGVs of the total volume of vehicles per link is noted in **Tables 14-2 to 14-4**.

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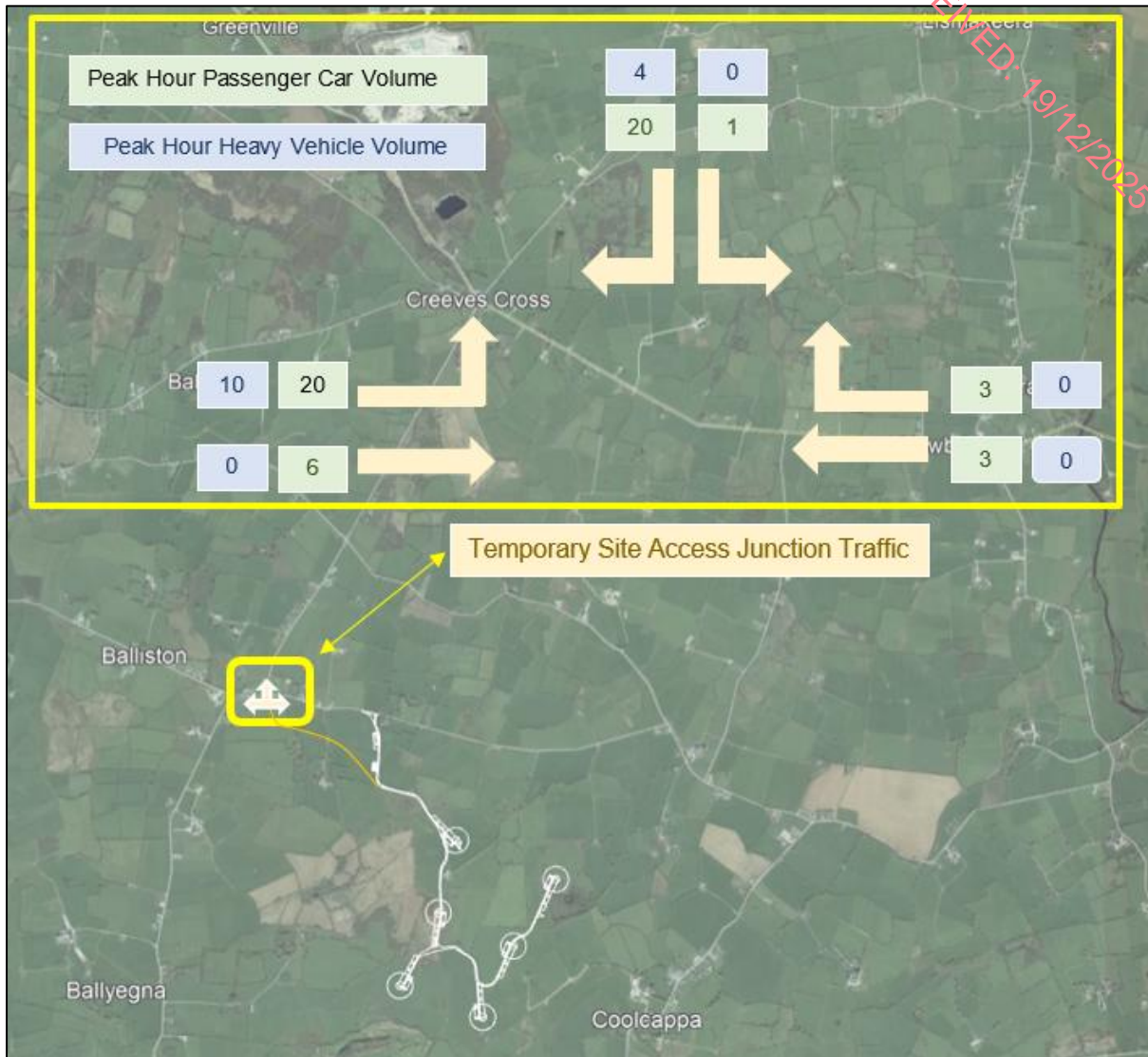


Figure 14-2: Peak Hour Vehicle Volumes

The total two-way vehicle volumes at the road locations identified were used to determine the baseline traffic in AADT (Annual Average Daily Traffic) values with percentage HGV content along each stretch of road. This was done in accordance with NRA Project Appraisal Guidelines, Unit 16.2 as referenced below. **Table 14-2** to **Table 14-4** below indicate the AADT vehicles per each approach, accompanied by the percentage of HGVs as surveyed.

Noting a carriageway width of approximately 6.1 m wide for the 2-lane northern approach, it is still operating with more than 95% reserve capacity. **Table 14-2** below highlights the two-way link volume as well as the equivalent Weekly Average Daily Traffic (WADT). It also highlights the Annual Average Daily Traffic (AADT) for the northern approach of the temporary site access, to be used by the construction traffic.

The estimated existing rural road link AADT capacity, based on the TII rural road link design and TII Capacity of Urban Roads is 750 vehicles per hour per direction. This TII road link capacity is based on a 60/40 direction split and accounts for vehicles per hour per direction. Being the minor road of the junction (with a stop-control implemented) it will have a slightly lower capacity than that of the east/west road (operating as the major road at the junction). With a total of 33 vehicles travelling northbound and 25 vehicles approaching the surveyed

junction from the northern side, the estimated existing road link per hour volume/capacity is calculated at **4.4%** and **3.3%**, demonstrating above **95%** reserve capacity of each direction on the northern arm.

Table 14-2: AADT of Northern Approach - Temporary Site Access

Northern Approach	
Two Way Link Vehicular Volume	58
Proportion Factor <small>Proportion Factor – NRA Guidelines Annex A (07:45-08:45)</small>	0.0675
Equivalent 24-Hour Total	859
Weekly ADT Factor <small>Proportion Factor – NRA Guidelines Annex B for surveys conducted on Tuesday</small>	0.98
Weekly ADT	842
AADT Factor <small>Proportion Factor – NRA Guidelines Annex C for surveys conducted in October</small>	0.99
AADT	834
%HGV	24.14%

The rural road link capacity of the east/west movement at the proposed site’s temporary access is estimated at approximately a 900-vehicle capacity per hour per direction. The existing vehicle volumes in the peak hour in each direction was 7 vehicles eastbound and 6 vehicles westbound (measuring east of the temporary site access junction). This provides an estimated road link per hour volume / capacity ratio to be **0.8%** and **0.7%** respectively, demonstrating above **95%** reserve capacity. It is noted that the junction as well as all its links operates well within its reserve capacity with the existing traffic. **Table 14-3** and **Table 14-4** below show the calculated AADT for the eastern and western approaches.

Table 14-3: AADT of Eastern Approach - Temporary Site Access

Eastern Approach	
Two Way Link Vehicular Volume	13
Proportion Factor <small>Proportion Factor – NRA Guidelines Annex A (07:45-08:45)</small>	0.0675
Equivalent 24-Hour Total	193
Weekly ADT Factor <small>Proportion Factor – NRA Guidelines Annex B for surveys conducted on Tuesday</small>	0.98
Weekly ADT	189
AADT Factor <small>Proportion Factor – NRA Guidelines Annex C for surveys conducted in October</small>	0.99
AADT	187
%HGV	0.00%

Table 14-4: AADT of Western Approach - Temporary Site Access

Western Approach	
Two Way Link Volume	63
Proportion Factor <small>Proportion Factor – NRA Guidelines Annex A (07:45-08:45)</small>	0.0675
Equivalent 24-Hour Total	933
Weekly ADT Factor <small>Proportion Factor – NRA Guidelines Annex B for surveys conducted on Tuesday</small>	0.98
Weekly ADT	915
AADT Factor <small>Proportion Factor – NRA Guidelines Annex C for surveys conducted in October</small>	0.99
AADT	906
%HGV	6.35%

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Based on **Table 14-2 to 14-4** and the surveyed existing vehicular traffic along the access route and proposed temporary site access, it is envisaged that the construction traffic will have a negligible to imperceptible impact on the surrounding transport network. This is due to the nature of the surrounding road network being lightly trafficked, with no active travel infrastructure (designated pedestrian routes, bicycle tracks or leisure routes) partnered with narrow carriageway widths. This indicates that utilising the surveyed junction as a temporary site access as shown in **Figure 14-3** will not raise major safety concerns. Furthermore, the AADT analysis reveals that the roads surrounding the site operate with significant reserve capacity, and will not have any impact on mobility due to construction vehicle volumes.

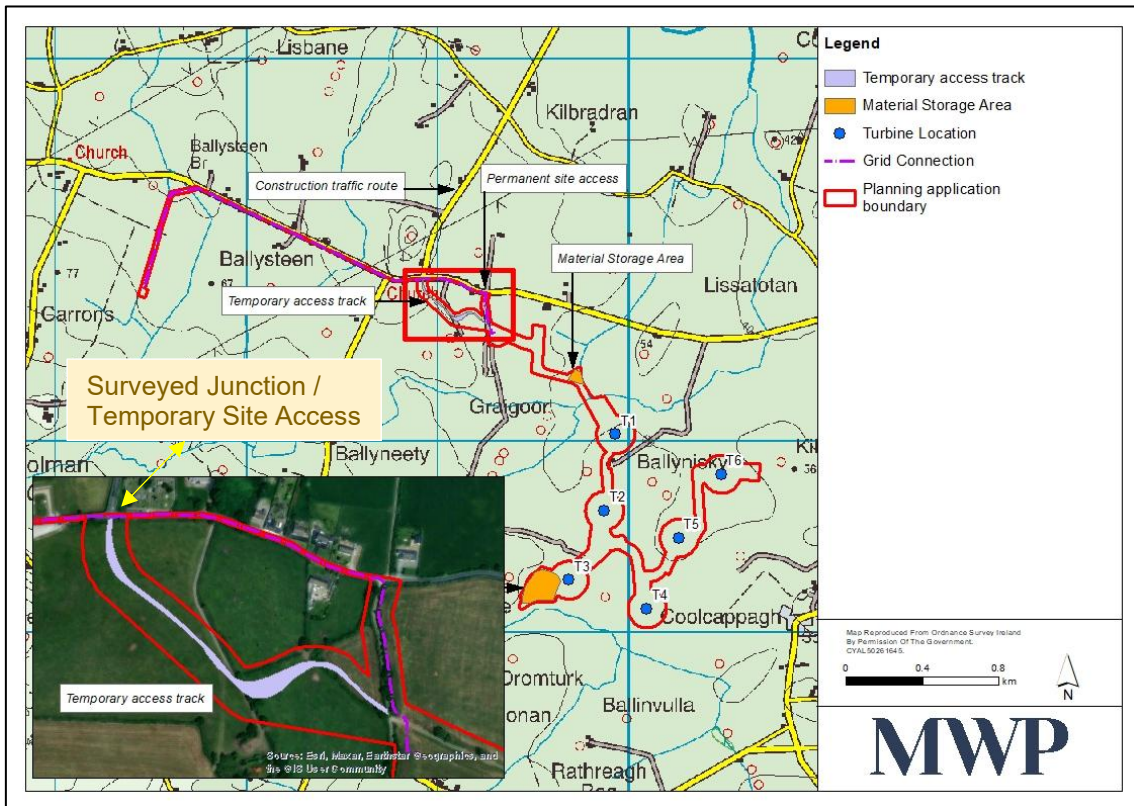


Figure 14-3: Temporary Site Access

The existing junction currently operates as a stop controlled junction with a stop control along the minor road (the L1220), with free-flow in an east-west direction. With the temporary site access to be located on the southern approach of the junction shown, as in the above Figure, the impact of the construction vehicular traffic is deemed to not cause any notable delays to any of the surrounding approaches.

14.3.1.1 Turbine Delivery Route

The proposed delivery route is shown on **MWP Drawing 22569-MWP-00-00-DR-C-5008** and **Figure 14-4**. A brief summary of the proposed route to the wind farm site is provided below.

- Exit Foynes Port storage area and travel south for 1.3km;
- Turn left onto N69 and head southeast for 1.8km on N69;
- Turn Right and take the L-1222 southeast for 5.1km to Creeves Cross;
- At Creeves Cross take a right turn (second exit) onto the L-1220; and
- Travel southwest for 2.5km to the construction stage site entrance for Ballynisky Wind Farm.

Detailed swept path assessments for the blade delivery vehicle were carried out and are presented in **Appendix 3A Turbine Delivery Route Assessment**. A total of nine potential pinch points on the route from Foynes Port to the site of the proposed wind farm were identified which may require temporary works for access. These temporary works include:

- Light post on inside of bend to be relocated away from the kerblines;
- Existing ESB overhead line to the south of the junction to be undergrounded or temporarily relocated;
- Signage on traffic islands will need to be temporarily removed;
- Tree/hedge clearance may be required; and
- Temporary works may be required to harden areas of soft verge with granular fill to allow for tower section deliveries to overrun the verge.

Inspection reports were also undertaken for the Sroolane North Bridge and Ahacronane Culvert (Refer to **Appendix 3B** and **3C**).

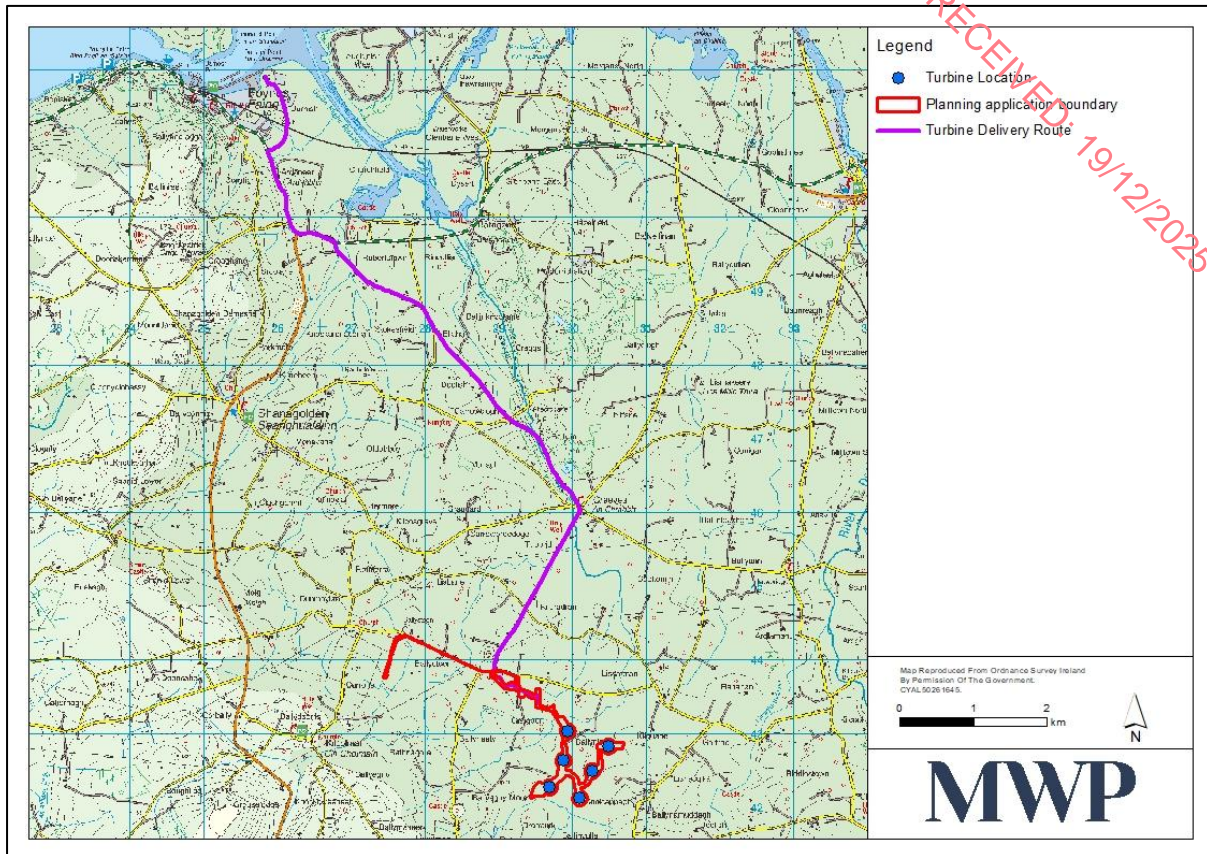


Figure 14-4: Turbine Delivery Route

14.3.1.2 Grid Capacity and Electrical Infrastructure

Existing electricity infrastructure includes Carrons windfarm substation approximately 2.5km northwest of the proposed development. Consultation with ESB DBYD has identified a medium voltage (10 to 20kV) and 38kV overhead line northwest of the proposed development.

14.3.2 Gas

Natural gas is supplied via underground interconnecting pipelines throughout the Country. The natural gas network in Ireland is run by Gas Networks Ireland.

Following consultation with Gas Networks Ireland DBYD, there are no identified gas network utilities within the proposed development site boundary or surrounding areas.

14.3.3 Telecommunications

An assessment of potential impacts of the proposed development on the existing telecommunications networks in the area was completed by Ai Bridges and a copy of the full report is included as **Appendix 14B**. Field and desk studies were undertaken to determine telecommunications network infrastructure that could be impacted by the proposed development. Four telecommunications mast-sites were identified as sites with network infrastructure that could potentially be impacted by the wind farm development and a field survey of each of these mast-sites was carried out. During the field surveys, radio antennas with bearings in the direction of the wind farm were recorded. The findings of the field surveys are provided in **Appendix B** of the Report.

Consultations with telecom operators were also undertaken to assist in identifying network infrastructure that could be impacted by the proposed wind farm. During the consultation process, seventeen (17) telecom operators were contacted. The responses received from telecom operators can be found in **Section 3** of the Report.

Using the information obtained during the field survey assessments and consultation process, a desktop impact analysis was carried out and all the telecommunication operator networks were analysed using radio planning/modelling software. Results from the impact analysis indicated one radio link that crosses over the proposed wind farm site. Refer to **Figure 14-5**. This is a Vodafone Ireland radio link from Askeaton to Ballymurragh East which passes through the site. A field survey of both telecom masts was carried out. During the surveys, radio antennas with bearings in the direction of the wind farm were recorded. The findings of the field surveys can be found in **Appendix B** of the report. The report concluded that there will be no impact to telecommunication links as a result of the proposed development.



Figure 14-5: Vodafone Ireland PTP Microwave Radio Link from Ballymurragh East to Askeaton

2rn's Digital Terrestrial Television (DTT) service, commonly known as Saorview TV is a technology in which television stations broadcast television content by radio waves to televisions in consumers' residences in a digital format. Transmitters surrounding the proposed development are indicated in **Figure 14-6**.

A review of the online Saorview coverage map indicates that TV reception in the area is principally received from the following transmitters:

- Areas to the north and east of the site primarily receive TV reception from the transmitter at Woodcock Hill, County Clare (62km north); and

- Areas to the west and south of the site primarily receive TV reception from the transmitter at Mullaghanish, County Kerry (63km south).

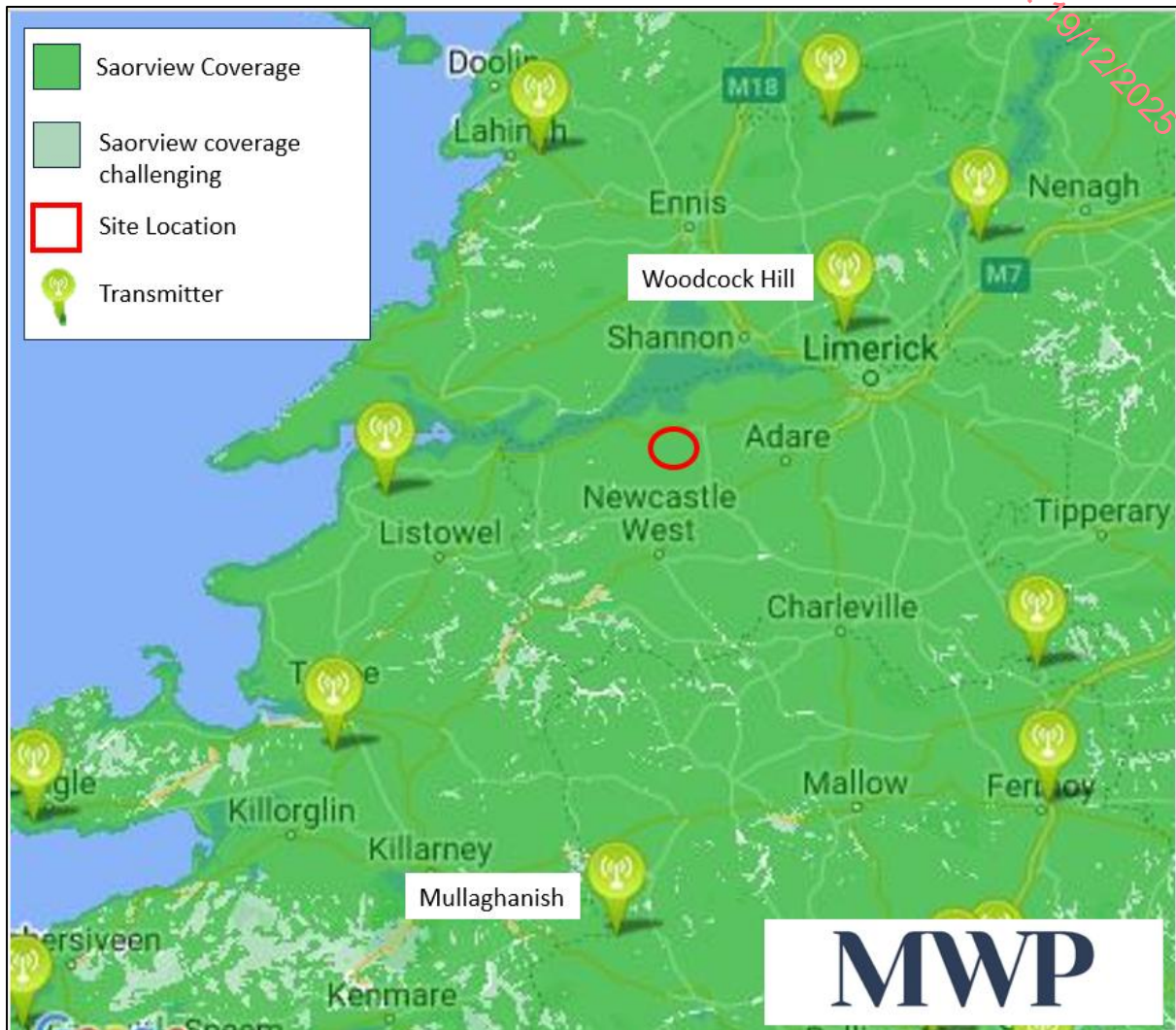


Figure 14-6: TV Transmitters in Proximity to the Proposed Development

Source: <https://saorview.ie/en/check-coverage/>

14.3.4 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 an 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.

MWP commissioned Ai Bridges Ltd to review the possible impacts of the proposed wind farm on aviation systems in the vicinity of the proposed development. Consultation was also completed with Irish Aviation Authority (IAA) (Dublin Headquarters) and Irish Aviation Authority (Shannon Centre).

The nearest aviation infrastructure to the proposed development site, i.e. airports and airfields, are listed in **Table 14-5** and illustrated in **Figure 14-7**.

Table 14-5: Airports in the Region

Airfield	Location	Estimated Distance: To the Proposed Development
Maryville Airfield	Co. Limerick	17km Southeast
Shannon Airport	Co. Clare	20km Northeast
Abbeysfeale Airfield	Co. Kerry	26km Southwest
Ardfert Airfield	Co. Kerry	53km Southwest
Kerry Airport	Co. Kerry	52km southwest

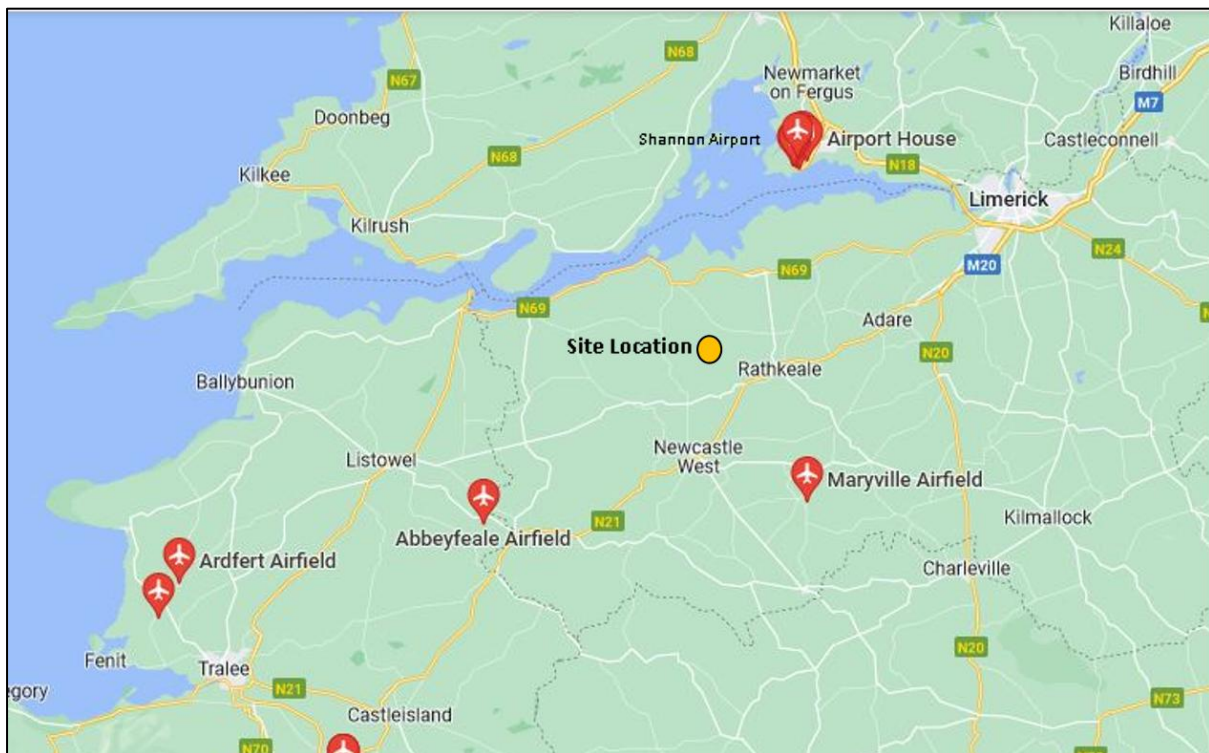


Figure 14-7: Airports & Airfields within the Region

Elevated structures within the proposed development will include six (6) wind turbines and a meteorological mast. The turbine will have a rotor diameter of 136m, a tower (hub) height of 90m and a tip height of 158m. A permanent meteorological mast will be erected within the site to monitor the local wind regime while the wind farm is in operation. It will be 90m high (in line with the hub height of the proposed turbines) and located to the east of the wind farm substation.

There are a number of other elevated structures in the vicinity of the proposed development, including existing wind turbines. A review of turbine locations within 20km of the proposed development are listed in bold in **Table 14-6**.

Table 14-6: Details of Operational Wind Energy Developments in Co. Limerick (Limerick DP 2022-2028)

Wind Farm	Year Connected to Grid	Output (MW)
Mauricetown	2019	13.8
Gortnacloghy	2018	4.4
Vistakon, Castletroy	2017	2
Ballagh	2016	2.3
Carracummer	2015	1
Athea	2014	34.35
Dromdeveen	2011	27.5
Grouselodge	2011	15
Rathcahill	2011	12.5
Slievereagh	2011	2.5
Carrons	2010	4.6
Kilmeedy	2010	4.7
Dromada	2009	28.5
Knockastanna	2009	7.5
Knockawarriga	2008	22.5
Tournafulla	2007	27
Total Output		210.15MW

14.3.5 Water and Wastewater Infrastructure

Consultation to identify water infrastructure within the proposed development was completed with Uisce Éireann in April 2022. A review of the data provided by Uisce Éireann has confirmed that there are no existing watermains or wastewater pipelines within the footprint of the proposed development, however, a distribution watermain is present along the road where grid connection route (Option A) passes, as shown in **Figure 14-8**. This consultation and resulting assessment is still valid at the time of planning submission (2025).

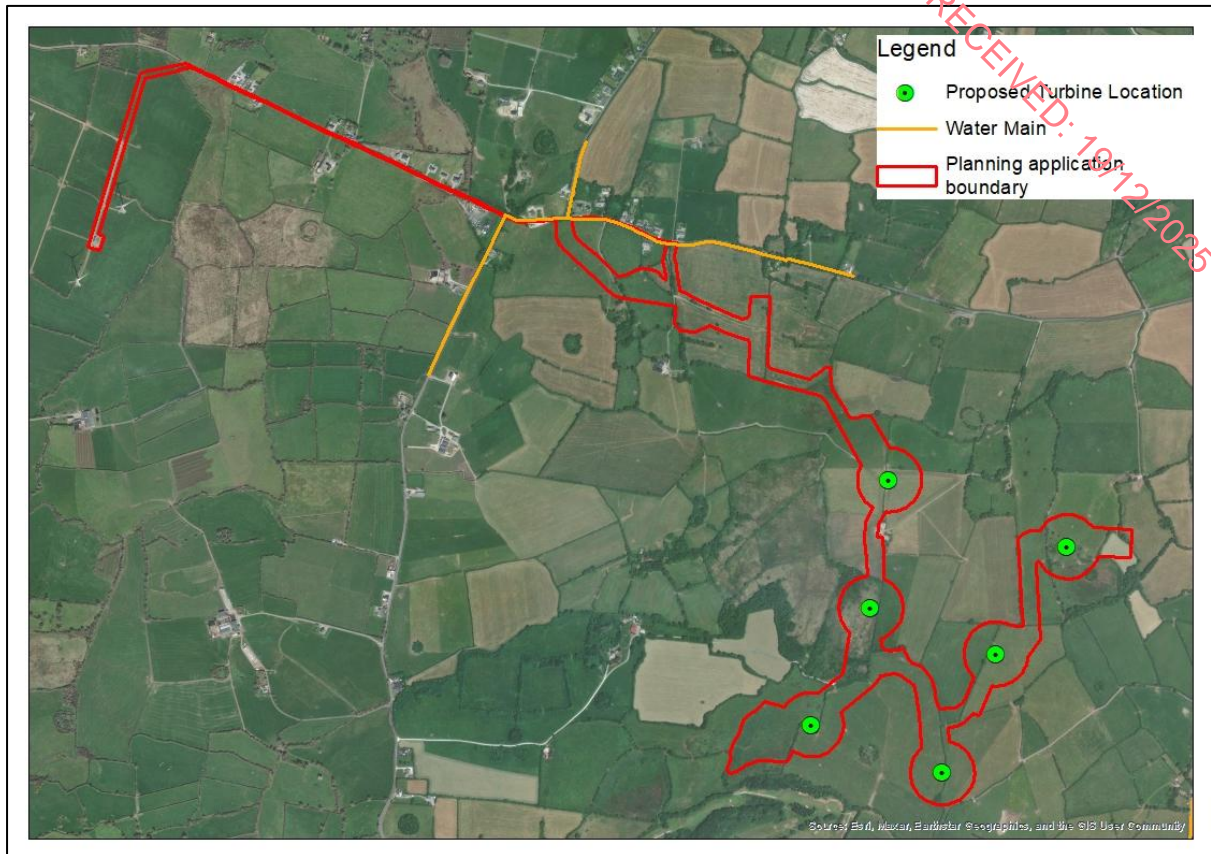


Figure 14-8: Water Infrastructure at the Proposed Site

14.3.6 Waste Management

A review of Limerick City and County Council's planning applications has confirmed that there are no waste or construction phase waste facilities within the proposed development area. Nearby waste facilities include Gortadroma landfill near Shanagolden, approximately 7km west of Ballynisky. This is a closed landfill now being used as a recycling centre.

14.4 Assessment of Impacts and Effects

Likely impacts and effects are predicted on the basis of the proposed development and are discussed below.

14.4.1 Roads and Traffic

14.4.1.1 Do Nothing Impacts

The roads and transportation objectives and policies of Limerick City and County Council are set out in the Limerick Development Plan 2022-2028. Policy TR041 states that it is an objective of the Council to upgrade and improve, where necessary, the regional and rural roads within the County.

The Plan identifies certain regional routes for the interests of preserving the traffic capacity of these routes and in order to avoid the creation of traffic hazards. It is noted that the proposed development, its local surrounding network and its access are not along any of the identified routes.

Subject to planning permission, it is envisaged that work would commence at the site during 2027, with duration of approximately 12 to 16 months. Accordingly, the proposed development is scheduled to be fully complete and operational by 2028/2029. The TII Traffic and Transport Assessment Guidelines recommend that the opening year of a development proposal, five and 15 years after the opening year, should be considered for assessing a development proposal.

TII in their Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections October 2016 envisage that car and light vehicle volumes on Ireland’s Mid-West national roads, including Limerick, would increase by an annual factor of 1.0110 for light vehicles during the period to 2030, and by a factor of 1.0242 for heavy vehicles, based on their high sensitivity growth scenario. The equivalent factors for the period 2030 to 2050 are 1.0018 and 1.0195, respectively and shown in **Table 14-7**.

Table 14-7: Existing and Future Traffic Volumes

Road Location	Year	Total Vehicles (HGVs)	
		Peak Hour	AADT (% HGVs)
Northern Approach	2027	60 (14)	834 (24.14%)
	2032	61 (14)	877 (22.97%)
	2042	62 (16)	891 (24.19%)
Eastern Approach	2027	13 (0)	187 (0)
	2032	14 (0)	201 (0)
	2042	14 (0)	201 (0)
Western Approach	2027	65 (4)	906 (6.35%)
	2032	67 (4)	949 (6.06%)
	2042	68 (4)	1021 (5.63%)

It is an objective (as outlined in objective CAF 08 of the development plan) of the council to promote the location of wind farms and wind energy infrastructure in the ‘Preferred Areas’ as excerpted in **Figure 14-9** (preferred areas indicated by the green area). The Map extracted from the Limerick Development Plan 2022-2028 (Map 9.1) indicates the proposed site location is within a Preferred Area for wind generating infrastructure, thus aligning with the Development Plan objectives.

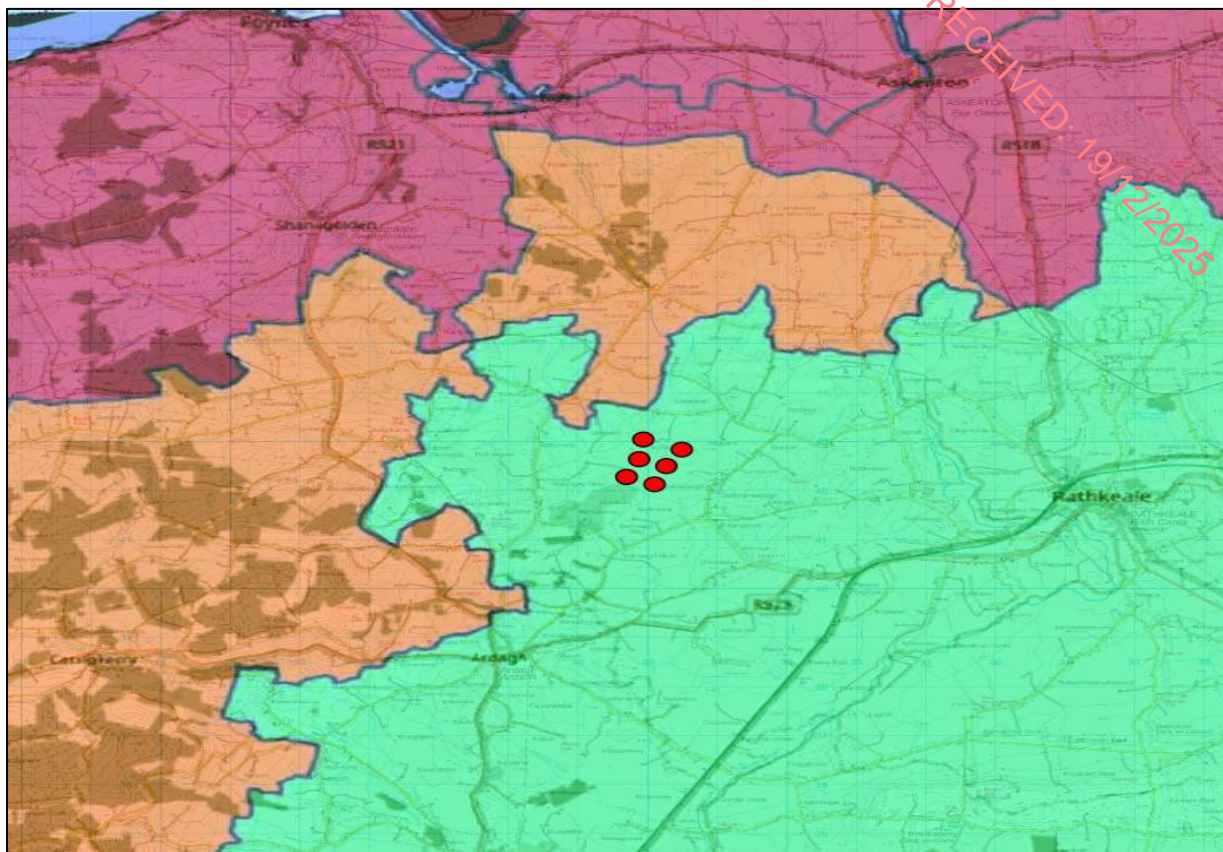


Figure 14-9: Location of Proposed Development within a Preferred Area for Wind Development

(Source: Limerick Development Plan 2022-2028)

14.4.1.2 Construction Phase

A detailed description of the proposed development construction traffic is provided in **Chapter 03 Description of the Proposed Development**.

Subject to planning permission, the proposed construction works would commence on site in 2027. The construction phase is expected to last between 12 to 16 months and would be completed by 2028/2029 depending on planning permission.

All aspects of traffic will be considered below in **Sections 14.4.1.2.1 to 14.4.1.2.8**.

As part of the proposed development, MWP Road Safety Auditors conducted a Stage 1 Road Safety Audit on 1st October 2024 (refer to **Appendix 14F**) to identify design features that could present safety risks and to recommend modifications to improve road user safety. The audit identified several potential issues, including:

- The layout of the crossroads junction at the temporary construction site access;
- The possibility of increased vehicle speeds;
- Potentially restricted stop sign visibility at the proposed permanent site access;
- Faded stop lines and road markings;
- Loose boundary wall stones at the junction; and
- Potential pedestrian access demand at the temporary construction site access.

Further details on these issues, along with recommended mitigation measures, are provided in the report. These have been taken into consideration during the design of the proposed development.

14.4.1.2.1 Access and Vehicle Routing

The routing and delivery of components is further detailed in **Chapter 03 Description of the Proposed Development** and **Appendix 3A Turbine Delivery Route Assessment Report** of this EIAR .

It is proposed that access will be provided via the L1219 local road northwest of the proposed site. It is envisaged that all construction vehicles will travel along the local road linking the site with the N69 passing through Greenville and Creeves Cross. This will allow the sourcing of material to be done from local quarries and reduce disturbance to the surrounding transport network and residential areas/towns.

The proposed delivery route is shown on drawing **22569-MWP-00-00-DR-C-5008**. A summary of the proposed route to the wind farm site is given below.

The proposed route is outlined as follows:

- Exit Foynes Port storage area and travel south for 1.3km;
- Turn left onto N69 and head southeast for 1.8km on N69;
- Turn Right and take the L-1222 southeast for 5.1km to Creeves Cross; and
- At Creeves Cross take a right turn (second exit) onto the L-1220.

14.4.1.2.2 Turbine Delivery Route

The wind turbines proposed will have an overall tip height of 158 metres. The components (nacelle, tower, blades) are expected to be delivered to Foynes Port by sea and transported to the site along the national, regional and local road network to site where they will enter via the temporary site entrance. A turbine delivery assessment report has been prepared and is attached as **Appendix 3A**.

The components for each turbine are expected to be delivered by road in approximately 90 no. deliveries. Due to their abnormal size, blades and towers will be delivered at night to avoid disruption to daytime traffic. The turbine blades will be the longest components to be transported from port to site at approximately 68m in length and the base tower sections will be the heaviest at 85 tonnes. The blades may be transported on a blade adapter vehicle which will allow the blade to be raised to an angle of 60 degrees to the horizontal. This will allow the blades to negotiate bends and junctions along the delivery route without requiring excessive temporary clearing or temporary road widening works. A permit for moving abnormal loads will be sought from An Garda Síochána for the delivery of oversized wind turbine components.

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 delivery of a 68m blade and 30m tower section to the site is feasible. Some minor modifications to existing boundaries and temporary widening may be required.

14.4.1.2.3 Hours and Staff

Normal construction activities will be undertaken within the hours 07.00am – 7.00pm, Monday to Friday and 07.00am - 2.00pm on Saturdays. Due to the requirement for the concrete pours to be continuous, the working

day may extend outside normal working hours in order to limit the traffic impact on other road users, particularly peak period school and work commuter traffic. Such activities are limited to the day of turbine foundation concrete pours, which are normally complete in a single day per turbine. Turbine and crane erections may also occasionally occur outside of these times in order to take advantage of low wind periods. Working hours will be confirmed at the outset of the development and any changes in hours will be agreed with the Local Authority. Works along public roads would be from 9.00a.m. to 5.00p.m. Monday to Friday and 9.00a.m. to 2.00p.m. on Saturdays. The expected peak staff would be up to 30-35 personnel, which would generate approximately 16 car and van trips, both to and from the site each working day, on the basis of an average vehicle occupancy rate of 1.25 personnel per vehicle. Canteen facilities for personnel will be provided on-site.

14.4.1.2.4 Delivery Vehicle Volumes

The 12 to 16 months of construction would require the approximate importation of approximately 5,024 loads of construction deliveries. This includes the delivery vehicles for the six wind turbines, their steel towers, turbine blades, nacelle, rotor hub etc. from the port to the site. All other construction materials would be imported using standard heavy vehicle delivery trucks with capacities of 10 m³ and 20 tonnes. The summary of the estimated deliveries is outlined in **Table 14-8**.

Table 14-8: Proposed Construction Works Delivery Traffic Volumes

Elements	No. of Approximate Deliveries / Loads	Quantity of Material	Units
Concrete			
Construction of turbine foundations, substation, meteorological mast etc. Each turbine foundation will have approximately 800m ³ of concrete	626 ⁽¹⁾	5010	m ³
Reinforcing Steel			
Each turbine foundation will have approximately 85 tonnes of reinforcing steel	32	480-510	t
Wind Turbine Components Deliveries			
Delivery of steel towers, turbine blades, nacelle, rotor hub etc. from port to site	90 ⁽¹⁾	15	Component deliveries per turbine
Crane Deliveries to site, including ballast, booms etc.			
Cranes of 750 to 1,200 tonnes lifting capacity will be required to erect the turbines. Ballast is also normally employed for craneage. Smaller cranes of 150 to 200 tonnes lifting capacity will be required to assist with the removal of tower sections from delivery trailers and to operate as "tailing cranes"	20	20	Component deliveries for cranes
Imported Stone Aggregate Material			
Construction of wind farm infrastructure including access tracks, hardstands and substation compound with imported Class 6F material. Crushed stone will be sourced locally.	4,254	42,543	m ³
Substation Compound Transformer			
Delivery of substation transformer using specialist delivery vehicle	1		Component deliveries for transformer
TOTAL APPROXIMATE DELIVERIES / LOADS FOR WORKS	5,024 ⁽¹⁾		

Note ⁽¹⁾: During base concrete pours. Other deliveries to site would be curtailed or stopped during concrete pours.

Note ⁽²⁾: For the purpose of the analysis, truck movements are conservatively assumed to occur within a 12-month period, during which more onerous construction elements are taking place.

The wind turbine loads will be delivered in consultation with Limerick City and County Council, during off-peak traffic periods. A total of 90 delivery vehicles will be required for all 6 turbines. This could result in temporary delays for other location traffic during the off peak traffic delivery periods.

The proposed construction works heavy vehicle delivery traffic volumes are provided in **Table 14-9**.

Table 14-9: Proposed Construction Works Delivery Volumes - Peak Hour

Works	Total Number of Heavy Vehicles		
	Total Construction Programme	Peak Daily	Highest Peak Hour
Concrete	626	40	4
Reinforced Steel	32	5	3
Wind Turbine	90	9	3
Crane	20	10	4
Imported Stone	4,254	40	4
Substation	1	1	1
TOTAL	5,024	40	4

Peak heavy vehicle traffic volumes generated by the delivery of construction materials would be up to 40 heavy vehicles per day, both to and from the site. This would occur on six (6) separate days during the concrete pours for the turbine bases. Other deliveries to site would be curtailed or stopped during concrete pours. Highest peak hour heavy vehicle traffic volumes would be up to four (4) heavy vehicles, both to and from the site.

14.4.1.2.5 Traffic Volumes

The predicted average annual daily traffic volumes, peak daily traffic volumes and highest peak hour traffic volumes generated by construction of the proposed development are provided in **Table 14-10**. The predicted AADT volumes are calculated based on a 12 month construction programme (as the construction is predicted to last between 12 to 16 months, a more robust, worse case approach, is to test the total generated volume over the shorter period), which would have a higher increases in AADT volumes than the same amount of construction traffic spread over more months.

Table 14-10: Proposed Construction Works Traffic Volume

AADT (% HGV)	Total Vehicles	
	Peak Daily	Highest Peak Hour
189 (15%)	250(80)	8(8)

The predicted 2027 peak daily and peak hour traffic volumes on the existing local roads with the proposed peak construction works traffic volumes are provided in **Table 14-11** and **Table 14-12** respectively.

Table 14-11: Traffic Volumes with Peak Daily Construction Volume

Road Location	Peak Daily Vehicles (HGV's)	
	Total Vehicles (HGV's)	Change
Northern Approach	884(233)	+250(80)
East Approach	437(80)	+250(80)
West Approach	1156(138)	+250(80)

Table 14-12: Traffic Volumes with Peak Hour Construction Volume

Road Location	Peak Hour Vehicles (HGV's)	
	Total Vehicles (HGV's)	Change
Northern Approach	68(22)	+8(8)
Eastern Approach	25(8)	+8(8)
Western Approach	77(12)	+8(8)

14.4.1.2.6 Volume/Capacity Ratios

The estimated rural road link AADT volume/capacity ratio for the approach roads to be used along the construction site access at the proposed development site is provided in **Table 14-13** on the basis of the TII Rural Road Link Design, for predicted 2027 AADT volumes with the TII high growth scenario, with the proposed construction development.

Table 14-13: Predicted 2027 TII Rural Link AADT Volume/Capacity Ratio of Peak Construction Traffic

Approach	AADT Vehicles	AADT Capacity	AADT Volume/Capacity Ratio
Northern Approach	884	5000	17.68%
Eastern Approach	437	5000	8.74%
Western Approach	1156	5000	23.12%

The surrounding network will continue to operate within its estimated rural road link AADT capacity, for the predicted 2027 AADT volumes on the basis of the TII high growth scenario and the proposed construction traffic volumes, with significant reserve capacity on all approaches. Therefore, the traffic associated with the proposed development will not have a significant effect. A 5- and 15-year assessment will be beyond that of any construction traffic and not typically done for wind farms. The operational phase will be significantly less than that of the construction phase

14.4.1.2.7 Traffic Management

A detailed description of traffic management required for the proposed development is provided in the Traffic Management Plan included as **Appendix 14A**.

14.4.1.2.8 Road Pavements

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. A Visual Pavement Condition Survey was completed by MWP in October 2024. Road pavements will be regularly monitored and reinstated in accordance with the requirements of Limerick City and County Council.

14.4.1.3 Operational Phase Impacts

During the operational phase, there will be periodic maintenance on site. This would generate a relatively low volume of vehicles, including occasional heavy vehicles.

On the basis of the EPA Guidelines, the proposed operational phase would have imperceptible to not significant traffic effects based on fractional and temporary vehicle presence compared to that of the construction phase.

14.4.1.4 Decommissioning Phase Impacts

A description of the decommissioning phase is provided in **Chapter 03**. The removal of the wind turbines during any decommissioning phase would be on a similar basis to the delivery of the wind turbines for the construction phase, with similar traffic volumes and impacts. Therefore, based on the consistency and similarity to that of the turbine delivery impacts, it is envisaged that the decommissioning traffic will not have a significant impact.

14.4.1.5 Risk of Major Accidents and Disasters

Road traffic accidents on the surrounding road network including the R521, L1220 L1222, N69 and L1219, and other roads, used by traffic generated by the proposed construction works, could result in delays to traffic generated by the proposed works and to other traffic. Traffic generated by the proposed works could be involved in road traffic accidents.

14.4.1.6 Cumulative Impacts

The predicted future baseline traffic volumes are on the basis of TII's predicted high sensitivity growth scenario. This high sensitivity growth scenario includes for other proposed development generated traffic volumes on the surrounding local road network.

With regard to transport projects in the area, An Coimisiún Pleanála (at the time of the decision) approved the 35km Foynes–Limerick Road (including the Adare Bypass) on 30th August 2022, upgrading the Attyflin–Rathkeale route and linking Foynes Port to the motorway network, with a HGV service area near Foynes. In November 2023, the Government fast-tracked the Adare Bypass to aid traffic for the Ryder Cup at Adare Manor in September 2027. Construction of the bypass, which is approximately 5km north of the proposed development, began in January 2025. With construction expected to commence on the proposed development in 2027, there may be some overlap between the two projects. The remaining construction works of the Foynes-Limerick Road is estimated for completion in 2030. Given the scale of this project, it is anticipated that standard mitigation measures will be employed across both projects to minimise traffic disruptions during construction.

14.4.1.7 Overall Impact Rating

A review of effects summarised in **Sections 14.4.1.2.1 to 14.4.1.2.8** (construction phase) above results in any potential adverse effect being **Adverse, Not Significant, Short-term** and **Likely** in relation to Roads and Traffic. The decommissioning phase will similarly not generate any additional vehicular traffic when compared to that of the construction phase and will therefore result in any adverse effect being **Adverse, Not Significant, Short-term** and **Likely**.

Potential effects resulting during the operational phase (**Section 14.4.1.3**) would be **Adverse, Imperceptible, Long term and Likely**.

14.4.1.8 Consultation

Limerick City & County Council

The following feedback was received from the LCCC Roads Department in relation to the proposed underground grid connection (Option A) along the L1219.

- Conditions outlined in the Guidelines for Managing Openings in Public Roads (Department of Transport, Tourism and Sport, 2017) will apply. Where possible, works to be confined to the verge area. If directional drilling is an option, it should be considered to minimise impact;
- At ROL stage detailed information relating to works proposed, TTMP etc will be needed;
- Watermain running from the L1239 Junction east along the L1219; and
- No mapped storm networks in place along the route. However, this area is known to have old unmapped flagged stone culverts in place and any damage to these would require replacement with modern construction.

At a second meeting with LCCC on the 17th July 2024, further feedback in relation to roads/traffic also included:

- A Stage 1 Road Safety Audit will be required;
- Requirement to show sightlines, forward visibility and stopping distances;
- For the TDR route, query raised in relation to the requirement for road widening; and
- Pavement condition survey to be carried out.

The above has been taken into consideration during the design of the proposed development.

Transport Infrastructure Ireland (TII)

A full copy of the TII response is included in **Appendix 1B** of **Volume III** of the **EIAR**. A summary of recommendations includes the following:

- Consultations should be had with the relevant Local Authority/National Roads Design Office with regard to locations of existing and future national road schemes; N21/N69 Limerick to Adare/Foynes;
- The developer should assess visual impacts from existing national roads;
- The developer should have regard to any **EIAR/EIS** and all conditions and/or modifications imposed by An Coimisiún Pleanála regarding road schemes in the area. The developer should in particular have regard to any potential cumulative impacts;
- The developer, in preparing **EIAR**, should have regard to TII Publications (formerly DMRB and the Manual of Contract Documents for Road Works); TII's Environmental Assessment and Construction Guidelines,
- Where appropriate, a Traffic and Transport Assessment should be carried out in accordance with relevant guidelines.
- In the interests of maintaining the safety and standard of the national road network, the **EIAR** should identify the methods/techniques proposed for any works traversing/in proximity to the national road network;
- TII recommends that that applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed as well as consult with Contractors and road authorities over which the haul route traverses.

- Any damage caused to the pavement on the existing national road arising from any temporary works shall be rectified in accordance with TII Pavement Standards and details in this regard shall be agreed with the Road Authority prior to the commencement of any development on site.

Following the above recommendations, the application has considered the following:

- Consultation has been held with Limerick City and County Council Roads department as discussed in **Section 14.4.1.8**.
- Visual impacts have been assessed in **Chapter 12 Landscape and Visual**.
- The **EIAR** has been assessed in regard to TII Publications (formerly DMRB and the Manual of Contract Documents for Road Works); TII's Environmental Assessment and Construction Guidelines.
- A Traffic Management Plan has been included in **Appendix 14A**.
- A Turbine Delivery Route Report has been included in **Appendix 3A**.

14.4.2 Grid Capacity and Electrical Infrastructure

The proposed development will assist in meeting increases in electricity demand nationally by exporting renewable 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 six (6) No. turbines, there are two options under consideration. Under Option A, it is being proposed that approximately 2.54km of 38kV underground electrical cable will be installed along the L1219 local road to the north extending west to connect the wind farm substation to an off-site substation at Carrons Wind Farm. Option B involves looping into an existing 38kV overhead line that transects the site in the townland of Graigoor before continuing to the 110kV substation in Rathkeale. This option would include cutting the line and running it underground to the proposed 38kV substation on site and back out to reconnect with the overhead line.

The wind farm proposal does not pose a permanent risk to the local electricity infrastructure. Existing overhead low voltage powerlines are present onsite. In the vicinity of the proposed substation, T1 and the met mast the overhead lines may need to be diverted or undergrounded if required by the distribution network operator ESB Networks. Any diversion or undergrounding of existing overhead low voltage power lines required by the power distribution network operator will be completed following agreement with ESB Networks and in accordance with their specifications and requirements as discussed **Chapter 03 Description of the Proposed Development**.

Trenching along public roads for cable route Option A will be excavated under a Road Opening Licence and in accordance with the requirements of Limerick City and County Council. Separation distances as per the Irish Water Code of Practice for Water Infrastructure will be achieved where applicable and the local authority, Irish Water and other service providers will be consulted. Once operational, there will be no direct emissions to the atmosphere from the wind farm. The CO₂ offset by the wind farm will further assist Ireland's CO₂ reduction commitments under the Paris Agreement and Ireland's Climate Action Plan 2025. The electricity generated will assist in displacing electricity from coal, oil and gas fired power plants, thus reducing emissions from these power plants. During construction there will be a **temporary, neutral, imperceptible, likely effect**.

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 a **Likely, indirect, long term, significant, and positive** effect during the operational phase.

In the context of this proposed development contributing to the commitments in the Climate Action Plan and the targets for renewable electricity generation contained in the Limerick Development Plan 2022-2028, there will be an **indirect, long-term, significant, positive, extensive effect**.

During decommissioning, underground cables connecting the turbines to the onsite substation will be cut back and left underground. The cables will not be removed if an environmental assessment of the decommissioning operation demonstrates that this would do more harm than leaving them in situ. The assessment will be carried out closer to the time to take into account environmental changes over the development life, with effects to be **neutral, imperceptible, permanent, direct and likely**.

14.4.3 Gas

There is no gas network infrastructure required at the wind farm site. Therefore, **no effects** to existing gas infrastructure are anticipated during the construction, operational or decommissioning phases.

14.4.4 Telecommunications

Results from the impact analysis indicate that four mast sites have been identified in the surrounding area, however only one microwave radio link crosses over the proposed development with the potential to be impacted. The Vodafone point to point (PTP) microwave radio link runs between Ballymurragh East and Askeaton. Extensive field survey and software modelling analysis was carried out to determine viable mitigation measures to offset the impact on the delivery of service to the Vodafone Base station site at Askeaton. During construction, the impacts are described as **Neutral, not significant, likely, and temporary**.

A mitigation measure of re-routing the service into Askeaton from an alternative Vodafone Feeder/POP site was put forward to Vodafone, who agreed to the proposal. Part of the agreed proposal was that the developer would cover the mitigation cost. Therefore, there will be no impact to telecommunication links as a result of the development.

Correspondence from the 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 and that the proposed windfarm is not located close to any existing or planned FM transmission sites.

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 proposed development.

Notwithstanding this, as is standard practice, a signed Protocol between the developer and 2rn 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.

Therefore, during operation, telecommunication assets will have **no effect**.

Decommissioning will have similar impact to the construction phase. Decommissioning effects are described as **Neutral, not significant, likely, and temporary**.

14.4.5 Aviation

The proposed development is located approximately 20km south of Shannon Airport. Ai Bridges Aviation report has noted that in the event of a grant of planning, the proposed development will be required to register in the IAA Air Navigation Obstacle Data set. A copy of Ai Bridges Aviation report is attached as **EIAR Volume III Appendix 14C**.

The IAA has provided general observations that following receipt of planning permission, the applicant should contact the IAA to agree an aeronautical warning light system, provide as-constructed coordinates with ground and blade tip height elevations, at each turbine location, notify the authority of the intention to commence crane operations at least 30 days in advance. A copy of the consultation correspondence with the IAA is attached as **EIAR Volume III Appendix 1B**. Consultation with Irish Aviation Authority (Shannon Centre) has advised to note the standard IAA Aeronautical lighting and marking requirements of wind turbines as recommended in the Easy Access Rules for Aerodromes as published August 2022.

During construction, the impacts are described as **neutral, imperceptible, likely, and temporary**.

By incorporating aviation warning lighting within the design of the proposed wind turbines, effects are assessed to be **likely, neutral, imperceptible** and **long term** for the duration of the operational phase. Due to the sub-surface nature of the proposed Grid Connection infrastructure, there will be no effects on aviation.

It is concluded, that the operation of the proposed wind turbines and meteorological mast will not result in any likely significant effect on Aviation.

At the end of the estimated 35-year lifespan of the proposed development, the Developer will make the decision whether to repower or decommission the turbines. Any further proposals for development at the site during or after this time will be subject to a new planning permission application. If planning permission is not sought after the end of life of the turbines, the site will be decommissioned and reinstated with all wind turbines and towers removed. Removal of infrastructure will be undertaken in line with landowner and regulatory requirements and best practice applicable at the time. The information below outlines the likely decommissioning tasks based on current requirements and best practice.

Prior to the decommissioning work, the following will be provided to Limerick City and County Council for approval:

- A plan outlining measures to ensure the safety of the public workforce and the use of best available techniques at the time; and
- A comprehensive reinstatement proposal, including the implementation of a program that details the removal of all structures and landscaping.

If the site is to be decommissioned, cranes of similar size to those used for construction will disassemble each turbine. The towers, blades and all components will then be removed.

Hardstand and turbine foundation areas will be left in situ and covered with soil to match the existing landscape. Access tracks will be left for use by the landowners for agricultural use. During decommissioning, the effects on aviation are described as **positive, imperceptible, localised, temporary, direct, and likely**

14.4.6 Water and Wastewater Infrastructure

The WFD assessment indicated that, based on the current understanding of the proposed development and the mitigation measures proposed, it is unlikely that the development will cause any significant deterioration or change in water body status or prevent attainment, or potential to achieve, future good status.

Water needs for construction activities will be limited to concrete truck chute washing, wheel wash, dust suppression and sanitary facilities.

During construction, wastewater production is estimated to be approximately 1,500 to 1,750 litres per day (based on an estimated workforce of 30 to 35 personnel generating on average 50L/person). It is proposed that this water requirement will be imported in bulk water tanks, therefore not impacting the local water supply. The volumes of water required are minimal and will have a negligible impact on the water supply utilities.

During construction works, there will be a temporary compound located in the north west corner of the site adjacent to the proposed substation area. The temporary compound will be set up upon commencement of the construction phase. The compound will have a plan area of approximately 1,375m². It will be used as a secure storage area for construction materials, waste materials and also contain temporary site accommodation units to provide welfare facilities and enclosed wastewater management system. Sanitary wastewater will be collected in portable toilets. Disposal of sanitary wastes will be managed through a contract with a licensed waste contractor. There are five licensed facilities within 25km of the proposed development, these include the Shannon Estuary water treatment plant, Adare Wastewater Treatment Plant, Croom Wastewater Treatment Plant, Croagh Wastewater Treatment Plant and Newcastle West Wastewater Treatment Plant. The effects during the construction phase are described as **temporary, neutral, imperceptible, and likely effect**.

During the operational phase, maintenance personnel will visit the substation building on a regular basis. The daily average wastewater production during the operational phase is estimated from the average number of workers on site, which is expected to be 2 personnel, resulting in a typical wastewater production rate of 100 litres per day. The wastewater generated during the operational phase will be managed by a holding tank which is of twin-hull design and fitted with an alarm to indicate levels and when it is due to be emptied. The holding tank will be emptied by a permitted contractor only on a regular basis. Therefore, the effects on water and wastewater infrastructure are considered to be **Neutral, Imperceptible, likely and long term**.

During decommissioning works, temporary compounds will be set up and used as a secure storage area for materials, waste materials and will contain temporary site accommodation units to provide welfare facilities and enclosed wastewater management system. Sanitary wastewater will be collected in portable toilets. Disposal of sanitary wastes will be managed through a contract with a licensed waste contractor. The effects on existing water and wastewater infrastructure during the decommissioning phase are described as a **temporary, neutral, imperceptible, localised, direct and likely effect**.

14.4.7 Waste Management

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 the 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.

During the course of the development, a certain amount of waste will be produced. During the construction phase anticipated wastes will include soil and subsoil, wastewater (as discussed in **Section 14.4.6**) and general waste. All soils and sub soils generated from excavation works will be retained on site and reused in landscaping and localised earthworks where required. Excess spoil material will be stored on site in the two (2) designated deposition zones. Public road excavation, can generate small quantities of tarmacadam which will require off-site disposal by a permitted waste contractor.

Construction phase waste may consist of hardcore, concrete, spare steel reinforcement, shuttering timber and unused oil, diesel and building materials. This waste will be stored in the construction compound and will be 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. Domestic type waste generated by contractors will be collected on site, stored in an enclosed skip at the construction compound and disposed of at a licensed landfill 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. Surplus spoil will be generated through construction of access tracks, crane hardstands, construction compound, turbine foundations and substation compound. Some of the surplus excavated topsoil and subsoils will be re-used on-site in reinstatement, revegetation and landscaping works as outlined in **Chapter 09 Land and Soil**. A **Resource Waste Management Plan (RWMP)** has been produced and submitted with this application which provides more detail on the management of wastes generated during the construction phase of this project. During the construction phase the effects of waste will be **slight, adverse, short term** and **likely** and will be managed in accordance with the requirements of the final Construction & Environmental Management Plan.

During the operational phase, minimal amounts of solid waste will be generated, which will be collected onsite and transported to a licensed disposal facility, 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. The effects of waste will be **slight, adverse, likely** and **long term**.

Decommissioning wastes 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.

On decommissioning, the majority, 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 during decommissioning are considered to be **slight, adverse** and **temporary**.

14.4.8 Cumulative Impacts and Effects

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

A search of Limerick City and County Council's ePlan site of developments in the last five years, was carried out during the EIA process (December 2025). The search focused on the townlands common to the development area. All other wind farm developments were considered within 20km of the site. Finally, recent planning applications that are pending a decision from the planning authority, which were accompanied by an **EIAR**, were also considered and are detailed in **Chapter 01 Introduction** of the **EIAR**.

The majority of existing, permitted and proposed developments in the vicinity of the proposed development comprise residential dwellings, associated ancillary developments (e.g. extension) or agricultural developments. Such minor domestic and agricultural development will not introduce cumulative effects.

The Foynes to Limerick Road (Including Adare Bypass) Project was approved by An Coimisiún Pleanála (HA91.306146) in August 2022. The proposed road is approximately 5km from the proposed development. Works on Adare Bypass began in January 2025.

The nearest tall structures to the development include the Carrons (approximately 2.5km northwest) and Grouselodge (4.5km west southwest) wind farms. It is assessed that there is no likelihood for the proposed development to have any significant effects on aviation, in combination with other existing, permitted or proposed developments.

The bulk of the renewable energy production in Limerick comes from wind, with 15 wind farms in operation, mostly in the west of the County (Limerick DP, 2022-2028) (Table 14-14). Those located within 20km of the proposed development are shown in bold. The proposed development area is located 4.5km east of the Grouse Lodge Wind Farm and 2.5km east of Carrons Wind Farm.

Table 14-14: Operational Wind Energy Developments in Co. Limerick

Wind Farm	Year Connected to Grid	Output (MW)
Mauricetown	2019	13.8
Gortnacloghy	2018	4.4
Vistakon, Castletroy	2017	2
Ballagh	2016	2.3
Carracummer	2015	1
Athea	2014	34.35
Dromdeveen	2011	27.5
Grouselodge	2011	15
Rathcahill	2011	12.5
Slievereagh	2011	2.5
Carrons	2010	4.6
Kilmeedy	2010	4.7
Dromada	2009	28.5
Knockastanna	2009	7.5
Knockawarriga	2008	22.5
Tournafulla	2007	27
Total Output		210.15MW

The proposed development is not assessed as likely to result in any cumulative effects on resources or utility infrastructure, either individually or in combination with other existing, permitted or proposed developments.

The proposed wind farm development will positively cumulate with other renewable energy developments in the region to advance in delivering local, regional, and national Green Energy targets.

The Limerick City and County Council online planning databases and the An Coimisiún Pleanála website were consulted to identify solar energy developments within 20km of the proposed development (Table 14-15).

Table 14-15: Solar Energy Developments within 20km (Limerick DP 2022-2028)

Planning Reference and Location	Status	Potential Output (MW)
16/619 – Newcastle West	Granted	11.5
17/807 – Foynes	Withdrawn	-
17/1174 – Foynes	Granted	10.34
17/1220 – Foynes	Granted	23.0
18/85 – Patrickswell	Withdrawn	-
19/18 – Shanagolden	Granted	21.35
22/1258 - Mullagh	Granted	5.65
2460320 / ABP Ref 321242 - Rathkeale	Granted	-

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There are several quarries within 20km of the proposed development as illustrated in **Figure 14-10**.

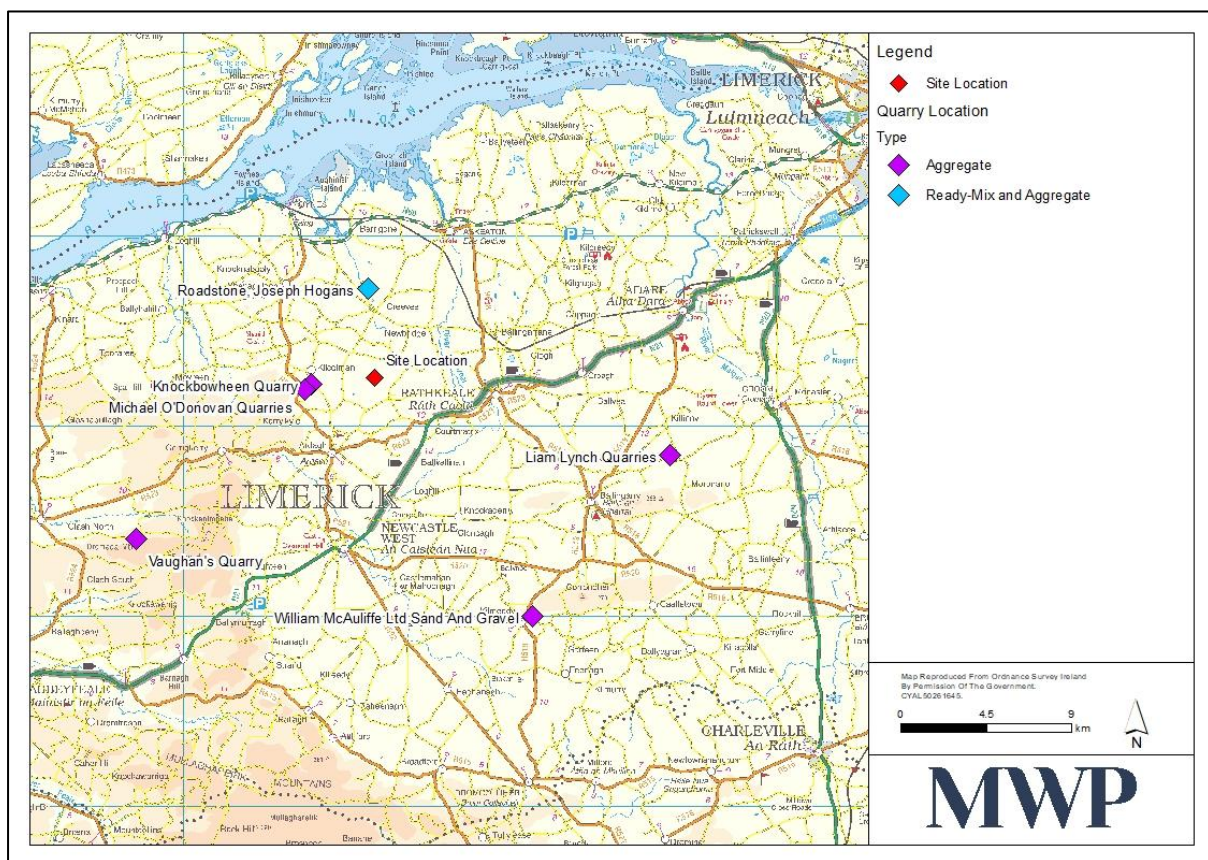


Figure 14-10: Quarries within 20km of the Proposed Development

The Limerick City and Council online planning databases and the An Coimisiún Pleanála website were consulted to identify battery energy storage developments within 20km of the proposed development. One battery storage application has been granted in Limerick and it is associated with the Kilathmoy wind farm (Limerick DP, 2022-2028) (Planning Ref. No. 211702). It is not anticipated that the proposed development will have any effect on the proposed Kilathmoy battery storage application.

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14.5 Mitigation and Monitoring Measures

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

14.5.1 Road and Traffic

A Traffic Management Plan has been prepared and is outlined in **EIAR Volume III Appendix 14A**. Construction activities associated with the proposed development will include 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.

Information regarding the extent and duration of the development will be provided to the public and business community. 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; and
- Provision for access / egress.

14.5.2 Grid Capacity and Electrical Infrastructure

Mitigation by design has been adopted whereby the grid connection methodology at the proposed development has been selected to utilise existing built infrastructure as discussed in **Chapter 04 Alternatives**. Ecological, field and desk study assessments have been applied to determine project development infrastructure locations and mitigation by avoidance of any constraints. 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 positive effect on the electricity supply infrastructure. No specific mitigation measures are proposed.

14.5.3 Gas

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

14.5.4 Telecommunications

Results from the impact analysis indicated that four mast sites have been identified in the surrounding area, with only one microwave radio link crossing the proposed development site. The Vodafone point to point (PTP)

microwave radio link runs between Ballymurragh East and Askeaton. To overcome potential interference, mitigation by avoidance has been applied. Furthermore, a mitigation measure of re-routing the service into Askeaton from an alternative Vodafone Feeder/POP site was put forward to Vodafone, who agreed to the proposal, should it be required. Part of the agreed proposal is that the developer will cover the mitigation cost. Therefore, there will be no impact to telecommunication links as a result of the development.

In the event of interference to telecommunication services arising from the wind farm development, the applicant will 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.

Notwithstanding this, as is standard practice, a signed Protocol between the developer and 2rn 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.

14.5.5 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 100m 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 100m or more are promulgated in the Irish Air Navigation Obstacle database;
- Wind turbines or any structure exceeding 100m in height may require appropriate aviation warning lighting as agreed with IAA; and
- 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; and
- The developer will notify the IAA of intention to commence crane operations with a minimum of 30 days prior notification of turbine erection.

14.5.6 Water and Wastewater Infrastructure

There are no existing watermains within the footprint of the proposed wind farm, however there is a distribution watermains which exists along a section of road where the grid connection route (Option A) passes. Pre-construction surveys will be completed to avoid disturbance to existing watermains.

All construction phase and operation phase wastewater will be taken off-site by an authorised waste contractor and brought to an authorised waste facility.

14.5.7 Waste Management

Waste will be managed, as follows: (a)Prevention; (b)re-use; (c)Recycling; (d)Other recovery (including energy recovery); and (e) Disposal.

All waste for offsite treatment/disposal will be stored temporarily in appropriate dedicated storage areas. The areas in which wastes will be stored on site will be 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 appropriately 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.

14.6 Residual Impacts and Effects

The residual effects section outlines the degree of environmental change that will occur after the proposed mitigation measures are implemented. Decommissioning effects will be similar in nature to construction effects.

The proposed development will not have any significant effect on the material assets identified.

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Table 14-16: Residual Impacts and Effects

Impact	Effect (Pre-Mitigation)	Mitigation Measures	Residual Effect (Post-Mitigation)
Construction Phase			
Roads and Traffic	Adverse, Not Significant, Short Term and Likely	Refer to Section 14.5.1	Adverse, Imperceptible, Short Term and Likely
Grid Capacity and Electrical Infrastructure	Neutral, temporary, imperceptible and Likely	Refer to Section 14.5.2	Neutral, temporary, imperceptible and Likely
Gas	No Effects	No Mitigation Measures Required	No Effects
Telecommunications	Neutral, not significant, likely, and temporary	Refer to Section 14.5.4	No Effects
Aviation	Likely, neutral, imperceptible, and temporary	Refer to Section 14.5.5	Likely, neutral, imperceptible, and temporary
Water and Wastewater Infrastructure	Temporary, neutral, imperceptible, and likely	Refer to Section 14.5.6	Temporary, neutral, imperceptible, and likely
Waste Management	Slight, adverse, short term and Likely	Refer to Section 14.5.7	Imperceptible, short term and Likely
Operational Phase			
Roads and Traffic	Adverse, Imperceptible, Long term and Likely	Refer to Section 14.5.1	Adverse, Imperceptible, Long Term and Likely
Grid Capacity and Electrical Infrastructure	Indirect, Long-Term, Significant, Positive, and Likely	No Mitigation Measures Required	Indirect, Long-Term, Significant, Positive, and Likely
Gas	No Effects	No Mitigation Measures Required	No Effects
Telecommunications	No effect	No Mitigation Measures Required	No effect
Aviation	Adverse, Imperceptible, Long Term and Likely	Refer to Section 14.5.5	Adverse, Imperceptible, Long Term and Likely
Water and Wastewater Infrastructure	Neutral, Imperceptible, Long Term and Likely	Refer to Section 14.5.6	Neutral, Imperceptible, Long Term and Likely
Waste Management	Adverse, Slight, Long Term and Likely	Refer to Section 14.5.7	Adverse, Imperceptible, Long Term and Likely

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14.7 References

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