

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED BALLINAGREE WIND FARM

VOLUME 2 - MAIN EIAR

CHAPTER 13 – TRAFFIC AND TRANSPORTATION

Prepared for: Ballinagree Wind DAC



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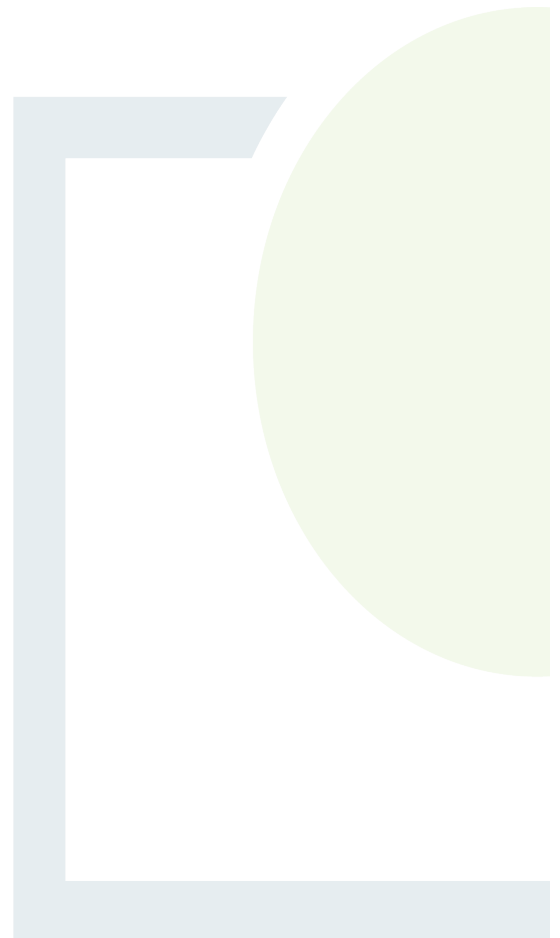


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13 TRAFFIC AND TRANSPORTATION

13.1 Introduction

This section of the EIAR evaluates the proposed project in the context of the traffic and transportation within the study area. The assessment examines potential impacts and identifies mitigations for construction, operation and decommissioning of the project.

13.1.1 Statement of Authority

This chapter of the EIAR has been prepared by Trevor Byrne of Fehily Timoney and Company (FT). Trevor is a Principal Engineer at FT and a chartered member of Engineers Ireland. Trevor has extensive experience in the preparation of environmental impact assessments for large scale renewable energy projects in the Ireland and the UK. Trevor holds an MSc in Sustainable Energy Systems from the University of Edinburgh and a first-class honours degree in Civil and Environmental Engineering from Edinburgh Napier University as well as a BEng (Ord) in Civil Engineering from Munster Technological University.

The TDR route was identified and surveyed by Pell Frischmann Consulting Engineers. Pell Frischmann is a multi-disciplinary and international consultant engineering company working across infrastructure, buildings, and regeneration. The commission was led by Gordon Buchan BEng (Hons), MSc, FCIHT, CMCILT, Divisional Director for Pell Frischmann and Timothy Lockett BSc, MCILT. Gordon has over 15 years' experience in undertaking abnormal load assessments across the UK, Republic of Ireland and northern Europe and has worked on over 500 wind farm sites. Timothy has over 10 years' experience and has worked on over 300 wind farm sites in the UK and Ireland.

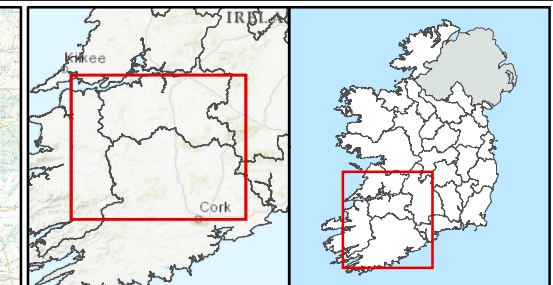
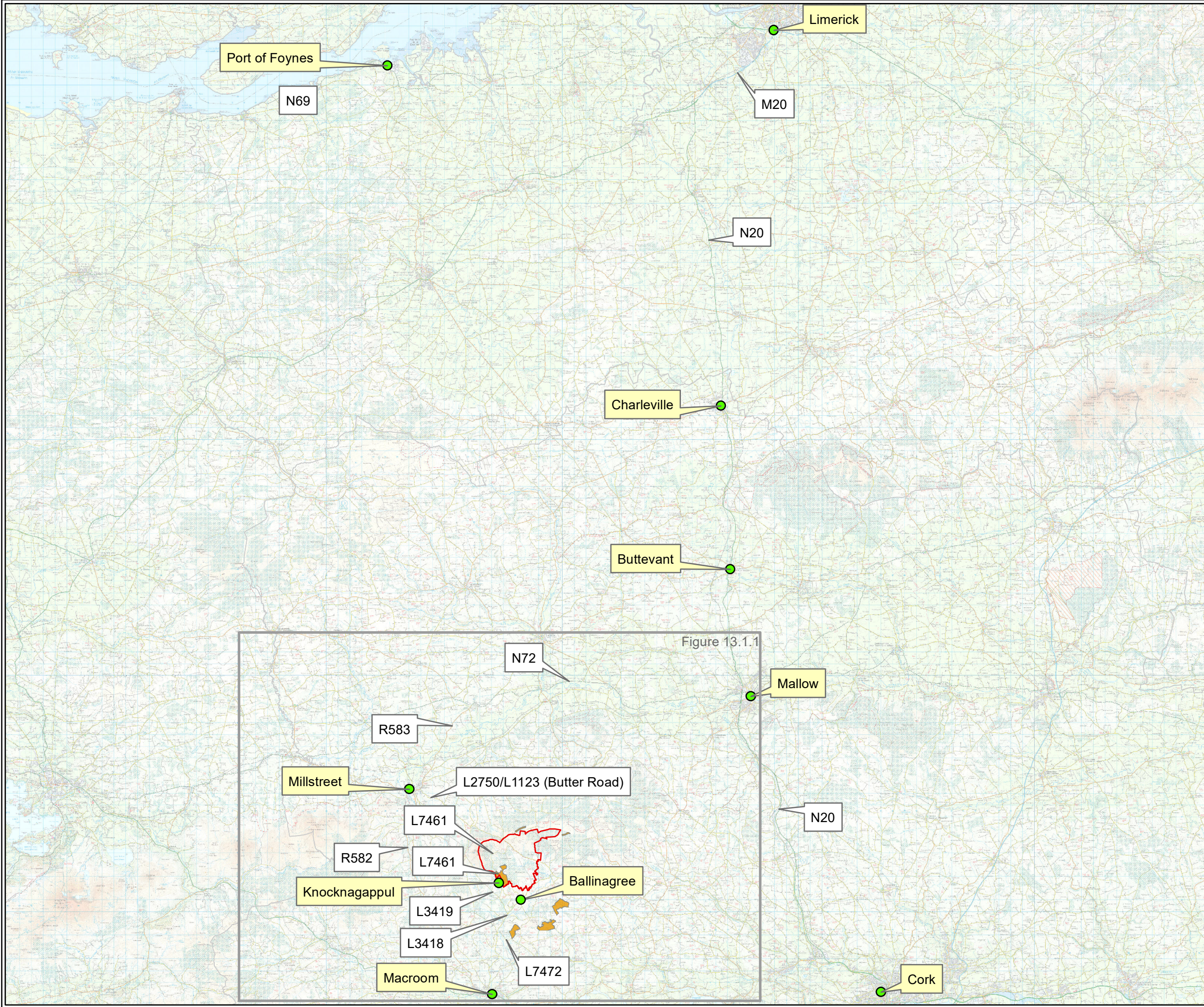
13.1.2 Study Area

The study area for the traffic and transportation chapter includes the main wind farm site along with the surrounding road network leading to and from the main wind farm site. Site access points are also assessed.

The roads associated with the grid connection are assessed, as is the turbine delivery route which runs from Foynes Port in Co. Limerick to the site entrances.

Measures associated with the implementation of the BEMP have been considered in the context of potential impacts on traffic and transportation.

The site location and surrounding road network comprising the study area is identified in Figure 13-1.



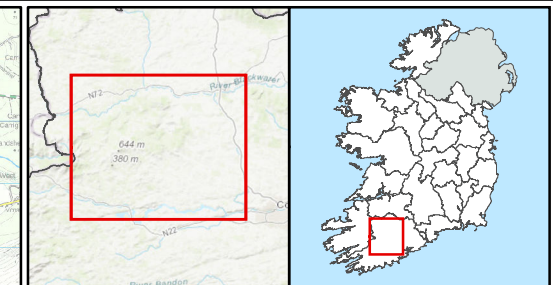
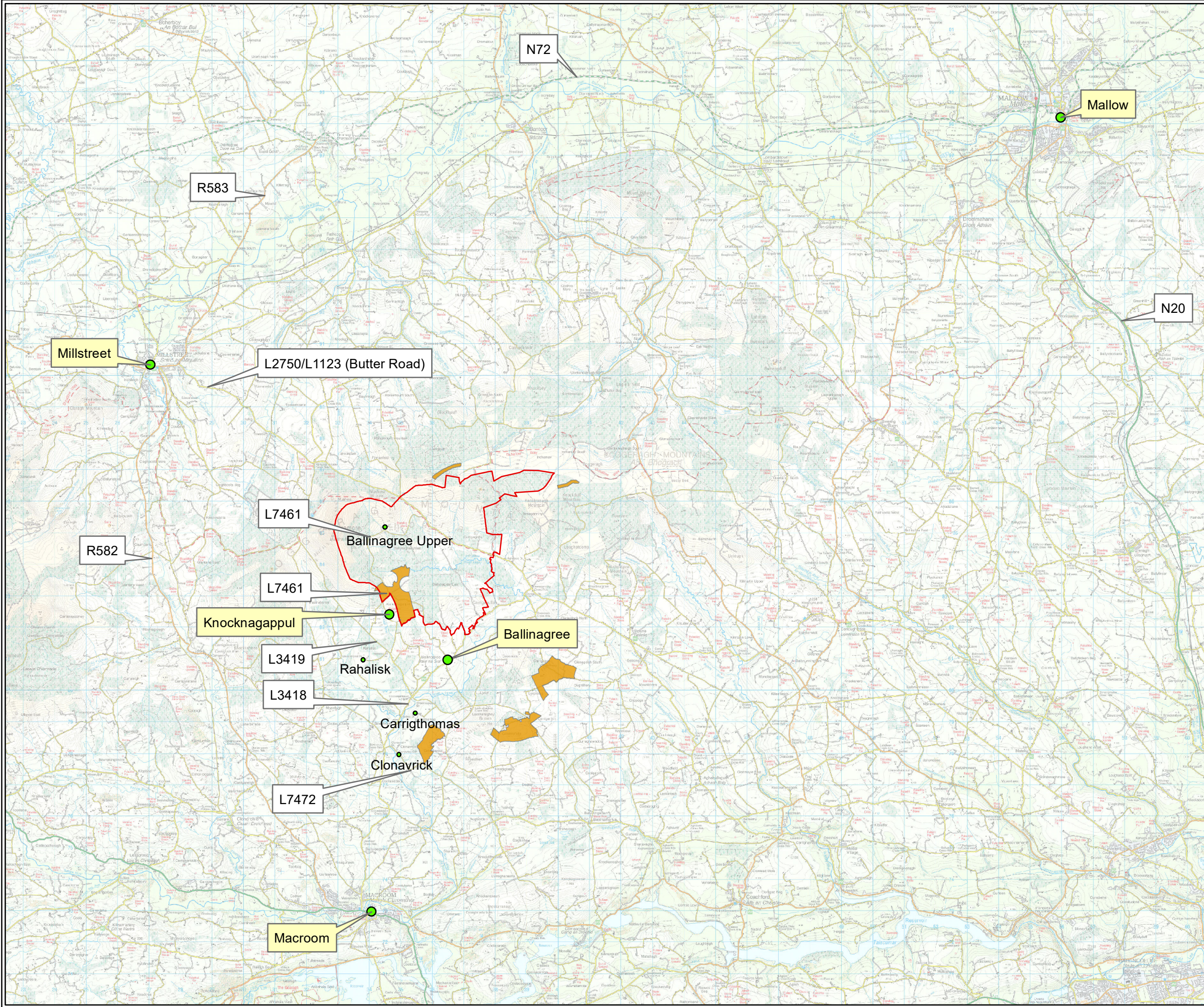
Legend

- Proposed Wind Farm Site
- County Boundaries
- BEMP Lands

Figure 13.1.1

TITLE:	Proposed Site Location and Surrounding Road Network		
PROJECT:	Ballinagree Wind Farm		
FIGURE NO:	13.1		
CLIENT:	Coillte and Ørsted		
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Legend

- Proposed Wind Farm Site
- County Boundaries
- BEMP Lands

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PROJECT:	Ballinagree Wind Farm	
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13.2 Assessment Methodology

The details of the proposed project are considered in relation to the construction, operation and decommissioning phases of the project.

The likely traffic that will be generated by each phase of the project is estimated in order to identify potential disruptions to existing road users within the study area. Based on the project construction methodologies described in Chapter 3 and the CEMP (Appendix 3.1), an estimate of the number of vehicles generated, as a result of the project is calculated. These estimates are used to assess the impact on the road network in numerical terms.

The potential for soiling or damage to public road infrastructure through poor construction practices as well as potential health and safety hazards through poor traffic management are also identified where applicable.

The effects of the project on the existing road network are then considered and described in terms of quality, duration and significance. Mitigation measures are then proposed followed by identification of residual impacts.

The potential for cumulative impacts from other developments are assessed in Section 13.9.

13.2.1 Construction Programming

As described in Chapter 3, the construction of the project in its entirety is expected to take between 18-24 months. An 18-month construction programme was assumed for construction traffic generation movement calculations as part of this assessment in order to assess for worst case (i.e., an accelerated construction programme leading to increased average vehicle movements per day).

13.2.2 Relevant Guidance

The following guidance was used during the assessment of traffic and transport in this EIAR:

- TII Publication: Traffic and Transport Assessment Guidelines, NRA, 2014;
- TII Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, 2019;
- EPA Guidelines on The Information to Be Contained In Environmental Impact Assessment Reports (DRAFT), 2017;
- County Development Plan 2015 – 2021, Cork County Council;
- Draft County Development Plan - 2021, Cork County Council;
- Limerick Development Plan 2022-2028, Limerick City and County Council;
- TII Project Appraisal Guidelines for National Roads: Estimating AADT on National Roads, October 2016;
- Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017;
- TII Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) DN-GEO-03060 April 2017.



13.2.3 Field Surveys, Data Collection and Desktop Studies

The assessment uses a combination of field surveys, data counters, desktop studies and consultation.

Traffic count data was obtained from open-source TII traffic counter information, consultation with Cork County Council Roads Department and private automatic traffic count (ATC) data. A summary of ATC survey data can be found in Appendix 13.1.

Other key sources of information used to assess traffic impacts include the following;

- Ordinance survey and aerial mapping;
- Project construction methodologies;
- Site Layout Plans;
- Route Survey Report for the Turbine Delivery Route carried out by Pell Frischmann, October 2020;

The above sources of information have been used to identify the study area and transport routes to be assessed.

13.2.4 Selection of Roads to be Assessed

While the assessment considers the entire road network in proximity to the project for both direct and indirect impacts, it is necessary to identify roads that will be used for specific purposes during construction, operation and decommissioning of the project. The selection of these roads are based on the project requirements in the context of the following:

- Delivery of oversized turbine components to the wind farm site from the Port of Entry;
- Delivery of construction materials to the wind farm site such as the importation of aggregates from suitable quarries;
- Export of waste materials from the site to suitable licensed waste facilities;
- Cabling works along public roads;
- Export of felled trees to licensed sawmills.

The identification of these roads informed the assessment and selection of traffic count survey locations which are presented in Figure 13.2.

The TDR is shown in Figure 13.5 and described in detail in Section 13.3 and 13.4. The selection of the TDR is described in detail in Appendix 13.2.

Haul routes for material import and export to and from the site are shown on Figure 13.5. The surrounding quarries currently in operation and indicative haul routes to the site have been identified. This is described in Section 13.4.2.2. The location of licensed waste facilities are identified in Section 13.4.2.2.



Roads associated with electrical and communications cabling along public roads are shown in Figure 13.4 and described in 13.4.3 and accompanying planning application drawings. The selection of the grid connection route is detailed in Chapter 2 of this EIAR.

Existing sawmills have been identified to accept felled timber from the wind farm site and are listed in Section 13.5.2.

With respect to the selection of material haul routes to quarries, waste facilities and sawmills, consideration has been given to the location of these facilities and their relative proximity to national and regional routes as well as the TDR. Due to the nature of the existing road network, the TDR and material haul routes will share the same route from the wind farm site to the nearest national road which is the N72 and follow the L1123 Butter Road and R583 as described in this chapter.

13.2.5 Site Entrance Design and Sightline Requirements

Access points needed for the project have been selected with consideration for safety of public road users and construction staff and to ensure they can be constructed to comply with the requirements of both Cork County Council and TII design requirements for direct accesses in terms of geometry and sightlines.

In terms of designing to achieve target sightline distances at access points, the primary specifications used throughout the project were TII standards which have been written for national and regional roads. In the case of Ballinagree wind farm, access points associated with the wind farm site are located on local roads which are not required to meet TII standards however in the interest of achieving nationally recognised best practice, TII targets were set wherever possible. Where TII requirements could not be met in terms of visibility distances, Cork County Council requirements were achieved. Further information can be found in Section 13.4.2.

Access points for the project are described in Section 13.4.2.1. The locations of these access points are shown on Figure 3.2.

13.2.6 Turbine Range

As described in Chapter 3, the proposed turbines will have a blade tip height of 179m to 185m, a hub height range of 102.5 to 110.5m and a rotor diameter range of 149m to 155m as illustrated in the plans and particulars submitted with this application for consent. This assessment has considered all components (blades and tower sections) within this range of dimensions in order to assess worst case.

The component dimensions assessed are based on the largest possible turbines associated with the above range to represent worst case, and described in detail in Appendix 13.2.

13.2.7 Consultation

Transport Infrastructure Ireland (TII) were consulted through the EIAR scoping process. In a response dated 22nd of July 2020, TII provided recommendations on consultation, potential traffic impacts and impacts (including visual impacts) on national roads for consideration in the EIAR.



Cork County Council Roads Department were also consulted during the EIAR scoping phase, via a pre-planning consultation meeting on the 22nd of April 2020 which took place online, and through subsequent email and telephone correspondence with relevant local area engineers. Feedback was provided on the proposed TDR temporary accommodation requirements near the town of Millstreet and the mitigation measures proposed for the grid connection cabling works.

Consultation also took place with Limerick City and County Council who were issued a copy of the scoping information for the proposed project as well as a video call meeting and follow up correspondence between FT and LCCC executive engineers in October 2021 to discuss proposed temporary accommodation requirements within LCCC’s jurisdiction.

Feedback from the above consultations fed into the assessment and mitigation measures proposed for these elements of the project. Details of the above and further consultations are contained in Chapter 5 of this EIAR.

13.3 Existing Environment

13.3.1 Existing Road Network

Roads in the Republic of Ireland are classified as motorways, national (primary and secondary), regional and local roads. Transport Infrastructure Ireland (TII) has overall responsibility for the planning and supervision of the construction and maintenance of motorways, national primary and secondary roads. The local authorities have responsibility for all non-national roads. The hierarchy of roads throughout Ireland is outlined in Table 13.1:

Table 13-1: Road Categories

Road Category	Description
Motorways	These are high quality multiple lane roads with limited grade separated junctions. They are high speed (120kmph) road predominantly provided to facilitate strategic traffic with reduced journey times.
National Primary Roads	These are predominantly single carriageway, with some that are dual carriageway. Generally high speed (100kmph) roads that facilitate strategic traffic, with reduced journey times.
National Secondary Roads	These are medium distance through-routes connecting towns, serving medium to large geographical areas and link to primary routes to form a homogeneous arterial network.
Regional Roads	Predominantly single carriageway roads of regional and local importance. These roads generally receive more frequent maintenance criteria than Local Roads and therefore tend to be structurally sound.
Local Roads (Primary, Secondary and Tertiary)	The local road system is operated in three tiers defining local importance, usage and maintenance priorities. They form a network of single carriageway roads of varying quality.



Motorways

The nearest motorway to the site is the **M8** which connects Cork City to the M7 between Urlingford and Portlaoise. The road is the arterial route for traffic connecting Cork to Dublin. The M8 is located approximately 37km to the east of the windfarm site. The M8 does not form part of the TDR and is therefore not part of the study area for this assessment.

The **M20** is located 60km north of the proposed wind farm site. The M20 forms part of the perimeter route around Limerick City and connects the N20, which is the primary artery between Limerick and Cork, with the M7 which connects Limerick to Dublin. The AADT for the M20 in 2019 according to TII automatic traffic counter data was approximately 30,349 with approximately 5.4% of this total comprised of HGV traffic. The M20 forms part of the TDR for the proposed project.

There are no other motorways located in proximity to the proposed wind farm site.

National Primary Routes

To the southwest the nearest national primary route is the **N22**. The N22 connects Killarney to Cork city and is approximately 9.8km southwest of the proposed wind farm site. The N22 does not form part of the TDR for the proposed project.

The **N20**, which is the primary artery between Limerick and Cork is located approximately 18km to the east of the proposed wind farm site. The AADT for the N20 in 2019¹ according to TII automatic traffic counter data was approximately 10,645 with approximately 7.7% of this total comprised of HGV traffic. The N20 forms part of the TDR for the proposed project.

The **N72** which connects Kilorglin to Dungarvan via Mallow passes approximately 11km to the north of the proposed wind farm site. The AADT for the N72 in 2019 according to TII automatic traffic counter data was approximately 5,610 with approximately 3% of this total comprised of HGV traffic. The N72 forms part of the TDR for the proposed project.

The **N69** is a national primary route which connects Tralee to Limerick and passes approximately 63km to the north of the proposed wind farm site. The AADT for the N69 in 2019 according to TII automatic traffic counter data was approximately 6,210 with approximately 7.5% of this total comprised of HGV traffic. The N69 forms part of the TDR for the proposed project.

Regional Roads

The **R583** is a regional road which connects the N72 at Dromagh with Millstreet. This road passes approximately 7.5km to the west of the site and forms the main road to the town of Millstreet for traffic approaching from the north. The AADT for this road is shown in Table 13-2. This road forms part of the TDR.

¹ Most recent full year of data available representing normal (pre-Covid 19) traffic conditions.



Plate 13-1: R583 Approaching Millstreet from East (TDR)

The **R582** is a regional road which connects the village of Ballydesmond with Macroom. This road passes approximately 7.5km to the west of the site and forms the main road through the town of Millstreet for traffic approaching from the east. This road does not form part of the TDR.

Local Roads

The L2750/L1123 (also known as The Butter Road) links Millstreet with the proposed wind farm site and forms part of the TDR as well as acting as a primary HGV and passenger haul route for the project. The road is a single carriageway road of varying widths. This road is also a designated scenic route and forms part of the Duhallow Way walking and cycling route.

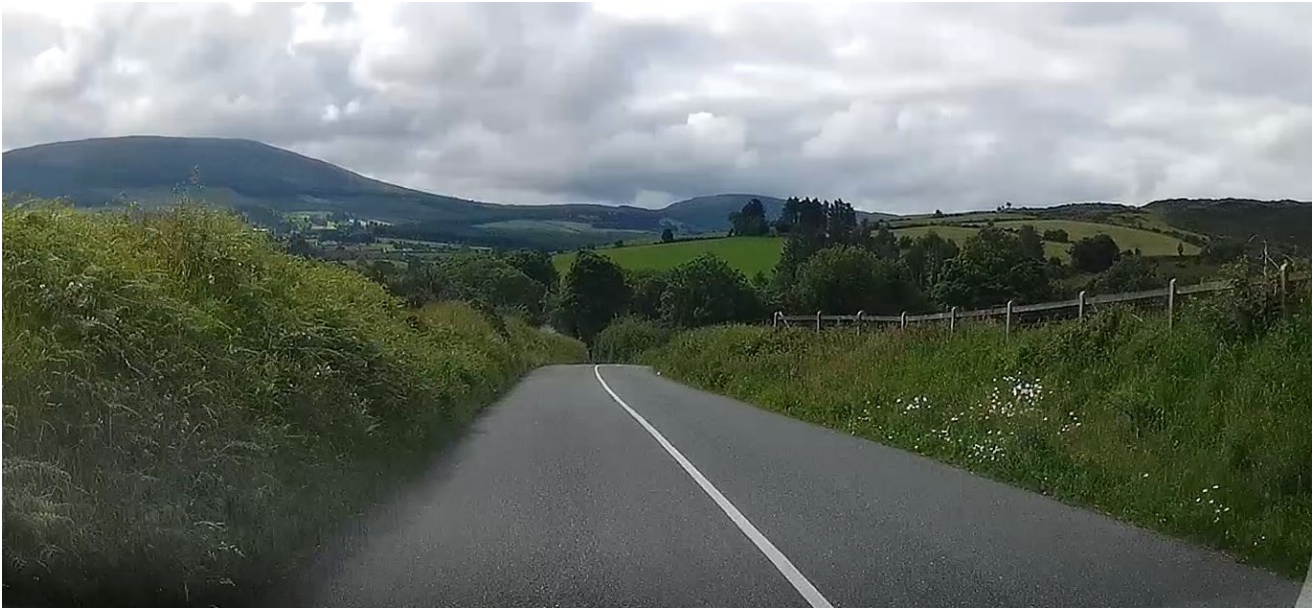


Plate 13-2: L2750/L1123 Butter Road Approaching Site From South (TDR)

Local Road L7461 at Ballinagree Upper. This is a narrow single lane rural upland tertiary local road which travels through the southern part of the site, connecting with the L1123 at the north end. This road will not be used as part of the TDR or as a haul route however the road will be crossed at a single point by HGV traffic associated with the project during the construction stage where existing site access points will facilitate access to the wind farm site and borrow pits in the west of the site.

Local Road L7461 at Knocknagappul. This is a narrow single lane rural upland tertiary local road which forms part of the proposed grid connection immediately south of the proposed wind farm site.



Plate 13-3: Local Road L7461 at Knocknagappul (GCR)



Local Road L3419 at Rahalisk. This is a single carriageway secondary local road which connects upper Aubane with Mullinhassig and forms part of the proposed grid connection south of the proposed wind farm site.

Local Road L3418 at Carrigthomas. This is a single carriageway secondary local road which connects Ballinagree and Macroom and forms part of the proposed grid connection south of the proposed wind farm site.



Plate 13-4: Local Road L3418 at Carrigthomas (GCR)

Local Road L7472 at Clonavrick. This is a single carriageway secondary local road which forms the final section of the proposed grid connection into the existing Clashavoon Substation.



Plate 13-5: Local Road L7472 at Clonavrick (GCR)

The location of all of the above roads are shown on Figures 13.1.

13.3.2 Existing Environment Traffic Volumes

Private 7-day classified automatic traffic count (ATC) surveys were taken on the R583 and the un-named local roads in April 2021 in accordance with requirements of TII Publication: Traffic and Transport Assessment Guidelines, NRA, 2014. A summary of ATC survey data can be found in Appendix 13.1. Traffic count data for the above referenced motorway and national roads was taken from TII permanent traffic counters for 2019.

Baseline 2024 traffic volumes on roads in the study area are predicted in Table 13-2 below:

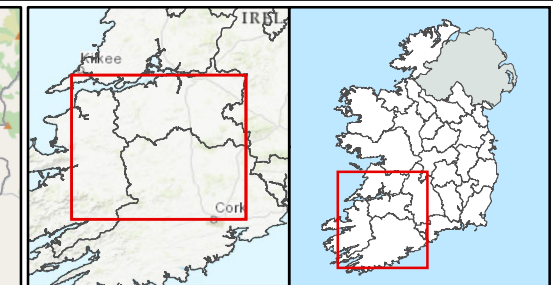
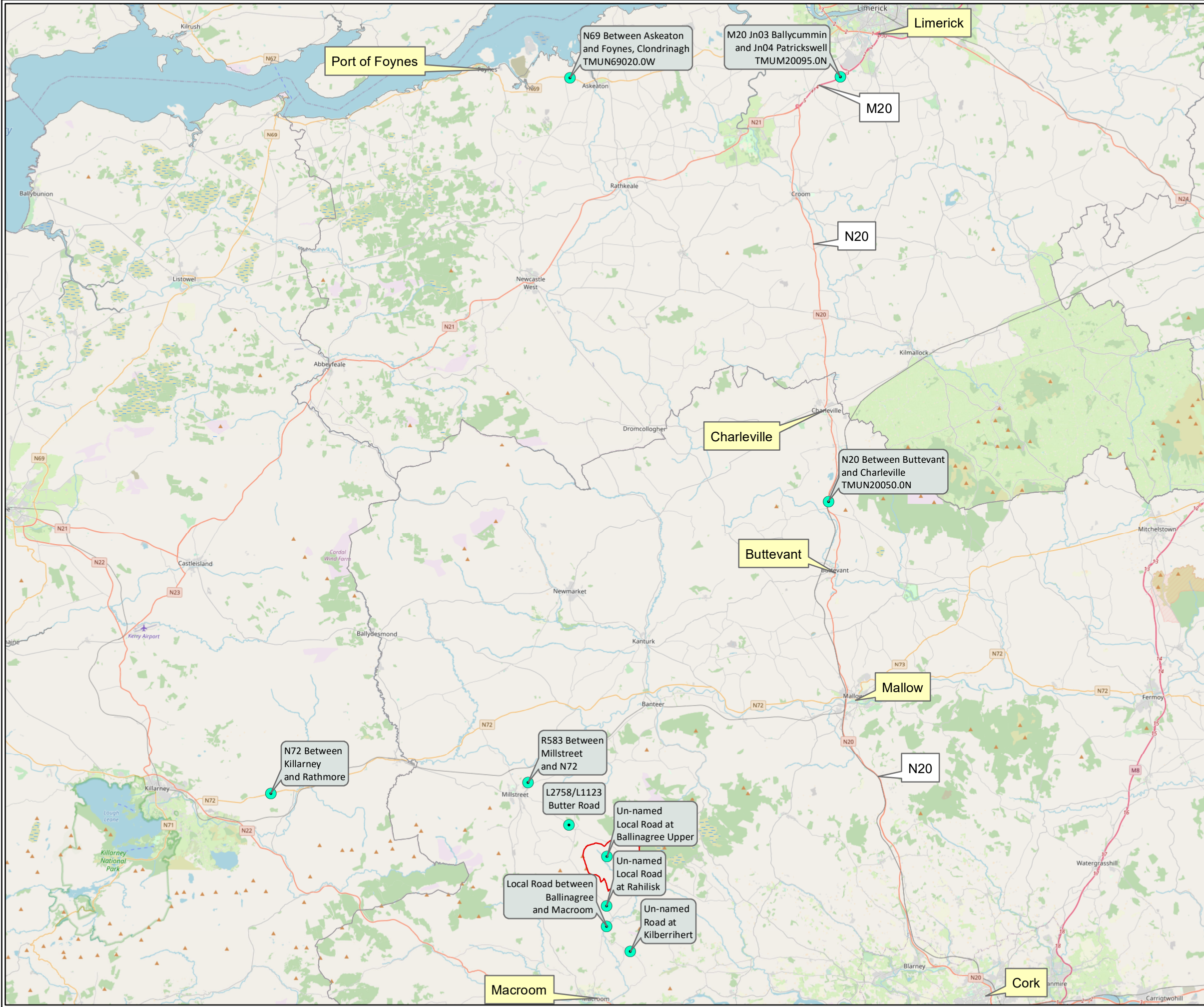
Table 13-2: Baseline Traffic Volumes

Automatic Traffic Counter Location	Projected Baseline AADT		
	HGV	LGV	AADT
M20 Jn03 Ballycummin and Jn04 Patrickswell TMUM20095.0N	1,758	29,710	31,468
N20 Between Buttevant and Charleville TMUN20050.0N	887	10,260	11,148
N72 Between Killarney and Rathmore	182	5,683	5,865
N69 Between Askeaton and Foynes, Clondrinagh TMUN69020.0W	504	5,999	6,503
R583 Between Millstreet and N72	287	3,726	4,013
L1123/L2750 (Butter Road)	31	689	720
Local Road L7461 at Ballinagree Upper	1	17	17
Local Road L3419 at Rahalisk	24	572	596
Local Road L3418 at Carrigthomas Between Ballinagree and Macroom	30	1,043	1,072
Unnamed Local Road at Kilberrihert	7	110	117



It is expected that the construction phase will commence in 2024 and this has been selected for estimating baseline traffic in the existing environment. AADT figures were projected to a proposed construction commencement year of 2024 from 2019 source data in accordance with TII Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, 2019.

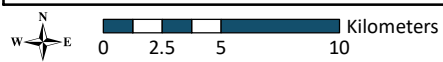
The location of automatic traffic counters (both TII and commissioned) can be seen in Figure 13-2.



Legend

- Proposed Wind Farm Site
- County Boundaries
- ATC Locations

TITLE:	Traffic Counter Locations		
PROJECT:	Ballinagree Wind Farm		
FIGURE NO:	13.2		
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13.4 Proposed Development

A detailed description of the project assessed in this EIAR is provided in Chapter 3 and is comprised of four main elements:

- The wind farm site (also referred to in this EIAR as ‘the Site’);
- The grid connection;
- The turbine delivery route (also referred to in this EIAR as ‘the TDR’);
- Biodiversity enhancement and management plan lands (also referred to in this EIAR as ‘the BEMP lands’).

The main wind farm site includes the wind turbines, internal access tracks, hard standings, the permanent meteorological masts, onsite substation, internal electrical and communications cabling, temporary construction compound, drainage infrastructure and all associated works related to the construction of the wind farm.

The associated grid connection will consist entirely of underground cable and will connect the on-site substation to the existing 220kV substation at Clashavoon, Co. Cork. The GCR will be 11.4km, in length, with 9.4km to be constructed within the existing public road corridor and the remainder in forestry tracks. The proposed grid connection cable route is identified in Figure 13.4.

The turbine delivery route includes all aspects of the route from the Foynes port to the site entrance including proposed temporary accommodation requirements to facilitate the delivery of wind turbine components.

The location of BEMP lands are shown in Figure 3.5 and consist of measures to improve biodiversity. These measures are described in detail in Chapter 3 and Appendix 3.4.

13.4.1 Construction Programme

The construction of the project in its entirety is expected to take between 18 – 24 months. An indicative construction programme upon which vehicle trip distribution calculations are based is shown in Figure 13-3 below:

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Mobilisation and site setup	█																	
Site clearance and felling		█	█															
Internal access tracks				█	█	█	█	█	█	█								
Turbine hard standings					█	█	█	█	█	█	█	█	█	█	█	█	█	█
Turbine foundations																		
Turbine Installation																		
Onsite substation																		
Grid connection cable works																		
Private electrical network																		
Commissioning																		
Recreational amenity works, landscaping, reinstatement																		
Demobilisation																		

Figure 13-3: Proposed Construction Programme



There are a number of items which will be conducted in parallel, but the basis of the construction programme will involve site establishment, site access road and drainage construction, hardstanding construction and substation works. The grid connection works are likely to be done in parallel with on-site works as shown in the programme and completed before the commissioning, reinstatement and landscaping phases are completed. However, it is also possible that the grid route could commence prior to the on-site infrastructure or subsequent to the construction of the on-site infrastructure. Carrying out the grid connection works in parallel with the site works represents the worst-case scenario.

13.4.2 Main Wind Farm Site

As described above and in Chapter 3, the main wind farm site includes the wind turbines, internal access tracks, hard standings, the permanent meteorological masts, onsite substation, internal electrical and communications cabling, temporary construction compound, drainage infrastructure and all associated works related to the construction of the wind farm.

13.4.2.1 Site Access

Ballinagree Wind Farm shall involve the use of 5 no. existing forestry and agricultural entrances as access points from the public road. The locations of these access points are shown on Figure 3.2. An assessment of the existing geometry and sightlines from these entrances was carried out in March 2021 with existing visibility presented in Table 13-3.

The access points have been selected with consideration for safety of public road users and construction staff and to ensure they can be constructed to comply with the requirements of both Cork County Council and TII design requirements for direct accesses. Each of the access points are described in detail below.

Access Point 1: This is the main site entrance for the southern part of the site and shall also act as the main site entrance for the overall wind farm. An existing Coillte forestry access shall be upgraded to facilitate the delivery of turbine components. All turbine components accessing the southern part of the site shall use this entrance for the installation of turbines T1 to T13. This access point shall also be used for construction and operation vehicles and shall be used by both HGV's and LGV's. This access point shall also act as the main entrance to the recreational amenity trail head at the location of the southern temporary compound during the operational phase of the project. This access is already regularly used by HGV's associated with agricultural and forestry activities and will continue to be used for such purposes during the construction and operation phases of the project.

Existing visibility at this access point already complies with Cork County Council visibility distance requirements in both directions. It is proposed to widen the existing bellmouth to facilitate the over-sized turbine delivery vehicles entering the site at this point. The detail is shown on 0101-Series planning application drawings included with the planning application. Visual obstructions shall be removed to achieve target 'Y' visibility distances in both directions of 160m in accordance with TII design specifications.



Plate 13-6: Access Point 1

Access Point 2: This is the main site entrance for the northern part of the site. An existing agricultural and forestry access shall be upgraded to facilitate the delivery of turbine components. All turbine components accessing the northern part of the site shall use this entrance for the installation of turbines T14 to T20. This access point shall be used for construction and operation by both HGV's and LGV's. This access is already regularly used by HGV's associated with agricultural and forestry activities and will continue to be used for these activities during the construction and operation phases of the proposed project. This access has also been used in the past to facilitate the construction of the existing Boggeragh Wind Farm.

Existing visibility at this access point already complies with Cork County Council visibility distance requirements in both directions. It is not required to widen the existing bellmouth to facilitate the over-sized turbine delivery vehicles entering the site at this point and minor upgrading of the existing running surface shall be carried out only. Existing visibility to the left already complies with TII target requirements (160m). Maximum visibility to the right cannot be improved beyond 130m due to the vertical curvature of the public road in this direction however this sightline distance is compliant with Cork County Council sightline requirements and is considered appropriate for this type of access. The layout of this access point is shown on 0101-Series planning application drawings included with the planning application. Visual obstructions shall be removed to achieve target visibility distances in both directions.



Plate 13-7: Access Point 2

Access Point 3: This is an existing agricultural and forestry access which provides access to the southern part of the site. This access point will be used for operational access by LGV's only. The proposed grid connection export cable shall exit this site through this access point. This access is already regularly used by HGV's associated with agricultural activities.

Existing visibility at this access point already complies with TII and Cork County Council visibility distance requirements in both directions. It is not required to widen the existing bellmouth to facilitate vehicles entering the site at this point and minor upgrading of the existing running surface shall be carried out only as well as trenching associated with the grid connection export cable. The layout of this access point is shown on 0101-Series planning application drawings included with the planning application.



Plate 13-8: Access Point 3

Access Point 4: This is an existing Coillte forestry access which will be used during the construction phase by LGV's and HGV's. This access point will form part of a public road crossing point with Access Point 5 for construction traffic travelling to and from the proposed borrow pits in the west of the site. This access is already regularly used by HGV's associated with agricultural and forestry activities.



Existing visibility at this access point does not currently comply with Cork County Council visibility distance requirements in both directions however a minimum visibility distance of 90m in both directions is achievable with removal of visual obstructions and this is proposed. It is not required to widen the existing bellmouth to facilitate vehicles entering the site at this point and minor upgrading of the existing running surface shall be carried out. The layout of this access point is shown on 0101-Series planning application drawings included with the planning application.



Plate 13-9: Access Point 4 (East side of public road)

Access Point 5: This is an existing Coillte forestry access which will be used during the construction phase by both LGV's and HGV's. This access point will form part of a public road crossing point with Access Point 4 for construction traffic travelling to and from the proposed borrow pits in the west of the site. This access is already regularly used by HGV's associated with agricultural and forestry activities.

Existing visibility at this access point does not currently comply with Cork County Council visibility distance requirements in both directions however a minimum visibility distance of 90m in both directions is achievable with removal of visual obstructions and this is proposed. It is therefore not required to widen the existing bellmouth to facilitate vehicles entering the site at this point and minor upgrading of the existing running surface shall be carried out. The layout of this access point is shown on 0101-Series planning application drawings included with the planning application.



Plate 13-10: Access Point 5 (West side of public road)

As described above, wind turbine component deliveries shall make use of Access Points 1 and 2 only. Access to the proposed main temporary construction compound shall be via Access Point 1. This shall also act as the main access to the recreational amenity trail head during the operational phase.

Table 13-3: Site Access Points Existing Visibility

Access Point	'X' Distance (m) ²	'Y' Visibility Distance from Observation Point (m) ³		Major Road Average Width (m)	Major Road Speed Limit (kph) ⁴
		Right	Left		
1	3	126	160	3	80
2	3	130	160	4.8	80
3	3	160	160	3.3	80
4	3	55	85	3.4	80
5	3	160	85	3.4	80

² The distance back along the minor road or direct access from which the full visibility is measured is known as the 'x' distance. It is measured back along the centreline of the minor road or direct access from the continuation of the line of the nearside edge of the paved surface (including hard strip or hard shoulder) of the major road. (TII Standard DN-GEO-03060: Geometric Design of Junctions, June 2017).

³ From the point "x" metres back from the major road a driver approaching the junction along the minor road shall be able to see clearly points to the left and right on the nearer edge of the major road running carriageway at a distance measured from its intersection with the centreline of the minor road. This is called the 'y' distance. (TII Standard DN-GEO-03060: Geometric Design of Junctions, June 2017).

⁴ Where no posted speed limit is available for public road in question, a speed limit of 80kph is assumed.



13.4.2.2 Construction Haul Routes (Excluding TDR)

In constructing the wind farm, materials and plant will need to be delivered to the site. The material haul routes will include some of the surrounding road network which will need to cater for the additional traffic associated with the project.

Traffic associated with the construction phase include:

- HGVs carrying felled timber, aggregates, pipes and other materials associated with construction of the internal access tracks, hard standings and drainage infrastructure;
- HGVs (Concrete wagons) carrying concrete for turbine foundations and substation foundations;
- HGVs carrying building materials for the substations as well as electrical equipment and cabling;
- HGVs carrying plant and fuel;
- HGVs exporting site waste;
- Cranes and associated elements needed for erecting the turbines;
- Private cars and vans for the commuting workforce.

The surrounding quarries currently in operation and indicative haul routes to the site have been identified. The nearest quarry is identified as Bweeng Quarry located in Mallow, Co. Cork. This is a Sand & Gravel quarry to the north-east of the Ballinagree site.

All materials required for the construction of the proposed wind farm shall approach the site from the direction of Millstreet along the L2750/L1123 (also known as The Butter Road). This shall act as the main haul route for the construction phase of the project.

A Waste Management Plan for the project has been included in the CEMP in Appendix 3.1. The Developer, in conjunction with appointed contractor, will prevent, reduce, reuse and recover as much of the waste generated on site as practicable and ensure the appropriate transport and disposal of residual waste to off site to licensed facilities. The location of these facilities area identified as follows:

- Kanturk Civic Amenity Site
- Mallow Civic Amenity Centre
- Munster waste management
- Codrum Recycle Centre

13.4.2.3 Borrow Pits

The inclusion of borrow pits can significantly reduce the amount of HGV traffic required for the construction of the wind farm as the material can be sourced from the site itself instead of being imported from local quarries and transported along public roads.

3 no. borrow pits have been identified to provide site-won aggregate material for the construction of the wind farm roads and hard standings. The locations of the borrow pits are shown on Figure 3-2. As described in Section 13.4.2.1, a public road crossing using existing Coillte forestry access points shall be used to facilitate the transport of aggregates from the two borrow pits located in the west of the site to the southern part of the wind farm site using Access Points 4 and 5.



The northern part of the wind farm site shall be served by a third borrow pit.

A controlled crossing shall be implemented between Access Points 4 and 5 to facilitate the movement of HGV's across the public road to the wind farm site. The public road at this location experiences very low traffic volumes (AADT = 17 recorded in April 2021) however it is commonly used by walkers and cyclists due to its proximity to the Duhallow Way and would likely experience increased traffic during summer months from visitors to the area.

Details of the proposed crossing and control measures are outlined in Section 13.7 and 0500-Series planning application drawings.

13.4.2.4 *Felling*

Felling of coniferous forestry is required within and around the wind farm infrastructure to accommodate the construction of turbines, hardstands, crane pads, temporary compounds, borrow pits, access tracks and the proposed onsite substation. This will give rise to HGV traffic during the construction phase which has been included in the assessment.

13.4.2.5 *Recreational Amenity Trail*

The project includes the use of 15.05 km of existing forest and farm tracks and paths that shall be made available as recreational amenity trails for community use and shall include trail signage and way-markers. All signage and way-markers shall be positioned within the corridor of the proposed trail upgrades.

The proposed wind farm temporary construction compound shall be repurposed following construction of the wind farm as a trail head car park. This shall include the partial reinstatement of the overall hard standing compound, landscaping, tree planting and installation of picnic tables. The general arrangement of the proposed trail head car park and picnic area can be found in accompanying planning application drawing.

The proposed car park shall provide space for 40no. vehicles.

13.4.3 Grid Connection

13.4.3.1 *Grid Connection Cable Works*

As described in Chapter 3, Electricity generated from wind turbines shall be collected at medium voltage (20/33 kV) by an internal circuit of buried cables which primarily will follow on-site access tracks. This circuit shall be terminated at a proposed 110kV onsite substation and exported to the grid via a 110 kV buried cable to the existing Clashavoon substation.

The underground grid route connection works to Clashavoon substation will involve the installation of ducting, joint bays and ancillary infrastructure and the subsequent running of cables predominantly along the existing road network. These works shall be undertaken on a rolling basis with short sections of road (up to several hundred metres in length) closed for short periods before moving onto the next section. This will require delivery of plant and construction materials to the sections along the route, followed by excavation, laying of cables and subsequent reinstatement of trenches and road surfaces.



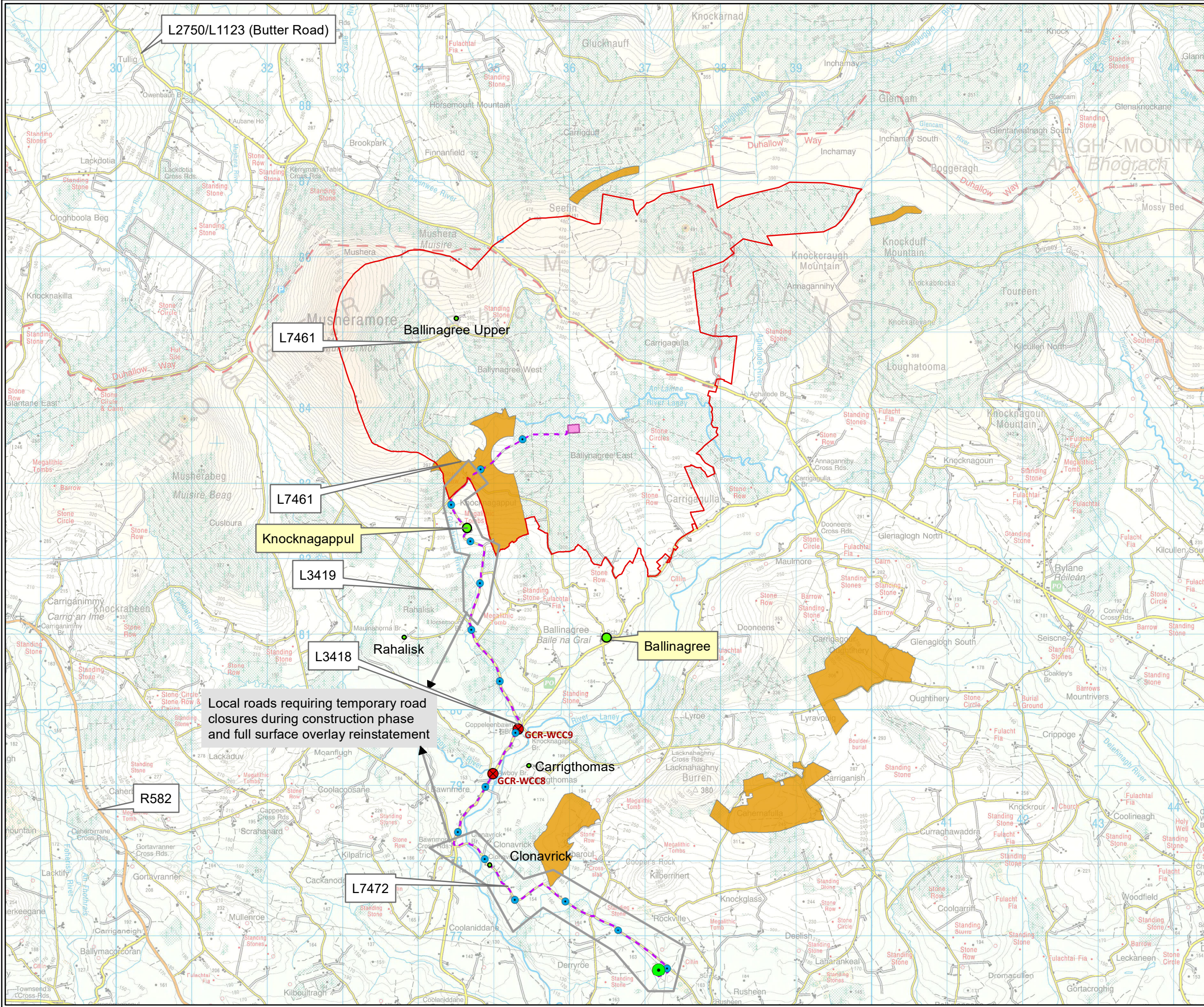
It is expected that full road closures will be put in place to facilitate cabling works in combination with lane closures, partial road closures and stop/go systems. This will enable the works to be completed as quickly and as safely as possible, with minimal disruption time for residents of the area.

A careful approach will be taken to planning the works to ensure minimal impacts on road users and the general public, which is discussed under mitigation.

Due to the length of cabling within the road corridor (ca. 10km), these works are expected to be conducted over a 6-month period. Road closures will be applied for by the appointed contractor and will outline local diversions whilst maintaining local access at all times for residents, farms and businesses.

Road closures will be subject to the applicable statutory licensing processes as implemented by the roads authority. Road closures will be facilitated by the existing network of roads in the area.

The grid connection route including roads identified as requiring full closures are identified in Figure 13.4.



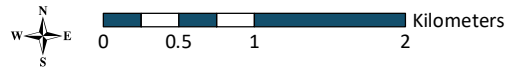
Local roads requiring temporary road closures during construction phase and full surface overlay reinstatement



Legend

- Proposed Wind Farm Site
- BEMP Lands
- Substation Compound
- Clashavoon Substation (110-220kV)
- Joint Bays
- ⊗ Location of horizontal directional drill
- Proposed Grid Connection Route

TITLE:	
Grid Connection	
PROJECT:	
Ballinagree Wind Farm	
FIGURE NO:	13.4
CLIENT:	Coillte and Ørsted
SCALE:	1:50000
REVISION:	0
DATE:	20/12/2021
PAGE SIZE:	A3





13.4.3.2 Watercourse Crossings Along the GCR

Details of watercourse crossings along the grid connection route are described in detail in Chapter 10.

A description of construction methodologies for watercourse crossings is presented in the CEMP (Appendix 3.1), and Chapter 3.

Horizontal directional drilling operations will be employed at 4 no. locations along the proposed grid connection route as part of the project as shown on the site layout plans.

The operation shall take place from one side of the watercourse within the public road corridor and will be carried out by an experienced HDD specialist. Each crossing is expected to take place in a single day under one mobilisation. Temporary road closures will be required for HDD works within the public road corridor. The locations of the above crossing points are shown in Figure 10-5.

13.4.3.3 Trench Details

Details for trench reinstatement are contained in the CEMP in Appendix 3-1 and shall be designed and constructed in accordance with Eirgrid specifications⁵.

The pavement will be reinstated to a condition equal or better to the existing pavement, pre-construction.

All materials used in the reinstatement of trenches will comply with the requirements of the Department of Transport guidelines for the Opening, Backfilling and Reinstatement of Trenches in Public Roads and the TII Specifications for Road Works.

Following consultation with Cork County Council, it is proposed that a full surface overlay shall be incorporated as part of the trench reinstatement works to a specification agreed with the County Council Roads Department. A full surface overlay involves the reinstatement of the entire width of the public road carriageway instead of just the trench itself. The roads identified for full surface overlay are identified in Figure 13-4 and amount to a total length of approximately 5.5km.

Trench construction and reinstatement methodologies are described in Chapter 3 and CEMP. Details of trench reinstatement can be found in 0500-Series planning application drawings.

13.4.4 Turbine Delivery Route

The proposed turbine delivery route is presented in Figure 13-5. A Delivery Route Selection and Assessment was carried out to identify the optimum delivery route to site and is presented as Appendix 13-2 of this EIAR.

Large components associated with the wind farm construction will be transported to site via the identified turbine delivery route (TDR). The proposed access route to site is as follows:

- Loads will depart Foynes Port and east along the N69;
- Loads will join the N18 and travel east;
- Loads will exit at Junction 1 and travel south on the M20;

⁵ <https://www.eirgridgroup.com/customer-and-industry/general-customer-information/transmission-policies-and/>



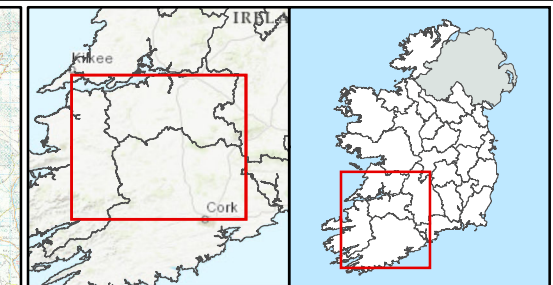
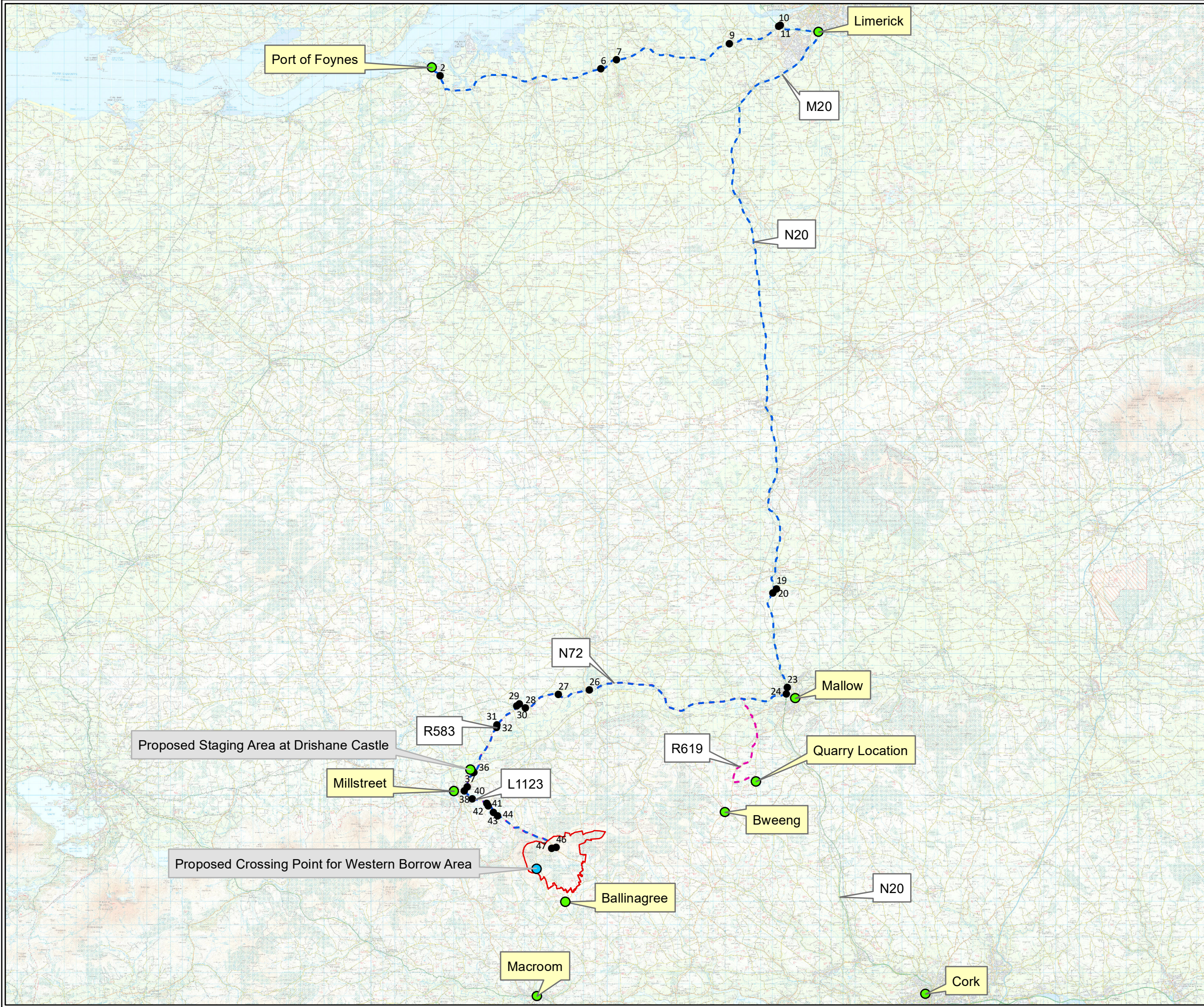
- Loads will depart the M20 and continue south on the N20;
- Loads will continue south on the N20 to Mallow;
- Loads will travel west along the N72;
- Loads will depart the N72 and travel onto the R583 at Dromtarriff;
- Loads will turn left at Millstreet onto the L1123 and continue to the site.

In some cases, temporary accommodation requirements are needed along the turbine delivery route such as hedge or tree cutting, relocation of powerlines/poles, relocation of street furniture (lampposts, signage) and local road widening. All temporary accommodation requirements to facilitate the delivery of wind turbine components are summarised in Table 13-4 and are assessed. Any accommodation requirements within the public road corridor will be carried out in advance of the turbine deliveries in agreement with the local authority and subject to a road opening license.

The location of accommodation requirements are shown in Figure 13-5 and identified as “Points of Interest (POI’s)”.

13.4.4.1 Tower Section Deliveries

The main street of Millstreet will not be used as part of the TDR with the exception of the delivery of wind turbine tower sections to the wind farm site, which will need to approach the junction between the R583 and L1123 from the west to avoid impacting third party property. This is due to the turning radius of the vehicles used to transport the tower sections which is greater than that of the lifting trailers used to transport the wind turbine blades. For this reason, a left-hand turn at the junction between the R583 and L1123 Butter Road on the main TDR route is not possible for the tower loads, and it is necessary to approach this junction from the west. After the loads have passed through Millstreet, the tower sections shall be decoupled from their clamp trailers at Claratlea and laid on the public road, while keeping a lane open for through traffic. The decoupled clamp trailers shall continue west and carry out a 180 degree turn at an existing Coillte forestry access at Rathduane which has sufficient space to facilitate the manoeuvre before returning to pick up the tower sections at Claratlea. The loaded vehicles shall then return through Millstreet and turn right onto the L1123 Butter Road, rejoining the main TDR route to the wind farm site. A detailed description of the proposed manoeuvre can be found in Appendix 13.2 in the form of a Method Statement for Turning Tower Sections which has been prepared by Pell Frischmann Consulting Engineers and includes swept path drawings. An overview of the turning manoeuvre is shown in Figure 13.6 below.



Legend

- Proposed Wind Farm Site
- Proposed Haul Route
- Proposed Turbine Delivery Route (TDR)
- TDR Nodes

TITLE:	
Turbine Delivery Route and Haul Routes	
PROJECT:	
Ballinagree Wind Farm	
FIGURE NO:	13.5
CLIENT:	Coillte and Ørsted
SCALE: 1:320000	REVISION: 0
DATE: 31/08/2021	PAGE SIZE: A3

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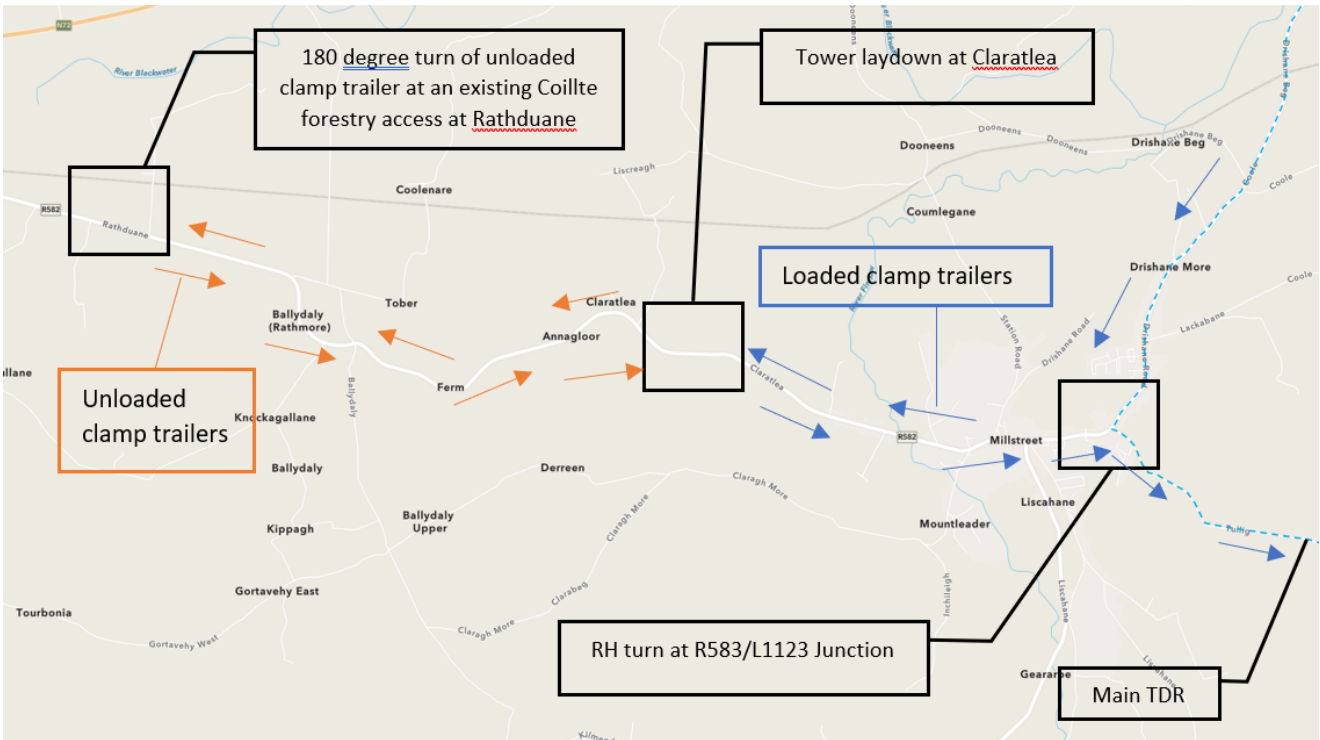


Figure 13-6: Turbine Tower Turning Summary



Table 13-4: TDR Temporary Accommodation Requirements (numbering as per Appendix 13.2)

TDR Node Reference Number (POI__)	Location	Summary Description of Proposed Temporary Accommodation Requirements
2	Foynes Port Access Road/N69	Temporary removal of street furniture. Overrun of splitter island. Overrun and oversail of public road verge. Placement of temporary load bearing surface. Tree and vegetation trimming.
6	N69 West of Toreen	Trimming of tree canopy
7	N69 Toreen	Trimming of tree canopy
9	N69 Clarina Roundabout	Temporary removal of street furniture. Overrun and oversail of northern edge of roundabout island. Placement of temporary load bearing surface. Removal of trees and vegetation.
10	N69/N18 Dock Road West Roundabout	Temporary removal of street furniture. Overrun and oversail of northern edge of roundabout island. Placement of temporary load bearing surface. Removal of trees and vegetation.
11	N69/N18 Dock Road East Roundabout	Temporary removal of street furniture. Overrun and oversail of public road verge. Placement of temporary load bearing surface.
19	N20 Ballybeg bends	Public road verge oversail. Temporary removal of street furniture. Removal of trees and vegetation.
20	N20 Kilcloosha bends	Public road verge oversail. Removal of vegetation.
23	N20/R883 Roundabout, Mallow	Overrun and oversail through roundabout island. Ground reprofiling and placement of temporary load bearing surface. Removal of trees and vegetation.
24	N20/N72 Roundabout Mallow	Overrun and oversail through roundabout and footpaths. Placement of temporary load bearing surface. Temporary removal of street furniture. Removal of tree.
26	N72 Dromcummer Beg	Vegetation trimming. Temporary removal of street furniture.
27	N72 Coolclough Bends	Temporary removal of street furniture. Relocation of telegraph pole. Removal of vegetation.
28	N72 Dromagh	Trimming of trees and vegetation.
29	N72 Dromtarriff Bends	Trimming of trees and vegetation. Removal of hedgerow. Temporary removal of street furniture. Oversail into third party lands. Placement of temporary load bearing surface.
30	N72/R583 Junction	Removal of trees and vegetation. Temporary removal of street furniture and wall.
31	R583 Killetragh	Trimming of trees and vegetation.
32	R583 Minehill	Overrun and oversail of public road verge. Placement of temporary load bearing surface. Trimming and removal of trees and vegetation.
36	R583 Drishane Castle	Construction of a temporary staging area comprising aggregate hard standing and associated access track to and from the public road



TDR Node Reference Number (POI__)	Location	Summary Description of Proposed Temporary Accommodation Requirements
		R583 in the grounds of Drishane Castle. Removal of masonry wall to facilitate temporary access from public road R583. Overrun and oversail of public road verge. Placement of temporary load bearing surface. Relocation of telegraph pole. Trimming of trees and vegetation.
37	R583 Right Bend Entering Millstreet	Relocation of utility poles and overhead lines.
38	R583/L1123 Junction	Relocation of utility poles and overhead lines. Removal of walls. Temporary removal of street furniture. Placement of load bearing surface on third party land. Overrun and oversail of public road footpaths. Suspension of parking.
40	L1123 Left bend south of Millstreet	Relocation of utility poles and overhead lines. Overrun and oversail of public road verge. Placement of temporary load bearing surface. Suspension of parking.
41	Tulig road right bend	Relocation of utility poles and overhead lines. Trimming of vegetation.
42	Tulig Road left/ right bend	Trimming of trees and vegetation. Relocation of utility poles and overhead lines.
43	River Owenbawn Left Bend	Removal of trees and vegetation. Relocation of utility poles and overhead lines. Removal of wall.
44	Auhane West of Tullig	Ground reprofiling and placement of load bearing surface on third party land. Relocation of utility poles and overhead lines. Temporary removal of street furniture. Removal of hedge.
46	Temporary widening of existing junction between Butter Road (L1123/L2750) and unnamed local road on approach to main site entrance.	Ground reprofiling and placement of load bearing surface on third party land. Removal of hedge.
47	Local Road on approach to main site entrance	Placement of temporary load bearing surface to roadside verges.

Pell Frischmann (PF) were commissioned by Fehily Timoney (FT) to undertake a study of the delivery route for wind turbine Abnormal Indivisible Loads (AIL) associated with the construction and development of Ballinagree Wind Farm. The Route Survey Review (RSR) has been prepared to help inform the EIAR on the issues associated with the development of the site with regard to off-site transport and access for AIL traffic and includes a detailed swept path analysis (SPA). The report identifies the key issues associated with AIL deliveries and identifies remedial works, either in the form of physical works or as traffic management interventions that will be required to accommodate the predicted loads. A copy of this report is contained in Appendix 13.2.



All blades will be carried on a superwing carrier to reduce the need for mitigation in constrained sections of the route. The assessment has assumed that the blade will be carried with a rear overhang of 17m. For pictures of proposed transport vehicles, please refer to the route survey report in Appendix 13.1.

Towers will be carried in a 4+7 clamp adaptor style trailer, whereas loads such as the hub, nacelle housing and drive train will be carried on a six axle step frame trailer.

13.4.4.2 Earthworks Requirements

Table 13-4 above sets out the temporary accommodation requirements along the TDR. The most significant amount of earthworks associated with temporary accommodation requirements shall take place at POI36 and POI44 as detailed below.

It is proposed that the blade will be transferred to a Goldhofer blade lifting trailer at the temporary staging area at Drishane Castle, near Millstreet. This trailer has the ability to lift blades up to a maximum angle of 60 degrees, lifting blades over potential constraints and shortening the vehicle length.

The staging area shall consist of a hard standing off the public road at which turbine blades shall be transferred from the superwing carriers to the blade lifting trailers. The location of the Drishane Castle staging area is shown in Figure 13.5. The general arrangement of the temporary staging area is shown on 500-Series planning application drawings. Two temporary access points to the staging area will be created from the public road at existing road junctions. These shall be controlled entrances and only used by turbine delivery vehicles, cranes and support vehicles associated with the delivery of turbine components.

Vehicles shall enter the eastern end of the staging area at an access point located at the junction between the R583 and L1116 where a break in the existing wall and hedgerow will facilitate the proposed temporary access and exit from the western end of the hard standing, making use of an existing junction between the R583 and L95831-1. The staging area will be fenced off from the public and closed when not in use and shall only be used when required during the delivery of wind turbine components in accordance with timings identified in the construction stage traffic management plan (TMP). A TMP has been prepared as part of this application and can be found in Appendix 3.1. A detailed plan of the proposed staging area and access points can be found in 500-Series planning application drawings.

As described in Chapter 10, POI 44 is located 30m from the River Owenbaun (Rathcool) which flows into the Blackwater SAC designated site. Specific mitigation measures with respect to surface water flow paths and road drainage can be found in Chapter 10 for this TDR node. At this location, it is necessary to relocate 1no. telecommunications pole and associated overhead line. The relocation of this utility shall take place within the red line planning development boundary shown in accompanying planning application drawings.

13.4.4.3 Existing Utilities and Overhead Lines

As detailed in Table 13-4 all overhead utilities and obstructions shall be removed at any locations that the blades are raised on the blade lifting trailer, namely upon entering Millstreet and turning from the R583 onto the L2750/L1123. The removal of overhead utilities will be either temporary disconnections or permanent re-routing. Such works will be carried out by the utility providers in advance of turbine delivery to site.

The permanent re-routing of overhead utilities will result in a temporary disruption to power and telecommunications services for existing residents and business and will also involve temporary road works to 'underground' these services.



A traffic management plan has been included at Appendix 3.1. Any trenching and road reinstatement works associated with utility diversions will be subject to a road opening license and is expected to be carried out in such a way as to ensure one lane of traffic will be open to traffic at all times. Such works will be carried out over a number of days (estimated 1 day per service).

However, if the permanent re-routing of overhead utilities is not possible, temporary disconnections of overhead lines will be required on several occasions to facilitate the delivery of turbine blades and will be carried out during the delivery of the components. Advance disconnection works will be required before the first turbine deliveries.

The schedule of turbine component deliveries will be determined by the turbine supplier however it is reasonable and worst case to assume that ten convoys will be required to deliver all of the turbine components to site over the course of the turbine installation works which is expected to take place over the course of 7 months. This is based on a total of 7no. loads per turbine to delivery blades, tower sections and nacelles, with each convoy consisting of components for two turbines at a time. Over the course of the 7-month installation period, it has been assumed convoys will be scheduled to deliver components to site every two weeks. It is reasonable to assume a worst-case scenario where temporary disconnections will be required during off peak times, on ten different occasions over the course of seven months (approximately once every two weeks) to facilitate convoys, with a duration of several hours between disconnection and re-connection of services on each occasion. The impact on residents and businesses is assessed in Chapter 11, Population, Human Health and Material Assets.

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

At TDR nodes where it has been identified that relocation of existing utilities is required to facilitate the temporary accommodation requirements, all such works will be carried out in advance of the formation of groundworks associated with the creation of new load bearing surfaces and all such activities shall take place within the immediate vicinity of the proposed TDR node areas assessed in this EIAR.

13.4.4.4 Existing Watercourse Crossing Structures Along TDR

There are a number of existing watercourse crossing structures along the turbine delivery route that will be crossed by the proposed oversized loads associated with the delivery of turbine components.

No modification or structural reinforcement of existing watercourse crossing structures is required to facilitate the delivery of the proposed loads along the TDR. A single bridge shall be replaced (WF-HF8) near the southern site entrance as described in detail in Section 3.3.3 of Chapter 3. While this crossing is located within the main wind farm site, it is situated under an existing public road and therefore in the context of traffic and transportation it is considered to be an existing structure along the TDR.

As mentioned above it is proposed to replace 1no. existing bridge structure identified as watercourse crossing no. WF-HF8 with a new concrete clear span bridge. The location of this crossing is shown in Figure 10.5 and the construction methodology is set out in the CEMP in Appendix 3.1.



13.4.5 BEMP Lands

18 ha of coniferous forestry is being felled as part of the proposed BEMP measures. This will give rise to HGV traffic during the construction phase which has been included in the assessment. This felling shall take place on Coillte lands and has been considered as part of the overall felling requirement for the project in this assessment.

Other measures associated with the implementation of the proposed BEMP will be equivalent to standard agricultural activities and will be carried out and maintained by the involved landowners, making use of existing farmyard and field entrances and using standard agricultural vehicles.

13.5 Potential Impacts of Proposed Development

Potential impacts of the proposed project are outlined below, these are categorised in relation to the construction phase, operational phase and decommissioning of the project.

13.5.1 Do Nothing Scenario

If the proposed project is not constructed, there will be no change to the current road network and existing traffic patterns within the study area.

13.5.2 Construction

13.5.2.1 *Main Wind Farm Site*

The construction activities associated with the wind farm site will lead to additional construction related traffic on the existing public road network over the duration of the construction works. These impacts will include:

- Heavy Goods Vehicles (HGVs) transporting materials to and from the site, including road making materials, felled trees, concrete, building materials, drainage/ducting materials, cabling, electrical components and excavated material.
- HGVs transporting conventional earthworks machinery such as excavators, dumper trucks and rollers.
- Fuel trucks transporting fuel for plant to each site compound during the construction phase
- Light Goods Vehicles (LGVs) such as cars, 4x4s and vans used by the workers and supervisory staff involved in the construction works.
- Oversized loads including turbine components.

Without appropriate mitigation measures, the proposed works have the potential to lead to a negative impact on the existing road network including:

- Delay and disruption to road users;
- Road safety issues should the works not be carried out in line with good traffic management practices;



- Inappropriate parking of construction related vehicles along the route of the works;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads;
- Damage to existing road surface.

For the purposes of assessing worst case, it has been assumed that clearance felling for the project shall take place at the start of the construction programme which equates to the largest volume of traffic as opposed to in advance of the commencement of the main balance of plant construction works. HGV's associated with the felling works shall approach and leave the site via the routes identified in Figure 13-5.

Felling of approximately 88ha of coniferous forestry is required for the project and felled material will be sent to the following sawmills located in the vicinity of the proposed development:

- Duhallow Sawmills Limited, Dromagh, Co. Cork;
- Walsh Sawmills, Kildorrery, Co. Cork;
- Sheehan Patrick Sawmills Ltd., Ballyporeen, Co. Tipperary;
- Graingers Sawmills .GP, Enniskeane, Ballymoney, Co. Cork;
- Enniskeane, Timber Products Ltd., Ballineen, Co. Cork;
- Glennon Brothers Cork Ltd, Farran South, Fermoy Co. Cork
- GP Wood, Lissarda, Co. Cork.

The construction of the permanent met masts shall be erected by a specialist supplier and will be carried out by a small crew using the following mobile plant:

- Low-loader
- Flatbed trucks
- Works Van
- Telescopic Handler
- Mobile Crane

Access to the mast locations shall be via the internal wind farm access track and forestry road network as shown in Figure 3.2.

Construction of the met masts shall take place over a number of days. Construction traffic shall consist of a small number of truck movements for delivery of mast sections and construction plant and crew.

13.5.2.2 Grid Connection

Cable Works

The potential traffic impact associated with the grid connection cable works will fall into two main categories, the construction traffic related impacts and the road/lane closure related impacts.



The proposed grid connection is shown on Figure 13.4.

Construction Traffic Related Impacts

The cable route construction works will involve constantly moving the working area as the cable installation works progress. Grid works within the public road corridor are estimated to take approximately 6 months on the assumption that an average of 75m of cable is installed each day. These works will lead to additional construction traffic associated with the cable route construction.

Road/Lane Closure Related Impacts

The grid connection construction works will require a combination of temporary road closures with traffic diversions and temporary lane closures along the proposed route.

All road works will be subject to a road opening licence, but it is anticipated that the cable installation along local roads will be advanced using a combination of rolling lane closures and temporary road closures where the existing road width is insufficient to accommodate an open lane for traffic to pass the works area.

The grid connection cable works by its nature will be isolated to a relatively small works area which will move on a daily basis. Impacts associated with the works will be experienced on the road network in the immediate vicinity to the works area.

Off-line sections of the proposed grid connection through private lands will not generate an impact to existing traffic flows.

Temporary road closures will be required at specific locations for the installation of joint bays and cable pulling and jointing operations at later dates. These activities are isolated and carried out in under a day at each location. The location of joint bays can be found in Figure 13-4.

Without appropriate mitigation measures, the proposed works have the potential to lead to a negative impact on the existing road network including:

- Delay and disruption to road users;
- Road safety issues should the works not be carried out in line with good traffic management practices;
- Inappropriate parking of construction related vehicles along the route of the works;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads;
- Damage to existing road surface.

13.5.2.3 Turbine Delivery Route

The delivery of turbine components including blades, tower sections and nacelles is a specialist transport operation owing to the oversized loads involved. As described in Chapter 3, the proposed turbines will have a blade tip height of 179m to 185m, a hub height range of 102.5 to 110.5m and a rotor diameter range of 149m to 155m as illustrated in the plans and particulars submitted with this application for consent. This assessment has considered all components (blades and tower sections) within this range of dimensions in order to assess worst case.



Turbine component deliveries will be carried out during off-peak times and will be done using a convoy and a specialist heavy haulage company. Turbine deliveries will also be escorted by An Garda Síochána. This will ensure the impacts of the turbine deliveries on the existing road network are minimised.

As described in Section 13.4, temporary accommodation requirements are needed along the turbine delivery route such as hedge or tree cutting, relocation of powerlines/poles, lampposts, signage and temporary local road widening through the laying of compacted aggregate to verges.

Without appropriate mitigation measures, the construction of the proposed temporary accommodation requirements have the potential to lead to a negative impact on the existing road network including:

- Delay and disruption to road users;
- Road safety issues should the works not be carried out in line with good traffic management practices;
- Inappropriate parking of construction related vehicles in the public road in the vicinity of the works areas;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads;
- Damage to existing public road infrastructure.

13.5.2.4 BEMP Lands

The BEMP measures are described in detail in Chapter 3 and Appendix 3.4.

As described in Section 13.4, 18 ha of coniferous forestry is being felled as part of the proposed BEMP measures. This will give rise to HGV traffic during the construction phase which has been included in the assessment. HGV traffic associated with felling for the BEMP lands shall use the haul routes identified in Figure 13-5.

It is expected that measures associated with the implementation of the proposed BEMP will be equivalent to standard agricultural activities and will be carried out and maintained by the involved landowners, making use of existing farmyard and field entrances and using standard agricultural vehicles. Therefore, with the exception of the delivery of stock fencing, bird/bat boxes, seed and plants required as part of the BEMP measures, no additional HGV traffic will be generated by the measures during the construction phase.

13.5.3 Operation

Traffic associated with the operational phase of the project will be associated with the wind farm owner/operator and grid network operator personnel visiting the substation, and maintenance staff. There will also be a limited infrequent attendance by routine environmental monitoring/compliance staff.

In addition to the above operational traffic, as described in Section 13.4.2.5, tracks and paths associated with the project shall be made available as recreational amenity trails for community use with parking for 40no. vehicles for visitors. This will generate some operational phase traffic primarily in the form of private cars which will access the proposed trail head car park via Access Point 1. Recreational trial loops proposed for the project are depicted in Figure 3.8.

Routine turbine maintenance is generally conducted by personnel climbing inside the tower. However, there may be circumstances where a crane may need to be mobilised to site to conduct non-routine maintenance.



The proposed substations have been designed in accordance with network operator requirements with welfare facilities however they will not require full time operational staff and shall be largely automated with occasional visits from maintenance teams.

Unforeseen or unplanned events such as emergency turbine repair works could potentially require the mobilisation of construction plant and personnel to site. The replacement of a large turbine component such as a blade will require a crane and the re-installation of some TDR temporary accommodation requirements.

A cable fault along the grid connection could potentially require temporary road works for intrusive investigations and repair. The above unplanned events are extremely unlikely to occur, however.

No potential traffic and transportation impacts are expected with respect to the BEMP during the operational phase of the project.

13.5.4 Decommissioning

On decommissioning, cranes will disassemble the above ground turbine components which will be removed off site for recycling. All the major component parts are bolted together, so this is a relatively straightforward process.

The foundation pedestals will be covered over and allowed to re-vegetate naturally. Leaving the turbine foundations in situ is considered a more environmentally sensible option as to remove the reinforced concrete associated with each turbine would result in environmental nuisances such as noise and vibration and dust.

It is proposed that all the internal site access tracks and turbine hard standings will be left in place. These will continue to be used for recreation, forestry and agriculture. Turbine hardstandings shall be covered over with topsoil previously stripped and used for landscaping purposes during the construction stage, and left to revegetate naturally. The recreational trails and associated signage shall be left in situ.

The temporary accommodation requirements along the TDR will not be required for the decommissioning phase as turbine components can be dismantled on site and removed using standard HGVs.

Grid connection infrastructure including the on-site substation and ancillary electrical equipment shall form part of the national grid and will be left in situ.

No decommissioning activities are envisaged for the Biodiversity Enhancement and Management Plan lands.

It is expected that the decommissioning phase will take no longer than 6 months to complete.

A detailed decommissioning plan will be agreed in advance of construction with Cork County Council.

The traffic impact associated with the decommissioning phase will be significantly less than the construction phase due to the considerably lower number of vehicle movements.

The decommissioning phase of the project is described in Chapter 3 of this EIAR.



13.6 Impact Assessment

13.6.1 Construction

In order to assess the impact of the additional construction related traffic on the existing road network it is first required to estimate the amount of construction traffic that will be generated (trip generation) as a result of the proposed project.

This assessment was done by estimating the amount of traffic, in the form of heavy goods vehicles (HGV) and light goods vehicles (LGV) that will be generated during the construction phase and then distributing it over the duration of the construction programme. In determining the number of 'trips' the estimated number of HGV vehicles was multiplied by a factor of 2 to account for a single trip 'in' and a corresponding single trip 'out'.

In the case of LGVs, the estimated number of vehicles was multiplied by 2.5 to account for some additional LGV movements e.g. some workers taking lunch breaks in the local area. The analysis allowed for a total number of trips per month to be calculated. This is translated to annual average trips per day (AADT).

Some key assumptions taken when preparing the trip generation estimates include:

- An average ready mix concrete truck carries a load of approximately 8m³ of concrete;
- An average tipper truck carries approximately 10 m³ of soil/rock/aggregate;
- A construction period of 18-24 months is expected based on the nature and scale of the proposed works. In order to assess for worst case in terms traffic volumes per day, an 18-month construction programme has been assumed here;
- It has also been assumed that cable trenching works associated with the construction of the grid connection, which is expected to take 6 months to complete, shall be carried out in parallel with the wind farm construction and shall follow different roads to those used for the wind farm construction;
- It is expected following intrusive site investigations (discussed in the Soils Chapter) site won material from the site will provide suitable aggregates for general and engineering fill purposes. However, it has been assumed that the import of engineering fill material and surface course stone for road dressing shall all be imported from local quarries. More detail on material volumes and quarries can be found in Chapter 9;
- An average of 1m of engineering fill shall be imported for the formation of wind turbine foundations.

Project related traffic will vary over the course of the construction programme. Activities can be broken up into the following main categories:

- Mobilisation and site setup
- Site clearance and felling
- Internal access tracks
- Turbine hard standing
- Turbine foundations
- Turbine Installation
- Onsite substation



- Grid connection cable works
- Private electrical network.
- Landscaping, reinstatement, demobilisation.

Table 13-5 and Figure 13-7 show construction stage vehicle trips and their distribution across the 18-month construction programme calculated for the entire project:

Table 13-5: Vehicle Trip Distribution

Activity	One-Way Vehicle Movements	Month																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Total Trips per month	56949	1416	2148	2148	2778	3516	3516	3516	3516	4584	5286	5286	5099	5099	3081	2469	1679	820	840
Total HGV Trips per month (x2)	36632	610	1342	1342	1972	2709	2709	2709	2709	2810	3351	3351	3164	3164	2114	1501	873	13	33
Total LGV Trips per month (x2.5)	20318	806	806	806	806	806	806	806	806	1774	1935	1935	1935	1935	968	968	806	806	806
Total Trips Per Week	13244	329	500	500	646	818	818	818	818	1066	1229	1229	1186	1186	717	574	391	191	195
Total HGV Trips Per Week	8519	142	312	312	459	630	630	630	630	654	779	779	736	736	492	349	203	3	8
Total LGV Trips Per Week	4725	188	188	188	188	188	188	188	188	413	450	450	450	450	225	225	188	188	188
Total Trips Per Day	2207	55	83	83	108	136	136	136	136	178	205	205	198	198	119	96	65	32	33
HGV Trips Per Day	1420	24	52	52	76	105	105	105	105	109	130	130	123	123	82	58	34	1	1
LGV Trips Per Day	788	31	31	31	31	31	31	31	31	69	75	75	75	75	38	38	31	31	31
Total Trips Per Hour	221	5	8	8	11	14	14	14	14	18	20	20	20	20	12	10	7	3	3
Total HGV Trips Per Hour	142	2	5	5	8	11	11	11	11	11	13	13	12	12	8	6	3	0	0
Total LGV Trips Per Hour	79	3	3	3	3	3	3	3	3	7	8	8	8	8	4	4	3	3	3

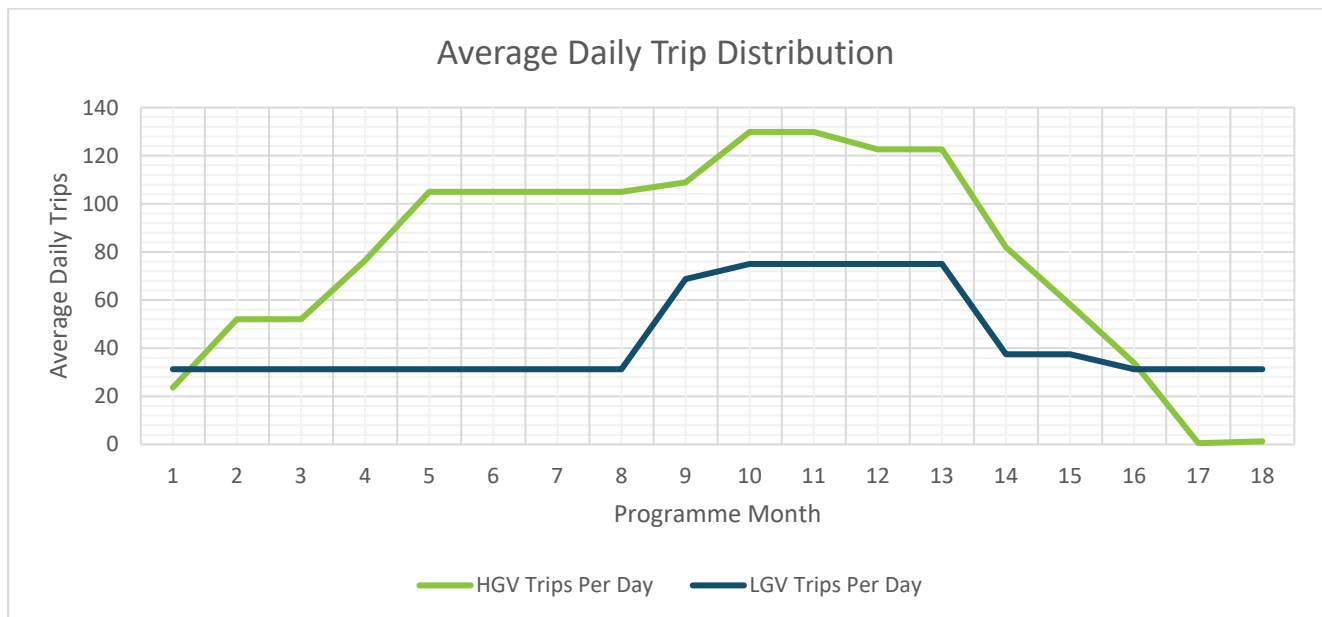


Figure 13-7: Average Daily Trip Distribution

The construction phase for the entire project (wind farm site, TDR and GCR) will lead to 36,632 additional HGV trips (two-way) over the duration of the construction works.

Calculations of HGV movements associated with the construction of the project indicate an average daily increase of 79 HGV trips per day over a construction period of 18 months. This increases to an average of 130 HGV trips per day during the peak month which occurs in months 10 and 11.



An average workforce of 30 persons is anticipated, increasing to 60 persons during peak periods. This is estimated to give rise to an increase of LGV traffic of 44 trips per day on average rising to 75 trips during peak construction periods which occur for LGV traffic during months 10 through 13.

The combined HGV and LGV average daily increase is 122 trips per day throughout the construction programme.

The busiest period during the construction programme is expected to occur in months 10 and 11 when multiple construction activities take place concurrently including construction of access tracks and hard standings, turbine installation, turbine foundations, turbine installation, the onsite substation and grid connection works. During this month, combined HGV and LGV traffic increases to 130 average daily trips.

It should be noted that the traffic increases presented include all construction stage traffic associated with the project including the grid connection cable works, and therefore represents an absolute worst-case. In reality, traffic impact on roads associated with the grid connection route will be considerably less than shown here due to the nature of grid connection cable works which are spread over a distance of approximately 10km of public roadway. Similarly, the M20, N20, N72, N69, R583 and Unnamed Road at Ballinagree Upper do not form part of the proposed grid connection, however it has been assumed above that all construction related traffic associated with the grid connection cabling works will pass along these roads. Likewise, the unnamed local roads at Rahilisk, Carrigthomas and Clonvarick will not experience traffic associated with the construction of the main wind farm site. The Local Road L7461 at Ballinagree Upper will only experience HGV traffic associated with tipper trucks moving between the western borrow pits and southern part of the proposed wind farm site. This shall take place in the form of a single road crossing as described in Section 13.4.

The following sub-sections assess the impacts associated with the various elements of the project. The construction of the proposed grid connection cable works has been separated from the rest of the project as these works will be isolated from the main wind farm site and carried out by a largely independent construction team.

The following subsections analyse the traffic impact of the construction works from the various elements of the project on the surrounding road network.

13.6.1.1 Main Wind Farm Site

The volume and distribution of vehicle trips generated by the construction of the main wind farm site are shown in Table 13-6 and Figure 13-8.



Table 13-6: Vehicle Trip Distribution – Wind Farm Site

Activity	One-Way Vehicle Movements	Month																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Total Trips per month	52741	1416	2148	2148	2778	3516	3516	3516	3516	4584	4584	4584	4397	4397	2380	1767	1679	820	840
Total HGV Trips per month (x2)	33391	610	1342	1342	1972	2709	2709	2709	2709	2810	2810	2810	2623	2623	1573	961	873	13	33
Total LGV Trips per month (x2.5)	19350	806	806	806	806	806	806	806	806	1774	1774	1774	1774	1774	806	806	806	806	806
Total Trips Per Week	12265	329	500	500	646	818	818	818	818	1066	1066	1066	1023	1023	553	411	391	191	195
Total HGV Trips Per Week	7765	142	312	312	459	630	630	630	630	654	654	654	610	610	366	223	203	3	8
Total LGV Trips Per Week	4500	188	188	188	188	188	188	188	188	413	413	413	413	413	188	188	188	188	188
Total Trips Per Day	2044.2	55	83	83	108	136	136	136	136	178	178	178	170	170	92	68	65	32	33
HGV Trips Per Day	1294.2	24	52	52	76	105	105	105	105	109	109	109	102	102	61	37	34	1	1
LGV Trips Per Day	750.0	31	31	31	31	31	31	31	31	69	69	69	69	69	31	31	31	31	31
Total Trips Per Hour	204.4	5	8	8	11	14	14	14	14	18	18	18	17	17	9	7	7	3	3
Total HGV Trips Per Hour	129.4	2	5	5	8	11	11	11	11	11	11	11	10	10	6	4	3	0	0
Total LGV Trips Per Hour	75.0	3	3	3	3	3	3	3	3	7	7	7	7	7	3	3	3	3	3

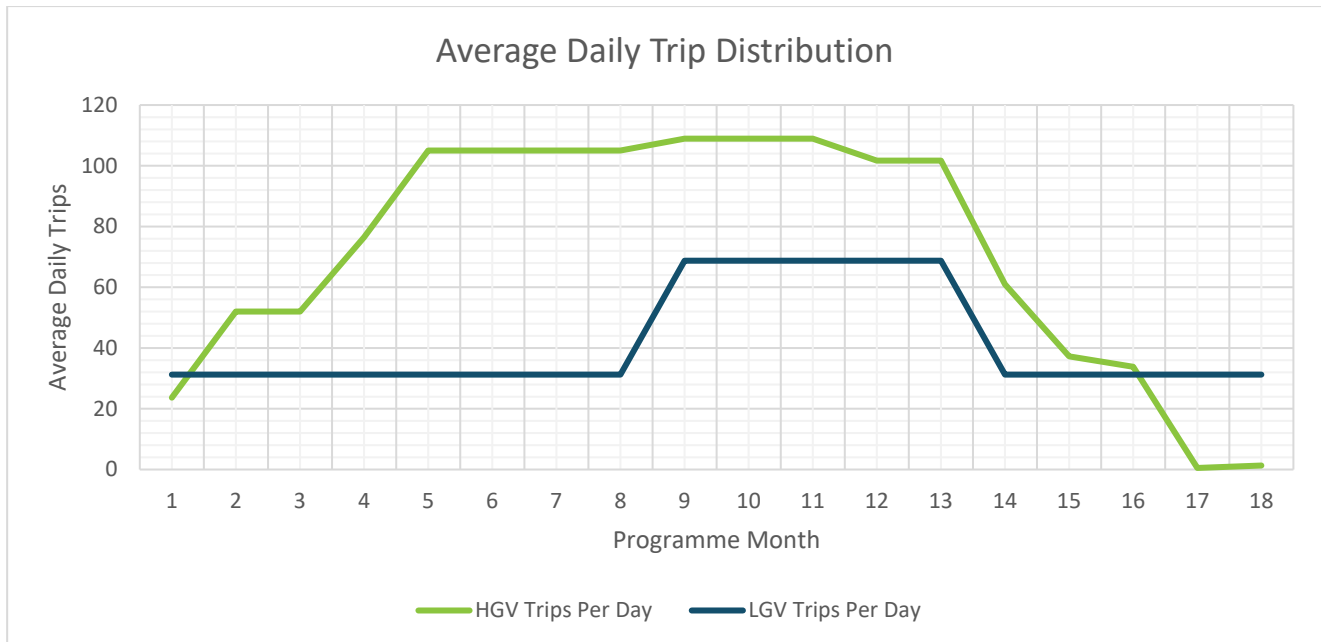


Figure 13-8: Average Daily Trip Distribution – Wind Farm Site

It is estimated that the construction phase for the main wind farm site will lead to 33,391 additional HGV trips (two-way) over the duration of the construction works.

Calculations of HGV movements associated with the construction works indicate an average daily increase of 72 HGV trips per day over the course of the construction programme. The peak month for HGV trips occurs in months 9 through 11 where average daily HGV trips rises to 106.

An average workforce of 25 persons is anticipated, increasing to 55 persons during peak periods. This is calculated to give rise to an average daily increase of 42 LGV trips per day over a construction period of 18 months. The peak month for LGV trips occurs in months 9 through 13 where average daily LGV trips rises to 69.

The combined HGV and LGV average daily increase is 113 trips per day throughout the construction programme.



The predicted AADT during the construction phase of the main wind farm site is presented in Table 13-7. The impact on predicted future traffic on the surrounding road network is also presented in this table:

Table 13-7: Predicted AADT with Construction Phase Traffic – Wind Farm Site

Location	Predicted AADT During Construction (Estimated Site Start 2024)	HGV AADT Pre-Development	Average Daily HGV Trips Generated by Development	Predicted HGV AADT During Construction	% Increase	LGV AADT Pre-Development	Average Daily LGV Trips Generated by Development	Predicted LGV AADT During Construction	% Increase	Average Daily Trips Generated by Development	Predicted Combined AADT During Construction	% Increase
M20	31,468	1,758	72	1,830	4.1%	29,710	42	29,752	0.1%	113	31,582	0.4%
N20	11,148	887	72	959	8.1%	10,260	42	10,302	0.4%	113	11,261	1.0%
N72	5,865	182	72	254	39.3%	5,683	42	5,724	0.7%	113	5,978	1.9%
N69	6,503	287	72	358	25.0%	3,726	42	3,768	1.1%	113	6,616	1.7%
R583	4,013	287	72	358	25.0%	3,726	42	3,768	1.1%	113	4,126	2.8%
L1123	720	31	72	102	231.8%	689	42	731	6.0%	113	833	15.7%

As described in Section 13.4.2, a public road crossing using existing Coillte forestry access points on the Local Road L7461 at Ballinagree Upper shall be used to facilitate the transport of aggregates from the two borrow pits located in the west of the site to the southern part of the wind farm site using Access Points 4 and 5. It is estimated that each of the borrow pits will provide 30,000m³ of site won aggregate material that can be re-used as described in Chapter 9. This is calculated to give rise to an average of 52 HGV trips per day over the course of the 18 month construction programme. Traffic count data show that existing HGV and LGV traffic along this local road are extremely low (1 and 17 AADT respectively). While the relative increase in vehicle trips on this road is technically significant, HGV trips shall be concentrated at a single location, the proposed crossing point, and HGV traffic associated with the project will not be permitted to travel along this local road to any of the other site access points.

The proposed borrow pit crossing design is deemed adequate with sufficient visibility in both directions. Site entrances from and to the wind farm and borrow pit will be secured and locked when not in use. Where required, the entrances will be controlled by flagmen to assist traffic movements. The proposed crossing point will be managed appropriately to allow the safe passage of construction vehicles in, out and across the public road. Priority will be maintained for public traffic. A concrete apron will be provided on both sides of the crossing point during the construction phase, constructed 40mm below road level and overlaid with surface course material. Details of the crossing points are shown on accompanying planning application drawings.

Access points to the site are adequately designed to provide save visibility for construction traffic and road users and vehicle queuing is not expected on the local roads approaching the site entrances due to the low frequency of construction traffic expected, and availability of passing opportunities.



Based on the above, **negative or adverse effects on the receiving environment associated with the construction of the wind farm are considered to be short-term in duration and moderate in significance** without appropriate mitigation. The impact assessment for different elements of the project and receiving environment is summarised in Table 13-10.

13.6.1.2 Grid Connection

The volume and distribution of vehicle trips generated by the construction of the grid connection cable works are presented in Table 13-8 and Figure 13-9.

Table 13-8: Vehicle Trip Distribution – Grid Connection Cable Works

Activity	One-Way Vehicle Movements	Month																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Total Trips per month	4209	0	0	0	0	0	0	0	0	0	701	701	701	701	701	701	0	0	0
Total HGV Trips per month (x2)	3241	0	0	0	0	0	0	0	0	0	540	540	540	540	540	540	0	0	0
Total LGV Trips per month (x2.5)	968	0	0	0	0	0	0	0	0	0	161	161	161	161	161	161	0	0	0
Total Trips Per Week	979	0	0	0	0	0	0	0	0	0	163	163	163	163	163	163	0	0	0
Total HGV Trips Per Week	754	0	0	0	0	0	0	0	0	0	126	126	126	126	126	126	0	0	0
Total LGV Trips Per Week	225	0	0	0	0	0	0	0	0	0	38	38	38	38	38	38	0	0	0
Total Trips Per Day	163.1	0	0	0	0	0	0	0	0	0	27	27	27	27	27	27	0	0	0
HGV Trips Per Day	125.6	0	0	0	0	0	0	0	0	0	21	21	21	21	21	21	0	0	0
LGV Trips Per Day	37.5	0	0	0	0	0	0	0	0	0	6	6	6	6	6	6	0	0	0
Total Trips Per Hour	16.3	0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	0	0	0
Total HGV Trips Per Hour	12.6	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	0	0	0
Total LGV Trips Per Hour	3.8	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0

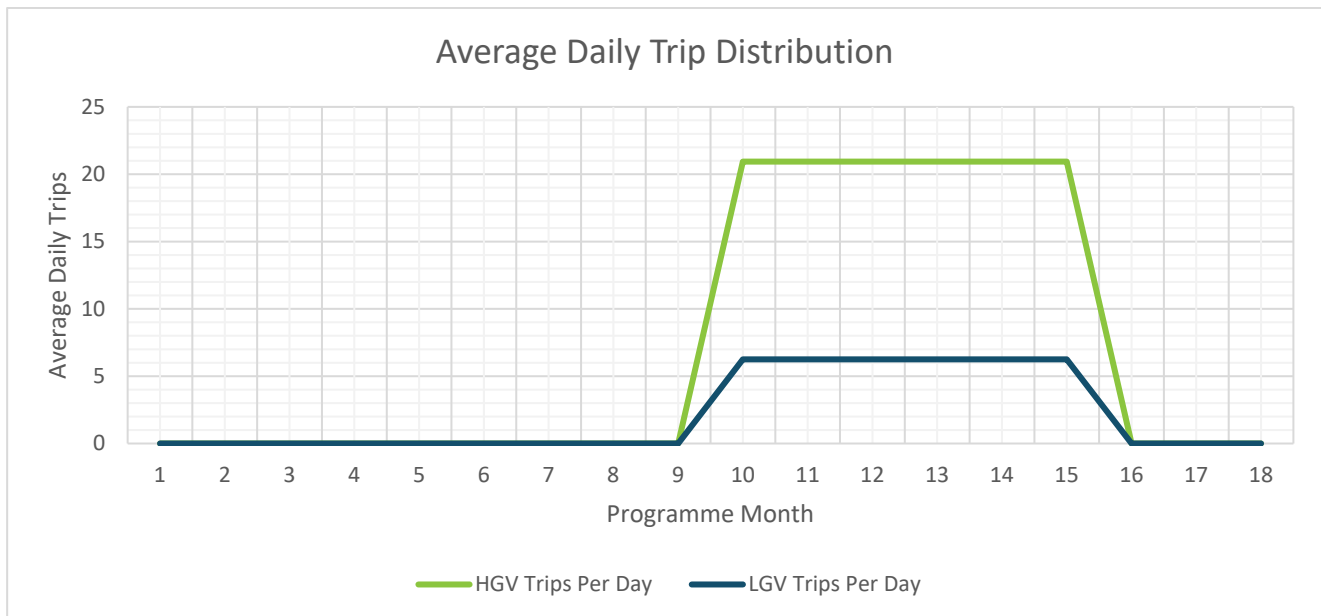


Figure 13-9: Average Daily Trip Distribution - Grid Connection Cable Works

It is estimated that the construction phase for the grid connection cable works will lead to 3,241 additional HGV trips (two-way) over the duration of the construction works.



Calculations of HGV movements associated with the construction works indicate an average daily increase of 7 HGV trips per day over the course of the project construction programme. The pattern of HGV trips shall remain relatively steady throughout the construction works and does not exceed 21 HGV trips per day on average over a 6-month grid connection construction programme duration.

The workforce associated with this activity is expected to give rise to an average daily increase of 6 LGV trips per day over a 6-month grid connection construction programme duration. The pattern of LGV trips shall remain relatively steady throughout the construction works.

The combined HGV and LGV average daily increase is 9 trips per day throughout the project construction programme.

As described in Section 13.5.2.2, the grid connection cable works by its nature will be isolated to a small works area which will move on a daily basis as the construction progresses along the route. Adverse impacts associated with the works will therefore be experienced on the road network in the immediate vicinity to the works area.

Should the construction of the grid connection works be split over two or more works areas, this would result in a significant reduction in overall construction time. This approach would also have the effect of increasing the overall average number of construction vehicle trips per day associated with the construction of the grid connection, albeit over a shorter timeframe. In such a scenario, as each of the works areas will be isolated from each other, the impacts associated with the works at each location will be as described above for that locality and will not act cumulatively with each other.

The predicted AADT during the construction phase of the grid connection cable works is presented in Figure 13-9. The impact on predicted future traffic on the surrounding road network is also presented in this table.



Table 13-9: Predicted AADT with Construction Phase Traffic – Grid Connection Cable Works

Location	Predicted AADT During Construction (Estimated Site Start 2024)	HGV AADT Pre-Development	Average Daily HGV Trips Generated by Development	Predicted HGV AADT During Construction	% Increase	LGV AADT Pre-Development	Average Daily LGV Trips Generated by Development	Predicted LGV AADT During Construction	% Increase	Average Daily Trips Generated by Development (Combined)	Predicted Combined AADT During Construction	% Increase
Local Road L3419 at Rahalisk	596	24	21	45	88.3%	572	6	578	1.1%	9	605	1.5%
Local Road L3418 at Carrigthomas	1,072	30	21	50	70.8%	1,043	6	1,049	0.6%	9	1,081	0.8%
Local Road L7472 at Clonavrick	117	7	21	28	307.2%	110	6	117	5.7%	9	126	7.7%



The works will result in a temporary increase in traffic volume of less than 2% on the Local Road L3419 at Rahalisk throughout the grid connection works and includes an increase in HGV traffic of 88%. At Carrigthomas, the Unnamed Local Road shall experience a less than 1% increase in overall traffic volumes as a result of the works however this includes 71% increase in HGV traffic compared with baseline levels. The Unnamed Local Road at Clonvarick experiences the lowest levels of existing traffic and therefore experiences the greatest relative increase in 7.7% for overall traffic and over 300% in HGV traffic.

The local roads associated with the proposed grid connection experience relatively low levels of traffic and therefore the impact that the temporary proposed road works will have on the wider road network will be limited to the vicinity of the works area and surrounding local roads where diversions will be in place.

The cable route construction works will involve constantly moving the working area as the cable installation works progress.

The grid connection construction works will require a combination of temporary road closures with traffic diversions and temporary lane closures along the proposed route. The impact of the traffic diversions and lane closures on a section of road will depend on the location of the grid connection works and active traffic at the time of installation. All road works will be subject to a road opening licence. The cable installation along local roads will be advanced using a combination of rolling lane closures and temporary road closures where the existing road width is insufficient to accommodate an open lane for traffic to pass the work.

The route follows the local road connecting Macroom and Ballinagree for 2km. Along this section of the route, sufficient space is available to implement a single lane closure around the moving works area. Where lane closures are implemented, the traffic will be allowed to travel in both directions. A stop/go system will be used to control the flow of traffic passing the works. This will have a temporary negative impact on road users.

The grid connection cable works by its nature will be isolated to a small works area which will move on a daily basis as the construction progresses along the route. Traffic management measures associated with the works that will impact existing road users in the form of delays and diversions, will therefore be experienced on the road network in the immediate vicinity to the works area, where lane or road closures, and diversions would be implemented. Should the construction of the grid connection works be split over two or more works areas, additional lane/road closures and diversions will be required, however as mentioned above, this approach would result in a significant reduction in overall construction time over the entirety of the route. In such a scenario, the works areas would be isolated from each other to such a degree that the impacts associated with the works at each location would be as described above for that locality and would not act cumulatively with each other.

Off-line sections of the proposed grid connection through private lands at the start and end of the grid connection route will not generate any impact to existing traffic flows. Traffic management associated with the creation of the rolling grid connection works areas shall provide safe spaces for LGV parking for site staff.

Horizontal directional drilling operations will be required at four locations along the grid connection between Ballinagree wind farm and Clashavoon substation. These activities are isolated and carried out in less than a day at each location. A temporary road closure will be required for HDD operations within the public road corridor.

Temporary road closures will be required at specific locations for the installation of joint bays and cable pulling and jointing operations at later dates i.e. after the grid connection ducting has been laid. These activities are isolated and carried out in less than a day at each location.

Based on the above, negative or adverse effects on the receiving environment associated with the construction of the grid connection cable works are considered to be **short-term in duration and slight to moderate in significance** without appropriate mitigation.



The impact assessment for different elements of the project and receiving environment is summarised in Table 13-10.

13.6.1.3 Turbine Delivery Route

Impacts along the TDR will be limited to specific locations where temporary accommodation requirements are required in advance of and on occasions where large turbine component deliveries are brought to the site.

Temporary accommodation requirements are at isolated locations and will not generate significant construction traffic such that has any potential to increase the overall volume of construction traffic and all associated impacts assessed for wind farm construction

As described in Section 13.4.4, turbine blades will be carried on a hybrid trailer to reduce the need for mitigation in constrained sections of the route. Where constraints are present, it is possible to raise the scissor lift to a maximum of 10m in height. This allows loads to be lifted over height constraints and to reduce the overall swept path of the delivery vehicle. The turbine blades shall be transported in the flat position for the majority of the delivery route. On approach to Millstreet, the blades will be transferred to a specialist lifting trailer at Drishane Castle as described in Section 13.4.4. The assumed schedule of turbine component deliveries is described in Section 13.4.4, consisting of ten convoys over the course of 7 months.

The removal of overhead utilities in Millstreet will be either temporary disconnections or permanent re-routing. Such works will be carried out by the utility providers in advance of turbine delivery to site. The permanent re-routing of overhead utilities will result in a temporary disruption to power and telecommunications services for existing residents and business and will also involve temporary road works to ‘underground’ these services. Any trenching and road reinstatement works associated with utility diversions will be subject to a road opening license and can be carried out in such a way as to ensure one lane of traffic on the R583 through the works area will be open to traffic at all times. Such works will be carried out over a number of days. A traffic management plan for these works will be agreed with Cork County Council in advance of any such works. A traffic management plan has been included in Appendix 3.2 of this EIAR.

If permanent re-routing of overhead utilities is not possible, temporary disconnections of overhead lines will be required on several occasions to facilitate the delivery of turbine blades and will be carried out during the delivery of the components.

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

The impact assessment for different elements of the project and receiving environment is summarised in Table 13-10. Negative or adverse effects on the roads associated with the turbine delivery route are considered to be **temporary in duration and slight to moderate in significance** without appropriate mitigation.

13.6.1.4 BEMP Lands

HGV traffic associated with felling associated with the BEMP has been included in the traffic impact assessment outlined in Section 13.6.1.1.



Measures associated with the implementation of the proposed BEMP will be equivalent to standard agricultural activities and will be carried out and maintained by the involved landowners, making use of existing farmyard and field entrances and using standard agricultural vehicles. Therefore, with the exception of the delivery of stock fencing, bird/bat boxes, seed and plants required as part of the BEMP measures, no additional HGV traffic will be generated by the measures during the construction phase.

The impact associated with the implementation of the BEMP shall be **short term in duration and imperceptible in significance**.

13.6.2 Operation

The trip generation for the wind farm once operational is anticipated to be minimal as both the wind farm and substation will be operated remotely. as described in Section 13.5.3.

Effects on the receiving environment associated with the operation phase of the project are considered to be **neutral in terms of quality, long-term in duration and imperceptible in significance**.

As described in Section 13.5.3, the proposed recreational amenity trails proposed as part of the project will generate some operational phase traffic primarily in the form of private cars.

A summary of traffic data from a similar Wind Farm recreational facility is outlined in Figure 13.10. It is anticipated that use of the recreational amenity during the operational stage will generate similar traffic volumes. Negative effects on the receiving environment associated with this traffic are considered to be **long-term in duration and not significant - slight in significance**.

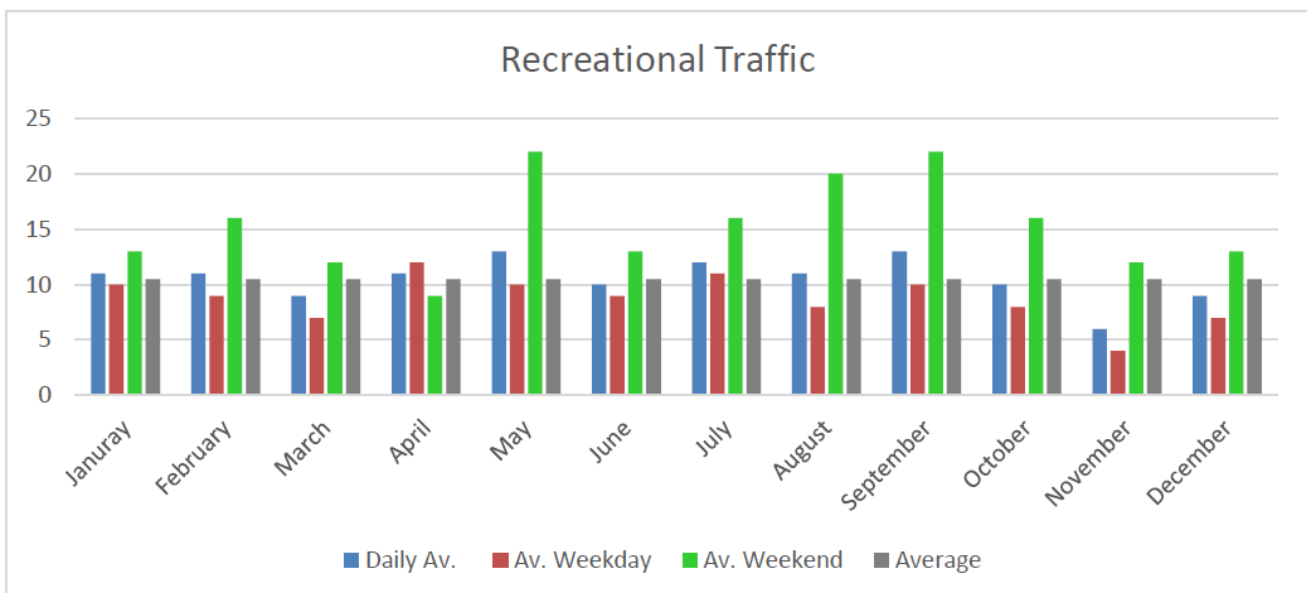


Figure 13-10: Operational traffic for existing wind farm recreational amenity⁶

⁶ Data from Sliabh Bawn Wind Farm provide by Coillte



For unforeseen or unplanned works described in Section 13.5.3 it is predicted that negative or adverse effects on the receiving environment will be **temporary in duration and slight in significance** without appropriate mitigation. In the case of a large turbine component replacement such as a turbine blade, the wind farm internal access infrastructure, which generates the majority of construction stage HGV traffic and therefore represents the majority traffic impacts, will already be in situ and will not need to be re-established. The re-establishment of temporary accommodation nodes to facilitate a turbine component replacement delivery will be carried out in the same fashion as at construction stage and will be fully reinstated afterwards.

13.6.3 Decommissioning

Impacts associated with the decommissioning of the project will be similar in nature to the construction stage but of a much lower magnitude primarily due to the following key reasons:

- Wind farm access tracks will be left in-situ and reinstated using material from the site;
- The grid connection will form part of the grid network and will be left in place;
- Wind turbine components will be dismantled on site and can be removed on standard HGV's eliminating the requirement for temporary accommodation requirements needed at construction stage.

Negative or adverse effects on the receiving environment associated with decommissioning works at the main wind farm site are considered to be **temporary in duration and slight to moderate in significance** without appropriate mitigation.

Infrastructure associated with the grid connection will form part of the national transmission and distribution system and will be left in-situ. Therefore, **no impacts are envisaged upon decommissioning of the grid connection** and no mitigation is required.

Negative or adverse effects on the receiving environment associated with the turbine delivery route are considered to be **temporary in duration and slight in significance** without appropriate mitigation.

No decommissioning activities are envisaged for the Biodiversity Enhancement and Management Plan lands.

Impacts are summarised in Table 13-10.



Table 13-10: Impact Summary

Phase	Project Element	Main Receiving Environment	Description of Potential Effect				
			General Extent of Activities/Context	Duration	Quality	Significance	
Construction	Wind Farm	N20, N72	Construction works associated with main wind farm site	Short-term	Negative/Adverse	Not significant	
		R583, R582			Negative/Adverse	Slight to moderate	
		L1123 / L2750 Butter Road			Negative/Adverse	Moderate	
	Turbine Delivery Route	M20	Abnormal loads associated with turbine component deliveries. Temporary accommodation requirements at specific locations	Temporary	Negative/Adverse	Imperceptible	
		N69, N20, N72			Negative/Adverse	Slight	
		R583			Negative/Adverse	Slight to moderate	
		L1123 / L2750 Butter Road			Negative/Adverse	Slight to moderate	
	Grid Connection Route	Local Road Network	Cable trenching and installation of ducts and joint bays. Directional drilling operations at specific locations.	Temporary	Negative/Adverse	Slight to moderate	
	Operation	Wind Farm	N20, N72	Operational staff travelling to and from site. Periodic maintenance works. Visitors to recreational amenity trails	Long-term	Neutral	Imperceptible
			R583, R582			Neutral	Imperceptible
L1123 / L2750 Butter Road			Negative/Adverse			Not significant to slight	
Turbine Delivery Route		M20	Not applicable unless unplanned repair works are required (see below).	Long-term	Neutral	Imperceptible	
		N69, N20, N72			Neutral	Imperceptible	



Phase	Project Element	Main Receiving Environment	Description of Potential Effect			
			General Extent of Activities/Context	Duration	Quality	Significance
		R583			Neutral	Imperceptible
		L1123 / L2750 Butter Road			Neutral	Imperceptible
	Grid Connection Route	Local Road Network	Not applicable unless unplanned repair works are required (see below).	Permanent	Neutral	Imperceptible
Decommissioning	Wind Farm	N20, N72	Mobilisation of construction staff, turbine removal and reinstatement works.	Temporary	Negative/Adverse	Not significant
		R583, R582			Negative/Adverse	Slight
		L1123 / L2750 Butter Road			Negative/Adverse	Slight to moderate
	Turbine Delivery Route	M20	Turbine component removal. Temporary accommodation requirements not required as components will be broken down to standard loads.	Temporary	Neutral	Imperceptible
		N69, N20, N72			Negative/Adverse	Slight
		R583			Negative/Adverse	Slight
		L1123 / L2750 Butter Road			Negative/Adverse	Slight
Grid Connection Route	Local Road Network	Not applicable unless unplanned repair works are required.	N/A	Neutral	Imperceptible	
Unplanned Events during operation (i.e. Accidents)	Wind Farm	N20, N72	Unplanned emergency repair works which could potentially require the re-mobilisation of construction plant and personnel to site.	Temporary	Negative/Adverse	Not significant
		R583, R582			Negative/Adverse	Slight



Phase	Project Element	Main Receiving Environment	Description of Potential Effect			
			General Extent of Activities/Context	Duration	Quality	Significance
		L1123 / L2750 Butter Road			Negative/Adverse	Slight
	Turbine Delivery Route	M20	Unplanned emergency repair works which could potentially require the re-installation of TDR nodes for crane and turbine component delivery.	Temporary	Negative/Adverse	Imperceptible
		N69, N20, N72			Negative/Adverse	Slight
		R583			Negative/Adverse	Slight
		L1123 / L2750 Butter Road			Negative/Adverse	Slight
	Grid Connection Route	Local Road Network	Unplanned emergency grid repair works which could potentially require temporary road works.	Temporary	Negative/Adverse	Slight



13.7 Mitigation Measures

13.7.1 Construction

13.7.1.1 *Main Wind Farm Site*

This section outlines the mitigation measures that will reduce, minimise or eliminate the potential impacts created by the project and outlined above.

The following mitigation measures are proposed to reduce the impact of the construction activity in relation to the construction phase of the project:

Traffic Management Plan

A detailed traffic management plan (TMP) has been submitted with this EIA in Appendix 3.1. This shall be developed further at construction stage by the main Contractor and in consultation with the roads authority and An Garda Síochána prior to commencing construction and shall include all of the mitigation measures described in the TMP in Appendix 3.2.

The following traffic management measures shall be implemented:

Traffic Management Co-Ordinator – A dedicated Traffic Management Coordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management on the project.

Roads and Routes: The final TMP will clearly identify roads that will be used to access the project site and roads that are not to be used. Turbine component and quarry material deliveries shall use the N72, R583 and L2750/L1123 Butter Road as the primary haul route as identified in Figure 13-5.

One-way Systems: as some of the local roads are relatively narrow, the roads authority may want to introduce a system of one-way construction traffic movements during the construction of the development. Any such one-way systems will be identified in the construction stage TMP in agreement with the roads authority.

Road Condition Survey: a pre-condition survey will be carried out on all public roads that will be used in connection with the development to record the condition of the public roads in advance of construction commencing. A post-construction survey will also be carried out after the works are completed. The specification and timing of the surveys will be agreed with the roads authority. Joint surveys shall be completed if the roads authority requests.

Road Reinstatement: All roads will be reinstated expeditiously on completion of the construction works. Roads will be reinstated to their pre-works condition or better and to the satisfaction of the roads authority.

Site Inductions: All workers will receive a comprehensive site induction which will include a section on traffic management and clear guidance on the routes to be used/not used to access the site.

24-Hour Emergency Contact: a 24-hour emergency phone number will be maintained for the duration of the construction works and the number will be noted on temporary signage at each works area (for grid connection) and the site entrance for the wind farm site.



Traffic Management Guidance: all necessary temporary traffic management will be planned and executed in accordance with best practice, including Chapter 8 of the Traffic Signs Manual published by the Department of Transport.

Letter Drops: a letter drop will be carried out to notify members of the public living near the proposed site and cable route to advise them of any particular upcoming traffic related matters e.g. temporary lane/road closure or delivery of turbine components.

Signage: Clear signage relating to the development, both temporary and permanent, will be provided for accessing the site.

Road Sweeping: Appropriate steps will be taken to prevent soil/dirt generated during the works from being transported on the public road. When, if necessary, a road sweeper will be used to maintain the public roads in a clean condition during the construction activities of the project.

Temporary Road Crossing Point: Site entrances from and to the wind farm and borrow pit will be secured and locked when not in use. Where required, the entrances will be controlled by flagmen to assist traffic movements. The proposed crossing point will be managed appropriately to allow the safe passage of construction vehicles in, out and across the public road. Priority will be maintained for public traffic. A concrete apron will be provided on both sides of the crossing point during the construction phase, constructed 40mm below road level and overlaid with surface course material.

Site Entrances: The entrances to the site will be secured when the site is not in use. When necessary, a flagman will be used to assist traffic movements at the site entrance or in other areas as required.

Abnormal Load Deliveries: Abnormal loads will require an abnormal load permit prior to delivery and will be delivered at times and frequencies directed by An Garda Síochána.

Measures contained within the construction stage CEMP and TMP shall be discussed with Coillte forestry operators in advance of the works to ensure no conflicts occur with ongoing forestry activities.

13.7.1.2 Grid Connection Works

Mitigation measures proposed for the grid connection works include:

Road Opening Licence: The road works associated with the grid connection cabling will be completed in line with the requirements of a road opening license as agreed with the local authority.

Route Proofing: In advance of the main grid connection works an assessment will be carried out to define the precise alignment of the cable route within the corridor which has been assessed. This will include slit trenching with the aim of minimising the construction impacts and avoiding existing services in the road.

Maintaining Local Access: reasonable access to local houses, farms and businesses will be maintained at all times during any road closures associated with the grid connection works. The details of this will be agreed with the roads authority in advance of the grid connection works commencing.

Road Cleanliness: Appropriate steps will be taken to prevent soil/dirt generated during the works from being transported on the public road. Road sweeping vehicles will be used when necessary, to ensure that the public road network remains clean.

Temporary Trench Reinstatement: Trenches on public roads, once backfilled, will be temporarily reinstated to the satisfaction of the roads authority.



Surface Overlay after Trench Reinstatement: following temporary reinstatement of trenches on public roads, sections of the public roads will receive a full surface overlay. Details to be agreed with the roads authority. At a minimum they will be reinstated to their pre-works condition or better and to the satisfaction of the roads authority.

Traffic management for the HDD operations in the public road shall be carried out in accordance with the TMP submitted with this EIAR.

13.7.1.3 Turbine Component Delivery Mitigation

The turbine delivery route has been assessed using a detailed appraisal of potential routes and the identification of the most appropriate route including the required accommodation requirements along the route to mitigate the impact of the turbine delivery. The impact of the deliveries on traffic is mitigated by delivering components during off-peak or night-time deliveries.

Mitigation measures proposed for the turbine delivery route also include:

Programme of Deliveries: a programme of deliveries will be submitted to the roads authority in advance of deliveries of turbine components to the site. The programme will include details of the dates and times of each component delivery along with the route to be taken.

Turbine component deliveries will be carried out during off-peak times and will be done using a convoy and a specialist heavy haulage company.

Garda Escort: Turbine deliveries will be escorted by An Garda Síochána. This will ensure the impacts of the turbine deliveries on the existing road network are minimised.

Reinstatement: Any area affected by the works to facilitate turbine delivery will be fully reinstated to its original condition after the construction phase.

Consultation: Consultation with the local residents and Cork County Council will be carried out in advance to manage turbine component deliveries.

13.7.1.4 Biodiversity Enhancement and Management Plan Lands

No additional mitigation measures are required for implementation of the BEMP.

13.7.2 Operation

It is considered that no further mitigation measures are necessary for the operational stage of the project.

13.7.3 Decommissioning

The traffic impact associated with the decommissioning phase will be significantly less than the construction phase.



Traffic and transportation impact mitigation for decommissioning of the project will be the same as those identified here and in the TMP in Appendix 3.2 for construction stage works and will be tailored to suit the existing environment conditions of the day and technology available.

Infrastructure associated with the grid connection will form part of the national transmission network and will be left in-situ. Therefore, no impacts are envisaged upon decommissioning of the grid infrastructure and no mitigation is required.

Mitigation measures adopted for project decommissioning shall be in line with those identified for the construction phase of the project.

All decommissioning works are to be carried out in accordance with a decommissioning plan to be agreed with the planning authority in advance of the decommissioning works.

Traffic management measures identified and described in this chapter will be included in the decommissioning plan for the wind farm.

13.8 Residual Impacts

The implementation of mitigation measures outlined in Section 13.7 will ensure that residual impacts are minimised throughout the duration of the proposed activities.

13.8.1 Construction

Negative or adverse effects on the receiving environment associated with the construction works on the main wind farm site are considered to be **short-term in duration and slight to moderate in significance** following mitigation.

Negative or adverse effects on the receiving environment associated with the turbine delivery route are considered to be **temporary in duration and slight** following mitigation.

Negative or adverse effects on the receiving environment associated with the construction of the grid connection are considered to be **short-term in duration and slight** in significance following mitigation.

13.8.2 Operation

The trip generation for the project once operational is anticipated to be minimal.

Negative effects on the receiving environment associated with the operation phase of the project are considered to be, **long-term in duration and not significant to slight** in significance.

For unforeseen or unplanned works such as emergency turbine repair works, it is considered that negative or adverse effects on the receiving environment will be **temporary in duration and not significant to slight** following appropriate mitigation.



13.8.3 Decommissioning

Negative or adverse effects on the receiving environment associated with decommissioning works at the wind farm site are considered to be **temporary in duration and not significant** following mitigation.

Negative or adverse effects on the receiving environment associated with the turbine delivery route are considered to be **temporary in duration and not significant** following mitigation.

Infrastructure associated with the grid connection will form part of the national transmission network and will be left in-situ. Therefore, no impacts are envisaged upon decommissioning of the project and no mitigation is required.



Table 13-11: Summary of Residual Impacts

Phase	Project Element	Main Receiving Environment	Description of Potential Effect	Description of Potential Effect			
				General Extent of Activities/Context	Duration	Quality	Significance
Construction	Wind Farm	N20, N72	Construction works associated with main wind farm site	Short-term	Negative/Adverse	Imperceptible to not significant	
		R583, R582			Negative/Adverse	Slight	
		L1123 / L2750 Butter Road			Negative/Adverse	Slight to moderate	
	Turbine Delivery Route	M20	Abnormal loads associated with turbine component deliveries. Temporary accommodation requirements at specific locations	Temporary	Negative/Adverse	Imperceptible	
		N69, N20, N72			Negative/Adverse	Slight	
		R583			Negative/Adverse	Slight	
		L1123 / L2750 Butter Road			Negative/Adverse	Slight	
	Grid Connection Route	Local Road Network	Cable trenching and installation of ducts and joint bays. Directional drilling operations at specific locations.	Temporary	Negative/Adverse	Slight	
	Operation	Wind Farm	N20, N72	Operational staff travelling to and from site. Periodic maintenance works. Visitors to recreational amenity trails	Long-term	Neutral	Imperceptible
			R583, R582			Neutral	Imperceptible
L1123 / L2750 Butter Road			Negative/Adverse			Not significant to slight	
Turbine Delivery Route		M20	Not applicable unless unplanned repair works are required.	Long-term	Neutral	Imperceptible	
		N69, N20, N72			Neutral	Imperceptible	



Phase	Project Element	Main Receiving Environment	Description of Potential Effect			
			General Extent of Activities/Context	Duration	Quality	Significance
		R583			Neutral	Imperceptible
		L1123 / L2750 Butter Road			Neutral	Imperceptible
	Grid Connection Route	Local Road Network	Not applicable unless unplanned repair works are required.	Permanent	Neutral	Imperceptible
Decommissioning	Wind Farm	N20, N72	Mobilisation of construction staff, turbine removal and reinstatement works.	Temporary	Negative/Adverse	Not significant
		R583, R582			Negative/Adverse	Not significant to slight
		L1123 / L2750 Butter Road			Negative/Adverse	Slight
	Turbine Delivery Route	M20	Turbine component removal. Temporary accommodation requirements not required as components will be broken down to standard loads.	Temporary	Neutral	Imperceptible
		N69, N20, N72			Negative/Adverse	Not significant to slight
		R583			Negative/Adverse	Not significant to slight
		L1123 / L2750 Butter Road			Negative/Adverse	Not significant to slight
Grid Connection Route	Local Road Network	Not applicable unless unplanned repair works are required.	N/A	Neutral	Imperceptible	
Unplanned Events (i.e. Accidents)	Wind Farm	N20, N72	Unplanned emergency repair works which could potentially require the re-mobilisation of construction plant and personnel to site.	Temporary	Negative/Adverse	Imperceptible to not significant
		R583, R582			Negative/Adverse	Not significant to slight



Phase	Project Element	Main Receiving Environment	Description of Potential Effect			
			General Extent of Activities/Context	Duration	Quality	Significance
		L1123 / L2750 Butter Road			Negative/Adverse	Not significant to slight
	Turbine Delivery Route	M20	Unplanned emergency repair works which could potentially require the re-installation of TDR nodes for crane and turbine component delivery.	Temporary	Negative/Adverse	Imperceptible
		N69, N20, N72			Negative/Adverse	Not significant to slight
		R583			Negative/Adverse	Not significant to slight
		L1123 / L2750 Butter Road			Negative/Adverse	Not significant to slight
	Grid Connection Route	Local Road Network	Unplanned emergency grid repair works which could potentially require temporary road works.	Temporary	Negative/Adverse	Not significant to slight



13.9 Cumulative Impacts of Proposed Development

All known existing and proposed projects listed in Appendix 1.2, that could potentially generate a cumulative impact with Ballinagree Wind Farm in relation to traffic and transportation during construction, operation and decommissioning were identified and examined as part of this assessment. Table 13-12 provides details of the projects within the study area that were considered for cumulative impacts with respect to traffic and transportation.

Further details on existing and proposed projects assessed in the EIA for cumulative impacts are contained in Chapter 1.

Table 13-12: Existing and Proposed Projects Assessed for Cumulative Impacts

Project	Existing/Proposed	Reason for Assessment
Existing forestry activities on the site and the surrounding forest blocks	Existing	Proximity to proposed wind farm site and sharing of haul routes.
Solar Farm at Carragraigue, Inchamay North and Crinnaloo South Co. Cork (Planning refs 165455, 186562)	Proposed	This type of development gives rise to construction traffic and its proximity to the proposed wind farm site and TDR has the potential for cumulative traffic and transport impacts.
Extension to Substation to include Battery Storage at Bawnmore Wind Farm (Planning ref 185240)	Proposed	Type of development (which will give rise to construction traffic) and proximity to grid connection route.
Knockglass Solar Farm (Planning ref 155424)	Proposed	Type of development (which will give rise to construction traffic) and proximity to grid connection route.
Battery Storage Facility at Caherdowney, Millstreet, Co. Cork (Planning ref 185686)	Proposed	Type of development (which will give rise to construction traffic) and proximity to wind farm site and TDR.
Solar Farm at Cloghmacow, Crookstown, Co. Cork (Planning ref 196847)	Proposed	Type of development (which will give rise to construction traffic) and proximity to grid connection route.
Solar Farm at Berrings, Co. Cork (Planning ref 187280)	Proposed	Type of development (which will give rise to construction traffic) and proximity to grid connection route.
Solar Farm at Currabeha, Crookstown, Co. Cork (Planning ref 164783)	Proposed	Type of development (which will give rise to construction traffic) and proximity to grid connection route.
Operational wind farms	Existing	Proximity to project



13.9.1 Existing Forestry Activities

Existing forestry operations consist of low numbers of HGV's periodically entering and leaving the site with the average number of HGV trips associated with these activities amounting to approximately 32 loads per week or 13 HGV trips per day. This is based on an expected harvesting rate of approximately 50,000m³ per annum and a haulage rate of 30m³ per load. This is a worst-case estimate as these trips would be spread out around the wider forested area.

The following sawmills are located in the vicinity of the proposed development.

- Duhallow Sawmills Limited, Dromagh, Co. Cork;
- Walsh Sawmills, Kildorrery, Co. Cork;
- Sheehan Patrick Sawmills Ltd., Ballyporeen, Co. Tipperary;
- Graingers Sawmills .GP, Enniskeane, Ballymoney, Co. Cork;
- Enniskeane, Timber Products Ltd., Ballineen, Co. Cork;
- Glennon brothers Cork Ltd, Farran South, Fermoy Co. Cork;
- GP Wood, Lissarda, Co. Cork.

All of the above sawmills are located close to national routes and area easily accessible from the project haul main transport routes via the N20, N72 and M8.

HGV's associated with day to day forestry activities form part of the existing baseline HGV traffic volumes on the road network within the study area, in particular the TDR which forms the main haulage route to the wind farm site. Therefore, no cumulative impact as a result of these activities is expected. Measures contained within the construction stage CEMP and TMP will ensure no conflicts occur between on-going commercial forestry felling occurring in the vicinity and the proposed construction operations.

13.9.2 Proposed Solar Farm at Carragraigue, Inchamay North and Crinnaloo South Co. Cork

The proposed permitted but not yet constructed development consists of a solar photovoltaic panel array consisting of up to 33,000sq.m of solar panels on ground mounted steel frames, 2 no. electricity control cabins, 4 no. inverter units, underground cable and ducts, hardstanding area, boundary security fence, new entrance onto public road, CCTV and all associated site services and works.

The above proposed development is located 5km north of the proposed Ballinagree wind farm site.

It is expected that, if developed, this project will be constructed in advance of Ballinagree wind farm. However, should construction of both projects take place at the same time, and having considered the nature, extent and duration of both projects, associated construction traffic arising from each, their relative proximity and respective transport routes, the negative effect on the existing road network would be temporary in duration and not significant.



13.9.3 Extension to Substation to include Battery Storage at Bawnmore Wind Farm

An extension to the existing electricity substation, comprising of the construction of up to 4 no. battery storage units, palisade fencing, bunded concrete plinths, associated electrical equipment, transformers and all ancillary site works.

The above permitted development is located 1.7km north of Clashavoon Substation.

It is expected that, if developed, this project will be constructed in advance of Ballinagree wind farm. However, should construction of both projects take place at the same time, and having considered the nature, extent and duration of both projects, associated construction traffic arising from each, their relative proximity and respective transport routes, the negative effect on the existing road network would be temporary in duration and imperceptible in significance.

13.9.4 Knockglass Solar Farm (adjacent Bawnmore Wind Farm)

Solar PV Panel array consisting of up to 33,000sq.metres of solar panels on ground mounted steel frames, 2 No. electrical control cabins, 5 No. inverter units, underground cable ducts, hardstanding area, boundary security fence, site entrances, access tracks, CCTV and all associated site works.

The above development is located 1.9km north of Clashavoon Substation.

It is expected that, if developed, this project will be constructed in advance of Ballinagree wind farm. However, should construction of both projects take place at the same time, and having considered the nature, extent and duration of both projects, associated construction traffic arising from each, their relative proximity and respective transport routes, the negative effect on the existing road network would be temporary in duration and imperceptible in significance.

13.9.5 Battery Storage Facility at Caherdowney, Millstreet, Co. Cork

The permitted development consists of a battery storage compound including 2 no. battery storage buildings with associated plant and equipment, an ancillary 110kV electricity substation with 2 no. control buildings, associated electrical plant & equipment and fencing, underground electricity cabling, surface water drainage, site entrance and access track, security fencing and all ancillary site works.

The permitted development is located 9km west of the Ballinagree wind farm site.

It is expected that, if developed, this project will be constructed in advance of Ballinagree wind farm. However, should construction of both projects take place at the same time, and having considered the nature, extent and duration of both projects, associated construction traffic arising from each, their relative proximity and respective transport routes, the negative effect on the existing road network would be temporary in duration and imperceptible in significance.

13.9.6 Solar Farm at Cloghmacow, Crookstown, Co. Cork

The permitted development consists of a 5 MW solar farm comprising approximately 22,200 photovoltaic panels on ground mounted frames within a site area of 8.12 hectares, 2 no. single storey inverter / transformer stations, 1 no. single storey delivery station, security fencing, CCTV, and all associated ancillary development works.



The development is located 11.5km south of Clashavoon Substation.

It is expected that, if developed, this project will be constructed in advance of Ballinagree wind farm. However, should construction of both projects take place at the same time, and having considered the nature, extent and duration of both projects, associated construction traffic arising from each, their relative proximity and respective transport routes, the negative effect on the existing road network would be temporary in duration and imperceptible in significance.

13.9.7 Solar Farm at Berrings, Co. Cork

The permitted development consists of solar PV arrays mounted on metal frames on a 21.3ha site, inclusive of an electrical substation compound, up to 10 inverter units, a temporary construction area and ancillary facilities (inclusive of gross floor space of proposed works up to 248sqm). The planning application is accompanied by an environmental report and stage 1 screening for appropriate assessment.

The development is located 14km east of Clashavoon Substation.

It is expected that, if developed, this project will be constructed in advance of Ballinagree wind farm. However, should construction of both projects take place at the same time, and having considered the nature, extent and duration of both projects, associated construction traffic arising from each, their relative proximity and respective transport routes, the negative effect on the existing road network would be temporary in duration and imperceptible in significance.

13.9.8 Solar Farm at Currabeha, Crookstown, Co. Cork

The permitted development consists of a 5 MW solar farm comprising approximately 22,200 photovoltaic panels on ground mounted frames within a site area of 8.5 hectares, 2 no. single storey inverter/transformer stations, 1 no. single storey delivery station, security fencing, CCTV and all associated ancillary development works.

The development is located 13km south of Clashavoon Substation.

It is expected that, if developed, this project will be constructed in advance of Ballinagree wind farm. However, should construction of both projects take place at the same time, and having considered the nature, extent and duration of both projects, associated construction traffic arising from each, their relative proximity and respective transport routes, the negative effect on the existing road network would be temporary in duration and imperceptible in significance.

13.9.9 Existing Operational Wind Farms

Operational wind farms in the vicinity of the project do not generate any perceptible levels of traffic as they are remotely operated and are not expected to generate a cumulative impact.

The existing Boggeragh wind farm shares its TDR and site access with Ballinagree. The wind farm does not generate any perceptible levels of traffic as it is remotely operated.



This wind farm has been operational for several years and will not be decommissioned during either the construction stage or decommissioning stage of Ballinagree Wind Farm should it be granted planning permission.

In the highly unlikely event of a significant turbine component replacement being required at the Boggeragh wind farm during the Ballinagree construction phase, this will involve a small number of HGV trips along the TDR route over a short period of time. It is estimated that HGV trips associated with such an operation would amount to no more than 20 over the course of one month.

Based on the above, it is considered that no cumulative impact will be created as a result of this development during the construction operation or decommissioning of Ballinagree Wind Farm.

13.10 Conclusion

There are no significant impacts expected on the receiving environment as a result of the construction, operation and decommissioning of the proposed project.

The proposed project is likely to result in a slight to moderate short-term negative impact on the existing road network during the construction phase if adequate mitigation measures are not implemented.

Following implementation of mitigation measures outlined herein, residual impacts during the construction phase shall be reduced and are not expected to exceed 'slight to moderate' in significance.

Residual Impacts during operation and decommissioning are considered imperceptible to slight.

There are no significant cumulative impacts expected on the receiving environment as a result of other existing or proposed projects.

The mitigation measures identified in this Chapter will be adopted and implemented by the Contractor and have been incorporated into the construction stage CEMP and TMP for the project.

A TMP is contained in the Construction Environmental Management Plan (CEMP) which is included in Appendix 3-1 of Volume 3 of this EIAR. In the event planning permission is granted for the proposed development, the final TMP will address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned.



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