

# ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED COOM GREEN ENERGY PARK, COUNTY CORK

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VOLUME 2 – MAIN EIAR

CHAPTER 13 – TRAFFIC AND TRANSPORTATION

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Prepared for: Coom Green Energy Park Limited



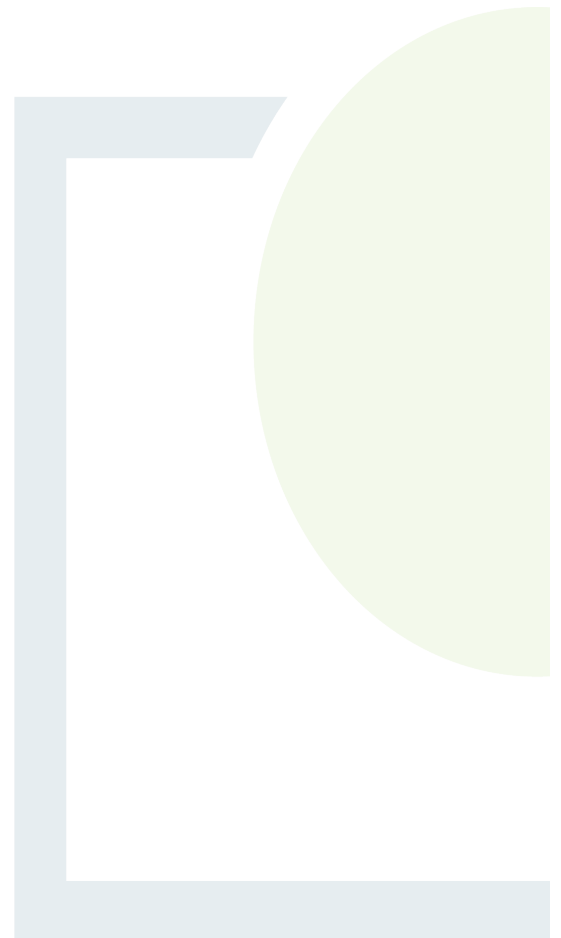
**Date:** November 2020

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## 13. TRAFFIC AND TRANSPORTATION

### 13.1 Introduction

This section of the EIAR describes the existing road network and study area along with the traffic and transportation in the vicinity of the proposed Coom Green Energy Park. This section examines the potential impacts and any necessary mitigations required in relation to the construction, operation and decommissioning of the energy park.

The proposed project will primarily consist of a wind farm of up to 22 no. wind turbine generators (WTG's), up to 2 no. substation compounds and a battery energy storage system along with ancillary civil and electrical infrastructure.

The associated grid connection route (GCR) will consist entirely of underground cable and will connect the on-site substations to an existing 110kV substation at Barrymore, within the townland of Farran South near Rathcormac. The GCR will be ca.24.4km in length, with ca. 16.7km to be constructed within the existing road corridor.

A detailed description of the proposed project is provided in Chapter 3.

#### 13.1.1 Study Area

The study area for the traffic and transportation chapter includes the proposed development site itself along with the surrounding road network leading to and from the site. The site entrance is assessed, and the turbine delivery route is also included within the study area.

The grid connection route, turbine delivery route and replant lands are considered in respect to the traffic and transportation in this chapter also.

### 13.2 Assessment Methodology

The following chapter outlines the existing environment including the existing road network in the area surrounding the site. The details of the proposed project are then considered in relation to the construction, operation and decommissioning phases of the project. The likely traffic is estimated to produce a volume of trips generated by the development. The impacts of the development are then considered, and any necessary mitigations proposed. A 24-month construction programme was assumed for construction traffic generation movement calculations as part of this assessment.

The assessment uses a combination of field surveys, data counters, desktop studies and consultation. The haul routes and turbine delivery routes are also considered.

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

- TII Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) DN-GEO-03060 April 2017;
- Cork County Council – County Development Plan 2014;



- EPA Guidelines on The Information To Be Contained In Environmental Impact Assessment Reports (DRAFT), 2017;
- TII Project Appraisal Guidelines for National Roads: Estimating AADT on National Roads, October 2016;
- NRA Project Appraisal Guidelines for National Roads: Unit 5.5 Link-Based Traffic Growth Forecasting, 2011;
- Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017;
- Bottlehill Landfill Environmental Impact Statement (EIS), prepared by Tobin Consulting Engineers on behalf of Cork County Council (May 2003).

7-day automatic traffic counts on local roads were taken at three locations between the 3<sup>rd</sup> and 7<sup>th</sup> of September 2019. These locations are shown in Figure 13-3.

### 13.2.1 Consultation

A meeting was held with Cork County Council (Fermoy District) on 18 June 2019 to discuss the proposed development, including delivery routes and the impact of the project on the existing road network.

A meeting was also held with Cork County Council (Mallow District) on 1<sup>st</sup> July 2019 to discuss the development. The proposed development, if consented, would be located within both of these municipal districts.

Transport Infrastructure Ireland (TII) were consulted through the EIAR scoping process. A copy of the correspondence from TII is included in Appendix 13-3.

Details of further consultation as part of this assessment are contained in Chapter 5 of this EIAR.

## 13.3 Existing Environment

The existing road network and site location are shown on Figure 13-1.

### 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 over.



**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.

#### Motorway

The nearest motorway to the site is the M8 which connects Cork City to the M7 west of Portlaoise. The road is the arterial route for traffic connecting Cork to Dublin. The M8 is located approximately 10km to the east of the CGEP site.

There are no other motorways located within 50km of the site.

#### National Primary Routes

The closest national primary route to the west of the site is the N20, the N20 is the primary route connecting Cork to Limerick and is approximately 6km from the site boundary.

To the north, the closest national primary route is the N72 which connects Fermoy to Mallow, this passes approximately 6km to the north of the site at Ballyhooly.

#### Regional Roads

The closest regional road to the proposed site is the R614 which is located to the south east of the site. The R614 connects Rathcormac to the east, with Cork City to the south.

The next closest regional road is the R619 to the west. The R619 connects Mallow to the N22 (near Farnanes).



## Local Roads

There are a number of local roads in the vicinity of the proposed development. Some of the local roads in the area are to the east, the local road which connects the bridge at Ballyhooly to Chimneyfield (L-1501) and to the west, the local road which connects Bottlehill to Knockacullata (L-1219).

The L-1219 local road runs in a north-south direction to the west of the site and joins with the L-1217 near Bottlehill. The main construction access to the development shall be located on this road.

Traversing the site, there are a number local roads. Some of the local roads in this area are the local road from Knuttery to Coom (L-69650), the local road from Knockacullata to Chimneyfield (L-2956) and the local road from Tooreen to Chimneyfield (L-5751).

Local roads associated with the grid connection route are located between Lackendarragh North and Barrymore and designated from West to East as the L-1505 and L-1510.

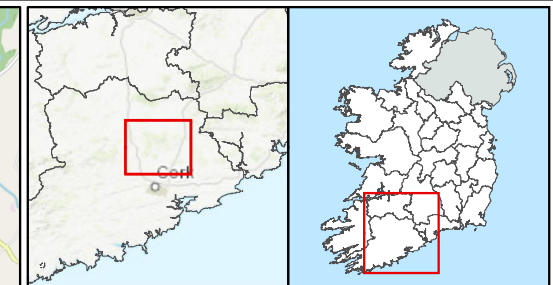
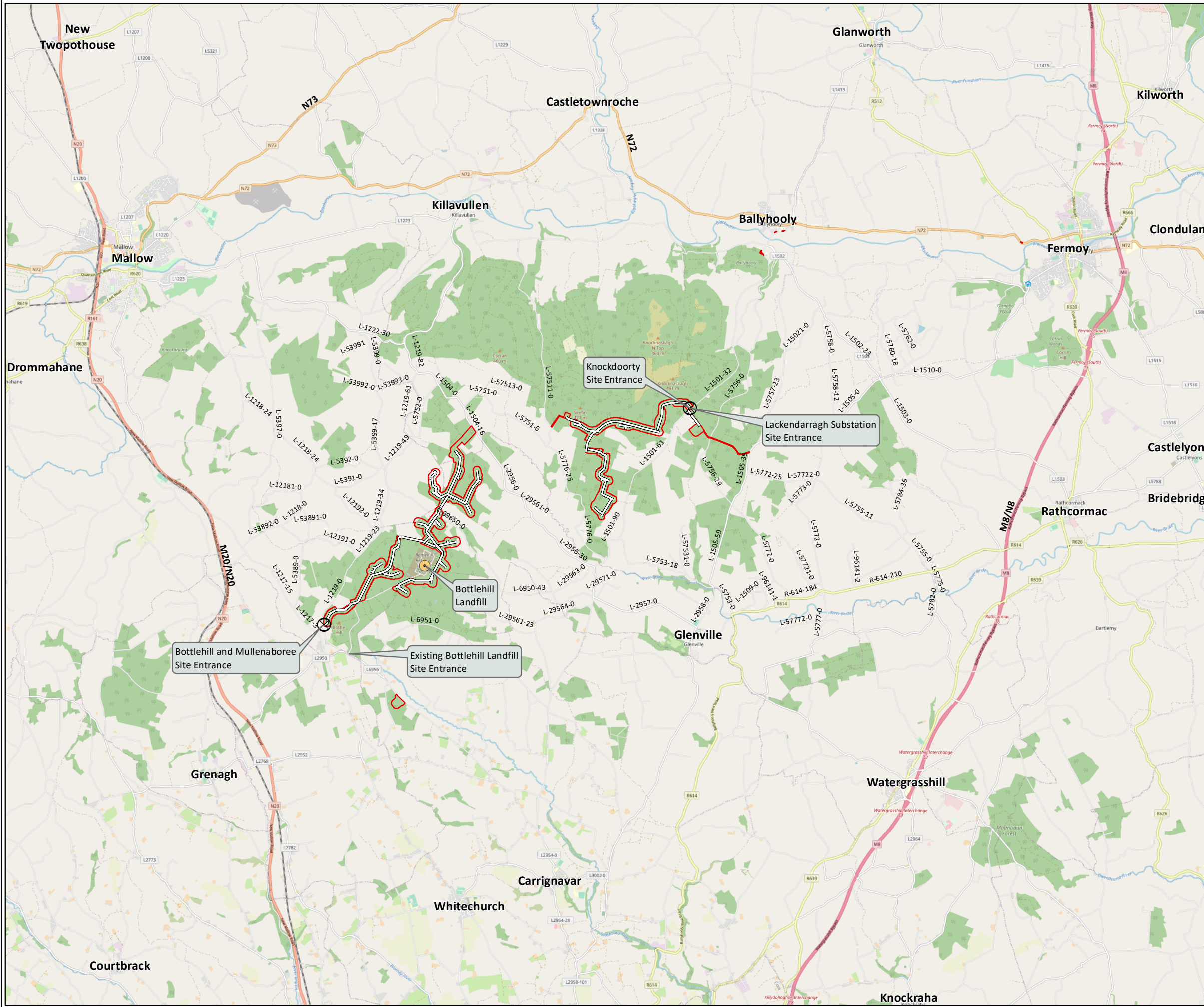
The above local roads are identified in Figure 13-1.



As described in Section 13.2, short term automatic traffic counts were carried out on local roads at Bottlehill, Lackendarragh North and Coolanakilla as shown in Figure 13-3. The results of the traffic count survey are shown in the table below. Based on the results of the surveys, these roads can be considered to have very low levels of traffic.

**Table 13-2: Average Daily Traffic on Local Roads in Existing Environment**

Location	7-Day Mean Vehicle Counts		Most Frequent Peak Hour		Average Vehicles Peak Hour
	24 hour	0700-1900	AM	PM	
L6957, Carrignavar Road, immediately north of Bottlehill Landfill site entrance	610	490	0800	1700	42 (PM)
L1501, Lackendarragh	139	112	0800	1600	10 (PM)
L1510, Coolnakilla	396	317	0800	1700	22 (PM)





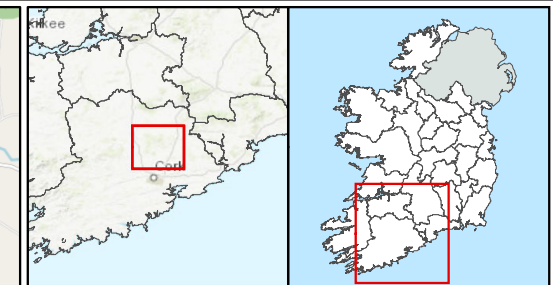
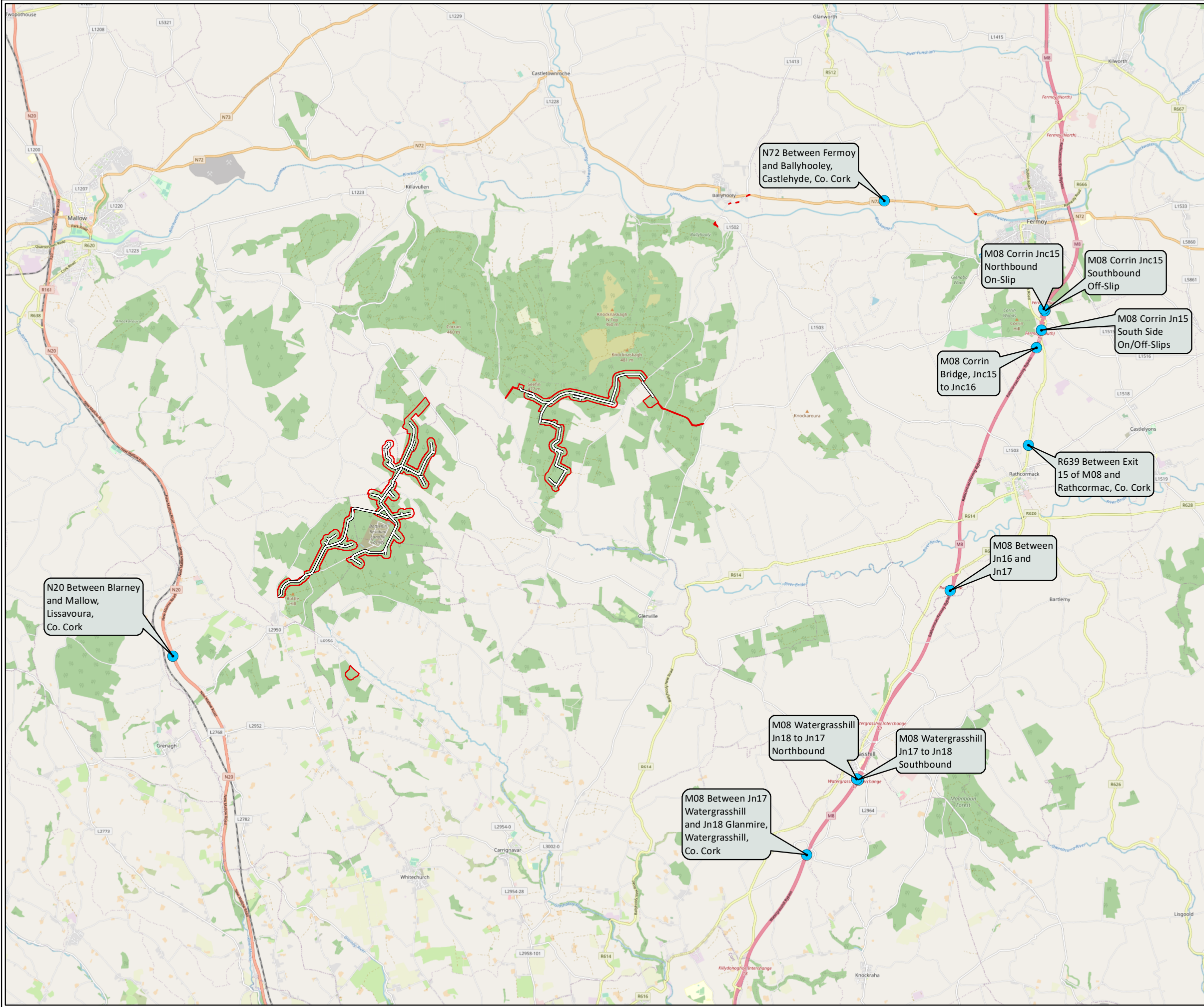
-  Site Entrance
-  Bottlehill Landfill Facility
-  Proposed Development Boundary
-  Proposed Internal Roads

<b>TITLE:</b>	Proposed Site Location and Surrounding Road Network		
<b>PROJECT:</b>	Coom Green Energy Park, Co. Cork		
<b>FIGURE NO:</b>	13.1		
<b>CLIENT:</b>	Coom Green Energy Park Ltd.		
<b>SCALE:</b>	1:100000	<b>REVISION:</b>	0
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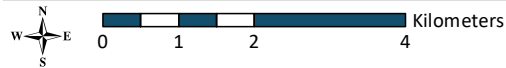




- TII Traffic Counter Locations
- Proposed Internal Roads
- Proposed Development Boundary

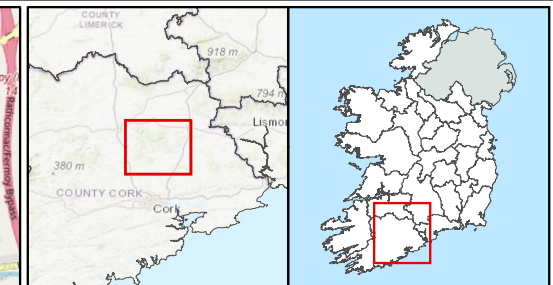
<b>TITLE:</b> Existing TII Traffic Counter Locations in the Vicinity of the Proposed Development	
<b>PROJECT:</b> Coom Green Energy Park, Co. Cork	
<b>FIGURE NO:</b> 13.2	
<b>CLIENT:</b> Coom Green Energy Park Ltd.	
<b>SCALE:</b> 1:100000	<b>REVISION:</b> 0
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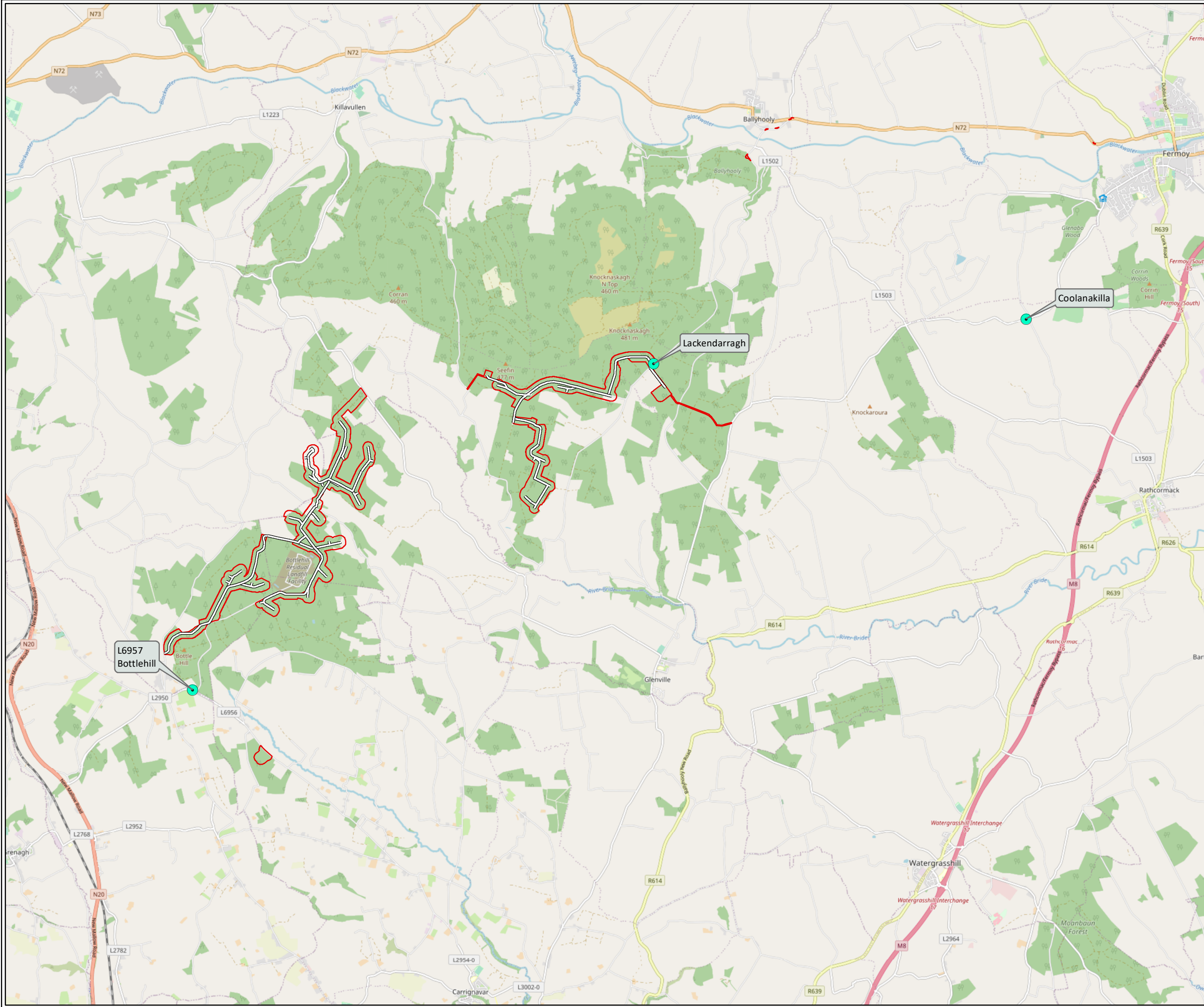








- ATC Locations
- Proposed Internal Roads
- Proposed Development Boundary



<b>TITLE:</b> Traffic Counter Locations - September 2019	
<b>PROJECT:</b> Coom Green Energy Park, Co. Cork	
<b>FIGURE NO:</b> 13.3	
<b>CLIENT:</b> Coom Green Energy Park Ltd.	
<b>SCALE:</b> 1:75000	<b>REVISION:</b> 0
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## 13.4 Proposed Development

The proposed project will primarily consist of a wind farm of up to 22 no. wind turbine generators (WTG's), up to 2 no. substation compounds and a battery energy storage system along with ancillary civil and electrical infrastructure.

The associated grid connection route (GCR) will consist entirely of underground cable and will connect the on-site substations to an existing 110kV substation at Barrymore, within the townland of Farran South near Rathcormac. The GCR will be ca.24.4km in length, with ca. 16.7km to be constructed within the existing road corridor.

A detailed description of the proposed project is provided in Chapter 3.

### 13.4.1 Construction Programme

It is estimated that the construction of the development will take approximately 18-24 months. There are a number of items which will be conducted in parallel, but the basis of the construction programme would 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 the site works and the turbine installation works will be completed before commissioning and reinstatement and landscaping.

### 13.4.2 Site Entrances

The Coom Green Energy Park will be served by four site entrances. Two entrances are required to the west to access the Bottlehill and Mullenaboree areas of the proposed development. Two site entrances will be required to the east. One of these is required for access to the turbines and associated infrastructure in the Knockdoorty area and the other is required for access to construct the substation at Lackendarragh North.

One of the western (Bottlehill) access points is located at the Bottlehill Landfill site (off the L-1217 local road) and is already constructed to TII guidelines (DN-GEO03060). The site entrance here will accommodate access to the Bottlehill part of the site for standard construction vehicles. Vehicles entering the site at this point shall only have the right to access turbines T2 – T7.

Access to the remaining turbines in the Bottlehill and Mullenaboree parts of the site shall be via the main site access off the L-1219-0. The main site access serving the Bottlehill and Mullenaboree parts of the site is an existing Coillte forestry access located on the L-1219-0 which will be upgraded to facilitate oversize loads associated with wind turbine component deliveries. All oversize turbine delivery vehicles for the Bottlehill and Mullenaboree areas of the site shall use this entrance.

The existing forestry access from the L-1504 local road at Mullenaboree shall not be used during the construction phase but shall remain as an access point for forestry operations and operational access to the proposed substation at Knockacullata.

The main Knockdoorty site entrance to the east is an existing Coillte forestry entrance which will be upgraded to facilitate the wind farm construction and operations in the Knockdoorty area. This will be a dedicated site entrance located along the L-1501 Ballyhooly to Chimneyfield road. This site entrance has been designed in accordance with TII guidelines and shall be upgraded to achieve sightlines of 160m in both directions at a setback distance of 3m. The Cork County Council requirements for local roads here are 90m sight lines in both directions.



A new entrance will also be located near the Knockdoorty site entrance to facilitate access for the construction of the proposed Lackendarragh North substation off the L-1501 local road. The new site entrance to the proposed Lackendarragh North substation will be constructed in line with Cork County Council requirements.

The site entrances are shown on drawings P1306-0101-0001, P13006-0101-002 and P1306-0101-003.





Bottlehill Landfill Site Entrance



**Plate 13-2: View Right from Bottlehill Landfill Site Entrance**



**Plate 13-1: View Left from Bottlehill Landfill Site Entrance**

Main Bottlehill and Mullenaboree Site Entrance



**Plate 13-4: View Right from Proposed Bottlehill and Mullenaboree Site Entrance**



**Plate 13-3: View Left from Proposed Bottlehill and Mullenaboree Site Entrance**





### Knockdoorty Site Entrance



**Plate 13-6: View Right from Knockdoorty Site Entrance**



**Plate 13-5: View Left from Knockdoorty Site Entrance**

### Lackendarragh North Site Entrance



**Plate 13-7: View Left from Lackendarragh Site Entrance**



**Plate 13-8: View Right from Lackendarragh Site Entrance**

#### 13.4.3 Cable Route and Grid Connection

As described in Chapter 3, electricity generated from wind turbines at the Bottlehill and Mullenaboree parts of the site shall be collected at medium voltage (20/33kV) by an internal circuit of buried cables which will follow on-site access tracks. This circuit shall be terminated at a proposed onsite substation at Knockacullata in the Mullanboree part of the site. The power from this western part of the site shall be transferred to the onsite substation at Lackendarragh North via a buried 110kV cable through private lands and a section of public road as shown on Figure 3-4. Electricity generated from wind turbines at the Knockdoorty part of the site shall also be collected at medium voltage (20/33kV) by an internal circuit of buried cables which will follow on-site access tracks and terminate directly into the on-site substation at Lackendarragh North before being exported to the grid via a 110kV buried cable to the existing Barrymore substation.



The grid connection is proposed to route from the on-site substation at Knockacullata to the substation at Lackendarragh North and on to the substation at Barrymore near Castlelyons.

The cable will follow the route along the local road and cross the M8 to Barrymore, the grid cable will cross private lands near Lackendarragh North substation and then follow the public road. As described in Section 13.1, c7.7km of the proposed 110kV cable associated with the grid connection will be laid in private lands and c16.7km will be laid within the public road.

The local road from Lackendarragh North to the Barrymore substation varies in width from 4.5m to 7m. This is a two-way road and is wide enough for two vehicles to pass each other in many cases. It is proposed to install the grid connection cable within the public road corridor. Connection works will involve the installation of ducting and cables within this road. This will result in traffic associated with the delivery of plant and materials along with traffic related to the excavation and reinstatement of trenches.

The proposed grid connection route is shown on Figure 13-4.

As described in Chapter 3, a careful approach will be taken to planning the works to ensure minimal impacts on road users and the general public. As discussed during consultation with Cork County Council, the cable trenching will be carried out with the aid of either a lane closure or road closure, which will ensure that the trenching works are completed as expeditiously as possible.

Due to the length of cabling within the road corridor (ca. 16.7km), these works could be conducted over 10-month period of time (ca. 40weeks). The 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 processes as implemented by the roads authority. Road closures will be facilitated by the good network of roads in the area. 'Rolling road closures' will be implemented, whereby the site will progress each day along a road, which will have the effect of reducing the impact for local residents.

A traffic management plan for the cable trenching will be adopted, in consultation with Cork County Council, to provide a safe environment for road users and construction workers.

A Traffic Management Plan is contained in the Construction Environmental Management Plan (oCEMP) which is included in Appendix 3-2 of Volume 3. The Traffic Management Plan shall be finalised following the appointment of the contractor for the main construction works in consultation with Cork County Council. In the event An Bord Pleanála decides to grant permission for the proposed development, any condition(s) relating to a Traffic Management Plan which may be attached by the Board to such a permission, will be implemented in accordance with the requirements of the condition.

Horizontal directional drilling operations will be required at a number of locations along the grid connection route between Knockacullata and Barrymore as described in Chapter 3. These activities are isolated and carried out in under a day at each location. It is expected that a temporary road closure will be required for 2 no. of these locations where the cable will cross existing watercourses by this method. The proposed crossing of the M8 motorway by HDD can be carried out off the public road and will not have any impact on the existing road network. The locations of HDD operations are indicated in Figure 13-4.

Where the grid connection route crosses the M8 motorway, horizontal directional drilling (HDD) will be used. The locations of the launch and reception pits will be adequately spaced from the carriageway to ensure the bore is at such depth as not to conflict with the drainage, foundations or surface of the motorway. Launch and exit points shall be located off the public road as indicated by areas "A" and "B" respectively in the image below.





**Plate 13-9: Launch and Exit Locations for HDD Operation Under M8 Motorway**

#### 13.4.3.1 Watercourse and Service Crossings Along the GCR

Table 13-3 summarises existing watercourse and service crossing locations and the proposed method for crossing same along the 110kV grid connection route. The location of these crossings can be seen on Figure 13-4.

Construction methodologies for trenching across existing water and service crossings are detailed in Chapter 3 and the CEMP in Appendix 3-2.

Typical details for the methods identified in Table 13-3 are included in the accompanying drawings.

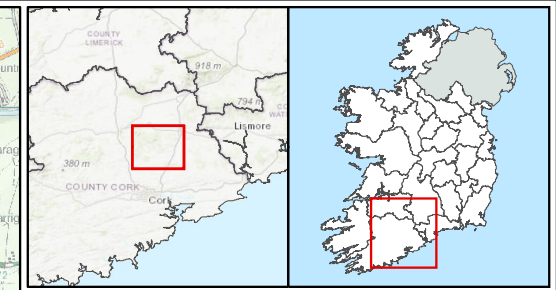
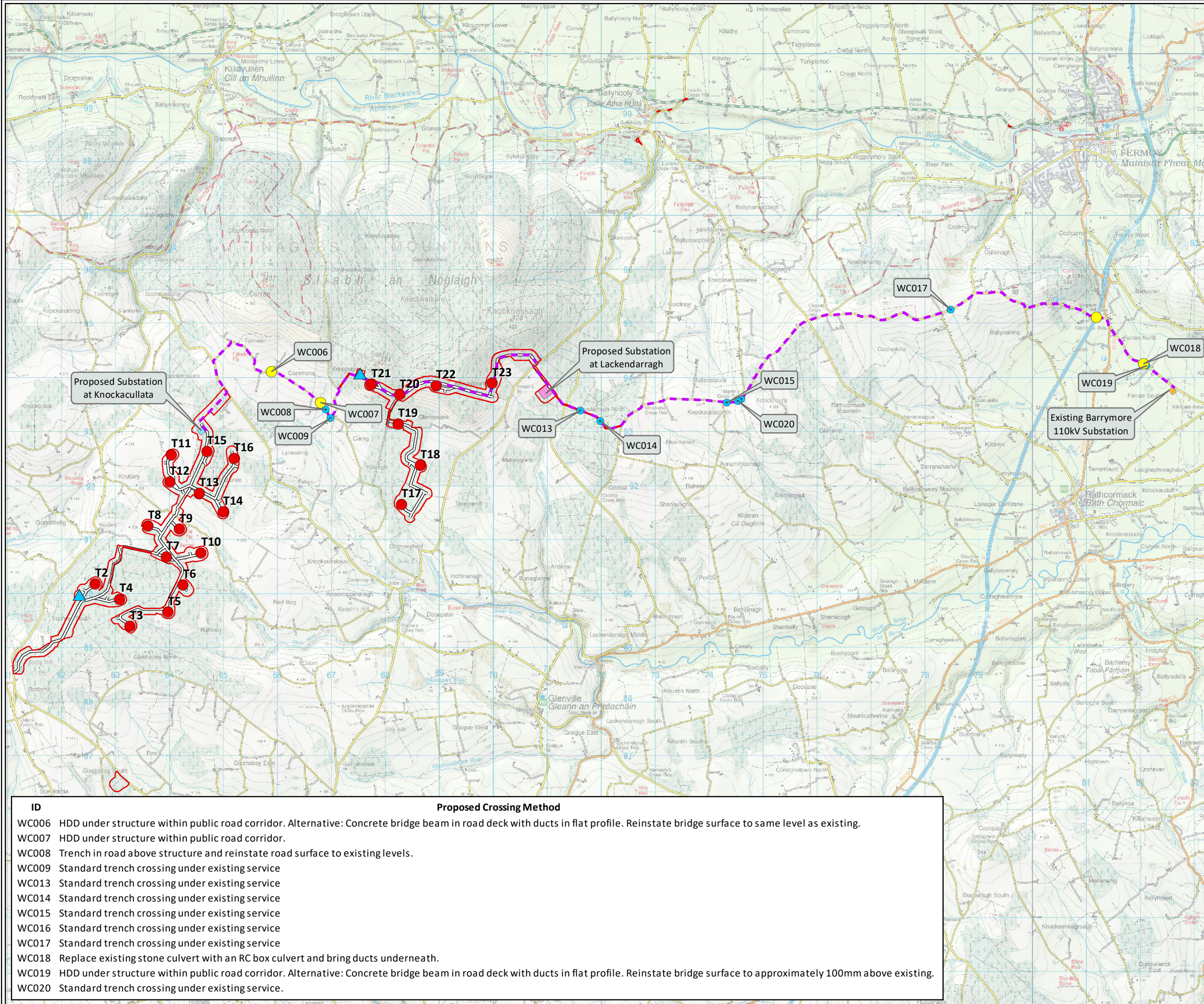


**Table 13-3: Watercourse and Service Crossings Along the GCR**

Feature ID	ITM_X	ITM_Y	Feature Type	Description	Proposed Crossing Method
WC006	565856.78	594166.05	Watercourse Crossing	Stone arch bridge	HDD under structure within public road corridor. Alternative: Concrete bridge beam in road deck with ducts in flat profile. Reinstate bridge surface to same level as existing.
WC007	566767.03	593590.72	Watercourse Crossing	Stone arch bridge	HDD under structure within public road corridor.
WC008	566855.33	593463.30	Watercourse Crossing	Stone box culvert	Trench in road above structure and reinstate road surface to existing levels.
WC009	566953.13	593308.63	Drain Crossing	Culvert/small diameter pipe	Standard trench crossing under existing service
WC013	571579.31	593438.66	Drain Crossing	Possible pipe culvert	Standard trench crossing under existing service
WC014	571953.73	593251.56	Drain Crossing	300mm dia. Pipe culvert	Standard trench crossing under existing service
WC015	574302.28	593592.15	Drain Crossing	Possible pipe culvert	Standard trench crossing under existing service
WC016	574563.28	593659.12	Drain Crossing	225mm dia. Pipe culvert near road surface	Standard trench crossing under existing service
WC017	578448.83	595314.38	Watercourse Crossing	Pipe culvert	Standard trench crossing under existing service
WC018	582024.33	594307.32	Watercourse Crossing	Stone culvert	Replace existing stone culvert with an RC box culvert and bring ducts underneath.
WC019	582076.81	594271.41	Watercourse Crossing	Stone arch bridge	HDD under structure within public road corridor. Alternative: Concrete bridge beam in road deck with ducts in flat profile. Reinstate bridge surface to approximately 100mm above existing.
WC020	574506.00	593616.00	Drain Crossing	Drainage ditch	Standard trench crossing under existing service.







- Proposed HDD Crossing
  - Water Crossings
  - Proposed Turbine Layout
  - ▲ Proposed Permanent Met Masts
  - - - Proposed Cable Route
  - Proposed Development Boundary
  - Proposed Internal Roads
- Substations**
- Existing Barrymore 110kV Substation
  - Proposed Substation at Knockacullata
  - Proposed Substation at Lackendarragh

ID	Proposed Crossing Method
WC006	HDD under structure within public road corridor. Alternative: Concrete bridge beam in road deck with ducts in flat profile. Reinstatate bridge surface to same level as existing.
WC007	HDD under structure within public road corridor.
WC008	Trench in road above structure and reinstatate road surface to existing levels.
WC009	Standard trench crossing under existing service
WC013	Standard trench crossing under existing service
WC014	Standard trench crossing under existing service
WC015	Standard trench crossing under existing service
WC016	Standard trench crossing under existing service
WC017	Standard trench crossing under existing service
WC018	Replace existing stone culvert with an RC box culvert and bring ducts underneath.
WC019	HDD under structure within public road corridor. Alternative: Concrete bridge beam in road deck with ducts in flat profile. Reinstatate bridge surface to approximately 100mm above existing.
WC020	Standard trench crossing under existing service.

<b>TITLE:</b>	Grid Connection Route	
<b>PROJECT:</b>	Coom Green Energy Park, Co. Cork	
<b>FIGURE NO:</b>	13.4	
<b>CLIENT:</b>	Coom Green Energy Park Ltd.	
<b>SCALE:</b>	1:70000	<b>REVISION:</b> 0
<b>DATE:</b>	19/11/2020	<b>PAGE SIZE:</b> A3











### 13.4.3.2 Trench Details

Typical details for trench reinstatement are shown on drawing P1306-0501-0003.

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

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

Trench construction methodologies are described in Chapter 3 and CEMP.

### 13.4.4 Development Site Construction Haul Routes

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

Typical traffic associated with the construction phase include:

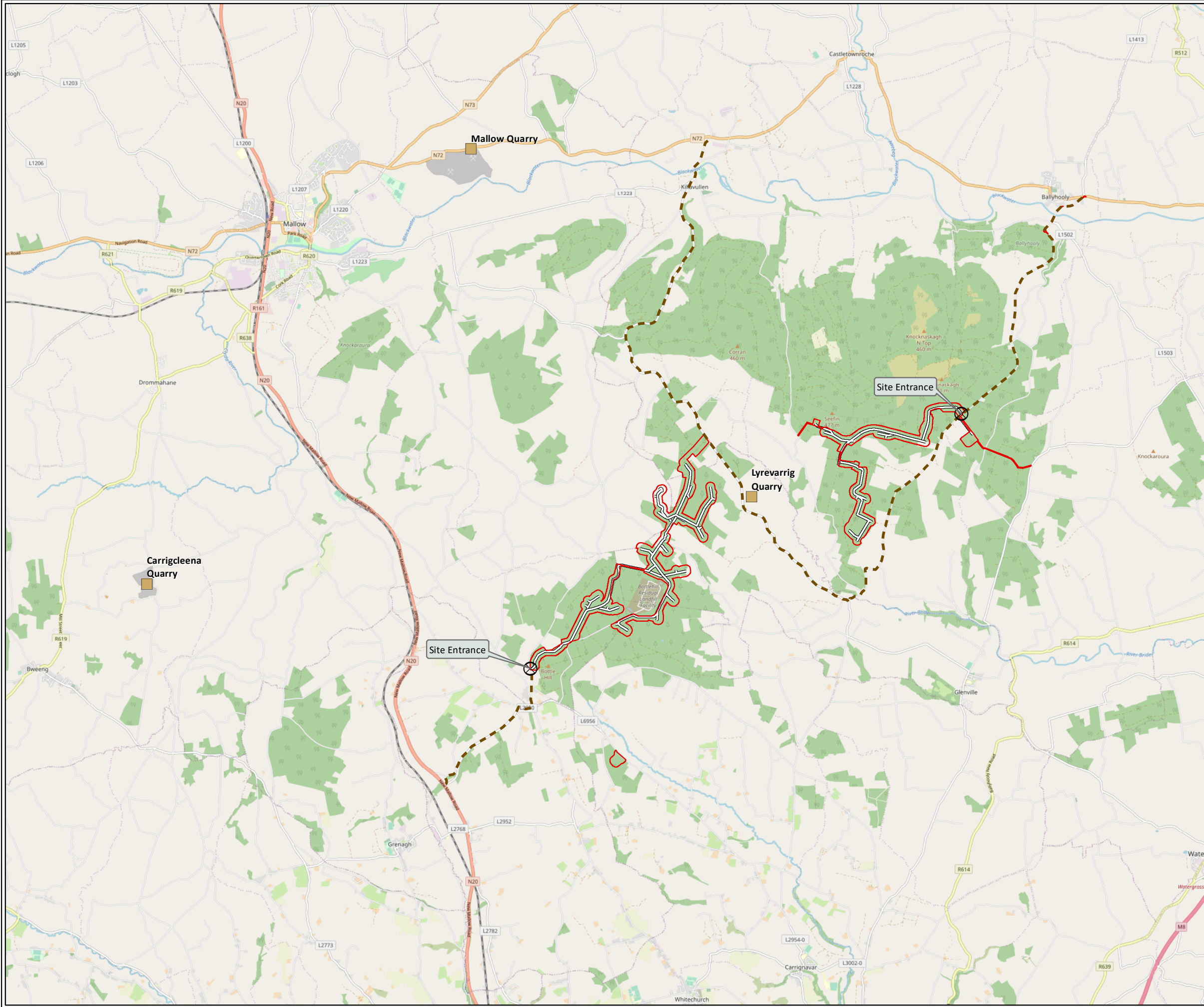
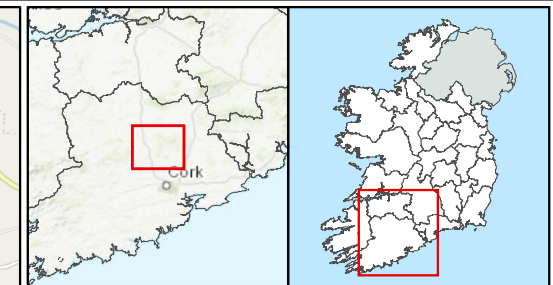
- HGVs carrying aggregates;
- HGVs (Concrete wagons) carrying concrete for turbine foundations and substation foundations;
- HGVs carrying building materials for the substation;
- HGVs carrying plant and fuel;
- HGVs exporting site waste;
- Cranes and associated elements for the main crane for erecting the turbines;
- Private cars and vans for the commuting workforce.

The surrounding quarries currently in operation and indicative haul routes to the site from each of these have been identified. The list of quarries is as follows:

- Danesfort, Co. Cork. Located 16km from Bottlehill and 35km from Knockdoorty entrance.
- Mallow, Co Cork. Located 20km from Bottlehill and 20km from Knockdoorty.
- Lyravarrig, Co. Cork. Located between the two site entrances, 13km to the Bottlehill entrance and 9km to the Knockdoorty site entrance.

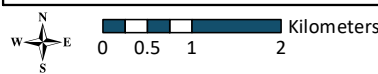
Indicative haul routes are shown in Figure 13-5.





- Active Quarries
- Site Entrance
- Proposed Haul Routes
- Proposed Development Boundary
- Proposed Internal Roads

<b>TITLE:</b>	
Haul Routes	
<b>PROJECT:</b>	
Coom Green Energy Park, Co. Cork	
<b>FIGURE NO:</b>	13.5
<b>CLIENT:</b>	Coom Green Energy Park Ltd.
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### 13.4.5 Turbine Delivery Route

A Delivery Route Selection and Assessment was carried out to identify the optimum delivery route to site and is presented as Appendix 13-2.

Turbine deliveries will be from Ringaskiddy and will be delivered along two distinct routes. One route to the west of the site, servicing the Bottlehill and Mullenaboree parts of the site and a second route to the east, servicing the Knockdoorty part of the site.

The proposed turbine delivery routes are presented in Figure 13-6.

#### Turbine Delivery to the West

The port of entry is Ringaskiddy where the turbine components will be offloaded and transported to the site, via the N28 and the N40 to the Dunkettle Interchange. At the Dunkettle Interchange, the components will take the N8 to Silversprings and then take the R635 (north ring road) around the north side of Cork City. At Blackpool, the components will join the N20 and turn off at the junction with the L-1217 towards Bottlehill Landfill. At this junction the components will travel north and enter the site at the existing Coillte site entrance off the L-1219-0. The Dunkettle Interchange is currently being re-designed. A review of proposed designs for the revised junction indicates that the turbine delivery route and proposed mitigations outlined here will not be impacted by the new layout.

As described in Section 13.4.2, The main site access serving the Bottlehill and Mullenaboree parts of the site is an existing Coillte forestry access located on the L-1219-0 which will be upgraded to facilitate oversize loads associated with wind turbine component deliveries.

In order to access the site via the existing Coillte entrance point on the L-1219-0, turbine delivery vehicles shall pass the final junction to the site entrance between the L-1217 and L-1219-0, turn at a temporary hard standing in Coillte land at Glashaboy South which is located approximately 2km south-east of the proposed site entrance and make their final approach to the site from the east and south. At the temporary turning area, wind turbine blade components shall be transferred via crane from standard extendable trailers to ‘Superwing’ blade lifting trailers which will allow them to negotiate the L-1217/L-1219-0 junction.



Plate 13-10: ‘Superwing’ Blade Carrier



## Turbine Delivery to the East

The port of entry is the same as above and the turbine components will take the same route to Dunkettle Interchange. At the Dunkettle Interchange, the turbine components will travel north along the M8 motorway. At Junction 14 on the M8, the turbine components will exit the motorway and travel south into Fermoy. Once the turbines reach Fermoy, they will travel west along the N72 and turning south just east of Ballyhooley. From there they will follow local roads across the Blackwater River and to the site entrance at Lackendarragh North.

## Temporary Accommodation Works

In some cases, accommodation works are required 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. Any accommodation works will be carried out in advance of the turbine deliveries, following further consultation and agreement with the local authority.

Key elements of the accommodation works are required at the following locations:

### East TDR

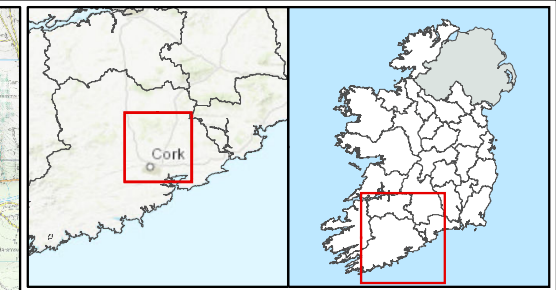
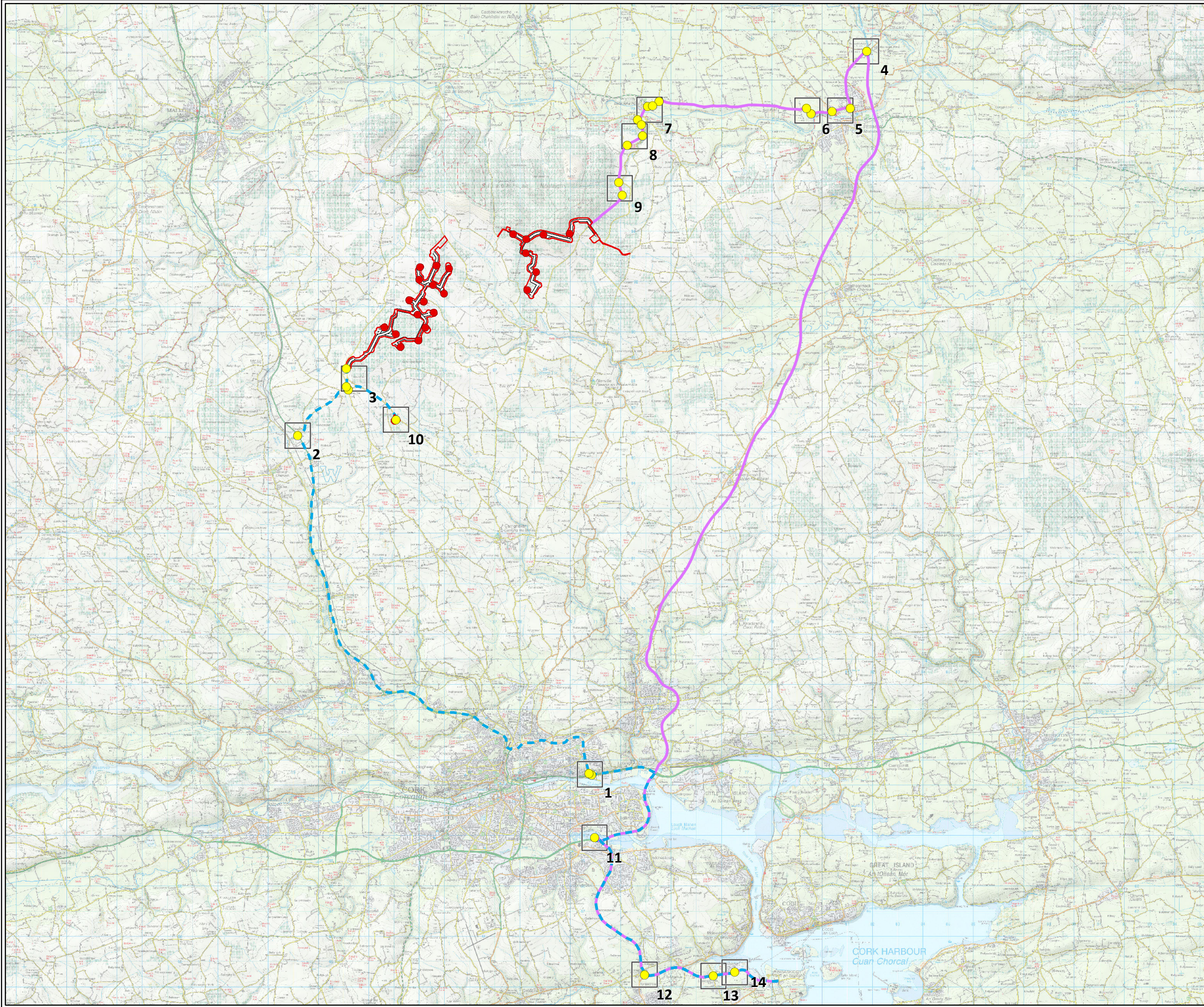
- Local widening at Junction 14 of the M8 (Node 2.0);
- Street furniture removal, enabling works to splitter islands at the junction of the N72 and the R639 in Fermoy Town (Node 2.1);
- Local widening near Castlehyde along the N72 between Fermoy and Ballyhooley (Node 2.3);
- Local widening at the junction of the N72 and the Ballyhooley North Road east of Ballyhooley (Node 2.5);
- Local widening at the approach road to the Blackwater Bridge south of Ballyhooley (Nodes 2.6 & 2.7);
- Removal of trees and construction of an aggregate hard standing at Castleblagh south of Ballyhooley (Node 2.8);
- Local widening through the laying of hardcore to road verges and tree/vegetation trimming at various locations along the road from Ballyhooley to the site entrance at Knockdoorty (Nodes 2.9 – 2.13) ;

### West TDR

- Street furniture removal, hedge/tree trimming, ramping of existing traffic splitter island and local widening through the laying of hardcore to road verge at Silverspings transitioning from the N8 to the R635 (Node 1.3);
- Enabling works to splitter island and removal of traffic lights at Blackpool (Node 1.5);
- Street furniture removal and vegetation trimming at junction between N20 and local road to Bottlehill (Node 1.6);
- Widening of existing forestry access, tree felling and construction of an off-site turning area at Glashaboy South (Offsite turning and transfer area);
- Local widening through the laying of hardcore to road verges, removal of street furniture at Junction between L-1217 and L-1219 (Junction 1).

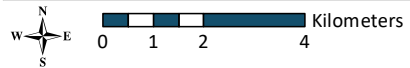
The locations of the above accommodation works are indicated in Figure 13-6. Specific details of the proposed temporary works are presented in the accompanying 0400-Series drawings and Turbine Delivery Route Assessment Report which can be found in Appendix 13-2. Subsequent swept path analysis was carried out for the 'Superwing' blade carrier trailer between the proposed Glashaboy turning area and the main Bottlehill/Mullenaboree site entrance off the L-1219-0. The resulting report can be found in Appendix 3-4.





- TDR Nodes
  - Proposed Turbine Layout
  - Proposed Development Boundary
  - Proposed Access Roads
- Turbine Delivery Route Options**
- - - Route 1
  - Route 2

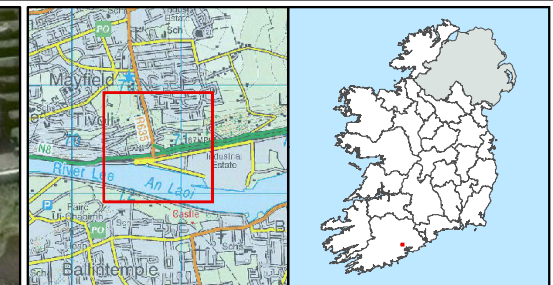
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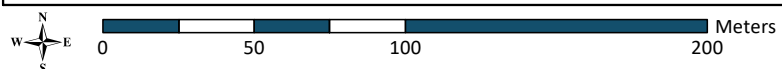






- TDR Nodes
- Proposed Nodes Upgrade Areas
- Turbine Delivery Route Options**
- - - Route 1

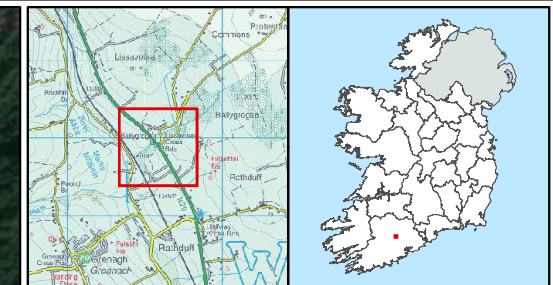
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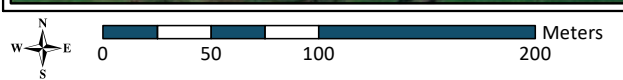






- TDR Nodes
  - Proposed Nodes Upgrade Areas
- Turbine Delivery Route Options**
- Route 1

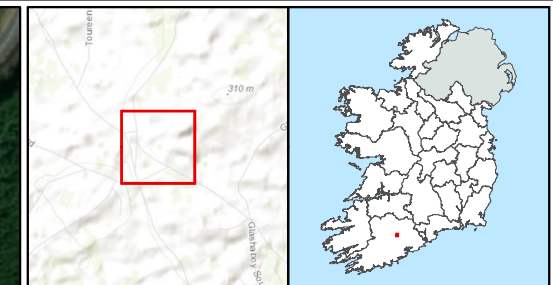
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- TDR Nodes
  - Proposed Development Boundary
  - Proposed Nodes Upgrade Areas
  - Proposed Access Roads
- Turbine Delivery Route Options**
- Route 1

<b>TITLE:</b>	Turbine Delivery Routes Submap 3		
<b>PROJECT:</b>	Coom Green Energy Park, Co. Cork		
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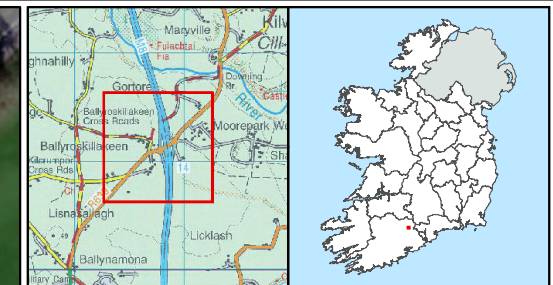
Cork | Dublin | Carlow  
[www.fehilytimoney.ie](http://www.fehilytimoney.ie)





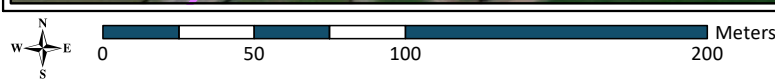






- TDR Nodes
  - Proposed Nodes Upgrade Areas
- Turbine Delivery Route Options**
- Route 2

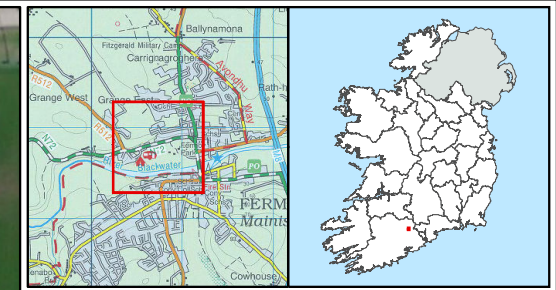
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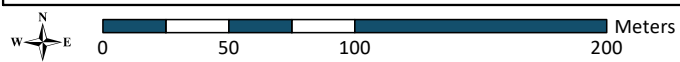






-  TDR Nodes
  -  Proposed Nodes Upgrade Areas
- Turbine Delivery Route Options**
-  Route 2

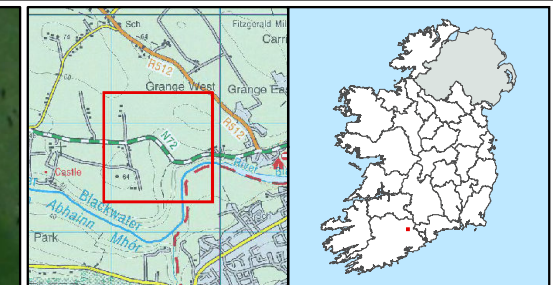
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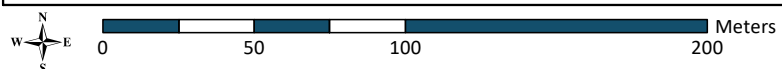






- TDR Nodes
  - Proposed Nodes Upgrade Areas
- Turbine Delivery Route Options**
- Route 2

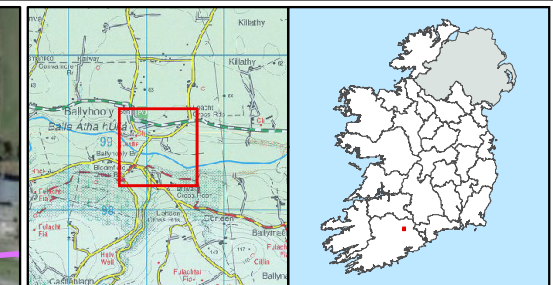
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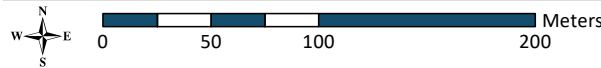






- TDR Nodes
  - Proposed Nodes Upgrade Areas
- Turbine Delivery Route Options**
- Route 2

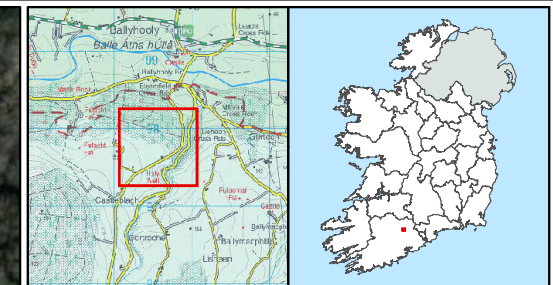
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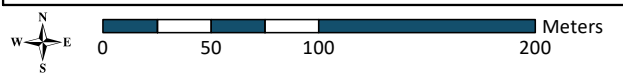






- TDR Nodes
  - Proposed Nodes Upgrade Areas
- Turbine Delivery Route Options**
- Route 2

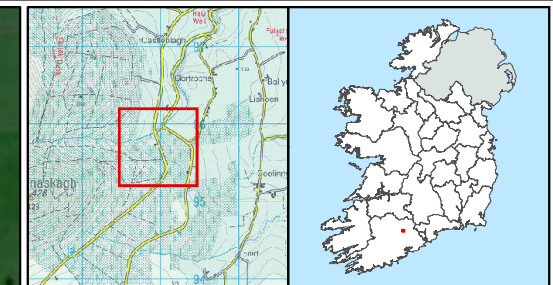
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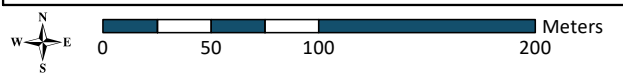






- TDR Nodes
  - Proposed Nodes Upgrade Areas
- Turbine Delivery Route Options**
- Route 2

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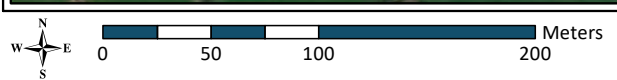






- TDR Nodes
- ▨ Proposed Nodes Upgrade Areas
- Turbine Delivery Route Options**
- Route 1

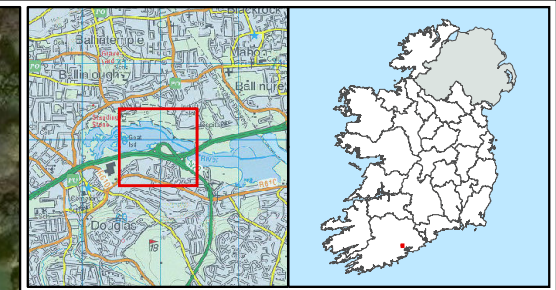
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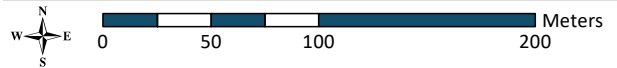






- TDR Nodes
- Turbine Delivery Route Options**
- Route 1
  - Route 2

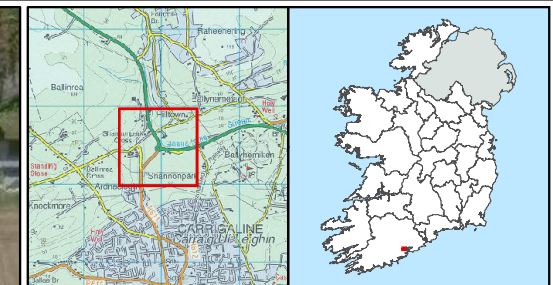
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- TDR Nodes
- Turbine Delivery Route Options**
- Route 1
- Route 2

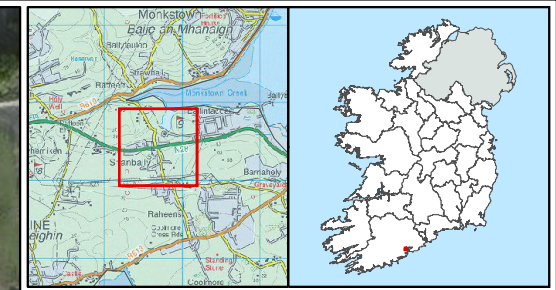
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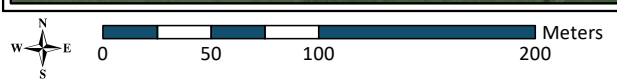






- TDR Nodes
- Turbine Delivery Route Options**
- Route 1
  - Route 2

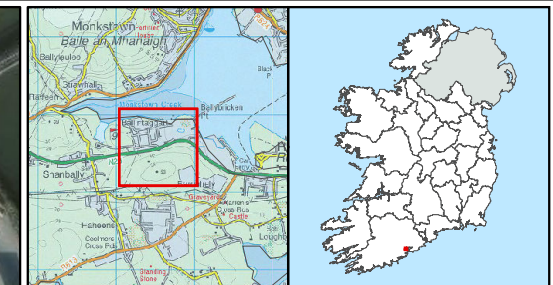
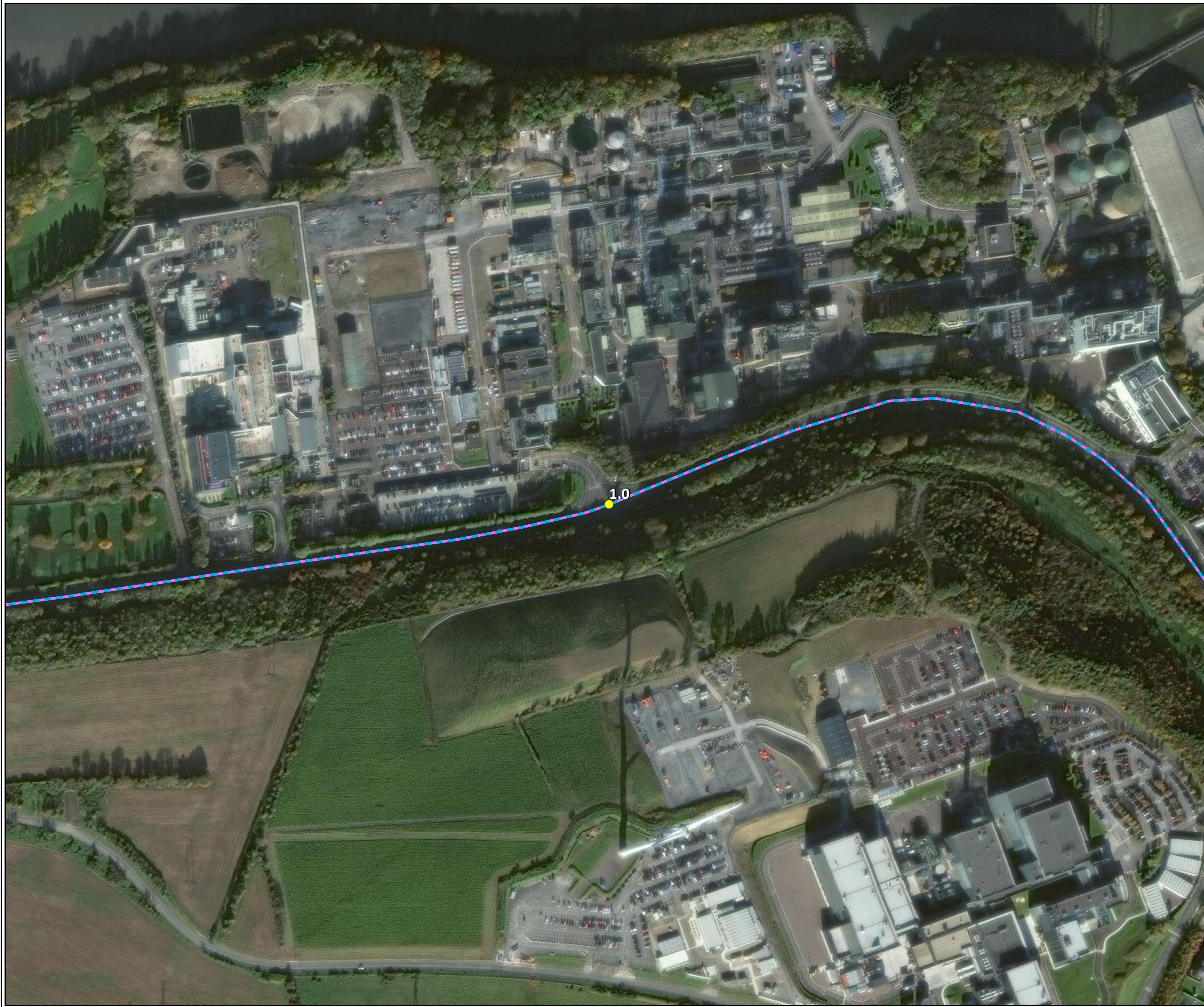
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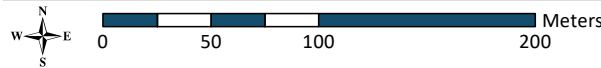






- TDR Nodes
- Turbine Delivery Route Options**
- Route 1
- Route 2

<b>TITLE:</b>	Turbine Delivery Routes Submap 14		
<b>PROJECT:</b>	Coom Green Energy Park, Co. Cork		
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<b>SCALE:</b>	1:3500	<b>REVISION:</b>	0
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### 13.4.6 Proposed Felling

In addition to existing forestry operations, tree felling will be required as part of the project. Felling of approximately 61ha of coniferous forestry is required within and around the wind farm infrastructure to accommodate the construction of some turbines, hardstands, crane pads, temporary compounds, borrow pits, access tracks and the proposed onsite substations.

### 13.4.7 Permanent Met Masts

Two permanent meteorological (Met) masts shall be erected on site at Bottlehill and Knockdoorty.

The permanent met masts shall be of the following general configuration:

- 100m high lattice steel mast with a shallow concrete foundation, fixed to ground anchors by guy-wires;

A construction sequence for the proposed masts is described in Chapter 3.

## 13.5 **Potential Impacts of Proposed Development**

Potential impacts of the proposed development are outlined below, these are categorised in relation to the green energy park construction (including grid connection and turbine delivery), operational phase and decommissioning of the development.

### 13.5.1 Potential Impacts – Construction Phase

The construction activities associated with the green energy park 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, 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 (more details below).

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.

#### 13.5.1.1 Potential Impacts of Grid Connection

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

##### Construction Traffic Related Impacts

The proposed grid connection route is shown on Figure 13.4 and the existing environment along the route is described in Section 13.3.

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 11 months on the assumption that 75m of cable is installed each day. This includes the grid connection works from the Mullenaboree substation at Knockacullata to Barrymore, via Lackendarragh North. These works will lead to additional traffic associated with the cable installation as it is constructed.

##### Grid Connection Roadworks

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.

As described in Section 13.313.2, the local roads associated with the proposed grid connection route have very low levels of traffic and therefore the impact the proposed road works will have on the wider road network will be limited.

All road works will be subject to a road opening licence, but it is anticipated that the cable installation along the local roads between Knockacullata and Barrymore 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.

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.

On the local road from Knockacullata to Knoppoge, it is anticipated that grid cable installation will involve temporary road closures for approximately 7km.

Temporary road closures will be required at specific locations between Lackendarragh North and Barrymore 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 locations of joint bays are indicated in Figure 13-4.

Horizontal directional drilling operations will be required at a number of locations along the grid connection route between Knockacullata and Barrymore as described in Chapter 3. These activities are isolated and carried out in under a day at each location.



It is expected that a temporary road closure will be required for 2 no. of these locations where the cable will cross existing watercourses by this method. The proposed crossing of the M8 motorway by HDD can be carried out off the public road and will not have any impact on the existing road network. The locations of HDD operations are indicated in Figure 13-4.

#### 13.5.1.2 Potential Impacts of Turbine Delivery

The delivery of turbine components including blades, tower sections and nacelles is a specialist transport operation owing to the oversized loads involved. The blades are the longest component and have been considered for the purpose of this assessment.

Turbine component deliveries will be carried out at night 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.

In some cases, accommodation works are required along the turbine delivery route such as hedge or tree cutting, relocation of powerlines/poles, lampposts, signage and local road widening. Any accommodation works will be carried out in advance of the turbine deliveries, following consultation and agreement with the local authority. The turbine delivery route report detailing the accommodation works is included in Appendix 13-2.

Accommodation works are required at the following locations:

#### East TDR

- Local widening at Junction 14 of the M8 (Node 2.0);
- Street furniture removal, enabling works to splitter islands at the junction of the N72 and the R639 in Fermoy Town (Node 2.1);
- Local widening near Castlehyde along the N72 between Fermoy and Ballyhooly (Node 2.3);
- Local widening at the junction of the N72 and the Ballyhooly North Road east of Ballyhooly (Node 2.5);
- Local widening at the approach road to the Blackwater Bridge south of Ballyhooly (Nodes 2.6 & 2.7);
- Removal of trees and construction of an aggregate hard standing at Castleblagh south of Ballyhooly (Node 2.8);
- Local widening through the laying of hardcore to road verges and tree/vegetation trimming at various locations along the road from Ballyhooly to the site entrance at Knockdoorty (Nodes 2.9 – 2.13).

#### West TDR

- Street furniture removal, hedge/tree trimming, ramping of existing traffic splitter island and local widening through the laying of hardcore to road verge at Silverspings transitioning from the N8 to the R635 (Node 1.3);
- Enabling works to splitter island and removal of traffic lights at Blackpool (Node 1.5);
- Street furniture removal and vegetation trimming at junction between N20 and local road to Bottlehill (Node 1.6);
- Widening of existing forestry access, tree felling and construction of an off-site turning area at Glashaboy South (Offsite turning and transfer area);





- Local widening through the laying of hardcore to road verges, removal of street furniture at Junction between L-1217 and L-1219 (Junction 1).

### 13.5.1.3 Proposed Felling

In addition to existing forestry operations, tree felling will be required as part of the project. Felling of approximately 61ha of coniferous forestry is required within and around the wind farm infrastructure to accommodate the construction of some turbines, hardstands, crane pads, temporary compounds, borrow pits, access tracks and the proposed onsite substations.

Based on interpolation from timber load from the proposed clearfell area (which is fully mature trees) the total volume of timber is approximately 21,000 m<sup>3</sup>.

Based on a continuous harvesting rate of 10 loads per day (or 20 HGV trips) the duration of these works would be up to 15 weeks however it is likely this felling would take place over a slower pace and over a longer period. These trips would be spread across the site with forestry haulage vehicles making use of different existing forest access locations.

It is likely that significant areas will be felled in advance of the commencement of construction work and actual volumes during this phase will be considerably less than this. It is also likely that felling associated with the development will overlap with stock earmarked for felling as part of ongoing commercial forestry operations which will further reduce cumulative impact between felling and construction operations.

It is expected that haul routes used for felling activities will generally be the same as those identified for the turbine delivery route (i.e. to M8 via N72, or to N20).

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.

### 13.5.1.4 Permanent Met Masts

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

- Low-loader
- Flatbed trucks



- Works Van
- Telescopic Handler
- Mobile Crane.

Access to the mast locations shall be via the internal CGEP access track network. Minor upgrades to existing tracks shall be carried out for the final approach to mast locations.

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 Potential Impacts – Operation Phase

A small number of full-time wind farm personnel are expected to be present during the operational phase of the development. Traffic associated with the operational phase of the development will be from the energy park owner/operator, ESBN and EirGrid personnel visiting the substation, and maintenance staff. There will also be a limited infrequent attendance by routine environmental monitoring/compliance staff.

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.

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 would require a crane and the re-installation of some TDR temporary accommodation works. A cable fault along the grid connection route could potentially require temporary road works for intrusive investigations and repair. The above unplanned events are extremely unlikely to occur, however.

### 13.5.3 Potential Impacts – Decommissioning

The decommissioning phase of the project is described in Chapter 3 of this EIAR and these works will be subject to a decommissioning plan, to be agreed with the local authority.

On decommissioning, cranes will disassemble the above ground turbine components which would be removed off site for recycling. The foundations will be covered over and allowed to re-vegetate naturally if required. It is proposed that the internal site access tracks will be left in place.

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 main energy park development and no mitigation is required.

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





## 13.6 Impact Assessment

### 13.6.1 Construction Phase

The construction phase traffic generated by the development on the surrounding road network has been calculated by estimating the number of vehicles required for each phase of the development. A construction period of up to 24 months is expected based on the nature and scale of the proposed works. The number of vehicles is then converted to the equivalent two-way trips, whereby every vehicle will generate two trips, one to and one from the site.

It has been assumed following site investigations that site won material from borrow pits will provide aggregates for general fill purposes and that engineering fill and surface course stone shall be imported from local quarries.

Stone deliveries will be brought to site on HGV tipping vehicles with a capacity to carry 10m<sup>3</sup> of stone. The concrete deliveries will be ready-mix concrete wagons and not articulated and have a capacity to carry 8m<sup>3</sup> concrete per delivery.

It is estimated that the construction phase for the entire development will lead to 22,836 additional HGV trips (two-way) over the duration of the construction works.

Calculations of HGV and LGV movements associated with the construction of the development indicate an average daily increase of 44 HGV trips per day over a construction period of 24 months. Traffic volumes described in Table 13-5 are based on the construction sequence described in Chapter 3.

An average workforce of 50 persons is anticipated, increasing to 75 persons during peak periods. This is estimated to give rise to an increase of LGV traffic of 68 trips per working day and rising to 100 during peak construction periods. The combined HGV and LGV average daily increase is 113 trips per day.

As the project will be built from two distinct sides, the traffic impacts are split to estimate the traffic generated at each location. It is estimated that the construction phase for the Bottlehill and Mullenaboree side of the development will lead to 15,434 additional HGV trips (two-way) over the duration of the construction works.

Calculations of HGV and LGV movements associated with the construction of the development indicate an average daily increase of 30 HGV trips per day over a construction period of 24 months.

An average workforce of 25 persons is anticipated, increasing to 40 persons during peak periods. This is estimated to give rise to an increase of LGV traffic of 35 trips per working day and rising to 52 during peak construction periods. The combined HGV and LGV average daily increase is 66 trips per day.

It is estimated that the Knockdoorty side of the development will lead to 7,360 additional HGV trips (two-way) over the duration of the construction works.

Calculations of HGV and LGV movements associated with the construction of the development indicate an average daily increase of 14 HGV trips per day over a construction period of 24 months.

An average workforce of 25 persons is anticipated, increasing to 35 persons during peak periods. This is estimated to give rise to an increase of LGV traffic of 34 trips per working day and rising to 48 during peak construction periods. The combined HGV and LGV average daily increase is 48 trips per day.



The predicted AADT for the Coom Green Energy Park during the construction phase of the proposed development is presented in Table 13-4. The impact on predicted future traffic on the surrounding road network is also presented in this table.





**Table 13-4: Predicted AADT Volumes with Construction Phase Traffic**

Location	AADT (2018)	Predicted AADT During Construction (Estimated Site Start 2021)	% HGV Based on TII ATC Data	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
N72 Between Fermoy and Ballyhooley, Castlehyde Co. Cork	2,812	2,889	4.4%	127	14	141	11.2%	2,762	34	2,795	1.23%	48	2,937	1.67%
M08 Between Jn13 Mitchelstown (South) Jn14 Fermoy (North), Mitchelstown Co. Cork	18,898	19,413	10.2%	1,980	14	1,994	0.7%	17,433	34	17,467	0.19%	48	19,461	0.25%
M08 Corrin Bridge Jnc15 to Jnc16	18,166	18,661	9.4%	1,754	14	1,768	0.8%	16,907	34	16,941	0.20%	48	18,709	0.26%
N20 Between Blarney and Mallow, Lissavoura Co. Cork	17,122	17,588	6.3%	1,108	30	1,138	2.7%	16,480	35	16,515	0.21%	65	17,653	0.37%

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

- Site mobilisation
- Onsite access road and drainage
- Turbine crane pads
- Foundations
- Substation
- Grid connection cabling works.

The busiest period during the construction programme is expected to occur between Month 7 to Month 15 when multiple construction activities are expected to take place concurrently. Peak traffic associated with the development is expected to occur during month 12 of the construction programme Average daily vehicle trips during this month are estimated to reach up to 140 for HGV's and 100 for LGV's. The predicted AADT for the Coom Green Energy Park during peak month of the construction phase of the proposed development is presented in Table 13-5 over.



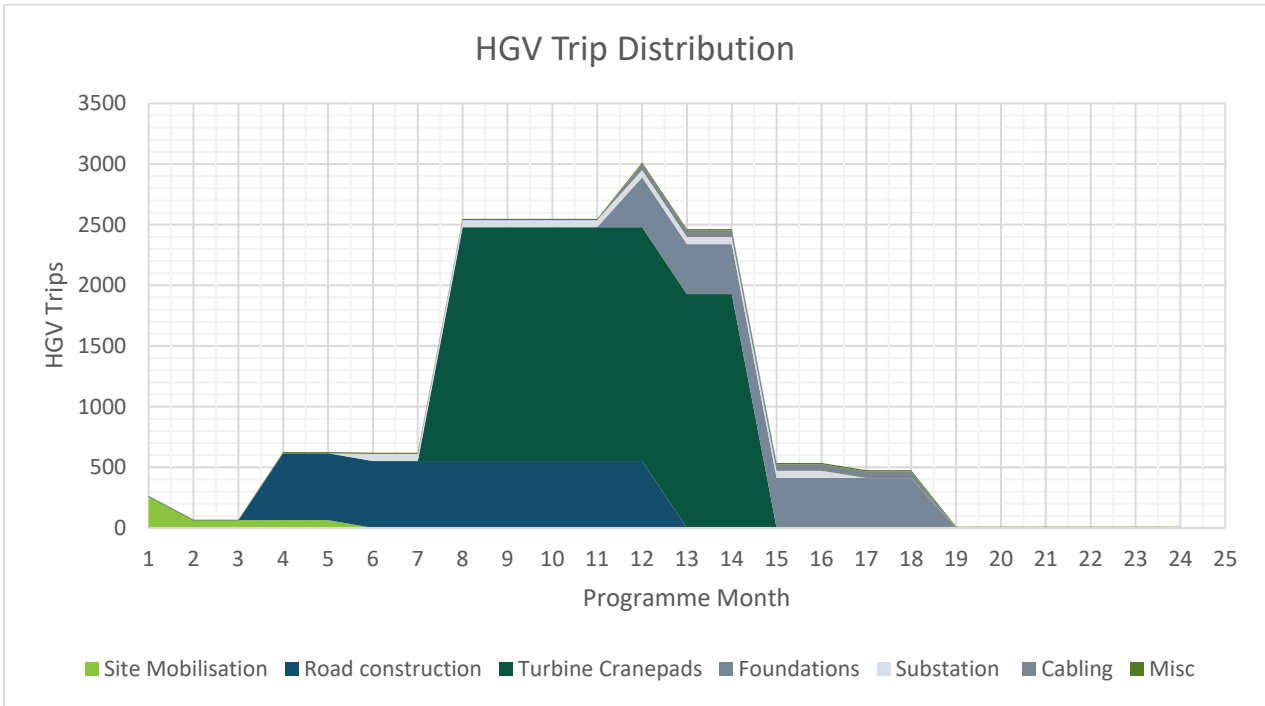
**Table 13-5: Predicted Construction Traffic Impact During Peak Month**

Location	Predicted AADT During Construction (Estimated Site Start 2021)	Predicted AADT During Peak Construction Month (Estimated 2022)	% HGV Based on TII ATC Data	HGV AADT Pre-Development	Average Daily HGV Trips Generated by Development during Peak Construction Month	Predicted HGV Daily Trips During Peak Construction Month	% Increase	LGV AADT Pre-Development	Average Daily LGV Trips Generated by Development during Peak Construction Month	Predicted LGV AADT During Construction	% Increase	Average Daily Trips Generated by Development (Combined) During Peak Construction Month	Predicted Combined AADT During Peak Construction Month	% Increase
N72 Between Fermoy and Ballyhooley, Castlehyde Co. Cork	2,889	2,915	4.4%	128	45	173	35.0%	2,786	48	2,834	1.72%	93	3,008	3.19%
M08 Between Jn13 Mitchelstown (South) Jn14 Fermoy (North), Mitchelstown Co. Cork	19,413	19,588	10.2%	1,998	45	2,043	2.2%	17,590	48	17,638	0.27%	93	19,680	0.47%
M08 Corrin Bridge Jnc15 to Jnc16	18,661	18,829	9.4%	1,770	45	1,815	2.5%	17,059	48	17,107	0.28%	93	18,922	0.49%
N20 Between Blarney and Mallow, Lissavoura Co. Cork	17,588	17,747	6.3%	1,118	95	1,214	8.5%	16,629	52	16,681	0.31%	147	17,894	0.83%

The second busiest period during the construction phase takes place during months 8, 9, 10 and 11 where average daily trips reach 119 and 100 for HGV's and LGV's respectively. These are distributed in similar fashion between the eastern and western parts of the site to that shown in the table above.

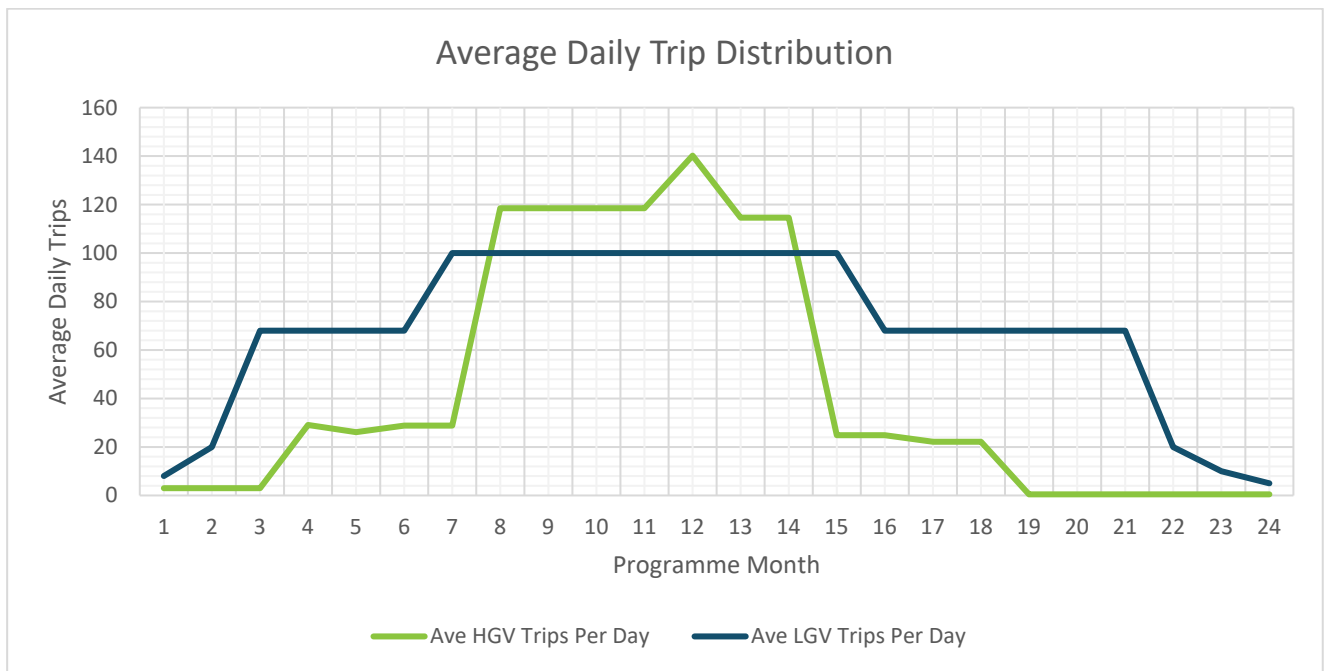
The distribution of overall HGV traffic throughout the construction programme is presented in Figure 13-7 below.





**Figure 13-7: HGV Trip Distribution**

The distribution of average daily trips for HGV's and LGV's for the overall project is presented in Figure 13-8.



**Figure 13-8: Average Daily Vehicle Trips During the Construction Phase**



Impacts along the TDR will be limited to specific locations where temporary accommodation works are required. The most significant of these works will take place at the following locations:

- Removal of trees and construction of an aggregate hard standing at Castleblagh south of Ballyhooly (East TDR - Node 2.8);
- Widening of existing forestry access, tree felling and construction of an off-site turning area at Glashaboy South (West TDR - Offsite turning and transfer area);

At these locations, relatively significant levels of construction activity will take place in comparison with other TDR node locations which are minor in nature.

It is estimated that felling and hard standing construction works at these locations will not exceed 5no HGV trips per hour at each location for construction material import and felling export. Average LGV trips per day for each location shall not exceed 5. This is based on a construction duration of 2 weeks at Node 2.8 and 4 weeks at the Glashaboy Turning Area.

As described in Section 13.3, the local roads associated with the proposed grid connection route have very low levels of traffic and therefore the impact temporary proposed road works will have on the wider road network will be limited.

Negative or adverse effects on the receiving environment associated with the construction works on the main energy park site are considered to be short-term in duration and slight to moderate in significance without appropriate 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 to slight in significance without appropriate mitigation.

Negative or adverse effects on the receiving environment associated with the construction of the grid connection route are considered to be short-term in duration and slight to moderate in significance without appropriate mitigation.

Negative or adverse effects on the receiving environment associated with proposed felling activities are considered to be short-term in duration and not significant to slight in significance.

Negative or adverse effects on the receiving environment associated with construction of permanent met masts are considered to be short-term in duration and imperceptible in significance.

### 13.6.2 Operational Phase

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

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

For unforeseen or unplanned works described in Section 13.5.2, it is considered that negative or adverse effects on the receiving environment would be temporary in duration and slight in significance without appropriate mitigation.





### 13.6.3 Decommissioning

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

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

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.

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 main energy park development and no mitigation is required.

Impacts are summarised in Table 13-6.

**Table 13-6: Impact Summary**

Phase	Project Element	Main Receiving Environment	Description of Potential Effect		
			Duration	Quality	Significance
Construction	Main Energy Park	N20, N72, Surrounding local road network	Short-term	Negative/Adverse	Slight - Moderate
	Turbine Delivery Route	M8, N20, N72, Local Road Network along TDR Route	Temporary	Negative/Adverse	Not significant - Slight
	Grid Connection Route	Local road network along Grid Connection Route	Short-term	Negative/Adverse	Slight - Moderate
Operation	Main Energy Park	N20, N72, Surrounding local road network	Long-term	Neutral	Imperceptible
	Turbine Delivery Route	M8, N20, N72, Local Road Network along TDR Route	Long-term	Neutral	Imperceptible
	Grid Connection Route	Local road network along Grid	Long-term	Neutral	Imperceptible



Phase	Project Element	Main Receiving Environment	Description of Potential Effect		
			Duration	Quality	Significance
		Connection Route			
Decommissioning	Main Energy Park	N20, N72, Surrounding local road network	Short-term	Negative/Adverse	Not significant - Slight
	Turbine Delivery Route	M8, N20, N72, Local Road Network along TDR Route	Temporary	Negative/Adverse	Not significant - Slight
	Grid Connection Route	Local road network along Grid Connection Route	N/A	N/A	N/A
Unplanned Events (i.e. Accidents)	Main Energy Park	N20, N72, Surrounding local road network	Temporary	Negative/Adverse	Slight
	Turbine Delivery Route	M8, N20, N72, Local Road Network along TDR Route	Temporary	Negative/Adverse	Slight
	Grid Connection Route	Local road network along Grid Connection Route	Temporary	Negative/Adverse	Slight

## 13.7 Mitigation Measures

### 13.7.1 Construction Phase

This section outlines the mitigation measures that will reduce, minimise or eliminate the potential impacts created by the development 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 wind farm development.

#### Traffic Management Plan

A detailed traffic management plan (TMP) has been submitted with this EIAR in Appendix 3-2. 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.





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

**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.

**Temporary Road Crossing Point:** Where the internal wind farm access track crosses the local road L-69650 between Bottlehill and Mullenaboree, this junction will be managed appropriately to allow safe passage of construction vehicles in and out of the junction. Priority at this junction will be maintained for public traffic. This crossing point will be secured when not in use.

**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.

### Grid Connection Works Mitigation

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 licence 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 if 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 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.

**Haul Route Interface:** aggregate imported to the wind farm site from local quarries will be managed to ensure they do not conflict with the grid connection works. Grid connection works will be planned to avoid conflicts with other major activities on the main construction site such as concrete foundation pours and large component deliveries. Measures contained within the construction stage CEMP and TMP will ensure no conflicts occur between felling and construction operations.

On the local road from Knockacullata to Knoppoge, it is anticipated that grid cable installation will involve short rolling temporary road closures over approximately 7km. A diversion route will be used via the Knockacullata to Slumberhill Road. Roadworks along this section will impact on road users and will lead to slightly increased journey times for the duration of the roadworks.

As described in Section 13.4 Horizontal directional drilling operations will be required at a number of locations along the grid connection route between Knockacullata and Barrymore as described in Chapter 3. These activities are isolated and carried out in under a day at each location. It is expected that a temporary road closure will be required for 2 no. of these locations where the cable will cross existing watercourses by this method.

Where the grid connection route crosses the M8 motorway, horizontal directional drilling (HDD) will be used. The locations of the launch and reception pits will be adequately spaced from the carriageway to ensure the bore is at such depth as not to conflict with the drainage, foundations or surface of the motorway. Locations of proposed launch and reception pit locations are shown in Plate 13-7. Detailed descriptions of HDD construction methodologies are contained in Chapter 3 and the CEMP.

The existing structures will be protected, and adequate separation will be maintained from and under the existing structures. Traffic management and licensing will be required to install these ducts which will likely take place during one mobilisation ahead of the grid trenching work.

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

#### 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 works 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 at night 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 unless agreed otherwise.

**Consultation:** Consultation with the local residents and Cork County Council are included in the traffic management plan to manage turbine component deliveries.

### Proposed Felling Mitigation

Measures contained within the construction stage CEMP and TMP which are contained within Appendix 3-4 ensure no conflicts occur

### Permanent Met Masts

Construction works associated with met mast installations shall be subject to the same traffic management requirements as the energy park construction.

### 13.7.2 Operational Phase

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

### 13.7.3 Decommissioning Phase

As stated in Section 13.6.3, the traffic impact associated with the decommissioning phase will be significantly less than the construction phase.

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 will be included in the decommissioning plan for the wind farm.

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 main energy park development and no mitigation is required.

Traffic and transportation impact mitigation for decommissioning of the energy park will be the same as those identified here and in the TMP in Appendix 3-4 for construction stage works and will be tailored to suit the existing environment conditions of the day and technology available.



## 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 Phase

Negative or adverse effects on the receiving environment associated with the construction works on the energy park site are considered to be short-term in duration and slight 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 not significant following mitigation.

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

Negative or adverse effects on the receiving environment associated with proposed felling activities are considered to be short-term in duration and not significant.

Negative or adverse effects on the receiving environment associated with proposed met mast construction activities are considered to be short-term in duration and imperceptible in significance.

### 13.8.2 Operational Phase

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

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

For unforeseen or unplanned works such as emergency turbine repair works described in Section 13.5.2, it is considered that negative or adverse effects on the receiving environment would be temporary in duration and not significant following appropriate mitigation.

### 13.8.3 Decommissioning

Negative or adverse effects on the receiving environment associated with decommissioning works at the energy park 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 energy park development and no mitigation is required.





A summary of residual impacts post-mitigation is presented in Table 13-7:

**Table 13-7: Summary of Residual Impacts**

Phase	Project Element	Main Receiving Environment	Description of Potential Effect		
			Duration	Quality	Significance
Construction	Main Energy Park	N20, N72, Surrounding local road network	Short-term	Negative/Adverse	Slight
	Turbine Delivery Route	M8, N20, N72, Local Road Network along TDR Route	Temporary	Negative/Adverse	Not significant
	Grid Connection Route	Local road network along Grid Connection Route	Short-term	Negative/Adverse	Slight
Operation	Main Energy Park	N20, N72, Surrounding local road network	Long-term	Neutral	Imperceptible
	Turbine Delivery Route	M8, N20, N72, Local Road Network along TDR Route	Long-term	Neutral	Imperceptible
	Grid Connection Route	Local road network along Grid Connection Route	Long-term	Neutral	Imperceptible
Decommissioning	Main Energy Park	N20, N72, Surrounding local road network	Short-term	Negative/Adverse	Not significant
	Turbine Delivery Route	M8, N20, N72, Local Road Network along TDR Route	Temporary	Negative/Adverse	Not significant
	Grid Connection Route	Local road network along Grid Connection Route	N/A	N/A	N/A
Unplanned Events (i.e. Accidents)	Main Energy Park	N20, N72, Surrounding local road network	Temporary	Negative/Adverse	Not significant - Slight
	Turbine Delivery Route	M8, N20, N72, Local Road Network along TDR Route	Temporary	Negative/Adverse	Not significant - Slight



Phase	Project Element	Main Receiving Environment	Description of Potential Effect		
			Duration	Quality	Significance
	Grid Connection Route	Local road network along Grid Connection Route	Temporary	Negative/Adverse	Not significant - Slight

### 13.9 Cumulative Impacts of Proposed Development

Relevant projects in proximity to the proposed Coom Green Energy Park development are listed in Table 13-8 below.

#### 13.9.1 Bottlehill Landfill

As described in Section 13.4.2, one of the western (Bottlehill) access points is located at the Bottlehill Landfill site (off the L-1217 local road). The site entrance here will accommodate access to the Bottlehill part of the site for standard construction vehicles. Vehicles entering the site at this point shall only have the right to access turbines T2 – T7.

Access to the remaining turbines in the Bottlehill and Mullenaboree parts of the site shall be via the main site access off the L-1219-0. The main site access serving the Bottlehill and Mullenaboree parts of the site is an existing Coillte forestry access located on the L-1219-0 which will be upgraded to facilitate oversize loads associated with wind turbine component deliveries. All oversize turbine delivery vehicles for the Bottlehill and Mullenaboree areas of the site shall use this entrance.

While the first phase of the landfill has been constructed, it is currently not operational. At the time of writing it is unknown when the landfill will begin receiving waste.

Should landfill operations commence during the operational phase of CGEP, the cumulative impact would be imperceptible due to the very small amounts of operational phase traffic associated with the energy park.

For the purposes of assessing worst case however, it has been assumed that landfill operations commence during peak construction works. According to the Bottlehill Landfill Environmental Impact Statement (EIS), prepared by Tobin Consulting Engineers on behalf of Cork County Council (May 2003), the Bottlehill landfill facility will generate 9.5 HGV waste trips per hour in the first year of operation rising to 14 per hour in the last year of operation. Assuming an average figure of 11.75 HGV trips per hour, this results in an average daily trip rate of 94 during operation of the facility.





**Table 13-8: Cumulative Traffic Impact – Bottlehill Landfill**

Location	Predicted AADT During Peak Construction Month (Estimated 2022)	HGV AADT Pre-Development	Average Daily HGV Trips Generated during Peak Construction Month	Predicted HGV Daily Trips During Peak Construction Month	% Increase
Impact on N20 - CGEP Only	17,747	1,118	95	1,214	8.5%
Impact on N20 - CGEP + Bottlehill Landfill Operations			189	1,308	16.9%

As illustrated in the table above, in this worst-case scenario, HGV traffic accessing the site from the N20 would temporarily double resulting in an increase in average daily HGV traffic on the N20 in the vicinity of the development from 8.5% to 16.9%. Post-mitigation, the short-term negative or adverse effect on the receiving environment would increase from ‘slight’ to ‘slight to moderate’ in significance.

It is not expected that landfill operations would conflict with turbine deliveries or construction of the grid connection route as there would be insufficient interaction to create a cumulative impact.

Should the construction phase coincide with the commencement of operation of the landfill, measures contained within the construction stage CEMP and TMP will ensure no conflicts occur between the two activities.

### 13.9.2 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 up to 13 HGV trips per day.

This is based on an expected harvesting rate of approximately 50,000m<sup>3</sup> per annum and a haulage rate of 30m<sup>3</sup> per load. This is a worst-case estimate as these trips would be spread out around the wider forested area.

Negative or adverse effects on the receiving environment associated with these works are considered to be short-term in duration and not significant to slight in significance.

Measures contained within the construction stage CEMP and TMP will ensure no conflicts occur between felling and construction operations.

### 13.9.3 Replant Lands

The total area required for replanting is 62.8 hectares.



Works associated with replanting are isolated from the main development construction works and traffic associated with replanting is expected to be very low. HGV traffic associated with replanting works involve the mobilisation of an excavator for drainage works (if required) and delivery of tree saplings by truck. The works can be carried out by a small team.

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.

Negative or adverse effects on the receiving environment associated with replanting activities at Moneygorm are considered to be short-term in duration and imperceptible in significance and no additional mitigation is required.

There is no cumulative impact associated with replanting activities at Ballard Co. Wicklow due to distance from CGEP.

#### 13.9.4 M20 Motorway Project

The M20 motorway project from Limerick to Cork is currently at feasibility stage. In the highly unlikely scenario that this project commences during the construction phase of CGEP there is the potential for a direct cumulative negative effect on the receiving environment in the form of increased construction traffic and disruption, especially on local roads near the proposed CGEP development site during construction of the section of motorway near the turn off for Bottlehill Landfill. It should be noted that expected impacts associated with the M20 development would have a considerably greater adverse effect on the existing road network than CGEP and would form vast majority of the overall cumulative impact.

Negative or adverse effects on the receiving environment associated with these activities are considered to be temporary in duration and significant without adequate mitigation.

Measures contained within the construction stage TMP for CGEP will ensure traffic management measures for both projects do not conflict. A TMP has been prepared as part of this EIAR and can be found in the CEMP in Appendix 3-4.

#### 13.9.5 M28 Motorway Project

The M28 Cork to Ringaskiddy Project is the upgrade of approximately 12.5km of the N28 National Primary Route from the N40 South Ring Road, at Bloomfield Interchange, to Ringaskiddy, Co. Cork.





Transport Infrastructure Ireland is the proponent of this project and the project has been included in the government's Infrastructure and Capital Investment Plan 2016 – 2021.

Construction is expected to take between 30 and 36 months and traffic impacts associated with the M28 development would have a considerably greater adverse effect on the existing road network in comparison to CGEP.

This project is over 20km from the proposed CGEP site. In the highly unlikely scenario that this project commences during turbine delivery for CGEP, the proposed roads scheme may result in a cumulative impact due to its interaction with the proposed TDR between Ringaskiddy and Dunkettle where the scheme terminates.

Negative or adverse effects on the receiving environment associated with these activities coinciding is considered to be temporary in duration and not significant.

The measures contained within the construction stage TMP for CGEP will ensure traffic management measures for both projects do not conflict. A TMP has been prepared as part of this EIAR and can be found in the CEMP in Appendix 3-4.

#### 13.9.6 Dunkettle Interchange Upgrade Project

Transport Infrastructure Ireland (TII) has developed proposals to improve the Dunkettle Interchange which is located approximately 6km to the east of Cork City, just north of the Jack Lynch Tunnel. The Interchange is strategically important as it is the intersection of a number of key national routes:

- The M8/N8 Dublin to Cork Road;
- The N25 Cork to Waterford Road; and
- The N40 Southern Ring Road (through the Jack Lynch Tunnel).

Construction of preliminary phases of the project has already commenced and the total duration of the construction works is expected to be 2.5 years. The construction of the interchange project will be carried out over several phases with traffic management measures in place to ensure continuous traffic flows in all directions through the junction during the construction works. A review of proposed designs for the revised junction indicates that the turbine delivery route and proposed mitigations outlined here will not be impacted by the new layout.

This project is over 18km from the proposed CGEP site. In the unlikely scenario that this project commences during turbine delivery for CGEP, the proposed roads scheme may result in a cumulative impact due to its interaction with the proposed TDR between Ringaskiddy and Silversprings where the scheme extends.

Negative or adverse effects on the receiving environment associated with these activities coinciding is considered to be temporary in duration and not significant.

The measures contained within the construction stage TMP for CGEP will ensure traffic management measures for both projects do not conflict. A TMP has been prepared as part of this EIAR and can be found in the CEMP in Appendix 3-4.



### 13.9.7 Consented Wind Turbine at Glannasack

A planning consent exists for a single wind development 1km from the site near Glannasack (planning ref. 11/06168). This consists of a single wind turbine of a smaller scale to those proposed at CHEP.

In the unlikely scenario that this project is constructed at the same time as CGEP, negative or adverse effects on the receiving environment associated with these activities are considered to be short-term in duration and not significant.

The measures contained within the construction stage TMP for CGEP will ensure traffic management measures for both projects do not conflict. A TMP has been prepared as part of this EIAR and can be found in the CEMP in Appendix 3-4.

## 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 development.

The key roads associated with the receiving environment are the N20, N72 and local roads surrounding the site.

The proposed development is likely to result in a slight to moderate short-term negative impact on these roads 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' in significance according to Draft EPA guidelines.

Impacts during operation and decommissioning are considered imperceptible to not significant.

It is not expected that the operation of the Bottlehill landfill, should it become active during the construction or the operation of CGEP will have a significant cumulative impact on the existing road network.

There are no significant cumulative impacts expected on the receiving environment as a result of other projects during the construction, operation and decommissioning of the proposed development.

It should be noted however that in the unlikely event of the M20 motorway upgrade taking place during construction of CGEP, temporary negative or adverse effects on the receiving environment are expected to be significant without mitigation. With the implementation of mitigation measures described here, the cumulative temporary adverse or negative impact will be reduced to 'moderate'. As described in 13.9.4, expected impacts associated with the M20 development would have a considerably greater adverse effect on the existing road network than CGEP and would form the vast majority of the overall cumulative impact.

The mitigation measures identified in this Chapter will be adopted and implemented by the Contractor and are incorporated into the construction stage CEMP and TMP for the project. A TMP has been prepared as part of this EIAR and can be found in the CEMP in Appendix 3-4.





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