

## 4. DESCRIPTION OF THE CLEANRATH WIND FARM DEVELOPMENT

### 4.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) describes the Cleanrath wind farm development that currently exists at the site. It also provides a summary of the works undertaken in the construction phase of the Cleanrath wind farm development. For the purposes of the substitute consent application to be submitted to An Bord Pleanála, the full description of the Cleanrath wind farm development is as follows:

- 1. 9 No. wind turbines with a ground to blade tip height of 150 metres and all associated foundations and hard-standing areas.*
- 2. All associated underground electrical (33kV & 38kV) and communications cabling connecting the turbines to the national electricity grid.*
- 3. Upgrade of existing access junctions and roads.*
- 4. Upgrade of existing and provision of new site access roads.*
- 5. Borrow pit.*
- 6. Temporary construction compound.*
- 7. Accommodation works along the turbine delivery route*
- 8. Temporary roadway to facilitate turbine delivery.*
- 9. Forestry Felling*
- 10. Site Drainage;*
- 11. The operation of the wind farm for a period of 25 years.*
- 12. The decommissioning of the wind farm, removal of turbines and restoration of the site.*
- 13. All associated site development and ancillary works.*

The application for substitute consent for the Cleanrath wind farm development includes the connection to the national electricity grid. All elements of the Cleanrath wind farm development, including grid connection and any works completed on public roads to accommodate turbine delivery, have been assessed as part of the remedial Environmental Impact Assessment Report (rEIAR) which accompanies this application.










This application seeks substitute consent for 25-year operational life from the date of commissioning of the entire wind farm.

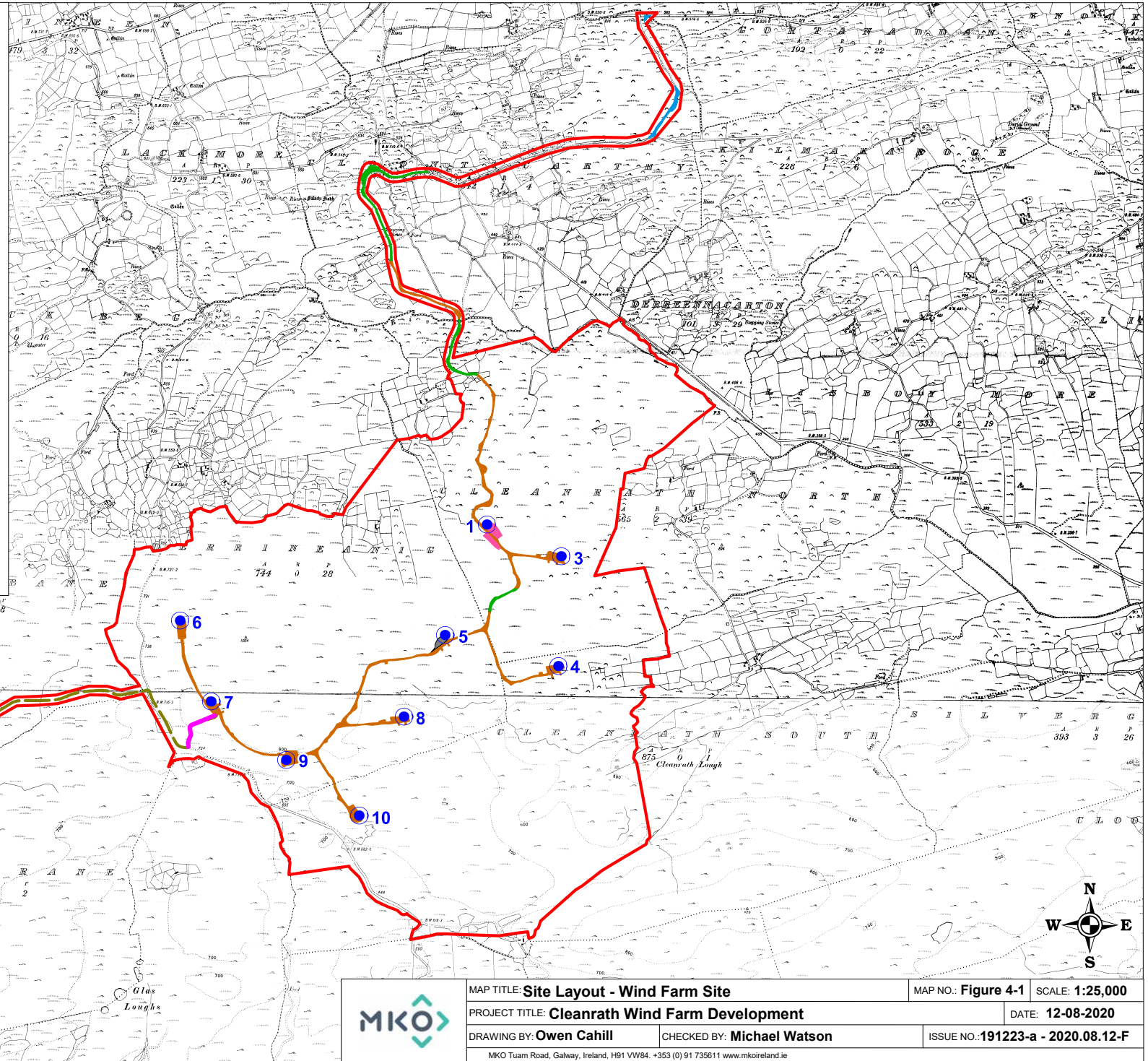
A fully detailed description of the Cleanrath wind farm development is provided below.

### 4.2 Development Layout

The layout of the Cleanrath wind farm development is shown on Figure 4-1. This map shows the current locations of the wind turbines, internal roads layout and the main site entrance. The map also shows the location of other elements of infrastructure including the borrow pit and the area used as a temporary construction compound used during the construction phase. Detailed layout drawings of the Cleanrath wind farm development are included as Appendix 4-1 to this report.

# Map Legend

-  rEIAR / EIAR Study Area
-  As Constructed Turbine Locations
-  Borrow Pit Area
-  Area used as a Temporary Construction Compound
-  Grid Connection Cable Route
-  Newly Constructed Roads
-  Existing Roads Upgraded
-  Turbine Delivery Accomodation Areas
-  Operational Access/Inspection Road with underground cabling permitted under PL ref. 18/04458



## 4.3 Development Components

### 4.3.1 Wind Turbines

#### 4.3.1.1 Wind Turbine Locations

The current installed wind turbine layout was constructed in accordance with a design which was optimised using wind farm design software to maximise the energy yield from the site, while maintaining sufficient distances between the turbines to ensure turbulence and wake effects would not compromise turbine performance. The as constructed grid reference co-ordinates of the installed turbine locations and associated foundation levels are listed in Table 4-1 below. The turbine numbering of the installed turbines was altered for operational purposes, however for ease of reference, the turbine numbering used in this EIAR corresponds to that of 2017 Permission application documentation. The corresponding installed turbine number is provided in the Table 4-1 below.

Table 4-1 Wind Turbine Locations and Elevations

Turbine Number	New Turbine Number (as per signage on site)	Irish Grid Coordinates		Top of Foundation Elevation (m OD)
		Easting	Northing	
1	15	120871	70057	209
3	14	121213	69913	213
4	13	121200	69411	190
5	12	120682	69553	208
6	7	119466	69620	260
7	8	119610	69250	253
8	11	120493	69178	222
9	9	119952	68981	228
10	10	120288	68725	229

#### 4.3.1.2 Turbine Type

Wind turbines harness the energy from the wind and convert it into electricity. A wind turbine, as shown in Plate 4-1 below, consists of four main components:

- > Foundation unit
- > Tower
- > Nacelle (turbine housing)
- > Rotor



Plate 4-1 Wind Turbine Components.

The installed wind turbines have a ground to blade tip height of 150 metres.

The turbine model installed on site is the Nordex N117 which has a hub height of 91m and a rotor diameter of 117m.

The wind turbines are conventional three-blade turbines and are all geared to ensure the rotors of all turbines rotate in the same direction at all times. The turbines are light grey matt colour.

Typically, various types and sizes of turbines are considered in an EIAR to assess the ‘worst case scenario’. As this EIAR has been prepared post construction, the turbine type and size is now known, the various assessments throughout this document have been completed using the N117 turbine. Turbine design parameters have a bearing on the assessment of shadow flicker, noise, visual impact, traffic and transport and ecology (specifically birds), as addressed elsewhere in this EIAR. In each EIAR section that requires the consideration of turbine parameters as part of the impact assessment, the turbine design parameters assessed are those of the installed turbine.

A drawing of the wind turbine is shown in Appendix 4-1. The individual components of a typical geared wind turbine nacelle and hub are shown in Figure 4-2 below.

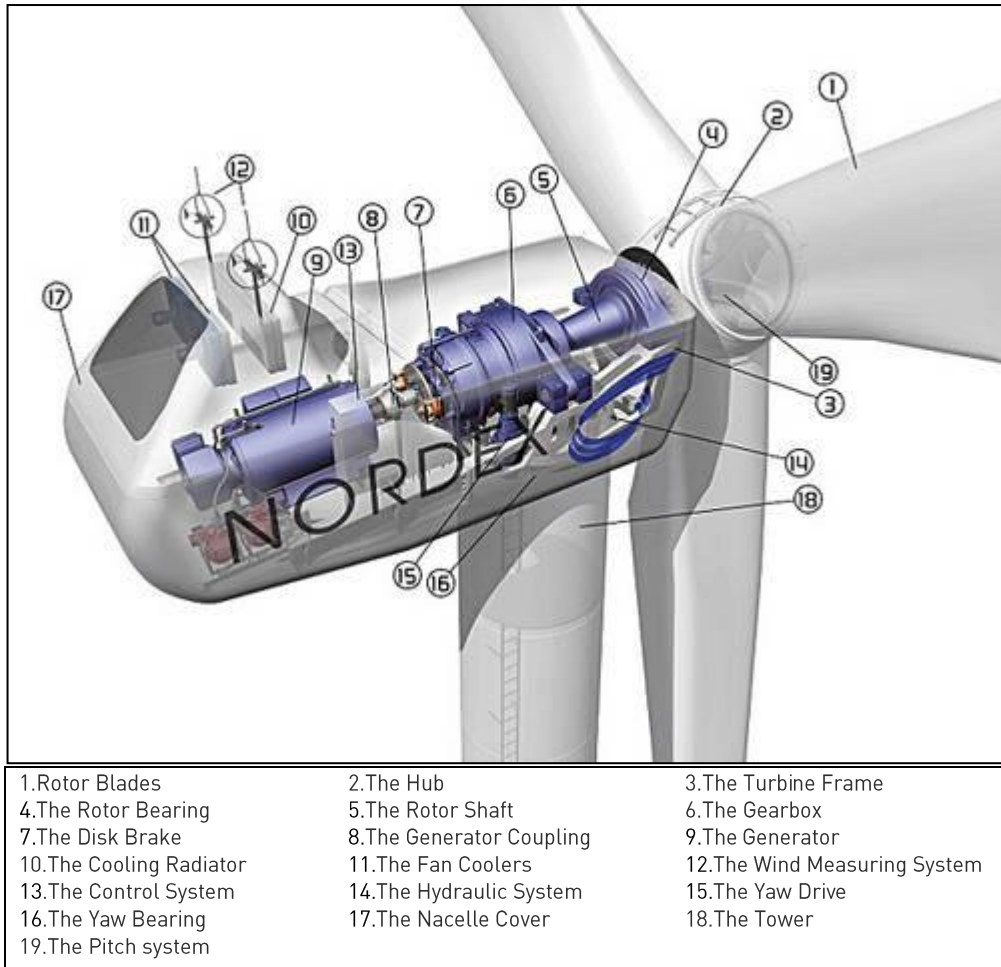


Figure 4-2 Turbine nacelle and hub components

### 4.3.1.3 Turbine Foundations

Each wind turbine is secured to a reinforced concrete foundation that is installed below the finished ground surface. The size of the foundations installed vary between 20.2 – 21.8 metres in diameter in a circular configuration. The turbine foundation transmits any load on the wind turbine into the ground. The horizontal and vertical extent of a turbine’s foundation is shown in Appendix 4-1.

### 4.3.1.4 Hard Standing Areas

Hard standing areas consisting of levelled and compacted hardcore are installed around each turbine base and were used to facilitate access, turbine assembly and turbine erection. The hard standing areas were used to accommodate cranes used in the assembly and erection of the turbine, offloading and storage of turbine components, and generally provide a safe, level working area around each turbine position. The hard standing areas were then extended to cover the turbine foundations once the foundation were in place. The sizes, arrangement and positioning of hard standing were installed as per turbine supplier’s requirements. The installed turbine hard standing areas which have been optimised at each turbine location so that they were accommodated by the topography, position of the site access road, the turbine position and the turbine supplier’s requirements are shown on the layout drawings included as Appendix 4-1.

The hard standing areas were developed to provide levelled assembly areas within the footprint of each hard stand. This ensured an appropriately sized area for offloading turbine blades and tower sections from trucks prior to being lifted into position by cranes., These levelled areas were provided within the hard standing areas outlined in the as constructed drawings in Appendix 4-1.

#### 4.3.1.5 Power Output

The installed wind turbines have a rated electrical power output of 2.4 megawatt (MW) and 3.6 MW depending on their siting on the wind farm site. There are 4 no. 3.6MW turbines and 5 no. 2.4MW turbines, with a combined installed capacity of 26.4MW. For the purposes of this EIAR, the rated output of 26.4MW has been utilised in the various calculations as appropriate.

The Cleanrath wind farm development has the potential to produce up to 80,942 MWh (megawatt hours) of electricity per year, based on the following calculation:

$$A \times B \times C = \text{Megawatt Hours of electricity produced per year}$$

where: A = ..... The number of hours in a year: 8,760 hours

B = ..... The capacity factor, which takes into account the intermittent nature of the wind, the availability of wind turbines and array losses etc: 35%

C = ..... Rated output of the wind farm: 26.4 MW.

The capacity factor of a wind farm takes into account the intermittency of the wind and is based on average wind speeds. A load factor of 35% is used here, based on the average figure anticipated for modern wind turbines selected to best suit the site's wind regime.

Therefore, the 80,942 MWh of electricity produced by the Cleanrath wind farm development is sufficient to supply approximately 19,272 Irish households with electricity per year, based on the average Irish household using 4.2 MWh of electricity (this latest figure is available from the March 2017 CER Review of Typical Consumption Figures Decision).

#### 4.3.2 Site Roads

The Cleanrath wind farm development site is accessed via the existing junction between the L3402 and the local road in the townland of Cloontycarthy adjacent to the sawmill, through a new turbine delivery accommodation roadway for abnormal loads and then via an existing commercial forestry entrance off the local road and into the site as outlined in Figure 4-1 above. From this site entrance, a network of forestry tracks and a local public road traverse the northern half of the site. Maximum use was made of the existing road and tracks in accessing the turbine locations which minimised the requirement for new roadways within the site.

Straight sections of existing and new roadways were installed to a running width of c.6 metres to accommodate the transportation of large turbine components. Corners and junctions are installed wider than six metres to allow the trucks to manoeuvre around bends. All site access roads as part of the Cleanrath wind farm development, both existing which required upgrade and new, were installed to comply with the turbine supplier's requirements. The stone material used for upgrade and construction of roads was won on site.

Floating roads were constructed where deeper peat depths were found within the site (generally above 2m).

#### 4.3.3 Borrow Pit and Rock Extraction Areas

One on-site borrow pit was developed as part of the Cleanrath wind farm development. The rock and hardcore material that was required during the construction of the Cleanrath wind farm development was sourced from the on-site borrow pit and areas where stone material was won on site as part of the cut and fill of turbine areas and roads. It is not proposed to undertake any further extraction from this

borrow pit as the requirement for stone material on the site now longer exists since the completion of construction. The borrow pit area has been reinstated since the completion of rock extraction.

#### 4.3.4 Temporary Construction Compound

A temporary construction compound measuring approximately 80 metres by 40 metres was installed in the north of the site adjacent to Turbine No. 1 and located along a section of new road. During construction, the compound included the provision of temporary site offices, staff facilities and car-parking areas for staff and visitors. Since the completion of construction, all offices, welfare facilities and equipment has been removed and the area repurposed as the hardstanding for Turbine No. 1.

An additional area of temporary construction compound was also provided on the south side of the access road adjacent to Turbine no. 1 which was used mainly by the turbine supplier as their compound during turbine installation. This area of temporary construction compound has been decommissioned with all offices, containers and welfare facilities removed from site. The stoned area that remains will be allowed to revegetate naturally over time.

The location and extent of the construction compound is shown on the site layout drawing in Figure 4-1.

#### 4.3.5 Access and Transportation

##### 4.3.5.1 Site Entrances

The site of the Cleanrath wind farm development has one main site entrance via an existing forestry road which was used during the construction phase. This forestry road is located in the townland of Cloontycarthy and accessed off the local public road. The entrance is located to the north of the site serving the entire footprint of the Cleanrath wind farm development. The location of the entrance is shown on the site layout drawing in Figure 4-1. Upgrade works have been completed to the existing entrance in order to accommodate access and egress of construction and turbine delivery vehicles. The layout of the site entrance is shown in Appendix 4-1.




There is a secondary entrance which was the subject of a separate planning permission to facilitate a more efficient cable route exiting the site and operational access. This entrance was not used for the main construction of the Cleanrath wind farm development however it did facilitate the construction of the export cable route. This entrance is controlled by a locked barrier for use by operation/maintenance personnel only.

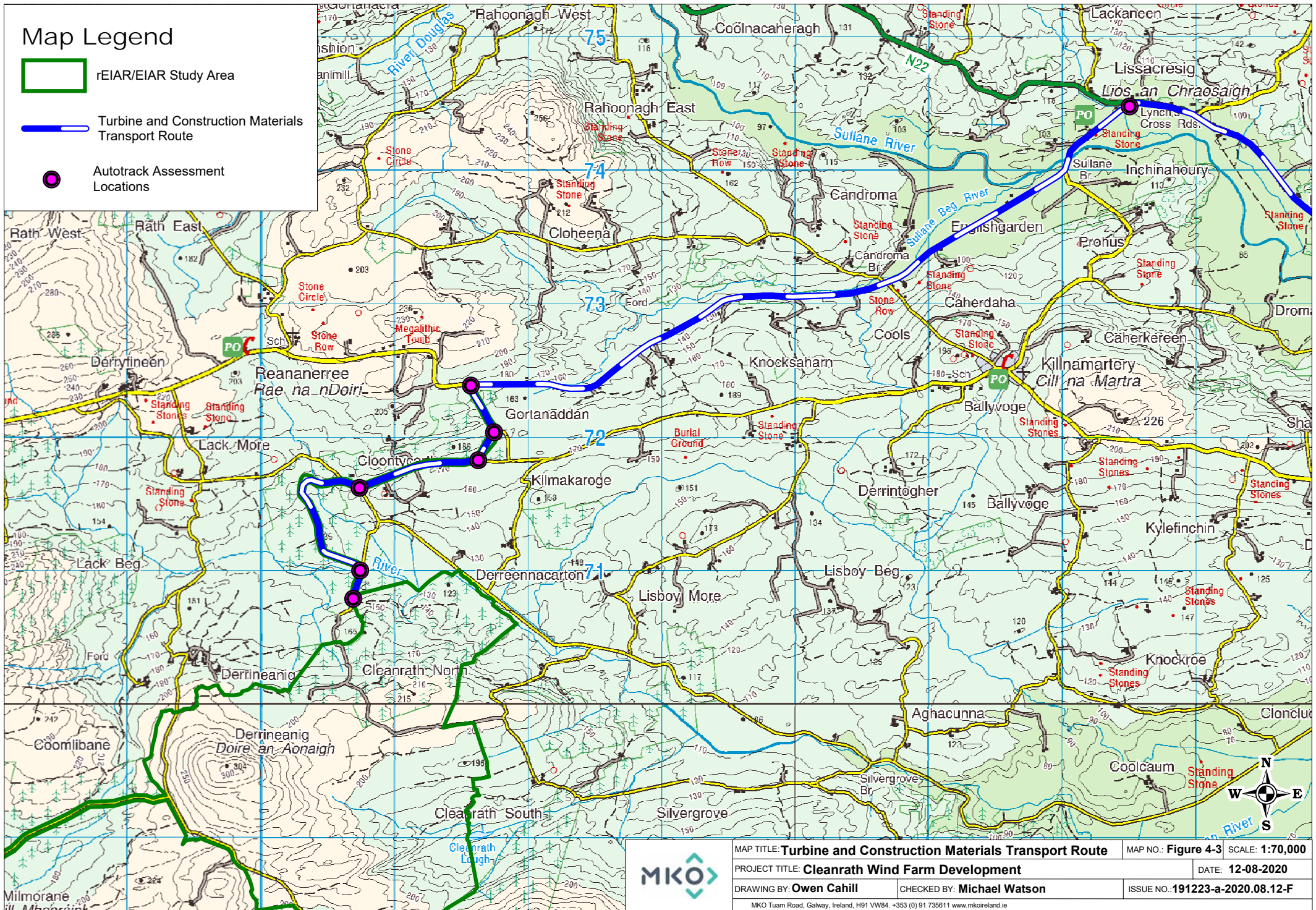
##### 4.3.5.2 Turbine and Construction Materials Transport Route

The turbine transport route to the Cleanrath wind farm development saw turbine components transported from the port at Ringaskiddy via the N40 National Primary Road and N22 National Primary Road to the townland of Lackaneen, east of the village of Lissacressig, before travelling onwards toward the site via a network of local roads to the existing site entrance in the townland of Cloontycarthy. The route had been the subject of a full route survey and swept path analysis survey prior to construction.

Deliveries to site such as concrete, steel and construction materials used the same transport route as the wind turbines to the Cleanrath wind farm development. Deliveries to the grid connection works used additional routes to access the various works areas as outlined in Figure 4-3. The number of construction vehicles generated during the construction phase of the Cleanrath wind farm development are outlined as part of the traffic and transport assessment in Chapter 14 of the rEIAR.

# Map Legend

-  rEIAR/EIAR Study Area
-  Turbine and Construction Materials Transport Route
-  Autotrack Assessment Locations



MAP TITLE: <b>Turbine and Construction Materials Transport Route</b>		MAP NO.: <b>Figure 4-3</b>	SCALE: <b>1:70,000</b>
PROJECT TITLE: <b>Cleanrath Wind Farm Development</b>			DATE: <b>12-08-2020</b>
DRAWING BY: <b>Owen Cahill</b>		CHECKED BY: <b>Michael Watson</b>	
MKO Tuam Road, Galway, Ireland, H91 VW84. +353 (0) 91 735611 www.mkoireland.ie		ISSUE NO.: <b>191223-a-2020.08.12-F</b>	



### 4.3.5.3 Works Along Transport Route

#### 4.3.5.3.1 Road Widening

Road widening was required along the turbine transport routes to accommodate the large vehicles used to transport turbine components to the Cleanrath wind farm development. The section of existing road which was the subject of widening works is outlined in Figure 4-4 and Appendix 4-1. These road works were carried out under Road Opening Licence (ROL) granted by Cork County Council (2019CO0648).

#### 4.3.5.3.2 Construction of Temporary Junction Accommodation Works

Junction accommodation works were completed at the exiting junction between the L-7435 and the local road in the townland of Cloontycarthy adjacent to an existing sawmill operational. The works comprised a new section of road on the eastern site of the junction to reduce the turning area required by abnormal loads. The temporary junction accommodation works were only be used by the turbine delivery/abnormal load vehicles and other vehicles associated with the delivery process. The extent of this junction upgrade is outlined within the Layout Drawings in Appendix 4-1.

The granular fill and final surface running layer within the accommodation areas will be left in place to allow these to be used again in the future should it become necessary (i.e. at decommissioning stage for turbine removal, or in the unlikely event of having to swap out a blade component during the operational phase). Should this be required the boundary treatments will be temporarily removed and then restored on completion of the required works.

#### 4.3.5.3.3 Turbine Delivery Accommodation Roadway

A temporary turbine delivery accommodation roadway was constructed in the townland of Cloontycarthy along with the section of road which was widened which is also located in the townland of Cloontycarthy. It is proposed that this temporary roadway will remain in place with the junctions with the public closed off on either end to prevent use by the general public. This roadway may also be required in the future to transport replacement components for turbines over the lifetime of the Cleanrath wind farm development. It may also be required during the decommissioning at the end of the 25-year lifetime of the Cleanrath wind farm development or pending the outcome of this substitute consent process where early decommissioning could be required.

### 4.3.6 Derragh Wind Farm Substation

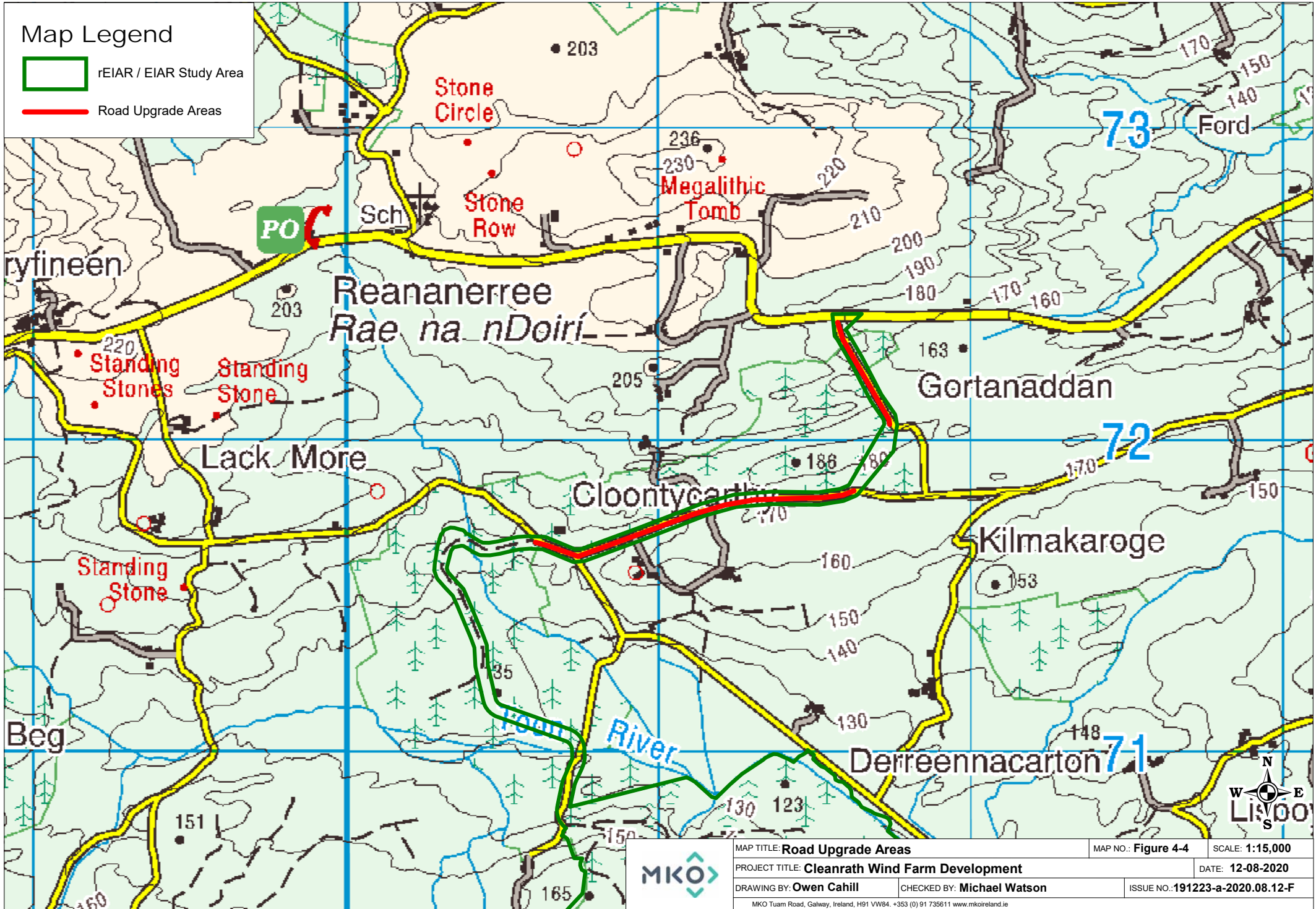
The grid connection cabling from the Cleanrath wind farm development connects to the existing 38kV Derragh Wind Farm Substation constructed as part of the Derragh Wind Farm development and is located approximately 3km west of Cleanrath Wind Farm in the townland of Rathgaskig. The cabling loops back out of this substation and runs mainly within the public road corridor on to the 110kV Coomatagart substation located in the townland of Grousemount, Co. Kerry.

The electricity substation compound includes a wind farm control building and the electrical components necessary to consolidate the electrical energy generated on Cleanrath wind farm development site and export that electricity to the national grid. Further details regarding the connection of the onsite substation to the national electricity grid are provided in Section 4.3.7 below.

The location of the Derragh Wind Farm Substation is outlined in Figure 4-5 (below) with layout and elevations of the substation shown on Layout Drawings in Appendix 4-1 of this EIAR. The substation compound is surrounded by an approximately 2.6 metre high steel palisade fence (or as otherwise required by ESB), and internal fences also segregate different areas within the main substation. The layout of electrical equipment in the electricity substation has been constructed to Eirgrid/ESB networks specifications.

### Map Legend

- rEIAR / EIAR Study Area
- Road Upgrade Areas



<b>MAP TITLE:</b> Road Upgrade Areas	<b>MAP NO.:</b> Figure 4-4	<b>SCALE:</b> 1:15,000
<b>PROJECT TITLE:</b> Cleanrath Wind Farm Development		
<b>DRAWING BY:</b> Owen Cahill	<b>CHECKED BY:</b> Michael Watson	<b>DATE:</b> 12-08-2020
<small>MKO Tuam Road, Galway, Ireland, H91 VW84. +353 (0) 91 735611 www.mkoireland.ie</small>		<b>ISSUE NO.:</b> 191223-a-2020.08.12-F

### 4.3.7 Site Cabling

The electricity and fibre optic cabling from each turbine passes through the various site access roads in the direction of Turbine no. 7. Within Turbine no. 7, the power was combined for export off site. The electricity and fibre-optic cable ducting is approximately 1.2 metres below the ground surface as outlined on the site layout drawings included as Appendix 4-1 to this report.

### 4.3.8 Grid Connection

The grid connection cable route comprises electricity cabling (33kV) from Turbine no. 7 within cable ducting along the permitted Operational Access/Inspection Road (PI Ref. 18/04458) southwest of Turbine no. 7 and on to the local public road until it turns onto the access track of the constructed Derragh Wind Farm development and connects to the constructed 38kV electricity substation. The grid connection is approximately c15km in length. The cabling loops back out of the Derragh Wind Farm Substation (38kV) and runs mainly within the public road corridor on to the 110kV Coomataggart substation located in the townland of Grousemount, Co. Kerry. The final 1.5km of the cable route within Co. Cork and the 2km of the cabling in Co. Kerry is located on existing private access tracks. The entire grid connection route passes through the townlands listed in Table 1-1 of this EIAR. The grid connection route is illustrated in Figure 4-5.

### 4.3.9 Associated Works

#### 4.3.9.1 Peatland Habitat Restoration

The construction of the Cleanrath wind farm development has resulted in the permanent loss of 4.13ha of the peatland habitat mosaic within the site. The development was specifically designed to avoid the larger areas of blanket bog that are mapped separately from the overall peatland mosaic (see Figure 6-6, Habitat Map, Chapter 6 of this EIAR). It has also led to the temporary physical disturbance of peatland habitats adjacent to the development footprint during the construction of the wind farm. A habitat restoration and enhancement plan has been prepared to mitigate for this habitat loss. This plan is included in Appendix 6-8 and summarised below in Section 4.7.1

#### 4.3.9.2 Tree Felling

A total of 8.14 hectares of forestry was felled within and around the development footprint. An additional 4.18 hectares of trees were temporary felled around the turbine locations. The total amount of tree felling completed as part of the Cleanrath wind farm development was 12.32 hectares. Figure 4-6 shows the extent of the area that was felled as part of the Cleanrath wind farm development. Tree felling licences were obtained for the area of trees that was felled for the construction of the Cleanrath wind farm development.

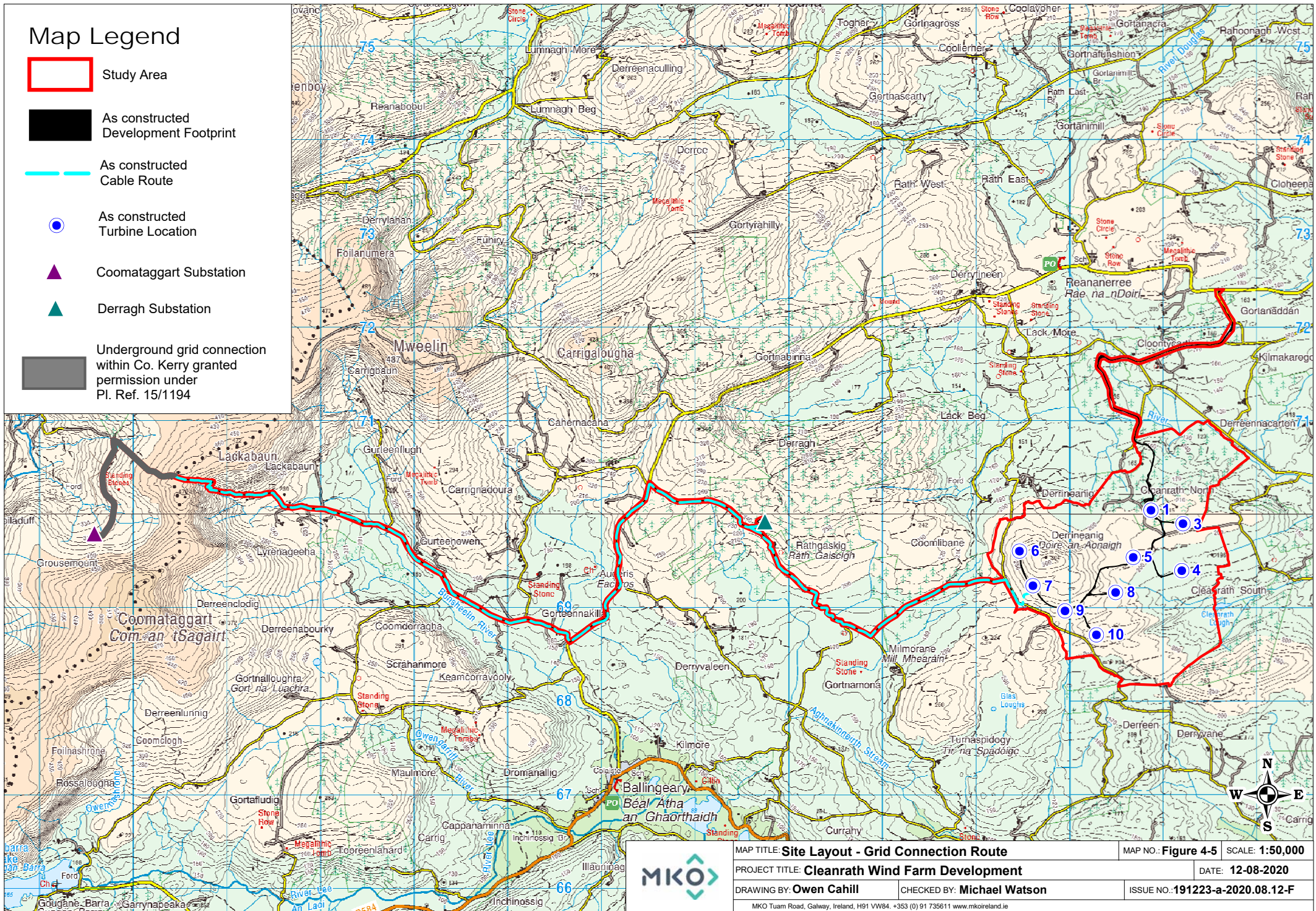
An additional hectare of immature forestry will be removed to provide an area of enhanced peatland which is intended to offset the permanent loss of Peatland Habitat due to the permanent footprint of the Cleanrath wind farm development. This area will be restored to peatland habitat and further details on the restoration plan are outlined in Chapter 6 of this EIAR. Any further felling proposed for the site will be the subject of a Limited Felling Licence (LFL) application to the Forest Service.

#### 4.3.9.3 Tree Planting

The replacement replanting of forestry can occur anywhere in the State subject to licence. Some replanting will take place on the site of the Cleanrath wind farm development. It is standard practice to maximise the allowed 2 years fallow period between felling and replanting where replanting is due to take place on site, therefore this replacement planting of temporary felled areas will be due to occur

# Map Legend

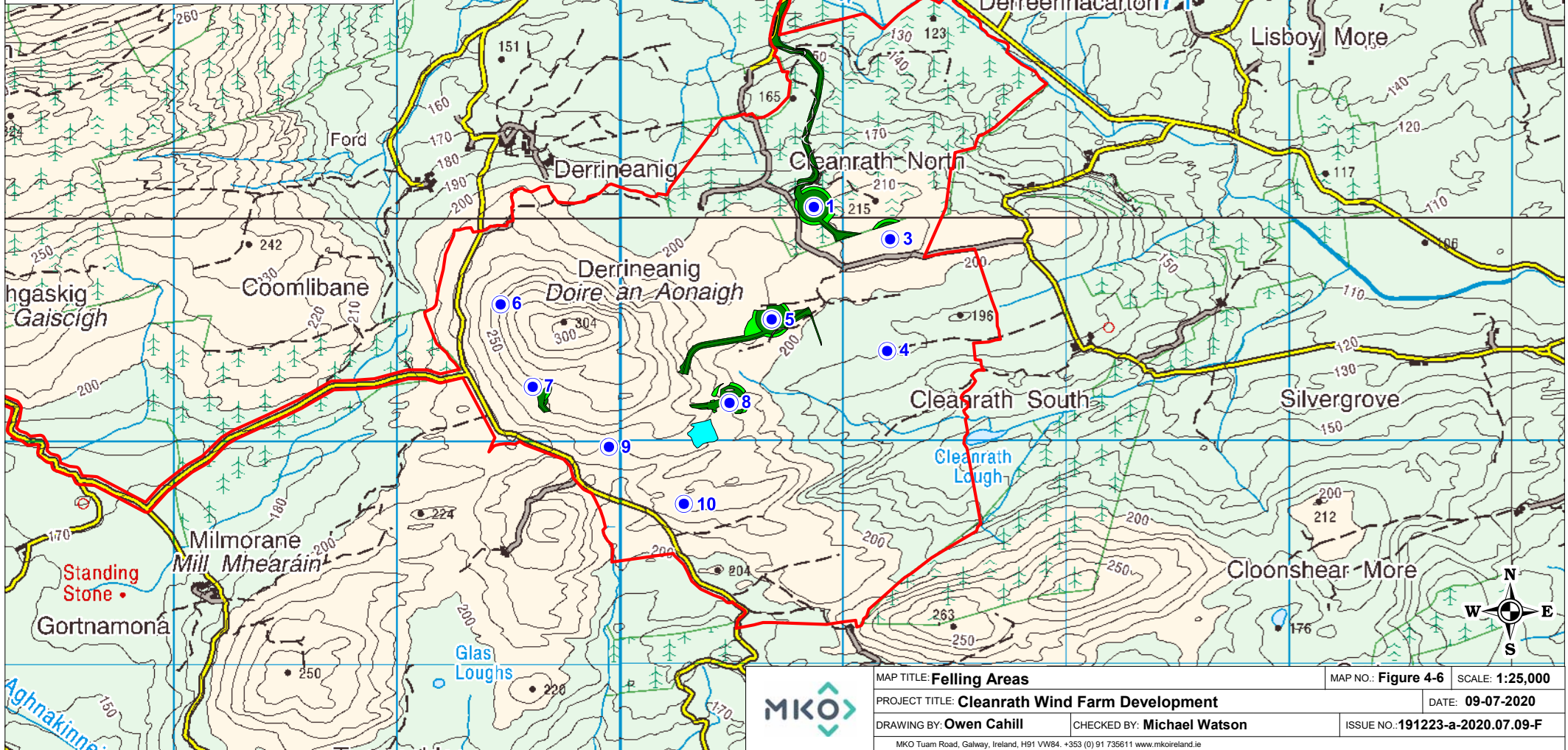
- Study Area
- As constructed Development Footprint
- As constructed Cable Route
- As constructed Turbine Location
- Coomataggart Substation
- Derragh Substation
- Underground grid connection within Co. Kerry granted permission under Pl. Ref. 15/1194



MAP TITLE: <b>Site Layout - Grid Connection Route</b>		MAP NO.: <b>Figure 4-5</b>	SCALE: <b>1:50,000</b>
PROJECT TITLE: <b>Cleanrath Wind Farm Development</b>			
DRAWING BY: <b>Owen Cahill</b>		CHECKED BY: <b>Michael Watson</b>	
DATE: <b>12-08-2020</b>		ISSUE NO.: <b>191223-a-2020.08.12-F</b>	
<small>MKO Tuam Road, Galway, Ireland, H91 VW84. +353 (0) 91 735611 www.mkoireland.ie</small>			

# Map Legend

- rEIAR / EIAR Study Area
- Turbine Locations
- Permanently Felled Areas
- Temporary Felled Areas
- Areas proposed for felling as part of Peatland Habitat Restoration



MAP TITLE: <b>Felling Areas</b>		MAP NO.: <b>Figure 4-6</b>	SCALE: <b>1:25,000</b>
PROJECT TITLE: <b>Cleanrath Wind Farm Development</b>			
DRAWING BY: <b>Owen Cahill</b>		CHECKED BY: <b>Michael Watson</b>	
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before 31/03/2022. In addition, two replanting areas were identified and assessed as part of the replacement of permanent felling with an availability of 2.95 hectares and 5.38 hectares located in the townlands of Glantane Beg and Claraghatlea, Co. Cork respectively.

The lands proposed as part of the replacement of permanent felling required for the areas of Peatland Habitat Restoration are located in the townland of Sheehaun in Co. Roscommon. All these lands were granted Forest Service Technical Approval for afforestation and the planting of these areas has been completed.

A description of the replanting land and an assessment of the actual impacts including cumulative impacts associated with afforestation at these locations along with Technical Approvals from the Forest Service are provided in Appendix 4-2.

## 4.4 Site Drainage

The protection of the watercourses within and surrounding the site, and downstream catchments that they feed is of utmost importance in considering the most appropriate drainage proposals during the operation of the Cleanrath wind farm development. The drainage design implemented during construction was prepared with the intention of having no negative impact on the water quality of the site and its associated natural watercourses, and consequently no impact on downstream catchments and ecological ecosystems which has been achieved as concluded within the rEIAR prepared for the Cleanrath wind farm development. The construction phase including all civil works has now been completed. In operational phase of the Cleanrath wind farm development, the reliance on the drainage system will become reduced as areas naturally revegetate. Once areas revegetate, this will result in a resumption of the natural drainage management that will have existed prior to any construction. The site will be maintained under the requirements of an Operation and Environmental Management Plan (Appendix 4-3)

The assessment of both the impacts of the construction phase of the Cleanrath wind farm development and the operational phases are further summarised in Chapter 9 of the rEIAR and this EIAR respectively.

## 4.5 Construction Phase

To date, all required works for the provision of the Cleanrath wind farm development have been completed. This section provides a summary of the works undertaken in the construction phase.

### 4.5.1 Wind Turbines

The construction of wind turbines at the Cleanrath wind farm development comprised the excavation of foundation bases, provision of an anchor cage, reinforcing steel, formwork and a concrete poured foundation. The area around the foundation was suitably backfilled to provide an appropriate working area for the erection of turbine components which was completed using a number of cranes during the assembly.

### 4.5.2 Site Roads

The construction of new and the upgrade of existing site roads was completed using a various plant and equipment but mainly with mechanical excavators. The roads were constructed using material won on site from the borrow pit area or as part of the cut and fill operation on site. Due to the rocky nature of the site terrain in some areas, extraction of rock with hydraulic breakers and blasting was utilised, all of which has been assessed within the rEIAR.

### 4.5.3 Site Cabling and Grid Connection

The internal cabling on the site of the Cleanrath wind farm development and the grid connection cabling from the site to the connection to the national grid at Grousemount substation was all installed in cable ducting laid within an excavated trench. The trenching was completed using a mechanical excavator with all excavated material re-used on site where possible or transported to a suitably permitted site. The areas of all cable trenching were reinstated to their original surface finish on completion of the works.

## 4.6 Community Gain Proposal

The Cleanrath wind farm development has the potential to have significant benefits for the local economy, by means of investment, employment and the generation of economic activity in the local surrounding area. The Cleanrath wind farm development also creates an opportunity to generate real tangible benefits for the local community who may not have a direct involvement in the project. It is proposed to deliver these benefits through a Community Gain Initiative.

The applicants have given careful consideration to the issue of community gain arising from the Cleanrath wind farm development, if permitted and constructed. Community gain from significant development proposals, including wind farms, whilst a relatively recent approach, is now a common consideration for developers and, indeed, planning authorities. This approach recognises that, with any wind farm proposal, the locality in which the project is situated is making a significant contribution towards helping achieve national renewable energy and climate change targets, and the local community should derive some benefit from accommodating such a development in their locality.

Community gain proposals can take a number of forms, generally depending on the nature and location of the Cleanrath wind farm development and the nature and make-up of the local community. In some instances, funds are paid by the developer, either annually or as a one-off payment, to a community fund that is administered by a voluntary body. These funds may then be used for a variety of projects, such as environmental improvements, local amenities and facilities, educational projects and energy efficiency improvement works.

### 4.6.1 The Proposal

The community gain proposal for the Cleanrath wind farm development is to contribute to a Community Gain Fund to support local social or community amenities and initiatives in the locality of the Cleanrath wind farm development. The Community Gain Fund will be administered by the wind farm developers and will be implemented following consultation with stakeholders in the local community, subject to the project being permitted and proceeding to construction.

#### 4.6.1.1 Qualifying Projects & Initiatives

The types of projects and initiatives that could be supported by such a Community Gain proposal could include youth, sport and community facilities, schools, educational and training initiatives, and wider amenity, heritage, and environmental projects.

The local community will be consulted when the Community Gain Fund is being established on the proposed qualifying criteria for projects and initiatives seeking funding from the Community Gain Fund.

#### 4.6.1.2 Financial Contributions

The community benefit scheme is proposed to be funded as follows:

- An initial contribution of €150,000 has been made available to the local community. The project has been constructed and did operate for a short period and over €100,000 in funds have already been distributed to the community.
- The annual contribution to the community is estimated at c€30,000 each year for the lifetime of the project, when it is in full operational mode.

The number and size of grant allocations will be decided by the administrators of the Community Fund. The input and suggestions of the local community will be sought during the establishment of the fund, on the types of groups and projects that should benefit, and to what degree they should benefit depending on their funding requirement.

Suggestions are invited from interested groups or individuals regarding the stewardship of the fund, the system of awarding funding as well as expressions of interest in funding. These can be made to [info@enercoenergy.ie](mailto:info@enercoenergy.ie).

## 4.7 Operation

The Cleanrath wind farm development has been operated for a short-period and the turbines are currently in Sleep Mode by agreement with the Supreme Court. When the turbines are in this mode generally electricity is not produced however on various occasions checks and tests are carried out by the turbine manufacturer as required by Eirgrid which will necessitate the generation of electricity. The rEIAR has already assessed the impacts of the operational phase.

The impact assessment within this EIAR will complete an assessment of the continued period of Sleep Mode and the future normal operational phase for the lifetime of the Cleanrath wind farm development.

The future operation is expected to have a lifespan of approximately 25 years. During this period, on a day-to-day basis the wind turbines will operate automatically, responding by means of meteorological equipment and control systems to changes in wind speed and direction.

The wind turbines are connected together and data relayed from the wind turbines to an off-site control centre. Each turbine will also be monitored off-site by the wind turbine supplier. The monitoring of turbine output, performance, wind speeds, and responses to any key alarms are monitored at an off-site control centre 24-hours per day.

Any future operation of the Cleanrath wind farm development will continue in accordance with Operation and Environmental Management Plan which is included as Appendix 4-3

### 4.7.1 Peatland Habitat Restoration

The restoration of peatland habitat as discussed in Section 4.3.9 above and in Chapter 6 of this EIAR will be undertaken during the future operation of the site and will be determined by the outcome of the substitute consent process. The restoration will comprise the management of an area of forestry that was felled during construction along with an additional hectare of immature forestry will be felled to establish suitable peatland habitat. The works will involve felling, chipping and removal of brash and restoring the peatland habitat to its original condition prior to planting which will include the blocking of drains with no further drainage to be installed around the area. Further details are included in Appendix 6-8 of this EIAR. The impacts associated with these restoration works are further assessed in Soils and Geology (Chapter 8) and the impact of the traffic volumes are assessed in Material Assets (Chapter 14).



## 4.7.2 Maintenance

Each turbine would be subject to a routine maintenance programme involving a number of checks and changing of consumables, including oil changes. In addition there is often a requirement for unscheduled maintenance, which could vary between resetting alarms to major component changes requiring a crane. Typically maintenance traffic will consist of four-wheel drive vehicles or vans. The electricity grid infrastructure and site tracks will also require periodic maintenance.

The replacement of major component could include the replacing of a turbine blade. A blade is the largest component that may need replacing on a turbine at any time during the operational life of the Cleanrath wind farm development. For this reason, the works undertaken along the transport route (Section 4.3.5 above) and in particular, the temporary junction accommodation works and the turbine delivery accommodation roadway will remain in place. These areas are currently secured to prevent public access with temporary fencing and soil berm. This soil berm will be removed temporarily removed using an excavator which will temporarily set aside the soil material to allow access to site. The berm will be restored after the works on site have been completed.

Although the level of activity required for the maintenance of the Cleanrath wind farm development is not significant, the impacts associated with traffic volumes for this period are assessed in Chapter 14.

## 4.7.3 Monitoring

The assessment completed prior to construction of the Cleanrath wind farm development set out a programme of monitoring required for the operational phase of the project as set out in Section 8 of the CEMP. This monitoring programme was cognisant of the conditions of but not confined to the permission previously granted for the Cleanrath wind farm development by An Bord Pleanála in 2017 (2017 Permission). The required monitoring includes:

- Post-construction bird monitoring which includes breeding bird surveys, winter roost surveys and corpse searching on the site determine the level of fatalities for the site as a result of collisions with the installed turbines. These surveys will be completed in accordance with guidelines issued by the Scottish Natural Heritage (SNH, 2009)
- Post-construction surveys for badger and otter will be completed on the site for five years.
- A Kerry Slug Management Plan will be implemented in full, in accordance with the derogation licence granted. This provides for post-construction surveys for a five year period
- Monitoring for shadow flicker at properties where any exceedance of the shadow flicker limit has been predicted as outlined in Chapter 5.
- Post turbine commissioning noise monitoring.

### 4.7.3.1 Operational Monitoring Ongoing

#### Post Construction Bird Monitoring

The programme of Post Construction Bird Monitoring commenced in 2020 as site has operated for a period and it is considered that the Sleep Mode has the same characteristics as an operational phase in terms of potential impacts on birds. Breeding bird surveys and corpse searching to determine the level of bird collision with the rotating turbines has been ongoing and the early stage findings are outlined in Chapter 7 of this EIAR

## Ecological Surveys

The operational phase otter and badger surveys for Year 1 have been completed for 2020 as part of the rEIAR/EIAR site walkover. The requirements of the Kerry Slug Management Plan have been completed for Year 1 of operation in 2020 also. The findings are outlined in Chapter 6 of this EIAR

## Shadow Flicker

The initial ground truthing and confirmation of lines of sight between relevant properties and turbines has been completed in 2020 and further monitoring will be undertaken when turbines resume normal operations. Details of the assessment completed to date is outlined in Chapter 5 of this EIAR

## Noise

The programme of Post Construction Noise Monitoring commenced in 2020 This has been completed for the site and the findings are summarised in Chapter 11 of this EIAR.

## Water Monitoring

A programme of water quality monitoring which naturally transitioned from the construction phase to the operational phase continues to be implemented on site. This included a review of the drainage system after construction was completed by the project hydrologist to provide guidance on the requirements of an operational phase drainage. This was also informed by the water quality monitoring data collected during construction and is summarised in Chapter 9 of this EIAR.

## 4.8

# Decommissioning

The wind turbines installed as part of the Cleanrath wind farm development are expected to have a lifespan of approximately 25 years. Following the end of their useful life, the wind turbines may be replaced with new turbines, subject to planning permission being obtained, or the site may be decommissioned, with the exception of the 38kV grid connection cabling which will be an ESB networks asset and will be part of the national electricity grid. Should early decommissioning be required the same process as outlined below will be followed.

Upon decommissioning of the Cleanrath wind farm development, the wind turbines would be disassembled in reverse order to how they were erected. The turbines will be disassembled with the same model of cranes that were used for their erection. The turbine will be removed from site using the same transport methodology adopted for delivery to site initially. The turbine materials will be transferred to a suitable recycling or recovery facility. The soil berm at the temporary junction accommodation works and the turbine delivery accommodation roadway will also need to be removed during decommissioning to provide access to and from the site with abnormal loads. The impacts associated with turbine removal as part of decommissioning is further assessed in Landscape (Chapter 13) and the impact of the traffic volumes are assessed in Material Assets (Chapter 14).

All above ground turbine components would be separated and removed off-site for recycling. Turbine foundations would remain in place underground and would be covered with earth and reseeded as appropriate. Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in environment emissions such as noise, dust and/or vibration.

The covering of the foundation will be completed using material imported to site as the required quantity of material does not currently exist at the site. This will require 1,547m<sup>3</sup> of soil to be imported to the site which will be sourced locally. The impacts associated with this element of reinstatement as

part of decommissioning is further assessed in Soils and Geology (Chapter 8) and the impact of the traffic volumes are assessed in Material Assets (Chapter 14).

Site roadways will be required by the ongoing farming and forestry operations, and therefore would be left in situ for future use.

The electrical cabling connecting the Cleanrath wind farm development to the Derragh substation in the townland of Rathgaskig will be removed from the underground cable ducting at the end of the useful life of the Cleanrath wind farm development or should early decommissioning be required. The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance for an underground element that is not visible.

The removal of 33kV cabling will be undertaken at each of the joint bays where the cables will be broken at each joint bay and removed by a winch which will both extract and roll the cabling on to cable drums for removal off site. The cables will be taken to an appropriate recycling facility. As outlined above, it is common practice the 38kV grid connection cabling to remain in place as it will be an ESB networks asset and will serve the existing 38kV substation. In the event that the 38kV cabling needs to be removed the same methodology will be employed as outlined for the 33kV cable.

A Decommissioning Plan has been prepared (Appendix 4-4) for an early decommissioning of the Cleanrath wind farm development the detail of which will be agreed with the local authority prior to any decommissioning. Should the Cleanrath wind farm development continue operation for the intended lifespan of approximately 25 years, the Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will be agreed with the competent authority at that time

The Traffic Management Plan (included within Appendix 4-4) provides details of the traffic management arrangements that will be implemented during the removal of cabling within public roads.