

3.

CONSIDERATION OF REASONABLE ALTERNATIVES

3.1

Introduction

Article IV of the EIA Directive as amended by Directive 2014/52/EU states that the information provided in an Environmental Impact Assessment Report (EIAR) should include a description of the reasonable alternatives studied by the developer which are relevant to the project and its specific characteristics and an indication of the main reasons for the option chosen, taking into account the environmental effects. The consideration of alternatives typically refers to alternative design, technology, location, size and scale.

The primary obligation under Article 5(1)(d) of the EIA Directive is upon the developer to provide a description of the ‘reasonable alternatives’ considered in the course of the application process. In this regard, the Directive states as follows:

(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;

The Cleanrath wind farm development, in respect of which Substitute Consent is sought has been constructed, operated up to the end of April 2020 and, in the circumstances as outlined in Chapter 1 of the remedial Environmental Impact Assessment Report (rEIAR), is currently operating in Sleep Mode, pending the determination of the application for Substitute Consent.

In the event that Substitute Consent is granted, the constructed development will remain unchanged and full operation of the wind farm will recommence with the provision of renewable electricity to the national grid to meet Ireland's climate change targets. The only realistic alternative to the resumption of full operation of the Cleanrath wind farm development is the early implementation of the Decommissioning Plan including the removal of the turbines and associated infrastructure and the development of an alternative source of renewable electricity at another, potentially greenfield location. This alternative is considered the least environmentally sustainable option and leads to the potential for new and/or additional environmental impacts as well as the potential loss of renewable electricity with the associated negative effects on air and climate.

The EIS and NIS completed as part of the development consent process that culminated in the grant of the 2017 permission, as well as the EIA and AA completed by the Board in the course of granting permission on that planning appeal concluded that the Cleanrath wind farm development as described in that planning application would not have any significant environmental effects and would not adversely affect the integrity of any European sites.

The monitoring results and reporting completed during the construction and operational phases of the Cleanrath wind farm development have been used to inform the assessment of the actual impacts and effects in the rEIAR, EIAR and in the accompanying rNIS, NIS. As predicted in the EIS and NIS submitted in respect of the process that culminated in the decision to grant the 2017 Permission, the Cleanrath wind farm development has not had any significant environmental impacts nor has it had any adverse effects on the integrity of any European site during either the construction or the operational phase up to the end of April 2020 or indeed in the period from May to August 2020 during which the development operated in Sleep Mode.

In order to provide context in terms of the reasonable alternatives considered when choosing and designing this project this section of the rEIAR contains a description of the reasonable alternatives that were considered originally for the wind farm development in terms of site selection, other land-use

options for the site as well as site layout and transport route options to the site. This section also outlines the design considerations in relation to the Cleanrath wind farm development and indicates the main reasons for selecting the chosen option with regards to its environmental impacts. Given the Cleanrath wind farm development has been constructed, it also considers the alternative scenarios which may arise depending on the outcome of the Substitute Consent process.

It is important to acknowledge that although the consideration of alternatives is an effective means of avoiding environmental impacts, there are difficulties and limitations when considering alternatives. Indeed, as is clear from the provisions of the EIA Directive itself, the requirement is to consider “reasonable alternatives” which are relevant to the project and its characteristics. Accordingly, the context in which the project is considered is important and, on this application for Substitute Consent, that context includes the fact that the Cleanrath wind farm development has already been constructed and has been operational prior to the submission of the application for substitute consent. In general terms, issues such as hierarchy, non-environmental factors and certain site-specific issues may also be relevant to the consideration of reasonable alternatives by the developer.

Hierarchy

EIA is concerned with projects. The Environmental Protection Agency’s draft guidelines (EPA, 2017) state that, in some instances, neither the applicant nor the competent authority can be realistically be expected to examine options that have already been previously determined by a higher authority, such as a national plan or regional programme for infrastructure which are examined by means of a Strategic Environmental Assessment (SEA), the higher tier form of environmental assessment.

Non-environmental Factors

EIA is confined to the potential significant environmental effects and that influences consideration of alternatives. However, other non-environmental factors will be important to the developer of a project, for example project economics, engineering feasibility or planning considerations.

Site-specific Issues

The EPA guidelines state that the consideration of alternatives also needs to be set within the parameters of the availability of the land, i.e. the site may be the only suitable land available to the developer, or the need for the project to accommodate demands or opportunities that are site-specific. Such considerations should be on the basis of alternatives within a site, for example design and layout.

3.2

Methodology

The EU Guidance Document (EU, 2017) on the preparation of an EIAR outlines the requirements of the EIA Directive and states that, in order to address the assessment of reasonable alternatives, the Developer needs to provide the following:

- A description of the reasonable alternatives studied; and
- An indication of the main reasons for selecting the chosen option with regards to their environmental impacts.

There is limited European and National guidance on what constitutes a ‘reasonable alternative’ however the EU Guidance Document (EU, 2017) states that reasonable alternatives “*must be relevant to the proposed project and its specific characteristics, and resources should only be spent assessing these alternatives*”.

The guidance also acknowledges that “*the selection of alternatives is limited in terms of feasibility. On the one hand, an alternative should not be ruled out simply because it would cause inconvenience or*

cost to the Developer. At the same time, if an alternative is very expensive or technically or legally difficult, it would be unreasonable to consider it to be a feasible alternative”.

The current Draft EPA Guidelines (EPA, 2017) state that “*It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account is deciding on the selected option. A detailed assessment (or ‘mini-EIA’) of each alternative is not required.*”

Consequently, taking consideration of the legislative and guidance requirements into account, this chapter addresses alternatives under the following headings:

- ‘Do Nothing’ Alternative;
- Alternative Locations;
- Alternative Layouts;
- Alternative Designs; and
- Alternative Mitigation Measures.

Each of these is addressed in the following sections.

When considering a wind farm development, given the intrinsic link between layout and design, the two will be considered together in this chapter.

3.3

Consideration of Alternatives

Annex IV, paragraph 2 of the EIA Directive provides that an EIAR should contain:

A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

3.3.1

‘Do-Nothing’ Option

Article IV, paragraph 3 of the EIA Directive states that the description of the baseline scenario should include “an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.” This is often referred to as the “do nothing” alternative.

An alternative land-use option to developing the Cleanrath wind farm development would have been to leave the site as it was prior to construction, with no changes made to the land-use practices of low-intensity agriculture, turf cutting and commercial forestry. This option would have no positive impact with regards to the production of renewable energy or the offsetting of greenhouse gas emissions. On the basis of the positive environmental effects arising from the Cleanrath wind farm development, the do-nothing scenario was not the chosen option. Instead, an application for planning permission was made and granted ultimately by An Bord Pleanála.

The Cleanrath wind farm development has been constructed, has been operational and is now operating in Sleep Mode with the site essentially in a shut-down mode with no export of electricity pending the outcome of the Substitute Consent process. In the event that Substitute Consent is obtained, the intention is to recommence and continue the full operation of the Cleanrath wind farm development until the end of 25 years from the formal commissioning of the turbines in July 2020 and implement the decommissioning plan for the Cleanrath wind farm development at the end of the operational period.

In the event that Substitute Consent is not granted and full operation of the development is not recommenced, it will remain in Sleep Mode which is, in effect, the “do nothing” option insofar as it represents the current situation as at the date of the application for Substitute Consent. There is the possibility that the decommissioning plan may need to be implemented early, should Substitute Consent not be granted and therefore this is also assessed in this rEIAR and below.

3.3.2 Alternative Sites/Strategic Site Selection

As set out in Section 1 of this rEIAR the applicant company is affiliated with Enerco Energy Ltd. which is an Irish-owned Cork-based company with extensive experience in renewable energy and is responsible for projects throughout Ireland. By early 2020, Enerco had installed a generating capacity of approximately 550 MW, with 180 MW under construction and a further 400MW of projects at various stages in its portfolio. All of which urgently need to be provided to assist Ireland in meeting its renewable energy targets. Enerco Energy invests a significant amount of time and resources identifying and investigating sites for renewable energy proposals throughout the Country.

Sites selected for the development of a wind farm must be suitable for consideration under a number of criteria, such as:

- Planning Policy Context;
- Low population density;
- Consistent wind speeds/Aspect;
- Potential for impact on Designated sites;
- Reasonable access to the national electricity grid.

In terms of all five criteria, the Cleanrath wind farm development site was deemed to be the optimal site for development of a wind farm. The site is also large enough to accommodate a larger-scale wind farm, taking into account the separation distances required between turbines and the buffer zones to be maintained around houses and roads etc. in which no turbines could be sited.

Potential renewable energy sites that perform well across the strategic criteria set out above are given a finer grain, more detailed review which includes engagement with landowners, carrying out site analyses and investigations, and consideration of whether an appropriate project design can be brought forward. The site of the Cleanrath wind farm development emerged as an optimal location for the provision of a renewable energy development from the developer's search for appropriate sites.

The initial site selection process for this development included a review of the planning policy context for the area and consideration of dwelling locations. A further consideration that arose was the desire to make the most sustainable use of existing resources and, if practicable, to group or cluster the required renewable energy infrastructure with existing facilitating infrastructure. Further detailed site investigations lead to the site being identified as an optimal location for the provision of a renewable energy development. The specific criteria considered are further assessed below.

It is important to note that the site was previously subject to a grant of planning permission on two occasions by An Bord Pleanála as detailed in Chapter 2 of this rEIAR. Accordingly, the strategic suitability of the site has been considered acceptable. As the site has been deemed appropriate for the development of wind energy infrastructure, it is in the interest of proper planning and sustainable development to ensure that the provided infrastructure is capable of making maximum use of the available wind resource on site in order to contribute further to national targets. Any alternative site which does not fulfil these criteria, from an environmental perspective, is less sustainable and therefore was not chosen.

The location of an available grid connection node is a key consideration when selecting the optimum location for a commercial wind farm with a general preference on having a grid connection of no greater than 15km zone from the wind farm development. In this regard, both the wind farm providers and regulating authorities share a common goal in wanting to minimise the distance to grid connection

nodes thus minimising impacts that may arise from ancillary infrastructure required to connect a wind farm to the designated connection point/node assignment. The grid connection node for the Cleanrath wind farm development is located at Coomataggart substation in the townland of Grousemount County Kerry, which is well within the desired 15km distance. The Cleanrath wind farm development is therefore well sited with reasonable access to the national electricity grid. Any other node, at further distance, has the potential for new or additional environmental effects and so was not chosen.

3.3.2.1 Strategic Site Selection Constraints

Within the search area surrounding the grid connection point the following constraints were applied at a strategic level in order to identify a suitable site:

- **Development Plan Designations.** The provisions of the County Development Plans were considered. The County Cork Development Plan contains areas that are classified as being ‘acceptable in principle’, ‘open for consideration’ and ‘normally discouraged’. The Kerry County Development Plan designates areas as “Open to consideration”, “Strategic”, and as “Infrastructural Deficit”. In applying strategic constraints the areas identified as being inappropriate under the provisions of the relevant County Development Plans were immediately disregarded from consideration.
- **Environmental Designations.** While wind farm developments can be provided within Natural Heritage Areas (NHAs), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), from a strategic viewpoint and to exercise the precautionary principle, for the purposes of suitable site identification, such areas were discounted from consideration in this instance.
- **Low Lying Valleys:** Throughout Ireland the lower lying valley areas (below the 100 metre contour level) tend to have a higher concentration of population and settlements and generally have lower wind speeds available. The lower lying landscape also generally accommodates the main traffic routes and higher quality farmlands. In the interests of minimising impacts on population and maximising the return on the wind resource, the lower lying valley areas below the 100 metre contour level were discounted from consideration at a strategic level.
- **Wind Speeds.** The average wind speeds available on any site are crucial in terms of the feasibility of any wind farm development. To identify the optimum site within the strategic site search area, the areas which have an appropriate annual wind speed were focused upon discounted. The areas with low wind speeds are generally along lower lying areas and included the majority of lands already excluded under the low lying valley criteria discussed previously.
- **Planning History.** A history review of the remaining area identified the locations of existing wind farms that are in operation and wind farms which have been permitted but not yet constructed as well as applications for wind farms that are currently under consideration.
- **Population Density/Settlement Patterns.** The settlement patterns within the overall site selection area were reviewed and areas of relatively high residential density were ruled out in the interests of minimizing impacts.

3.3.2.2 Alternative Site Assessment

The site is “Open to Consideration” for the provision of wind farm development in the Cork County Development Plan, does not overlap with any environmental designations, the site is accessible in terms of connection to the national grid and also is located in an area with a relatively low population density with an appropriate annual wind speed.

The purpose of the site identification exercise was to identify an area that would be capable of accommodating a wind farm of sufficient size to cater for the grid connection capacity that has been secured at a single location while minimising the potential for adverse impact on the environment,

population and visual impact. In order to satisfy this requirement, a significant landholding that would yield a sufficient viable area for the siting of wind turbines was required.

The site at Cleanrath yielded a sufficient unconstrained viable area to accommodate a wind farm of adequate scale.

Once the current site emerged as the optimum location for the provision of the Cleanrath wind farm development the applicants approached the landowners in order to assemble the site. Arising from the site assembly discussions the current site was identified and brought forward as being capable of accommodating a cohesive viable area of sufficient size to cater for a wind farm of the required scale.

3.3.3 Alternative Land-uses

3.3.3.1 Other Land-uses

Forestry & Agricultural Use

An alternative land-use to the Cleanrath wind farm development site footprint would be to return the footprint of the development to its original land uses, being primarily commercial forestry and grassland. In doing so, the opportunity to capture a significant part of County Cork's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions, as set out in Chapter 2. The retention of forestry would have no positive impact in terms of generating renewable energy or reducing the need for electricity production from fossil fuels, which gives rise to greenhouse gas emissions. Furthermore, to return to the original land use will require the decommissioning of the Cleanrath wind farm development, the potential for effects associated with decommissioning as are discussed in detail in Chapters 4 to 14 of this rEIAR.

A wind farm has a relatively small footprint and so the existing land uses in and around the development i.e. forestry and agriculture will continue in tandem with the wind farm. Any forestry permanently felled as part of the project was also replanted elsewhere.

The preferred option, in terms of land use is for the Cleanrath wind farm development to remain in place and resume full operation, supplying renewable electricity to the national grid and contributing to Ireland achieving its climate change targets.

3.3.4 Alternative Turbines

In relation to the turbine types considered for the Cleanrath wind farm development, a range of options were reviewed prior to selecting the turbine envelope which was previously assessed/approved and subsequently constructed. The installed turbines make the most efficient use of the wind resource at this site, grid connection and supporting infrastructure with the result that the Cleanrath wind farm development utilises these valuable resources and fundamentally result in the production of renewable energy.

The alternatives considered was to install 11 no. turbines with a maximum ground to blade tip height of up to 126m (which had been previously been permitted at the site of the Cleanrath wind farm development under the 2013 Permission). It was considered that this turbine size (126m) was not making the most efficient use of the wind resource passing over the site. Therefore, the alternative considered was to install 11 no. turbines with a maximum ground to top blade tip height of up to 150m which were subsequently proposed to generate even more renewable energy from the available wind resource on this site, therefore increasing the renewable energy outputs.

However, the installation of all 11 no. permitted turbines was not considered a viable alternative as the available grid capacity could not accommodate the inclusion of all 11 no. turbines previously permitted and the optimum layout and turbine technology has been adopted and installed on site i.e. 9 turbines at 150m tip height. The omission of 2 no turbines and associated infrastructure was not informed by environmental considerations however its effect is to reduce the potential for environmental effects during the construction phase in particular.

3.3.5 Turbine Numbers and Model

The Cleanrath wind farm development has an installed generating capacity of 26.4 megawatts (MW). There are 9 no. turbines installed at the site each with generating capacities of 2.4 – 3.6MW to achieve the 26.4 MW output. Such a generating capacity could also have been achieved on the site by using smaller turbines (for example 1.5 MW machines). However, this would have necessitated the installation of 18 turbines to achieve the same generating capacity of c.26 MW. Furthermore, the use of smaller turbines would not make efficient use of the wind resource available having regard to the nature of the site, topography and nature of existing uses in the vicinity. A larger number of smaller turbines would result in the wind farm occupying a greater footprint within the site, with a larger amount of supporting infrastructure being required (i.e. roads etc) and increasing the potential for environmental impacts to occur. The installed number of turbines took account of all site constraints and the distances to be maintained between turbines and features such as roads and houses, while maximising the wind energy potential of the site. The turbine technology chosen for the 9 no. turbine layout installed at the site facilitated the omission of 2 no. turbines which reduced the development, while still achieving the required output at a more consistent/efficient level than would be achievable using different turbines.

The turbine model now installed on the site has a height of 150m when measured from ground level to blade tip. No other alternative to the existing turbine is considered reasonable as the turbines have been built and so this rEIAR therefore provides a robust and comprehensive assessment of the turbines that have been installed thereby assessing the actual size envelope of 150m ground to top blade tip height rather than a variance of types and sizes of wind turbines to assess the worst case scenarios as would be the approach in the event of the actual turbine type to be installed being unknown.

The chosen option for the Cleanrath wind farm development was the most optimum solution available at the time that the turbine procurement was made. The use of alternative smaller turbines at this site would not be appropriate as they would fail to make the most efficient use of the wind resource passing over the site. There is no credible alternative to change the turbine types given the project has been constructed.

3.3.6 Alternative Site Layout

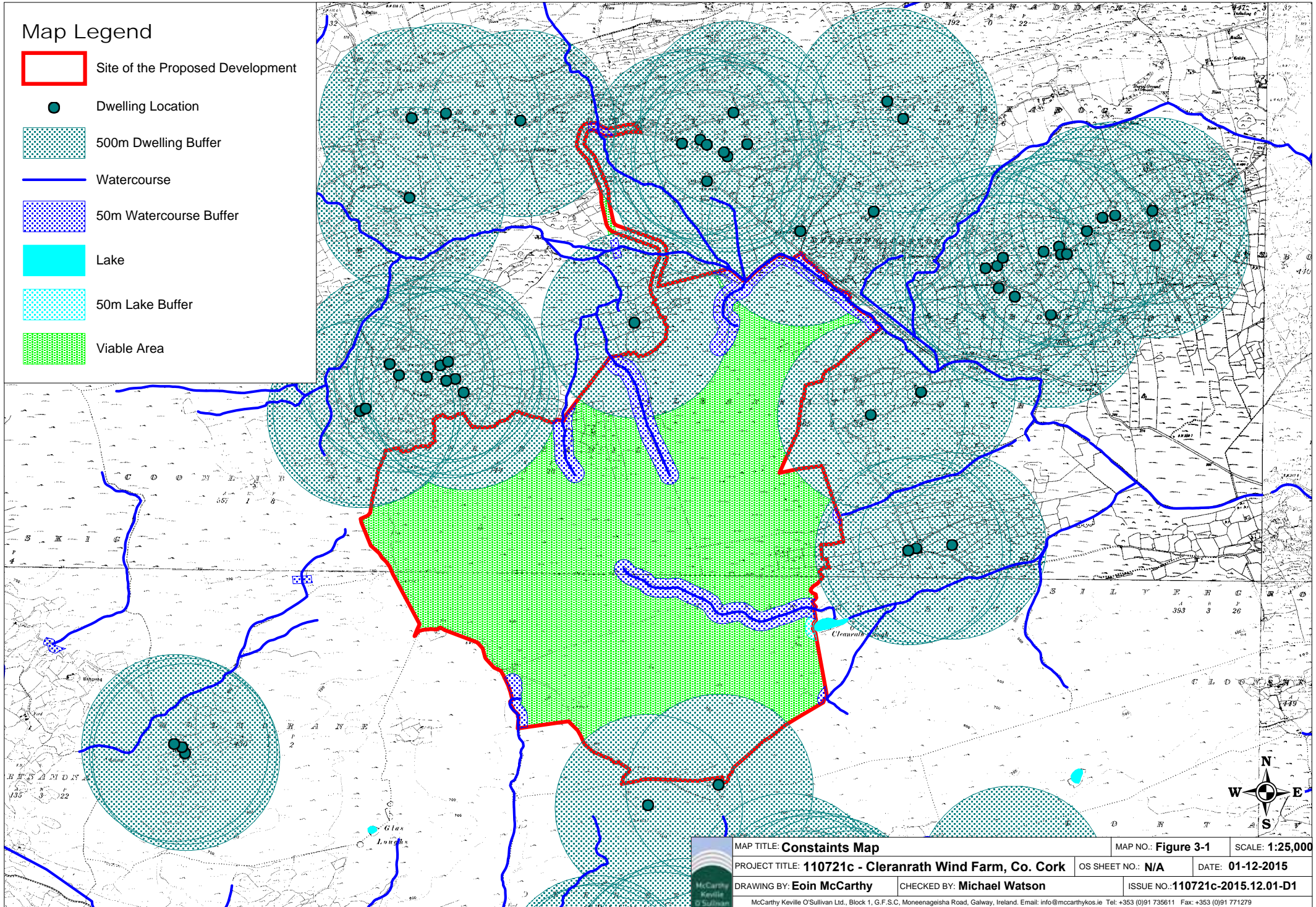
3.3.6.1 Turbine Layout

The now constructed turbine layout takes account of all site constraints and the distances to be maintained between turbines and from houses, roads, etc. as identified in constraints mapping completed as part of the project design for the 2017 Permission and included here as Figure 3-1. The layout is based on the results of all site investigations that have been carried out during the process of preparing the previous Environmental Impact Statements (EIS) and during the detailed design phase of the development, prior to construction.

A six turbine layout was granted at the site of the Cleanrath wind farm development by Cork County Council in 2016 (PI Ref. 15/6966) with the omission of five of the 11 no turbines originally proposed. By proceeding with the six turbine layout, the opportunity to capture maximum potential of a significant

Map Legend

- Site of the Proposed Development
- Dwelling Location
- 500m Dwelling Buffer
- Watercourse
- 50m Watercourse Buffer
- Lake
- 50m Lake Buffer
- Viable Area



	MAP TITLE: Constaints Map	MAP NO.: Figure 3-1	SCALE: 1:25,000
	PROJECT TITLE: 110721c - Cleranath Wind Farm, Co. Cork	OS SHEET NO.: N/A	DATE: 01-12-2015
	DRAWING BY: Eoin McCarthy	CHECKED BY: Michael Watson	ISSUE NO.: 110721c-2015.12.01-D1
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part of County Cork's valuable renewable energy resource would have been lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. Therefore, this option was not selected and an appeal of this decision was made to An Bord Pleanála.

The infrastructure currently constructed was subsequently permitted under ABP Ref. PL04. 246742 after an appeal to An Bord Pleanála of the decision under 15/6966. This layout evolved from an iterative EIA process as detailed in the preparation of the previous EIS. The six turbine layout granted under (PI Ref. 15/6966) (superseded under appeal to the Board) and the eleven turbine layout granted under (PL04. 246742) as outlined in Figures 3-2 and 3-3 respectively.

Prior to construction, it was decided to omit two turbines and the road infrastructure leading to them, leaving a nine turbine layout. The substation, one of the borrow pits, the met mast and any relating infrastructure were also not required and omitted from the layout. The eleven and nine turbine site infrastructure layouts are outlined in Figures 3-4 and 3-5 respectively which also shows the infrastructure which was omitted from the layout and has not been constructed.

There is a negative effect on air and climate associated with not developing the 2 No additional turbines however this project had the benefit of a Gate 3 Grid Connection offer and the chosen 9 turbine layout, turbine technology and associated infrastructure was capable of delivering on this. Therefore, the 9 turbine layout was the chosen option. The reduction in both turbine numbers and infrastructure is seen, on balance, as a positive alternative as it led to a reduction in the overall development footprint and eliminated any potential for environmental effects associated with the works in these areas. It also led to the reduction in the potential for noise emissions, shadow flicker and visual effects during the operational phase.

The current rEIAR and EIAR have reviewed and updated all the previous assessments and site investigations along with the review of as constructed information. Following the review/proofing of the as constructed turbine locations it was considered to be in the interests of proper planning and sustainable development that the Cleanrath wind farm development remain unchanged and continue to operate as originally intended, as it has adhered to the best principles of wind farm design and considered the site constraints in terms of separation distances and the ability of the landscape to accommodate the proposal.

Further and more detailed assessment of the site, including ground conditions and ecology, and of the potential impacts on human health, including noise and shadow flicker have been undertaken to further assess the "as constructed" layout and its impacts.

3.3.6.2 Road Layout

Access tracks were required onsite in order to enable transport of turbines and construction materials to each of the turbine locations. Such tracks were constructed of a gradient and width sufficient to allow safe movement of equipment and vehicles. Prior to construction, the Cleanrath wind farm development site was serviced by a network of existing access roadways and maximum possible use was made of existing roadways in order to minimise the potential for impacts. Locations were identified where upgrading of the existing road would be required and where new roads were to be constructed, in order to ensure suitable access to and linkages between turbines, and efficient movement around the site.

An alternative option to making maximum use of the existing road network within the site would be to construct an entirely new road network, having no regard to existing roads or tracks. This approach was deemed highly unsuitable, as it would require unnecessary disturbance to the site and create the potential for additional environmental impacts to occur.

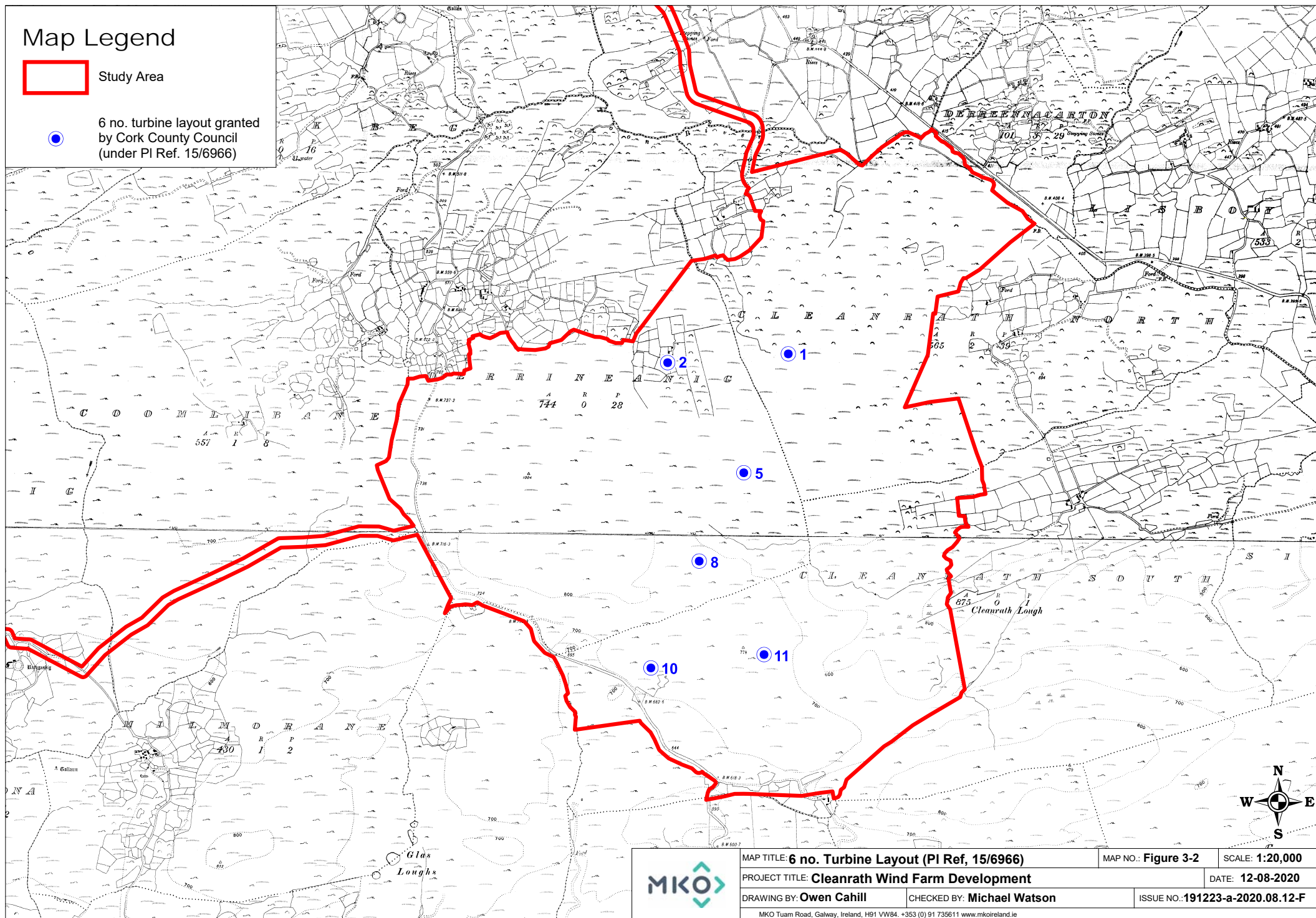
Map Legend



Study Area



6 no. turbine layout granted
by Cork County Council
(under PI Ref. 15/6966)



MAP TITLE: **6 no. Turbine Layout (PI Ref, 15/6966)**

MAP NO.: **Figure 3-2**

SCALE: **1:20,000**

PROJECT TITLE: **Cleanrath Wind Farm Development**

DATE: **12-08-2020**

DRAWING BY: **Owen Cahill**

CHECKED BY: **Michael Watson**

ISSUE NO.: **191223-a-2020.08.12-F**

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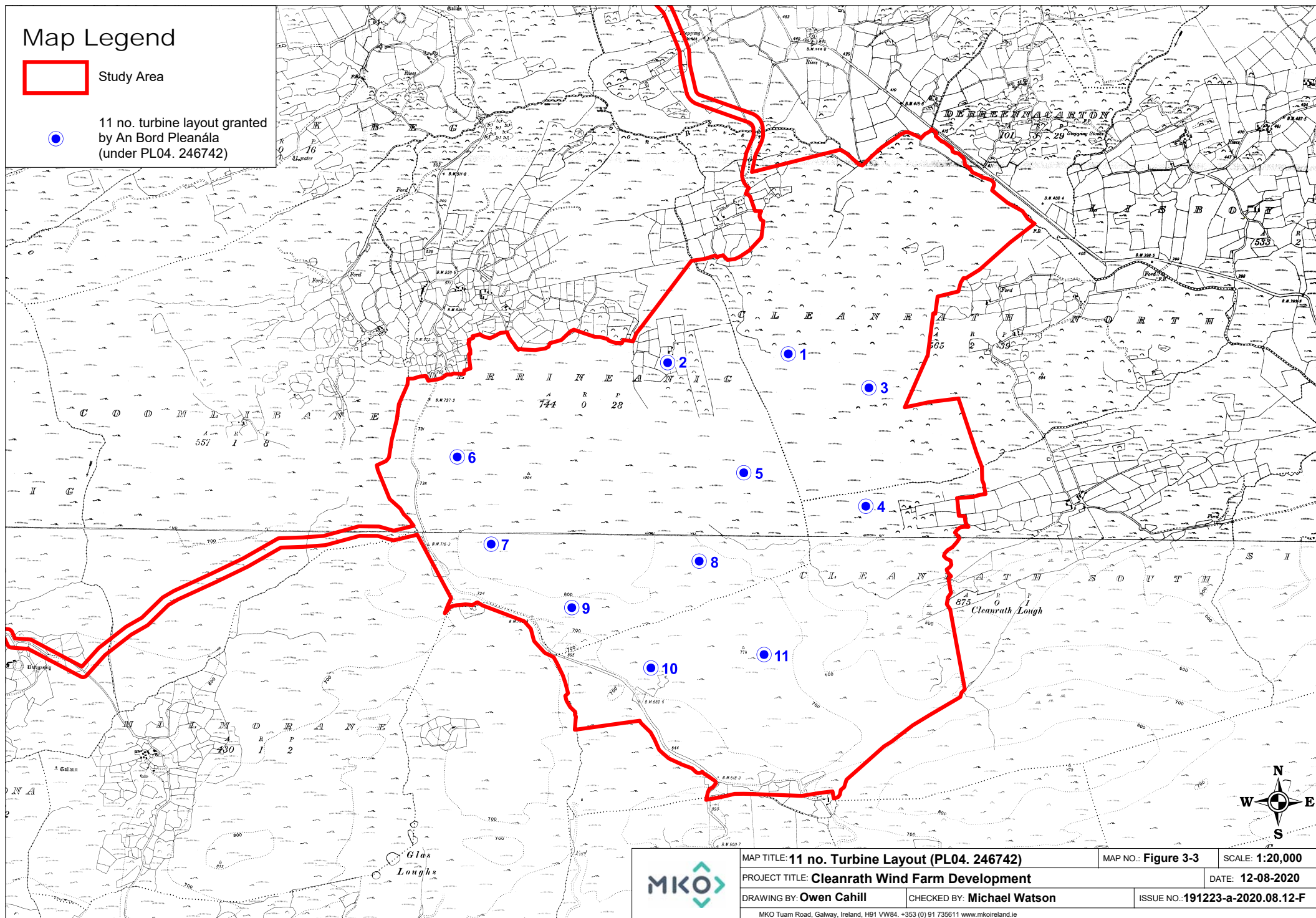
Map Legend



Study Area



11 no. turbine layout granted
by An Bord Pleanála
(under PL04. 246742)



MAP TITLE: **11 no. Turbine Layout (PL04. 246742)**

MAP NO.: **Figure 3-3**

SCALE: **1:20,000**

PROJECT TITLE: **Cleanrath Wind Farm Development**

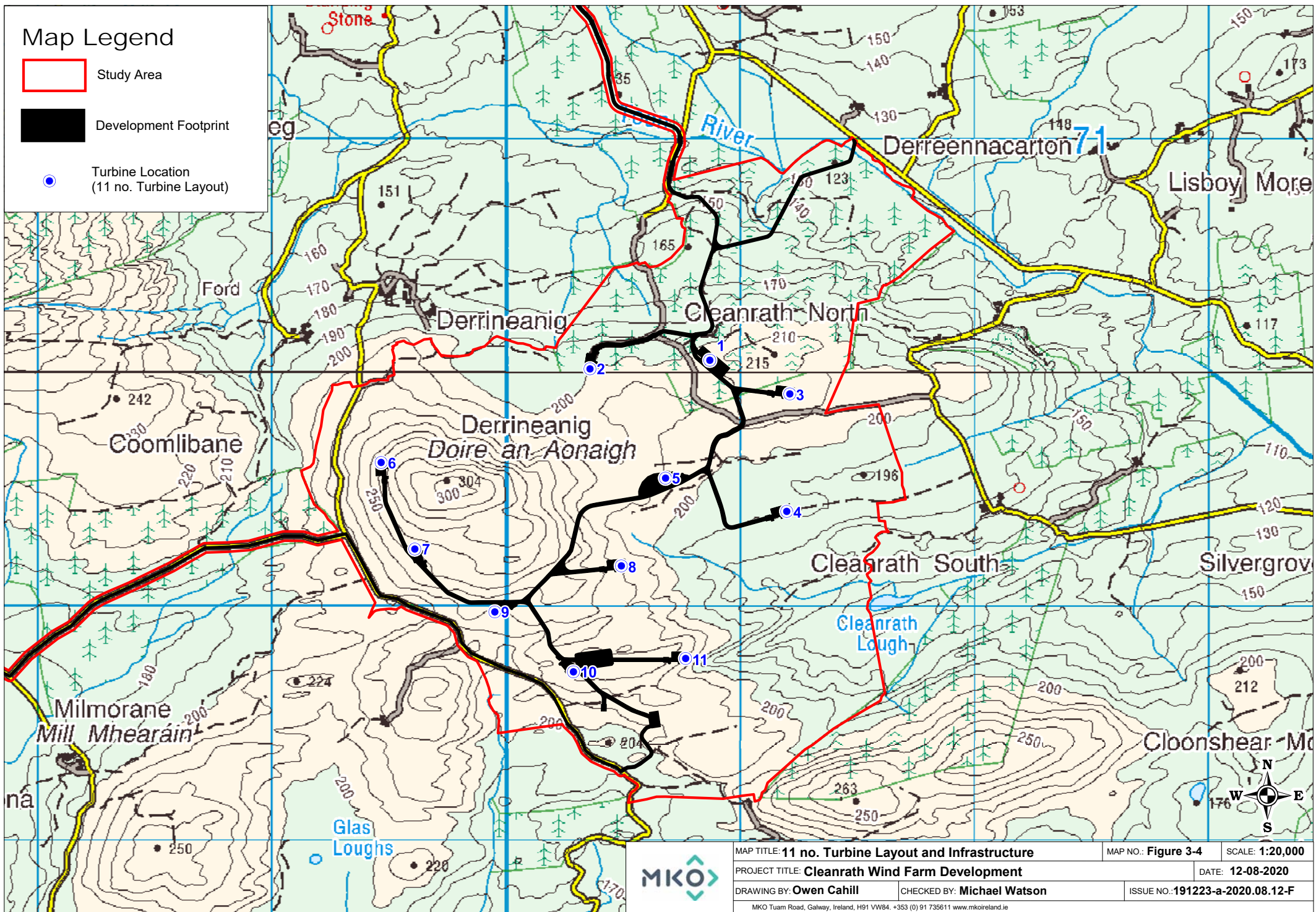
DATE: **12-08-2020**

DRAWING BY: **Owen Cahill**

CHECKED BY: **Michael Watson**

ISSUE NO.: **191223-a-2020.08.12-F**

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Map Legend



Study Area



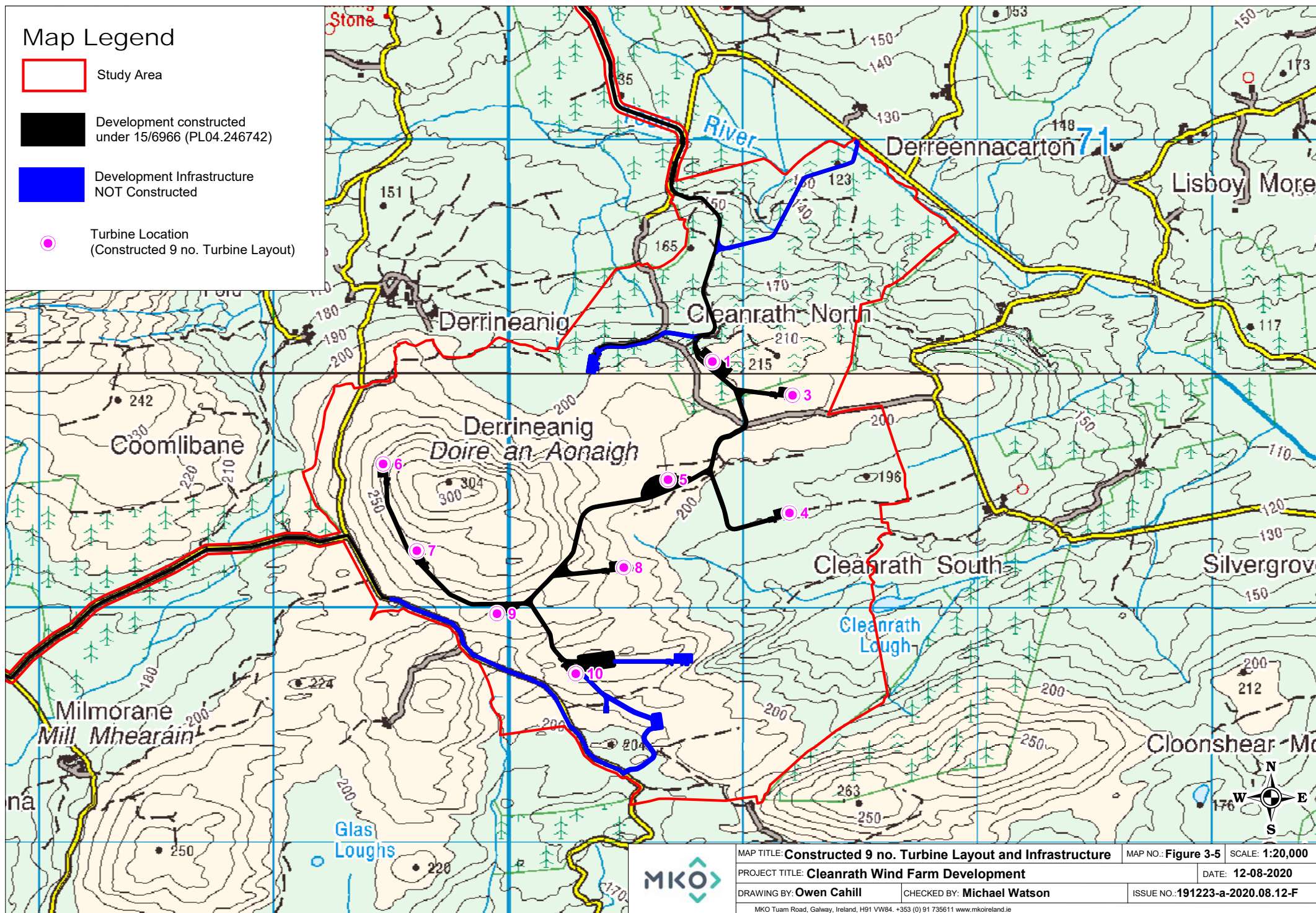
Development constructed under 15/6966 (PL04.246742)



Development Infrastructure NOT Constructed



Turbine Location
(Constructed 9 no. Turbine Layout)



MAP TITLE: **Constructed 9 no. Turbine Layout and Infrastructure**

MAP NO.: **Figure 3-5** SCALE: **1:20,000**

PROJECT TITLE: **Cleanrath Wind Farm Development**

DATE: **12-08-2020**

DRAWING BY: **Owen Cahill**

CHECKED BY: **Michael Watson**

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3.3.6.3 Location of Ancillary Structures

The ancillary structures required for the Cleanrath wind farm development include construction compounds, electricity substation and borrow pits.

3.3.6.3.1 Construction Compounds

One temporary construction compound was used for the storage of all construction materials and turbines. The construction compound is located towards the centre of the site and accessed via the internal road network. As construction progressed to the turbine installation phase, the construction compound was repurposed as a hardstand for the construction of Turbine no. 1.

The alternative option of using multiple temporary construction compounds rather than the one large compound installed was not considered to be a viable alternative given the scale of the development.

3.3.6.3.2 Borrow Pits

All hardcore fill material required for the construction of access roads and turbine bases has been obtained from a borrow pit located in centre of the site and material won in other site areas as part of the standard cut and fill construction methods for roads and turbine areas. The use of locally sourced stone material represents an efficient use of the available onsite resources and eliminated the need to transport large volumes of construction materials along the local public road network to the site. The locations for the borrow pit developed during the construction of the Cleanrath wind farm development was identified taking into account the site characteristics, including topography, habitat type and surface water features.

A second alternative available was the option of sourcing stone and hardcore materials from a licensed quarry in the vicinity. The movement of such material would result in a significant increase in construction traffic and heavy loads and was therefore considered the least preferable option.

3.3.6.3.3 Electricity Substation and Grid Connection

Underground electrical cables transmit the power output from each wind turbine to an electricity substation on the constructed Derragh Wind Farm approximately 3km west of the Cleanrath wind farm development turbines. The substation previously permitted in the south of the Cleanrath Wind Farm site has not been constructed as to do so would represent an unnecessary duplication of infrastructure. Although overhead lines are less expensive and allow for easier repairs when required, underground cables have no visual impact. For this reason it was considered that underground cables would be a preferable alternative to overhead lines. The underground cables follow the route of existing access tracks and roads, thereby minimising ground disturbance.

The Cleanrath wind farm development is connected to the national grid via underground cabling running from the site towards the Coomatagart node, west of the site (looping into the Derragh site where the power from the two wind farms is combined). All cabling between the Cleanrath wind farm development and the connection node to the grid is laid underground and follows the route of the existing public road corridor and existing tracks.

The wind farm connection between the Cleanrath wind farm development and Derragh Wind Farm substation and subsequent connection to Coomatagart substation was identified as the most appropriate means of achieving connection to the national grid. The provision of this grid connection contributes to minimising the impact on the environment through facilitating the production of renewable energy. Any alternative means of connection would involve additional construction activity and therefore have the potential to create additional environmental impact on biodiversity, soil and geology, hydrology, noise associated with construction and material assets including traffic.

The applicant also identified the opportunity of reducing the works footprint by amending the route of the underground cabling exiting the site. In this regard permission was sought and granted for an amendment to the previously permitted cable route including service vehicle access (Pl. Ref. 18/4458 refers). This amendment to the cable route was constructed, and an alternative to using this shorter route would have been to use the previously consented (longer) route which would have required additional construction activity. The amended cable route which was constructed on site and the previously consented and longer route are outlined in Figures 3-6 and 3-7 respectively. The previously consented route was not chosen as the amended route was much shorter and reduced the potential for environmental effects associated with the works in this area.

3.3.7 Alternative Transport Route and Site Access

The Cleanrath wind farm development included one access point from the local roads in the area although three access points were originally proposed, two of these were not developed. The access was used for the delivery of turbines during construction for access during construction. An Operational Access/Inspection Road (Pl Ref. 18/4458) was installed on the west of the wind turbines and was only used for accommodating the installation of grid connection cabling. This alternative grid route achieved a reduction in the overall length of cabling and therefore a reduction in construct activity required onsite

The chosen turbine transport route to access the site was via an existing commercial forestry access to the north of the site. The transport access routes for all materials including turbines to the Cleanrath wind farm development were agreed with the local authority and operated successfully during the construction phase.

3.3.8 Alternative Early Decommissioning

The Cleanrath wind farm development has been constructed, has been operational for a short-term period and is now currently operating in Sleep Mode where the turbines are in a controlled mode which is maintained by the turbine manufacturer and are generally not producing electricity pending the outcome of the Substitute Consent process.

In the event that Substitute Consent for the development is not obtained, then the result may be that a renewable energy facility is not provided at this location or the Cleanrath wind farm development being maintained in the Sleep Mode and subsequently decommissioned early. In these circumstances, the development on the site would not utilise the allocated Gate 3 grid connection offer secured for the Cleanrath wind farm development, and the absence of production of renewable energy from the site is likely to result in a further shortfall in achieving the Government's 2020 target of generating 40% of the State's electricity from renewable sources this year (a target which Ireland will fall short of) and which has recently been increased to 70% by 2030. This could potentially lead to a long term slight negative impact on air quality and climate due to the reduction in renewable energy being supplied to the national grid which is contrary to planning and national policy.

The early decommissioning of the Cleanrath wind farm development would also require the identification and development of an alternative site in order to meet Ireland's targets with further potential for environmental impacts by both decommissioning the Cleanrath wind farm development and developing the alternative site. The Cleanrath wind farm development and building of its infrastructure has been shown to have had no significant environmental impacts and therefore the environmentally sustainable approach is to maintain the existing infrastructure.

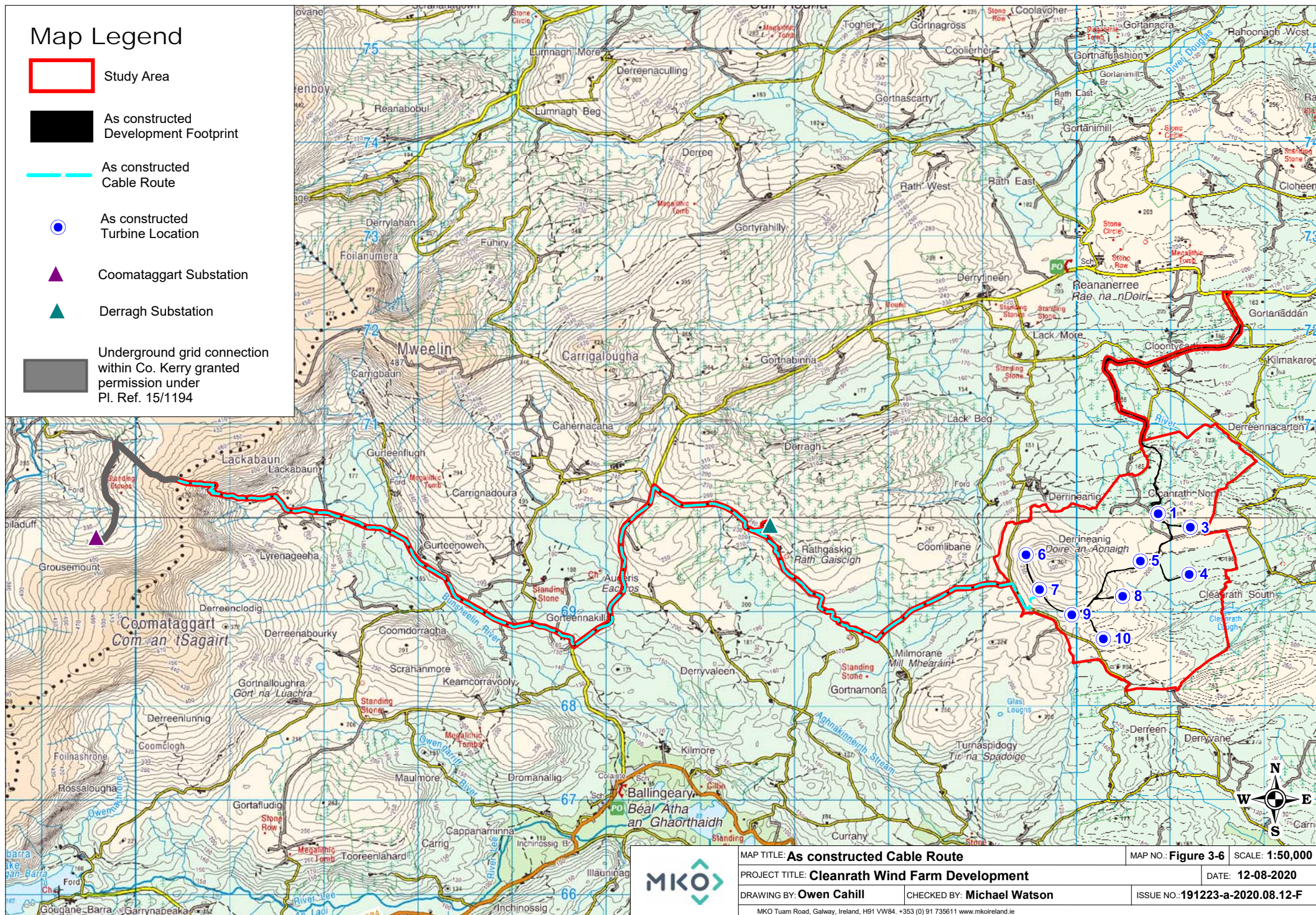
The chosen option, based on the evaluation of potentially negative environmental effects is for the Cleanrath wind farm development to remain in place and recommence full operation, supplying renewable electricity to the national grid and contributing to Ireland achieving its climate change targets. In the event that full operation of the Cleanrath wind farm development does not recommence, it may be necessary to implement the decommissioning plan early, which would involve

further construction works to be carried out which would in themselves require further mitigation measures to offset potential environmental impact.

Early Decommissioning is considered the least environmentally sustainable option and leads to the potential for new and/or additional environmental impacts as well as the potential loss of renewable electricity with the associated negative effects on air and climate.

Map Legend

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



MAP TITLE: **As constructed Cable Route**

MAP NO. **Figure 3-6** SCALE: **1:50,000**

PROJECT TITLE: **Cleanrath Wind Farm Development**

DATE: **12-08-2020**

DRAWING BY: **Owen Cahill**

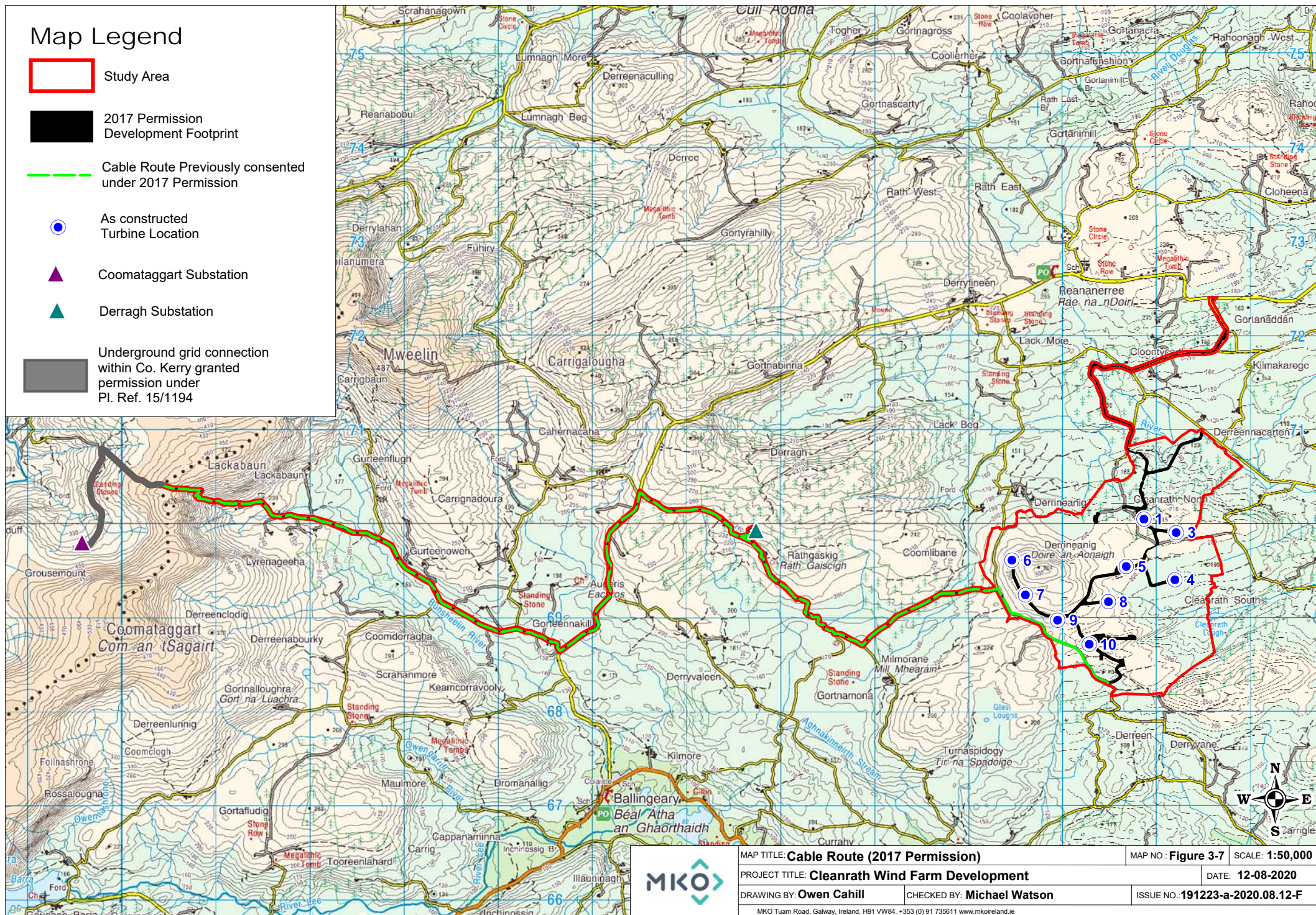
CHECKED BY: **Michael Watson**

ISSUE NO.: **191223-a-2020.08.12-F**

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Map Legend

- Study Area
- 2017 Permission Development Footprint
- Cable Route Previously consented under 2017 Permission
- As constructed Turbine Location
- ▲ Coomataggart Substation
- ▲ Derragh Substation
- Underground grid connection within Co. Kerry granted permission under Pl. Ref. 15/1194



MAP TITLE: Cable Route (2017 Permission)		MAP NO.: Figure 3-7	SCALE: 1:50,000
PROJECT TITLE: Cleanrath Wind Farm Development			DATE: 12-08-2020
DRAWING BY: Owen Cahill	CHECKED BY: Michael Watson	ISSUE NO.: 191223-a-2020.08.12-F	
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Conclusion

In order to provide context in terms of the reasonable alternatives considered when choosing and designing this project, a description has been provided of the reasonable alternatives that were considered originally for the wind farm development in terms of site selection, other land-use options for the site as well as site layout and transport route options to the site. The design considerations in relation to the Cleanrath wind farm development and an indication of the main reasons for selecting the chosen option with regards to its environmental impacts has also been provided. Given the Cleanrath wind farm development has been constructed, consideration and evaluation is also provided with regards the alternative scenarios which may arise depending on the outcome of the Substitute Consent process.

The monitoring results and reporting completed during the construction and operational phases of the Cleanrath wind farm development have been used to inform the assessment of the actual impacts and effects in the rEIAR, EIAR and in the accompanying rNIS, NIS. As predicted in the EIS and NIS submitted in respect of the process that culminated in the decision to grant the 2017 Permission, the Cleanrath wind farm development has not had any significant environmental impacts nor has it had any adverse effects on the integrity of any European site during either the construction or the operational phase up to the end of April 2020 or indeed in the period from May to August 2020 during which the development operated in Sleep Mode.

The chosen option, based on the evaluation of potentially negative environmental effects is for the Cleanrath wind farm development to remain in place and recommence full operation, supplying renewable electricity to the national grid and contributing to Ireland achieving its climate change targets. In the event that full operation of the Cleanrath wind farm development does not recommence, it may be necessary to implement the decommissioning plan early, which would involve further construction works to be carried out which would in themselves require further mitigation measures to offset potential environmental impact.

Early Decommissioning is considered the least environmentally sustainable option and leads to the potential for new and/or additional environmental impacts as well as the potential loss of renewable electricity with the associated negative effects on air and climate.