3. CONSIDERATION OF REASONABLE ALTERNATIVES

3.1 Introduction

Article 5(1)(d) of Directive 2011/92/EU[1] of the European Parliament and of the Council of 13 December 2011 on the assessment of effects of certain public and private projects on the environment (codification), as amended by Directive 2014/52/EU[2] (the EIA Directive), requires that the Environmental Impact Assessment Report (EIAR) contains "*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.*"

Article 5(1)(f) of the EIA Directive requires that the EIAR contains "*any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.*"

Annex IV of the EIA Directive states that the information provided in an EIAR should include 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 Proposed Development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.*"

As detailed in Section 1.1.1 in Chapter 1 (Introduction), for the purposes of this EIAR, the various project components are described and assessed using the following references: 'Proposed Development', 'proposed turbines', the 'Site', the ' 2020 Application' and the 'Kealkill Wind Farm'. Please see Section 1.1.1 of this EIAR for further details. A detailed description of the Proposed Development is provided in Chapter 4 (Description of the Proposed Development) of this EIAR.

The consideration of alternatives is an effective means of avoiding environmental impacts. As set out in the Environmental Protection Agency (EPA) '*Guidelines on The Information to be Contained in Environmental Impact Assessment Reports, 2022*' (EPA, 2022), the presentation and consideration of reasonable alternatives investigated is an important part of the overall EIA process.

Non-environmental Factors

EIA is confined to the environmental effects that influence consideration of alternatives. However, other non-environmental factors may have equal or overriding importance to the developer of a project, for example project economics, land availability, engineering feasibility or planning policy.

Hierarchy

EIA is concerned with projects. EPA, 2022 states that in some instances neither the Applicant nor the competent authority can be realistically expected to examine options that have already been previously determined by a higher authority, such as a national plan or regional programme for infrastructure.

[1] *European Union (2011). Directive 2011/92/EU. European Parliament and European Council.*
[2] *European Union (2014). Directive 2014/52/EU. European Parliament and European Council.*

Site-specific Issues

EPA, 2022 states 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 Consideration of Reasonable Alternatives

3.2.1 Methodology

The EU Guidance Document: *Guidance on the preparation of the Environmental Impact Assessment Report* (EU, 2017)[3] 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 EU, 2017 states that reasonable alternatives "*must be relevant to the Proposed Development 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".*

EPA, 2022 states 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 legislation and guidance requirements into account, this section addresses alternatives under the following headings:

- 'Do-Nothing' Alternative;
- Alternative Site Locations;
- Alternative Renewable Energy Technologies;
- Alternative Project Design Options
    - Alternative Turbine Numbers and Model
    - Alternative Turbine Layout and Development Design
    - Alternative Road Layout
    - Alternative Borrow Pit Option
    - Alternative Temporary Construction Compound
    - Alternative Design of Ancillary Structures
    - Alternative Electricity Infrastructure
    - Alternative Transport Route and Site Access
- Alternative Mitigation Measures.

Each of these headings and how they relate to the Proposed Development, is addressed in the following sections.

[3] *European Union (2017) Guidance on the preparation of the EIA Report (Directive 2011/92/EU as amended by 2014/52/EU).*

When considering the Proposed Development, given the intrinsic link between layout and design, the two will be considered together in this chapter.

3.2.2 'Do-Nothing' Alternative

Annex IV, Part 3 of the EIA Directive states that the description of reasonable alternatives studied by the developer 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 referred to as the "do nothing" alternative. EU, 2017 states that this should involve the assessment of *"an outline of what is likely to happen to the environment should the Project not be implemented – the so-called 'do-nothing' scenario."*

An alternative land use option to developing a renewable energy project at the Site would be to leave the Site as it is, with no changes made to the current land use practices of commercial forestry and unutilised existing wind farm infrastructure that remains at the Site from the Kealkill Wind Farm. In doing so, the environmental effects in terms of emissions are likely to be neutral.

However, by implementing the 'Do-Nothing' alternative, the opportunity to capture the available renewable energy resource on a historically established and operational wind energy site 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. The opportunity to generate local employment and investment would also be lost.

As such, on the basis of the positive environmental effects arising from the project when compared to the 'Do-Nothing' scenario, the Do-Nothing' scenario was not the chosen option. The existing land uses can and will continue in conjunction with the Proposed Development. A comparison of the potential environmental effects of the 'Do-Nothing' Alternative when compared against the chosen option of developing a renewable energy project at this site are presented in Table 3-1 below.

Table 3-1 Comparison of environmental effects when compared against the chosen option of developing a renewable energy project.

Environmental Consideration	Do-Nothing Alternative	Chosen Option of developing a renewable energy project
Population & Human Health	No increase in local employment and no long-term financial contributions towards the local community. No potential for shadow flicker and noise to affect sensitive receptors. No potential for effects on visual amenity due to the construction and operation of turbines. No potential for positive effects on air quality and climate change targets.	Approximately 40 jobs could be created during the construction, operation, and maintenance phases of the Proposed Development. Based on the assessment detailed in Chapter 5 (Population & Human Health), and the mitigation measures proposed, there will be no significant effects related to shadow flicker and noise from the Proposed Development. As detailed in Chapter 12, residual effects from Noise and Vibration are predominantly not significant for the short-term construction and decommissioning phases. For the Operational Phase, the residual

Environmental Consideration	Do-Nothing Alternative	Chosen Option of developing a renewable energy project
	No potential to supply an estimated 10,512 homes with clean renewable electricity per anum. No potential to impact tourism due to the construction and operation of turbines.	effects is not significant on sensitive receptors. As detailed in Chapter 13 (Landscape & Visual), there will be no significant residual effect. The proposed turbine locations adhere to the recommended 500m set back distance in the Guidelines (DoEHLG, 2006) and also the 4 times tip height set-back distance set out for visual amenity purposes, prescribed by the draft Guidelines (DoHPLG, 2019). As detailed in the assessment in Chapter 10 (Air Quality), the overall impact will be a Long-term Moderate Positive Impact on air quality. No potential to cause significant effect on tourism based on Appendix 5-3.
Biodiversity (including Birds)	No habitat loss. No potential for collision risk for birds and bats No potential biodiversity enhancement measures would be put in place.	As detailed in Chapter 6 (Biodiversity), the development has been designed to avoid or mitigate impacts on biodiversity. As detailed in the Bat Report in Appendix 6-1 of this EIAR, there is unlikely to be any significant effect in relation to collision risk to bats from the Proposed Development. The Proposed Development includes for a Biodiversity Management Enhancement Plan designed to improve biodiversity in the local area. Please see Appendix 6-5 BMEP for details. As detailed in Chapter 7 (Birds), the Collision Risk Assessment (CRA) indicates that the impact of the Proposed Development on birds corresponds to a Low – Very Low effect significance.
Land, Soils & Geology	Neutral	As detailed in the assessment in Chapter 8 (Land, Soils & Geology),

Environmental Consideration	Do-Nothing Alternative	Chosen Option of developing a renewable energy project
		no significant effects on land, land use, peat, soil and bedrock will occur. Geotechnical investigations followed by careful design will lead to no significant environmental impacts.
Hydrology and Hydrogeology	Neutral	As detailed in the assessment in Chapter 9 (Hydrology and Hydrogeology), no significant effects on surface water or groundwater quality will occur.
Air Quality	Neutral. Will not provide the opportunity for an overall increase in air quality or reduction of greenhouse gasses	As detailed in the assessment in Chapter 10 (Air Quality), there will be no significant effects on air quality during the construction, and decommissioning phases. There will be a Long-term Moderate Positive Impact on air quality during the operational phase.
Climate	Neutral. Will not provide the opportunity for a contribution to the reduction of greenhouse gases. Will not assist in achieving the renewable energy targets set out in the Climate Action Plan 2025 (CAP25)	As detailed in the assessment in Chapter 11 (Climate), over the proposed 35-year lifespan of the Proposed Development, 333,725 tonnes of carbon dioxide will be displaced from traditional carbon-based electricity generation, this will result in a positive significant effect on climate.
Noise & Vibration	Neutral. No potential for noise impacts on nearby sensitive receptors.	Based on the assessment detailed in Chapter 12 (Noise & Vibration), and the mitigation measures proposed, there will be no significant effects on sensitive receptors due to an increase in noise levels from the Proposed Development during the construction, operational phase and decommissioning phases.
Cultural Heritage & Archaeology	Neutral. No potential for impacts on unrecorded, subsurface archaeology.	As detailed in the assessment in Chapter 14 (Archaeological, Architectural and Cultural Heritage), the significance of direct effects will be slight - not significant and no significant effects will occur. There will be no significant direct

Environmental Consideration	Do-Nothing Alternative	Chosen Option of developing a renewable energy project
		or indirect impacts on Cultural Heritage and Archaeology.
Landscape & Visual	Neutral. No potential for landscape and visual impacts on nearby sensitive receptors.	As detailed in the assessment in Chapter 13 (Landscape & Visual), the lack of nearby highly sensitive landscape and visual receptors, and the strategic siting of infrastructure will mitigate any potential for significant landscape and visual effects during all three phases of the Proposed Development.
Material Assets	Neutral	As detailed in Chapter 15 (Material Assets), there will be temporary imperceptible to slight negative effect on traffic volumes on the local road network during the construction phase of the Proposed Development. A detailed Traffic Management Plan incorporating all the mitigation measures will be agreed with the roads authority prior to construction works commencing on site.
Vulnerability of the Project to Major Accidents and Natural Disaster	No potential to be affected by or to cause major accidents or natural disasters	As demonstrated in Chapter 16 (Major Accidents & Natural Disasters), the risk of a major accident and/or disaster during the construction of the Proposed Development is considered 'low' in accordance with the 'Guide to Risk Assessment in Major Emergency Management' (DoEHLG, 2010). The Proposed Development will be designed and built in accordance with current best practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded through the design. With the implementation of all mitigation and monitoring measures detailed in the EIAR, there will be no significant residual effects associated with the construction, operation and decommissioning of the Proposed Development.

For the reasons set out above, the proposal for a wind energy development at the Proposed Development was progressed over a Do-Nothing Scenario despite the potential environmental effects,

as it was determined through the existing site infrastructure, iterative design process, and site visits carried out by the EIAR team that any potential environmental effects could be eliminated or appropriately mitigated as set out in detail in Chapters 5-16 of this EIAR. By progressing the Proposed Development, there is an opportunity to enhance the employment and investment in the local area and to capture the available renewable energy resource within County Cork, thus contributing to meeting national and international climate targets. Please refer to Chapter 5 through to Chapter 16 of this EIAR for further details on the effect associated with the progression of the Proposed Development.

3.2.3 Alternative Site Locations

3.2.3.1 Previous Site History

The process of identifying a suitable location for a development such as the Proposed Development is influenced by a number of factors. While wind speeds, the extent of suitable or available land, proximity to the grid connection point, and planning policy are all very important, a wind farm project must be commercially viable/competitive, as otherwise it will not attract the necessary project finance required to see it built. The Site, as detailed in Chapter 1, Section 1.4, was subject to the previous Kealkill Wind Farm development as well as the 2020 Application.

As detailed in Section 1.1 of Chapter 1, the Kealkill Wind Farm turbines were removed in June 2018. The 2020 Application was submitted to Cork County Council, appealed to An Bord Pleanála (now referred to as An Coimisiún Pleanála) in September of 2020, granted permission with conditions on the 28/01/2020 and subsequently the Boards decision was quashed by order of the High Court on the 19/12/2020 (perfected 21/12/2022). The case was remitted back to An Coimisiún Pleanála and reactivated on the 27/01/2023 under ABP-315656-23. In May of 2024 An Coimisiún Pleanála decided to refuse permission for the 2020 Application.

The Proposed Development will seek to address the concerns raised in the determination of the previous planning application. It is proposed to significantly reduce the scale of the Proposed Development, utilising the spine road of the original wind farm at this site and connecting directly to the existing onsite 38kV substation. The Proposed Development will ensure that it maximises the amount of renewable energy generated from the wind resource at this site using the most modern wind turbine technologies in order to contribute to Irelands ambitious renewable energy generation targets as set out in the Climate Action Plan 2025 (CAP 25) i.e. deploying 9GW on onshore wind by 2030.

The Proposed Development considered a number of constraints during the design process to reduce the proposal from the 7-no. turbine layout from the 2020 Application to the proposed 3 no. turbine layout as discussed in Section 3.2.5.2.2 below.

The Cork County Development Plan (CDP) 2022-2028 contains a Wind Energy Strategy (WES) which identifies the Site as “Open to Consideration” for wind energy development. The presence of the previous wind turbines further verifies that the Site has potential to accommodate a wind energy development and the conclusions to the various chapters of the EIAR and the accompanying NIS demonstrates that this is the case in relation to the Proposed Development.

3.2.3.2 Strategic Site Selection

To ensure that the levelized costs of building each megawatt of electricity-generating capacity on a wind farm is controlled efficiently, it is incumbent on the design team to ensure that the most suitable site for development of a proposed wind farm is chosen. Being that the Site was previously used for wind energy generation, the Site still includes infrastructure that was part of the Kealkill Wind Farm and which can be utilised for the Proposed Development, for example, existing access tracks and an existing onsite 38kV substation, overall making the Proposed Development more environmentally sustainable than it would be to develop on an alternative greenfield site. If the developer was unable to make use of this site, they would envisage the need to develop another (potentially greenfield) site for

the Proposed Development as a means of working towards meeting Government and EU targets for climate change on the island of Ireland, which would be less sustainable and could potentially lead to greater environmental impacts or impacts on Natura 2000 sites.

As the cost of building each megawatt of electricity generating capacity in a wind farm is in the region of €1.5 million euro (based on current industry indicators), it is critical that the most suitable site for the Proposed Development is chosen.

As set out in Section 1.3 of this EIAR, the Applicant company, Wingleaf Ltd is associated with Enerco Energy Ltd. which is an Irish-owned Cork-based company with extensive experience in renewable energy and is responsible for a number of projects throughout Ireland. Enerco Energy Ltd. invests a significant amount of time and resources identifying and investigating sites for renewable energy proposals throughout the country.

A nationwide constraints analysis was undertaken and included avoidance of environmental designations (Natura 2000 sites), review of national, regional and local policies and objectives, suitable wind speeds, adequate setbacks from sensitive receptors, proximity to national grid nodes, avoidance of direct impacts on known cultural heritage assets, access and constructability.

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

- **Planning Policy:** County Development Plan Renewable Energy Strategy for wind energy development;
- **Environmental Sensitivities**: Located outside areas designated for protection of ecological species and habitats;
- **Grid Connection**: Access to the national electricity grid possible within a viable distance;
- **Sensitive Receptors**: Capable of complying with required setbacks from sensitive receptors.
- **Site Scale:** Sufficient area of unconstrained land that could potentially accommodate a wind farm development and turbine spacing requirements.

The criteria above will be explained further below in so far as they influenced the Site selection exercise undertaken.

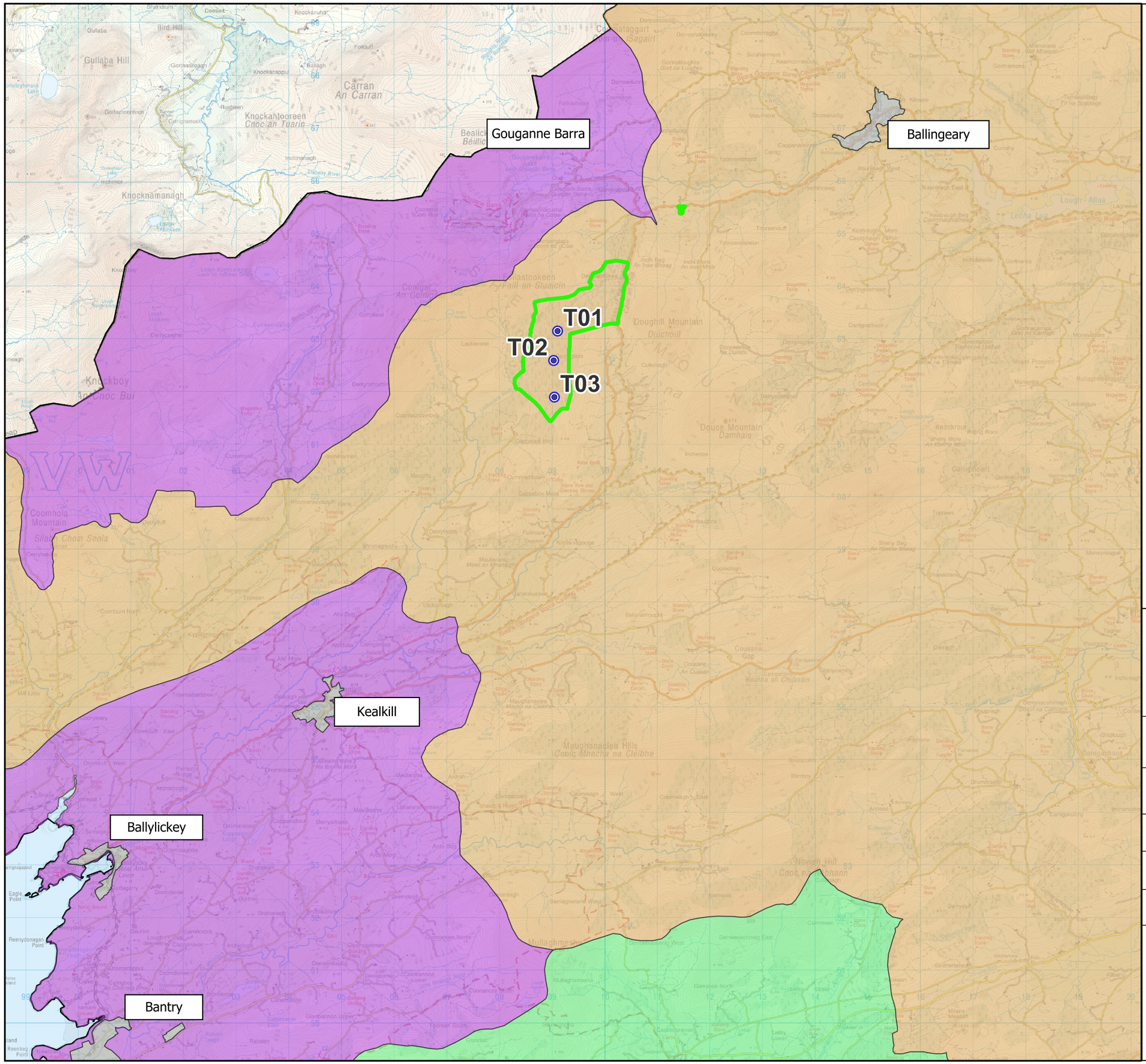
The Site is large enough to accommodate a wind farm development that consists of a larger turbine than those previously located on the Site, taking into account the separation distances required between turbines and the buffer zones to be maintained around houses and roads etc. in which no turbines could be sited.

3.2.3.2.1 *Planning Policy*

Section 2.2. in Chapter 2 (Background to the Proposed Development) of this EIAR sets out in detail the planning policies of the Cork County Council with regard to wind energy development. As detailed in that section of this EIAR, the Proposed Development is located in an area deemed 'Open to Consideration', as shown in Figure 3-1. The proposed site location was therefore deemed suitable for the Proposed Development from a planning policy perspective.

Considering the former use of the Site as a wind farm, the REPower EU policy is particularly relevant to the planning policy in the context of consideration of alternatives.

Further elaboration on the policies that identify the Site as being suitable for wind energy development are detailed and outlined in Section 2.2 in Chapter 2 (Background to the Proposed Development).



Map Legend

- EIAR Site Boundary
- Proposed Turbines Locations
- County Boundary

Cork Wind Energy Strategy

- Acceptable in Principle
- Normally Discouraged
- Open to Consideration
- Urban Area

Drawing Title

Cork County Development Plan Wind Energy Strategy 2022-2028

Project Title

Curraglass Wind Farm, Co. Cork

Drawn By	Checked By
EM	EC
Project No.	**Drawing No.**
240614	Figure 3-1
Scale	**Date**
1:70,000	2025-08-08

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3.2.3.2.2 Environmental Sensitivities

The Site is not located within any area designated for ecological protection.

The Site is not located within any Special Area of Conservation or Special Protection Areas. The nearest Natura 2000 site, i.e. Special Area of Conservation (SAC) or Special Protection Area (SPA), is the Derryclogher (Knockboy) Bog SAC which is approximately 3.8km directly west of the Site and has blanket bog as the qualifying interest. The nearest national designated site, i.e. Natural Heritage Area (NHA) or proposed Natural Heritage Area (pNHA) is the Conigar Bog NHA which is approximately 816m west, located directly adjacent to the Site. Figure 3-2 shows the location of the Site in relation to designated areas within c.15-kilometres. The Site is located within a total of 4 no. Article 17 Habitats. The northeast section of the Site is located within 3 no. Article 17 habitats: Wet Heath, Dry heath, and Active Blanket Bog. The northwest section of the Site sits within 1 no. Article 17 habitat, the Alpine & Subalpine Heath Habitat.

3.2.3.2.3 Grid Connection

The Proposed Development intends to connect to the national grid via the existing 38kV overhead line Details regarding potential alternative grid connection cabling route options are considered and presented in Section 3.2.5.7.

The Kealkill Wind Farm was commissioned in 2006, and the turbines were removed by the operator in June 2018. It is intended to continue the use of the existing onsite 38kV substation that remains at the Site. The existing 38kV overhead line remains in situ and connected to the national grid. The Proposed Development intends to repower the Site of the Kealkill Wind Farm, including the continued use of the existing onsite 38kV substation, and the planning application will include the continued use of elements of the existing wind farm infrastructure at the Site.

3.2.3.2.4 Sensitive Receptors

Having reviewed the settlement patterns in the vicinity, the Site has emerged as suitable to accommodate the Proposed Development. The recommended setback distance (minimum 500m recommended by the Guidelines (DoEHLG, 2006) and 4 x turbine tip height recommended in the Draft Guidelines (DoHPLG, 2019)) to sensitive receptors is being achieved by the proposed turbines. The population density of the Population Study Area as described in Chapter 5 (Population and Human Health) section of this EIAR is 12.9 persons per square kilometre. This is considerably lower than the average national population density of 73.3 persons per square kilometre.

3.2.3.2.5 Site Scale

The Site, covering a total of 270 hectares, ranges in elevation from 111 metres above ordnance datum (m OD), in the turbine component turning area of the Site, to 347m OD in the north of the Site.

Current land use comprises of commercial forestry, agricultural land and unutilised existing wind farm infrastructure. In addition to forestry and wind energy, other land-uses in the surrounding area include agriculture, and residential/commercial activities.

The Site benefits from existing wind farm infrastructure and existing Coillte Forestry roads (approx. 4km). Approximately 2.6km of road will require upgrading, 100m of which will be the upgrade to existing gravel tracks off the R584 and approximately 1.5km of new access road to be constructed. As discussed above, the Site comprises habitats of low ecological value, with some smaller areas of valuable Annex 1 habitats. All Site infrastructure is accommodated within habitats of low ecological values, maintaining setback distances from sensitive ecological receptors.

As such, with its existing 38kV overhead line and wind farm infrastructure, accessibility, relatively flat topography, low ecological value habitats and achievable setbacks from sensitive receptors, the Site affords a large-scale area that is sufficiently unconstrained to accommodate a 3-turbine wind farm development.

3.2.3.2.6 *Summary*

From the review of the criteria set out above the Site was identified as a suitable location for the provision of a renewable energy development of the scale proposed. As noted, the Site was an operational wind farm site, that had it's turbines removed as detailed in Section 1.1 The Site has an existing 38kV overhead line and is located on forestry land which allows the Proposed Development to take advantage of the existing access roads (which will be upgraded) and highlights the suitability of the Proposed Development as it can make sustainable use of these established items of infrastructure.

The Site is designated as 'Open to consideration' under the Cork County Development Plan Wind Energy Strategy, and as such *"have potential for wind farm developments but there are also some environmental issues to be considered".*

The Proposed Development coincides with the REpowerEU objectives, whereby deployment of renewable energy projects must be accelerated. In order to speed up the process of deployment, development of renewable energy projects must be contained to areas where there are lower environmental risks, adequate infrastructure, easier grid connection, and suitable land-use. The Proposed Development, with its low environmental risk, existing wind farm infrastructure, existing 38kV overhead line, and history of land-use for wind, evidently aligns with the objective of the REpowerEU plan.

As aforementioned above, the Proposed Development is situated within coniferous forestry and is not located within or adjacent to EU or National protected areas, nor does it contain any EU designated Annex I Habitats, therefore the Site primarily consists of an area with low ecological value. All required setbacks can be met, and the wind resource in the area is considered commercially viable for wind energy development.

Factoring all required environmental constraints into the project design, a site of considerable scale and a history of wind energy, with an estimated installed capacity of 14.4MW, and potential to power approximately 10,512 Irish households with renewable energy and displace 10,730 tonnes of carbon dioxide per annum (375,550 tonnes over the 35-year operational life), the Site is considered appropriate for wind energy development and represents a positive contribution to National and EU climate action targets.

It can be demonstrated by the above information, and the assessment undertaken within the chapters in this EIAR, that the Site is suitable for wind energy and in accordance with the current County Development Plan. From the review of the criteria set out above, the existing 38kV overhead line was identified as suitable for the provision of a connection of the Proposed Development to the national grid.

3.2.4 Alternative Renewable Energy Technologies

The Proposed Development will be located in a site where commercial forestry operations will continue around the footprint of the Proposed Development.

Both onshore and offshore wind energy development will be required to ensure Ireland reaches the target set in the Climate Action Plan 2025 to source 80% of our electricity from renewable energy by 2030. It is not a case of 'either' 'or'. The Climate Action Plan 2025 has set out the following targets for electricity generation:

Share of electricity demand generated from renewable sources to up to 80% where achievable and cost effective, without compromising security of electricity supply;

- Onshore Wind Capacity: up to 9GW
- Offshore Wind Capacity: 5GW (minimum)
- Solar PV Capacity: 8GW

When considering other renewable energy technologies in the area, the Applicant considered commercial solar energy production and offshore wind as alternatives to the Proposed Development.

3.2.4.1 Solar Energy

The Proposed Development will be located on a site where commercial forestry operations will continue around the footprint of the Proposed Development. Commercial solar energy production is the harnessing and conversion of sunlight into electricity using photovoltaic (PV) arrays (panels). To achieve the same maximum estimated electricity output from solar energy as is expected from the Proposed Development (c. 14.4MW), a larger development footprint would be required. As detailed in Section 1.1.1 in Chapter 1, the EIAR Site Boundary encompasses an area of approximately 270ha and the permanent footprint of the Proposed Development measures approximately 4.7ha, which represents approximately 1.7% of the Site. A solar PV array of the scale necessary to provide the same electricity output would require a footprint of approx. 28.8 hectares[4] or 10.6% of the overall Site. In addition, a solar development of this scale, would have a higher potential environmental effect on Traffic and Transport (construction phase), Air Quality (construction phase) and Biodiversity and Birds (habitat loss), a greater potential for direct impacts on unknown subsurface archaeology (construction phase) and glint and glare at the Site (operational phase). Furthermore, the implementation of a solar development would require the removal of the existing forestry, resulting in additional environmental and landscape impacts. In contrast, a wind energy development allows for the continued co-existence of the forestry, thereby minimising land use change and preserving existing habitats. Taking into account the factors outlined above, it has been determined that wind energy is the most suitable renewable energy technology for the Site with the lesser potential for significant, adverse environmental effects.

A comparison of the potential environmental effects of the development of a solar PV array when compared against the chosen option of developing the Proposed Development at this Site are presented in Table 3-2 below.

Table 3-2 Comparison of environmental effects when compared against the chosen option (wind turbines)

Environmental	Solar PV Array (with up to 14.4 MW Output)	Chosen Option
Population & Human Health (incl. Shadow Flicker)	Relatively lower long-term financial contributions towards the local community (i.e., community benefit fund) on a per MWh basis Lower potential for noise and vibration effects. Lower potential for visual obstructions in the skyline due to solar farms being low lying structures.	Higher long-term financial contributions towards the local community (i.e., community benefit fund) on a per MWh basis Based on the assessment detailed in Chapter 5 (Population & Human Health) and the mitigation measures proposed, there will be no significant effects related to shadow flicker from the Proposed Development.

[4] *Approximately 1.6 - 2 ha are required for each MW of solar panels installed based on approximately 4000 panels per MW (taken from the Sustainable Energy Authority Solar Energy FAQ publication which can be accessed here: https://www.seai.ie/publications/FAQs_on_Solar_PV.pdf). For the purposes of comparison, a minimum value of 1.6 ha has been assumed.*

	Potential for glint and glare impacts on local receptors. No potential to cause significant effect on tourism. No material difference between the two options during construction and operational phase.	No potential for glint and glare impacts on local receptors Greater potential for noise and vibration during construction operational and decommissioning phases. Greater potential for visual effects during operational phase. No material difference between the two options during construction and decommissioning. No potential for glint and glare impacts on sensitive receptors, therefore no significant effect. No potential to cause significant effect on tourism based on Appendix 5-3.
Biodiversity (including Birds)	Larger development footprint would result in greater potential habitat loss. No potential for collision risk for birds. Potential for glint and glare impacts on birds.	As detailed in Chapter 6 (Biodiversity), the development has been designed to avoid or mitigate impacts on biodiversity including bats and downstream aquatic receptors. The Proposed Development includes for a biodiversity net gain proposal to enhance the quality of the local biodiversity. Please see Appendix 6-4 for details. With the implementation of the mitigation measures described in Chapter 7 (Birds), the residual effects for collision risk are not significant.
Land, Soils & Geology	Shallower excavations involved in solar PV array developments would result in reduced volume of spoil to be excavated.	As detailed in the assessment in Chapter 8 (Land, Soils and Geology), there is no loss of topsoil or subsoil as a result of the Proposed Development. Topsoil and subsoil will be relocated within the Site. No significant effects on soils and subsoils will occur.
Water	Shallower excavations involved in solar PV array developments would result in reduced volume of spoil to be excavated, therefore	Project specific drainage design removes the potential for significant environmental effects. As detailed in the assessment in Chapter 9

	reducing the potential for silt-laden runoff to enter receiving waterbodies.	(Hydrology & Hydrogeology), no significant effects on surface water or groundwater quality will occur.
Air Quality	Increased potential for dust and other noxious emissions due to larger volume of transport movements to and from site and larger volume of plant and ground works on site due to the larger footprint. Reduced capacity factor of solar PV array technology would result in less carbon offset	Reduced potential and less significant effect for dust and other noxious emissions due to smaller volume of plant and ground works on site due to a smaller footprint. Increased capacity factor of wind turbine technology would result in greater carbon offset
Climate	Reduced capacity factor of solar PV array technology would result in less carbon offset.	As detailed in the assessment in Chapter 11 (Climate), over the proposed 35-year lifetime of the Proposed Development, 375,550 tonnes of carbon dioxide will be displaced from traditional carbon-based electricity generation. The addition of an estimated 14.4MW clean energy to the national grid will be a positive significant contribution to the States renewable energy targets set out in the Climate Action Plan 2025.
Noise & Vibration	Potential for short term noise impacts on nearby sensitive receptors during the construction phase. Larger traffic movements and increased plant on site due to the larger footprint/ground disturbance could lead to larger noise and vibration output during the construction phase.	Based on the assessment detailed in Chapter 12 (Noise) and the mitigation measures proposed, there will be no significant effects on sensitive receptors due to an increase in noise levels from the Proposed Development during the construction and operational phase. Reduced traffic movements and less plant on site due to a smaller footprint/ground disturbance would lead to reduced noise and vibration output during the construction phase.
Landscape & Visual	Panelling potentially less visible from surrounding area due to the screening by vegetation and topography	As detailed in the assessment in Chapter 13 (Landscape & Visual), the landscape value of the Proposed Development is deemed to be of 'Low' value and sensitivity, and the strategic siting of infrastructure will mitigate any potential for significant landscape and visual effects.

Cultural Heritage & Archaeology	Larger development footprint would increase the potential for impacts on unrecorded, subsurface archaeology.	As detailed in Chapter 14, there will be no significant direct or indirect effects on known or unknown archaeology and cultural heritage during the construction, operation and decommissioning phases. Archaeological monitoring under licence of the smaller footprint will be implemented during the construction phase.
Material Assets	Potential for greater traffic volumes during construction phase due to the number of solar panels required to achieve the same output. Greater potential for impacts on waste management due to increased plant on site giving rise to increase in hazardous waste materials. No material difference for impacts on gas, water, aviation. No potential for impacts on telecommunications.	As detailed in Chapter 15, there will be short term negative imperceptible to slight impact on traffic volumes during the construction phase of the Proposed Development. A detailed Traffic Management Plan incorporating all the mitigation measures will be agreed with the roads authority prior to construction works commencing on site. No material difference for impacts on gas, water, aviation. Buffers implemented on telecommunication links. There will be a significant positive effect on electricity supply with the provision of an estimated 14.4MW to the national grid and powering of 10,512 Irish households with renewable electricity per year.

For the reasons set out above, the Proposed Development was considered to be the most efficient method of electricity production with the lesser potential for significant environmental effects.

3.2.4.2 Offshore Wind

Although the screening exercise was based on identifying lands for onshore wind development; another alternative source of renewable electricity generation would be offshore wind energy.

Enerco Energy Ltd has a keen interest in offshore wind farms and has explored potential offshore sites. However, it is considered that due to delays with the regulatory process for offshore development, a combination of both onshore and offshore wind farm development will continue to be required to deliver on the ambitious renewable energy targets set under the Climate Action Plan 2025 which include focusing on onshore wind energy developments to reach the 2025/2030 renewable energy targets. In 2022 Ireland's "Phase 1", also known as "Relevant Projects" were announced, where six offshore wind projects were proposed with four Relevant Projects supported by the Offshore Renewable Electricity Support Scheme 1 (ORESS1), and two which made unsuccessful bids given the option to secure an alternative route to market. In October 2024, "Phase 2" progressed with the announcement of the South Coast Designated Maritime Area Plan (SC- DMAP). The SC-DMAP

identifies four proposed maritime areas off the south coast within which fixed Offshore wind farms may be located. These Maritime areas with be auctioned off supported by ORESS 2.1, with the first site "Tonn Nua" being auctioned in 2025. With all the Phase 1 projects submitted to An Coimisiún Pleanála and with only one Phase 2 project currently on the horizon, under the current plan led system it's imperative that we continue developing onshore wind to meet target onshore target of 9GW under CAP 2025. As of December 2024, the republic of Ireland had an installed Wind Energy Capacity of 4,836MW. As such, Enerco's primary focus continues to be the development of onshore wind farms, and the Applicant will continue to explore potential development offshore in tandem with delivering suitable onshore sites, such as the Proposed Development.

The Applicant is committed to playing a key role in helping the State achieve its CAP25 objectives while building upon its proven record of generating clean renewable energy to the national grid. As such, the option of an offshore project is not considered to be a reasonable alternative at this time.

Being that the Site previously catered for wind turbines, the location is deemed acceptable to use for wind energy.

3.2.5 Alternative Project Design Options

3.2.5.1 Alternative Turbine Numbers and Model

As discussed in Section 3.2.3, the suitability of the area for wind energy as identified under the various previous CDP and Wind Energy Strategy (WES) within various Cork County Development Plan' including the most recent 2022 – 2028 was used to identify the Site. This application considered the issues identified in the previous refusal reasons during the design process which led to a reduction in the number of turbines at the Site from the 7 no. turbines assessed as part of the previous application, down to 3 no. turbines, assessed as part of the Proposed Development application.

Modern wind turbines have a potential power output in the 4.5 - 7-megawatt (MW) range. It is proposed to install 3 turbines at the Proposed Development which could achieve an overall output of 14.4 MW. Such a wind farm could also be achieved on the Site by using smaller turbines (for example 2.5 MW machines). However, this would necessitate the installation of over 6 turbines to achieve a similar output. A larger number of smaller turbines would result in the wind farm with a greater spatial extent, 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 proposed number of turbines takes 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 Proposed Development. The 3-turbine layout selected for the Proposed Development has the smallest development footprint of the other alternatives considered, while still achieving the optimum output at a more consistent level than would be achievable using different turbines. The other alternatives considered are discussed in further detail in Section 3.2.5.2.2 below.

The turbine model to be installed on the Site will have an overall ground to blade tip height of 156.5m; a rotor diameter 133m; and a hub height of 90 metres. The use of alternative smaller turbines at the Site would not be appropriate as they would fail to make the most efficient use of the wind resource passing over the Site and would potentially require a larger development footprint. This alternative would potentially lead to additional environmental effects. Larger turbines were also considered during the design development phase, which could offer even greater efficiency and output due to their increased rotor diameters and hub heights. However, the use of larger turbines would have resulted in taller overall structures, which would increase visual impacts. While larger turbines may be technically more efficient, the selected turbine model represents the optimum balance between reducing the overall scale of the development and ensuring a viable, productive wind farm.

A comparison of the potential environmental effects of the installation of a larger number of smaller wind turbines when compared against the chosen option of installing a smaller number of larger wind turbines on the Site is presented in Table 3-3 below.

Table 3-3 Comparison of environmental effects when compared to the chosen option (3 wind turbines, higher MW output)

Environmental Considerations	Larger number of smaller turbines	Chosen option of a 3-turbine layout
Population & Human Health	Greater potential for shadow flicker and noise impacts on nearby sensitive receptors due to the increased number of turbines. However, these can be curtailed to meet threshold criteria. Smaller turbines would be less visually obstructive in the skyline; however, the larger development footprint would spread further across the landscape potentially occupying a larger portion of a viewpoint.	Decreased potential for shadow flicker due to greater setbacks from houses, greater separation between turbines thus reducing aggregated shadow flicker time and therefore has less potential for a significant effect Fewer turbines may occupy a smaller portion of a viewpoint.
Biodiversity (Including Birds)	Larger development footprint would result in greater potential for habitat loss	As detailed in Chapter 6 (Biodiversity), the development has been designed to avoid or mitigate impacts on biodiversity including bats and downstream aquatic receptors. As per Chapter 6 of this EIAR, there are no significant long-term negative effects expected on biodiversity receptors. With the implementation of the mitigation measures described in Chapter 7 (Birds), the residual effects for collision risk are not significant.
Land, Soils, & Geology	Larger development footprint would result in greater volume of spoil to be generated, excavated and sorted. Neutral-Geotechnical investigations followed by careful design would lead to no significant environmental impacts	Smaller footprint would result in smaller volume of soils to be excavated and managed. As detailed in Chapter 4 and 8, the Proposed Development has been designed to utilise the existing wind farm infrastructure to minimise ground disturbance where possible. The Spoil Management Proposal discussed in Chapter 4 sets out the optimal treatment for spoil generated on site without creating significant impacts for biodiversity, hydrology, land use etc.

Environmental Considerations	Larger number of smaller turbines	Chosen option of a 3-turbine layout
		Neutral-Geotechnical investigations followed by careful design would lead to no significant environmental impacts.
Hydrology and Hydrogeology	Project design specific drainage design removes the potential for significant environmental effects. Larger development footprint, therefore, increasing the potential for silt-laden runoff to enter receiving waterbodies.	Project design specific drainage design removes the potential for significant environmental effects. Smaller footprint would result less potential for silt laden run-off to enter a waterbody. As detailed in the assessment in Chapter 9 (Hydrology & Hydrogeology), no significant effects on surface water or groundwater quality will occur.
Air Quality	Increased potential for vehicle and construction dust emissions due to an increased volume of construction material and turbine component deliveries to the Site, giving rise to a reduced air quality locally for the construction phase.	Decreased potential for vehicle emissions and dust emissions due to a decreased volume of construction material and turbine component deliveries to the Site. As detailed in Chapter 10 (Air Quality), there will be no significant effects on air quality during the construction, and decommissioning phases. There will be a Long-term Moderate Positive Impact on air quality by during the operational phase.
Climate	There would be an increased potential for vehicle emissions and dust emissions due to an increased volume of construction material and turbine component deliveries to the Site.	Decreased potential for vehicle emissions and dust emissions due to a decreased volume of construction material and turbine component deliveries to the Site. As detailed in the assessment in Chapter 11 (Climate), over the proposed 35-year lifetime of the Proposed Development, 375,550 tonnes of carbon dioxide will be displaced from traditional carbon-based electricity generation. The addition of an estimated 14.4MW clean energy to the national grid will be a positive contribution to the States renewable energy

Environmental Considerations	Larger number of smaller turbines	Chosen option of a 3-turbine layout
		targets set out in the Climate Action Plan 2025.
Noise & Vibration	Potential for increased noise impacts on nearby sensitive receptors due to reduced separation distance between sensitive receptors and turbine locations and additional turbine generators.	Potential for decreased noise levels at nearby sensitive receptors due to increased separation distance between sensitive receptors and turbine locations. Based on the assessment detailed in Chapter 12 (Noise), there will be no significant effects on sensitive receptors during the construction operational and decommissioning phases from the Proposed Development.
Cultural Heritage & Archaeology	Larger development footprint would increase the potential for impacts on unrecorded, subsurface archaeology. No material difference between the two options for indirect effects on monuments.	Smaller development footprint would decrease the potential for impacts on unrecorded, subsurface archaeology. As detailed in the assessment in Chapter 13 (Landscape & Visual), there will be no significant direct or indirect effects on known or unknown archaeology and cultural heritage during the construction, operation and decommissioning phases. Archaeological monitoring under licence of the smaller footprint will be implemented during the construction phase.
Landscape & Visual	Smaller turbines may be less visually intrusive on the landscape. Equally, a larger number of smaller turbines would be spread over a wider area, taking up a greater portion of a viewpoint	As detailed in the assessment in Chapter 14 (Archaeological Architectural & Cultural Heritage), there will be no significant landscape and visual effects during the construction, operation and decommissioning phases. The proposed turbines are suitable sited and scaled within the landscape.
Material Assets – Traffic and Transport	Potential for greater traffic volumes during construction phase due to larger development footprint and requirement for more construction materials and turbine components.	Potential for smaller traffic volumes during the construction phase due to a smaller development footprint and requirement for fewer

Environmental Considerations	Larger number of smaller turbines	Chosen option of a 3-turbine layout
Material Assets- Utilities, Waste Management, Telecommunications and Aviation	No material difference between the two options for gas, water, waste management, telecommunications and aviation.	construction materials and turbine components. As detailed in Chapter 15 (Material Assests), there will be short term negative imperceptible to slight impact on traffic volumes during the construction phase of the Proposed Development. A detailed Traffic Management Plan incorporating all the mitigation measures will be agreed with the roads authority prior to construction works commencing on site.
Vulnerability to Major Accidents Natural Disasters	No material difference between the two options difference between the two options	No material difference between the two options difference between the two options

3.2.5.2 Alternative Turbine Layout and Development Design

The design of the Proposed Development has been an informed and collaborative process from the outset, involving the designers, developers, engineers, landowners, environmental, hydrological and geotechnical, archaeological specialists and traffic consultants. The aim being to reduce potential for environmental effects while designing a project capable of being constructed and viable.

Throughout the preparation of this EIAR, the layout of the Proposed Development has been revised and refined to take account of the findings of all site investigations and been informed by refusal reasons outlined in the decision on the previous planning application, which have brought the design from its first initial layout to the current proposed layout. The design process has also taken account of the historic and current recommendations and comments of the relevant statutory and non-statutory organisations, the local community and local authorities as detailed in Chapter 2 (Background to the Proposed Development) of the EIAR, while still seeking to ensure a viable project which can ultimately be constructed and connected to the national grid.

3.2.5.2.1 *Constraints and Facilitators Mapping*

The design and layout of the Proposed Development follows the recommendations and guidelines set out in the Guidelines (DoEHLG, 2006) and the *'Best Practice Guidelines for the Irish Wind Energy Industry'*, (Irish Wind Energy Association, 2012).

The Guidelines (DoEHLG, 2006) were the subject of a targeted review. The proposed changes to the assessment of impacts associated with onshore wind energy developments were outlined in the draft Wind Energy Development Guidelines (DoHPLG, 2019). A consultation process in relation to the Draft Guidelines (DoHPLG, 2019) closed on 19th February 2020. The proposed changes presented in the Draft Guidelines (DoHPLG, 2019) give certain focus on the setback distance from sensitive receptors (four times the proposed maximum tip height), along with shadow flicker and noise requirements relative to sensitive receptors.

The constraints mapping process involves the placing of buffers around different types of constraints so as to clearly identify the areas within which no development works will take place. The size of the

buffer zone for each constraint has been assigned using guidance presented in the Guidelines (DoEHLG, 2019). Should the Draft Guidelines (DoHPLG, 2019) be adopted in advance of a planning decision being made on this planning application, the Proposed Development will be capable of achieving the requirements of the Draft Guidelines (DoHPLG, 2019) as currently proposed.

The constraints map for the Proposed Development, as shown in Figure 3-2, was produced following a desk study of all site constraints. Figure 3-2 encompasses the following constraints and associated buffers:

- **Sensitive Receptors:** a minimum 4 times turbine tip height (initially 178.5m tip height) setback from third party sensitive receptors and a minimum 500m setback from sensitive receptors involved in the Proposed Development (achieving the Guidelines (DoEHLG, 2006) recommended setback of 500m and 4 x tip height separation distance from third party sensitive receptors in line with the Draft Guidelines (DoHPLG, 2019)).
- **Natura 2000** sites plus 200-metre buffer;
- **Hydrology**: Watercourses plus 50 metre buffer.
- **Telecommunications;** Telecommunication Links plus operator specific buffer; and
- **Archaeological Sites or Monuments;** 30-metre buffer, plus 'Zone of Notification' as required by the National Monuments Service (ROI)
- **Habitats and Biodiversity**: Sensitive ecological receptors plus 30m buffer (50m buffer in breeding season).

Facilitators at the Site build on the existing advantages and include the following:

- Available lands for development;
- Acceptable wind resource;
- Existing connection to national grid
- Opportunity to win construction materials on site, minimising the potential for additional traffic (and associated environmental impacts) and cost generation by acquiring all materials offsite;
- Existing access points and general accessibility of all areas of the Site due to existing road infrastructure; and
- Limited extent of constraints.

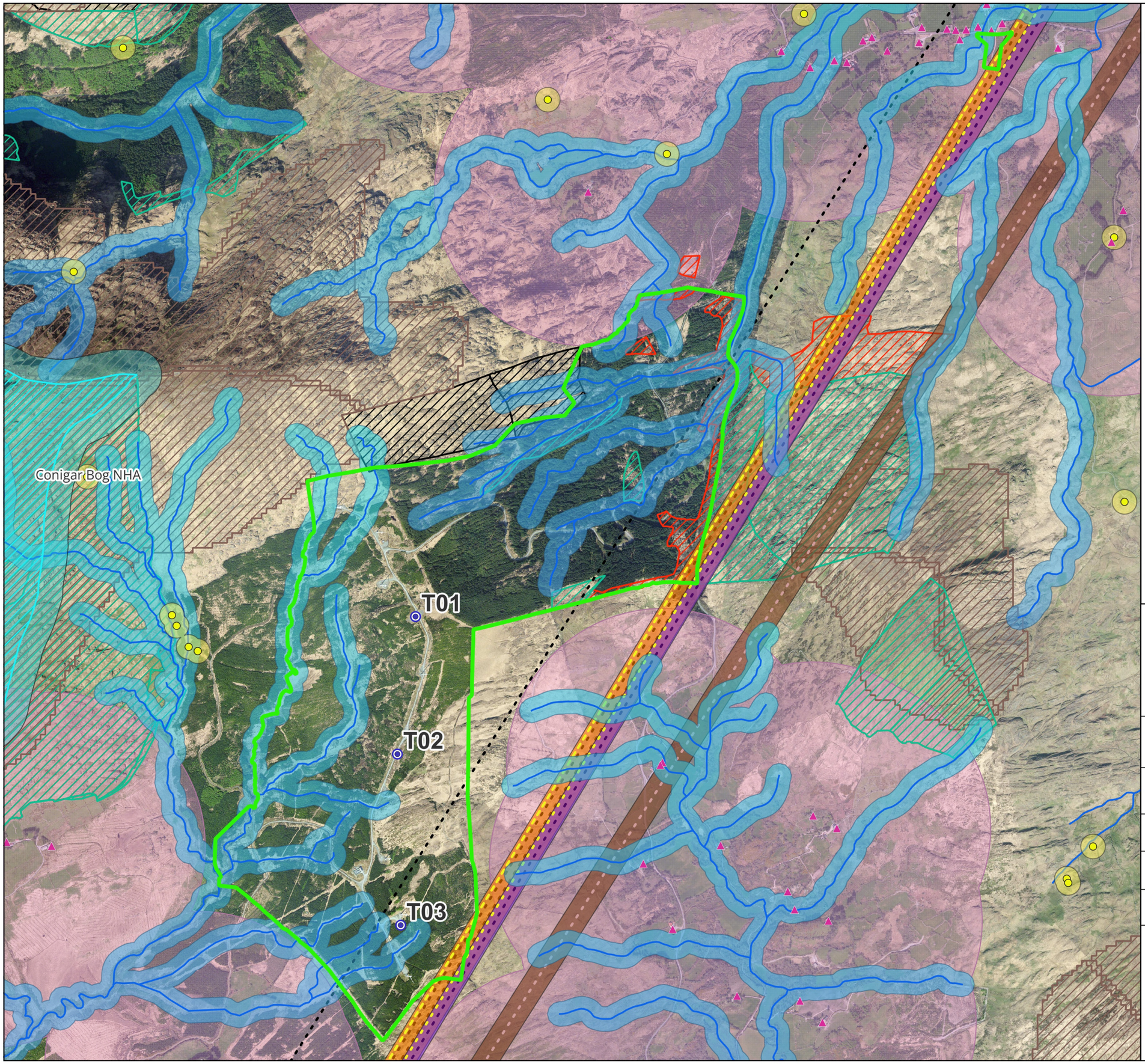
The inclusion of the constraints on a map of the Site allowed for the viable area of the Proposed Development to be re-identified and reassessed. Constraints mapping was initially informed by the 2020 Application and subsequently updated for the Proposed Development to reflect any changes. This updated constraints mapping allowed for the verification of the viable development area. An initial turbine layout was then developed to take account of all the reassessed constraints mentioned above and their associated buffer zones and the separation distance required between the turbines. Following the mapping of all known constraints, detailed site investigations were carried out by the project team.

The ecological assessment of the Proposed Development encompassed habitat mapping and extensive surveying of birds and other fauna. This assessment, as described in Chapter 6 (Biodiversity) and 7 (Birds) of this EIAR on Biodiversity and Birds respectively, optimised the decision on the siting of turbines.

The hydrological assessments of the Site included walkover surveys and hydrological mapping, peat and mineral soil lithology investigation, field hydrochemistry measurements, surface water flow measurement and surface water sampling. As detailed in Chapter 9 (Hydrology & Hydrogeology), this data, was used to design the turbine foundations and other infrastructure on the Proposed Development. Geotechnical investigations were also carried out on the Site in 2020 and again in 2025. The 2020 site investigations informed the decision to locate the proposed turbines in the same position as those in the previous planning application. The 2025 geotechnical investigation surveys were used to identify suitable areas for the temporary construction compound, borrow pit location, and new access

roads to be sited in relation to the underlying limestone bedrock. Where specific areas were deemed as being unsuitable for the siting of turbines or roads, etc., alternative locations were proposed and assessed, taking into account the areas that were already ruled out by constraints.

The turbine layout for the Proposed Development has also been informed by the results of noise, landscape and visual and the separation distance to be maintained between turbines. Thus, the baseline environmental assessment of the Site and wind farm design was an iterative process, where findings at each stage of the assessment were used to further refine the design, always with the intention of minimising the potential for environmental impacts.



Map Legend

- EIAR Site Boundary
- Proposed Turbines

Cork Article 17 Habitats 2020

- Active Blanket Bog Poly
- Alpine and Subalpine Heath Poly
- Dry Heath Poly
- Wet Heath Poly

Designated Sites

- NHA
- NHA 100m Buffer

Water

- Watercourse
- 50m Watercourse Buffer

Cultural Heritage

- National Monuments
- National Monuments 50m Buffer

Sensitive Receptors

- Sensitive Receptors
- Senstive Receptors 626m Setback

Material Assets

- ESB Links
- 2rn Links
- Enet Link
- Enet Fresnel Buffer
- Defense Force Link
- Defense Force Fresnel Buffer
- Vodafone Link
- Vodafone Fresnel Buffer

N

Drawing Title

Constraints and Facilitators

Project Title

Curraglass Wind Farm, Co. Cork

Drawn By	Checked By
EM	EC
Project No. 240614	Drawing No. Figure 3-2
Scale 1:15,000	Date 2025-09-08

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3.2.5.2.2 Alternative Wind Farm Site Layout Iterations

Based on the nature of this site and in order to maintain clarity throughout this EIAR, it is important to distinguish between the various planning applications previously submitted in relation to the Site. The Site has evolved over time, with proposals submitted under different project titles, turbine layouts, and planning references. To ensure consistency and transparency in referencing these applications, they are summarised in Table 2-3 in Chapter 2 (Background of the Proposed Development) and will be referred to accordingly throughout this chapter and the wider EIAR. These include the Kealkill Wind Farm (2006), referenced as Kealkill Wind Farm, the Curraglass Renewable Energy Development (2020), referenced as the 2020 Application; and the Curraglass Wind Farm (2025), referenced as the Proposed Development.

The final proposed turbine layout for the Proposed Development, is informed by the 2020 Application and takes account of all site constraints and the distances to be maintained between turbines and from houses, roads, etc. The layout is based on the results of all site investigations that have been carried out during the EIAR process, as well as the EIA scoping process with statutory and non-statutory consultees. As information regarding the Proposed Development was compiled and assessed, the proposed layout has been revised and amended to take account of the physical constraints of the Proposed Development and the requirement for buffer zones and other areas in which no turbines could be located. The proposed layout has also been revised based on the objective to utilise the existing wind farm infrastructure located on site from Kealkill Wind Farm and to address refusal reasons for the 2020 Application. The selection of the turbine number and layout has had regard to wind-take and the separation distance to be maintained between turbines, as well as landscape and visual, noise and shadow flicker impacts. The EIAR and Proposed Development design process was an iterative process, where findings at each stage of the assessment were used to further refine the design, always with the intention of minimising the potential for environmental impacts.

The development of the Proposed Development final site layout has resulted following feedback from the various studies and assessments carried out as well as ongoing negotiations and discussions with landowners, local community and planning authority.

There were several reviews of the specific locations of the various turbines during the optimisation of the Proposed Development layout. The initial constraints study identified a significant viable area within the overall study area of the Kealkill Wind Farm. The initial revised turbine layout comprised of 10-no. turbines and was considered as a replacement for the 10-turbine development that was previously operational as the Kealkill Wind Farm (see figure 3-3 below). However, the layout was refined to an 8-turbine layout (see figure 3-4), then a 7-turbine development (figure 3-5) following feedback from the environmental project team, landowners and the need to respect on-site constraints. The final layout for the Proposed Development (see Figure 3-7) was reduced to a layout of 3 turbines with a reduced tip height as a means to address refusal reasons for the 2020 Application. The Proposed Development layout went through several iterations which illustrate the evolution of the turbine layout, with further details included below.

Proposed Layout Iteration No. 1

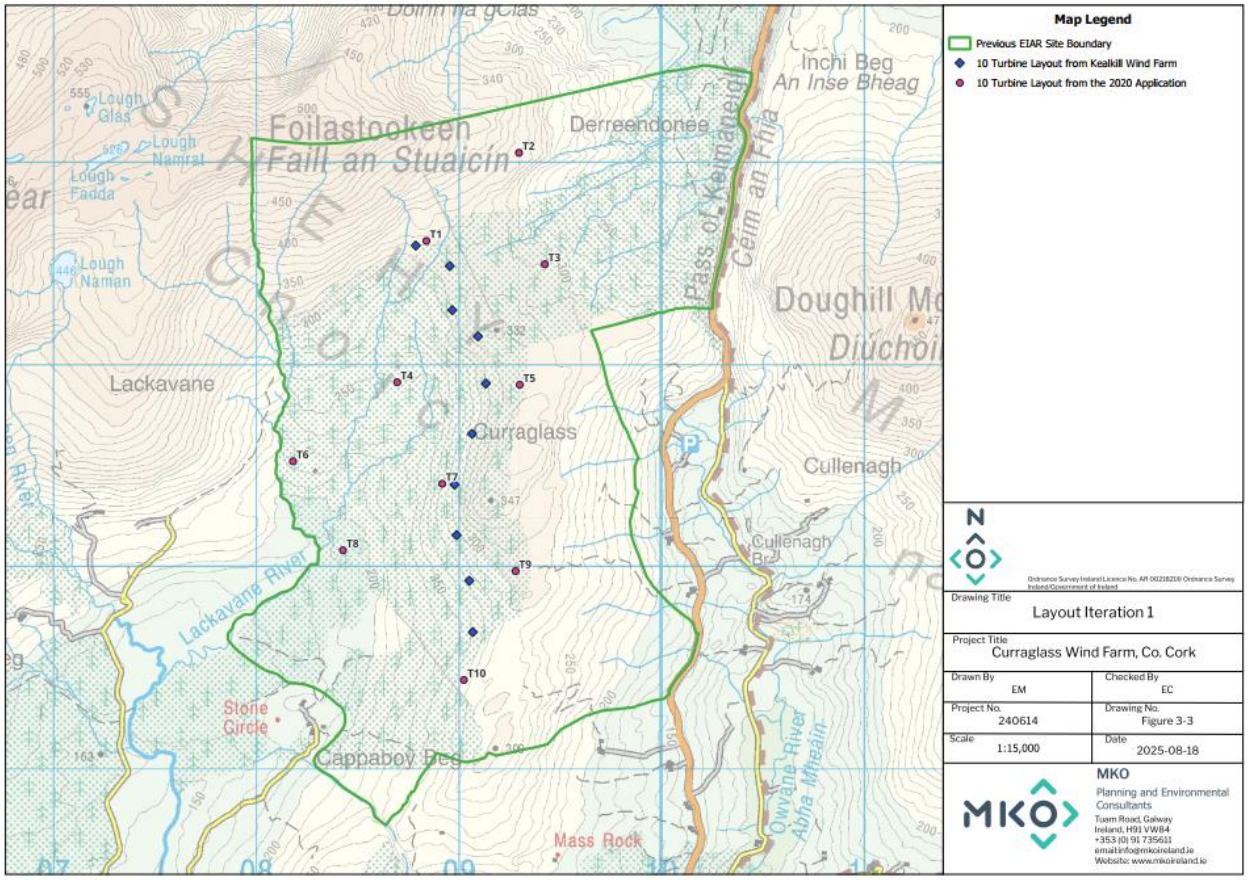


Figure 3-3 Turbine layout iteration 1

Iteration No.1 as shown above in figure 3-3 shows the first layout iteration for the 2020 Application. This initial 10-turbine layout identified a significant viable area within the overall study area. Iteration No.1 was based on a preliminary constraint mapping exercise and identification of a viable area for siting of turbines. Constraints that were considered include relevant setback from dwellings setback from any telecommunication links, setback from National Monuments plus 30m buffer, and avoidance of ecologically sensitive and designated habitats, watercourses plus a 50m watercourse buffer. Using the viable area procured from constraints mapping the 10 no. turbine layout was identified within the overall study area. Upon review of desk-based constraints in relation to the layout and based on feedback from the design team, it was determined that it would be more environmentally sensitive and efficient to allow for fewer turbines and a larger turbine model within this area.

Further analysis also revealed that this 10-turbine configuration, while fitting within the viable area, would generate a lower energy output compared to a more optimised layout with fewer, higher-capacity turbines. In addition, several of the turbine locations in this 10-turbine layout would have required extensive supporting infrastructure, including access roads, hardstands, and cable routes, some of which would have impacted sensitive environmental features. As such, this 10-turbine option was ultimately deemed suboptimal from both an environmental and technical standpoint, prompting a re-evaluation of the layout and a shift towards a more efficient design approach that reduces the overall footprint while maintaining a high level of energy yield.

Proposed Layout Iteration No. 2

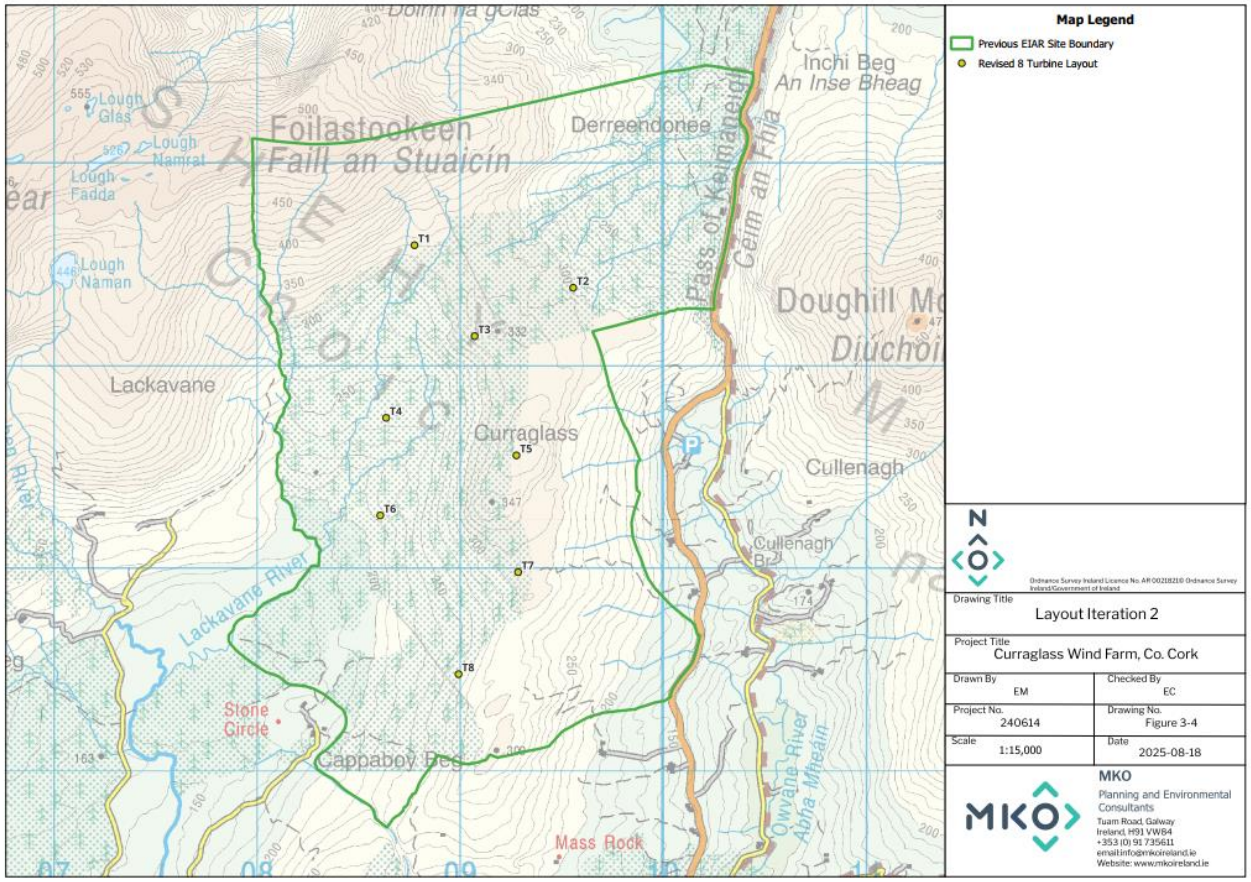


Figure 3-4: Turbine layout iteration 1

A revaluation of the layout led to a reduction in turbine numbers, with an 8-turbine layout developed (see figure 3-4). The layout in Iteration No.2 was presented to the project team for detailed investigations and assessment. These investigations included habitat mapping, intrusive site investigation surveys, ecological surveying, and hydrological investigations of the proposed site layout. On review of the above layout, the project team provided feedback from their site visits. These on-site constraints included hydrological receptors around T4 that would be impacted by related wind farm infrastructure to service the turbine within this location. Ground conditions within this area were also deemed unsuitable for development based on intrusive site investigations. Furthermore, removal of this turbine would reduce the scale of this project and help to minimise the potential adverse landscape impact and visual intrusion of the Project. The turbine layout and study area were updated to address any on-site constraints not identified during the desk-based assessment.

Proposed Layout Iteration No. 3

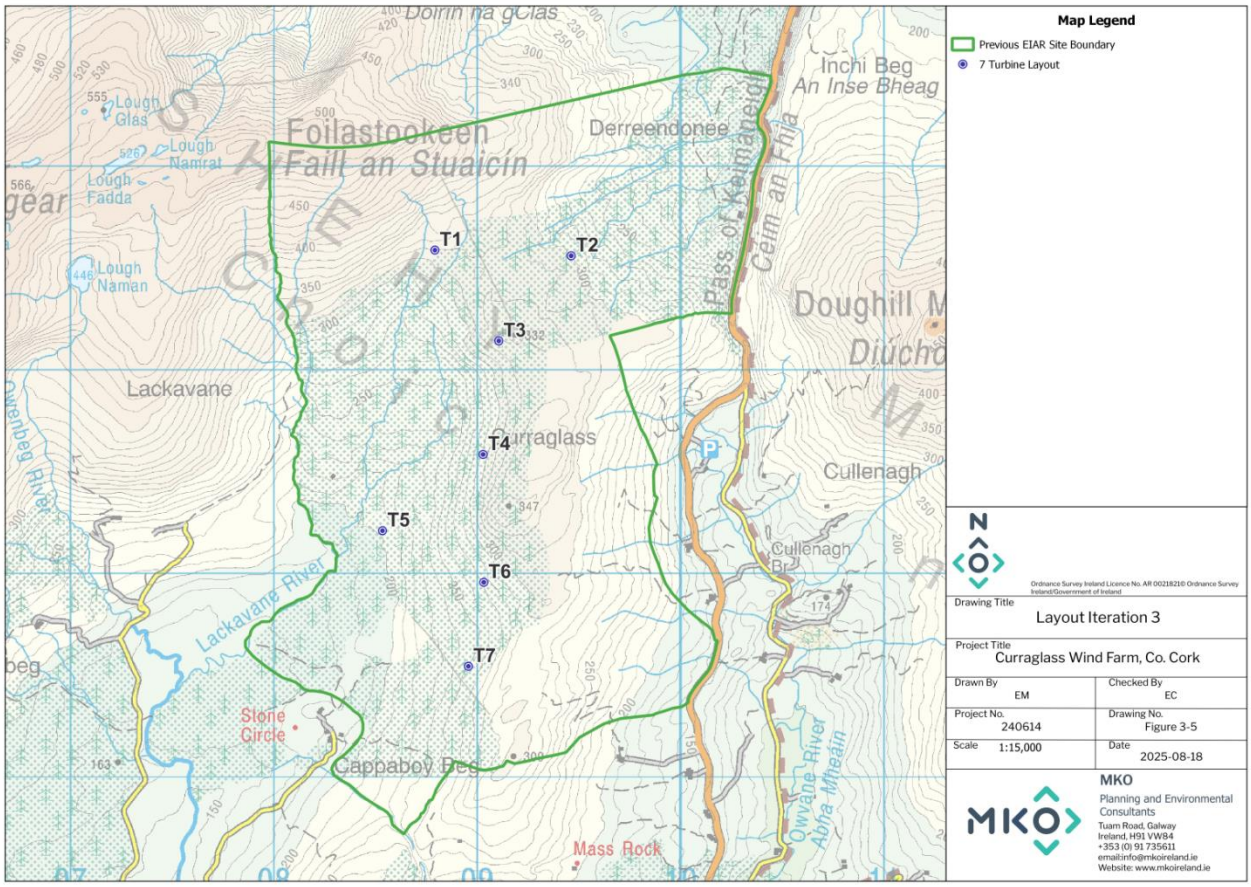


Figure 3-5 Turbine layout iteration 3

During finalisation of the above layout in respect to the environmental constraints, the Applicant received notification from operators of additional telecommunications links within the study area. In order to maintain the required separation distances and avoid interference with these links, a review of turbine locations in the southeastern area of the Site was undertaken. As a result, T6 and T7 were repositioned to ensure compliance with telecommunication safeguarding requirements while still maintaining optimal turbine spacing and site efficiency, as illustrated in Figure 3-5 above.

Proposed Layout Iteration No. 4

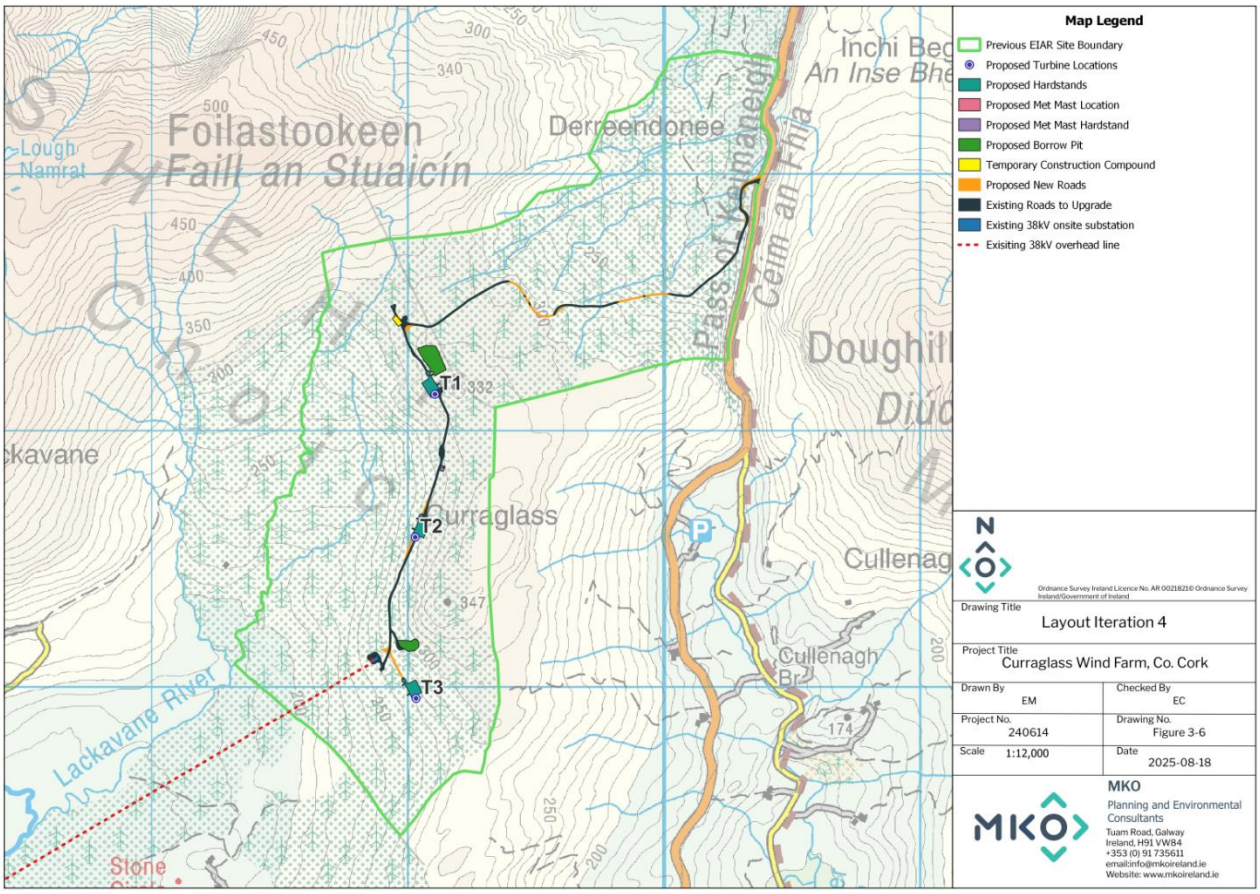


Figure 3-6 Turbine layout iteration 4

Iteration no. 4 as presented in Figure 3-6 is comprised of 3 no. turbines and expands on the previous turbine layout iterations illustrated above in (Figure 3-3, Figure 3-4, Figure 3-5). Iteration no.4 had an initial maximum overall ground-to-blade tip height of 169 metres, rotor diameter of 133 metres, hub height of 90 metres, one met mast and a temporary construction compound which is further detailed in Section 3.2.5. As part of the iterative design process, this initial turbine layout was presented at the pre-planning meeting with Cork County Council in March 2025, which proposed a turbine tip height of 169 metres. The 169-metre iteration reflected an initial effort to respond to the concerns raised in the 2020 Application, particularly relating to visual impact and landscape sensitivity. Feedback received from the local planning authority at the pre-planning meeting informed the final reduction in turbine height, leading to the current proposal to a reduced tip height of 156.5 metres.

In addition to feedback received from the local planning authority, iteration no.4 takes into account the response to a previous decision to refuse planning permission for the 2020 Application and seeks to address the concerns raised in the determination of that decision. Previous refusal reasons noted that excessive height of the turbines and scale of the project, would cause for a 'highly obtrusive development' on the considered landscapes of West Cork which has areas of high landscape value and sensitivity. Previous refusal reasons sought out T1 to be of inappropriate proximity to the amenity of the Gougane Barra, and T7 being sited in a position that could have a domineering effect on the considered landscape. Respectively, following a detailed landscape and visual assessment, the final proposed iteration has dropped both T1 and T7 to alleviate effects on landscape visuality and correct the visual imbalance within the overall turbine layout. This placement reduced visual exposure, with the turbines sited at lower base elevations relative to surrounding ridgelines to further integrate them within the landscape and eliminate views from sensitive locations such as Gougane Barra, whilst also utilising the existing wind farm infrastructure. Furthermore, T2 and T5 were dropped in order to reduce the scale of the development, from the previous 7-turbine layout, to a now currently proposed 3-

turbine layout. Removal of the turbines was considered appropriate to reduce visual intrusion, minimise impacts on the surrounding landscape character, and enhance the overall coherence and acceptability of the proposed development from a landscape and visual perspective. By omitting T2, and T5 the Proposed Development is confined to an area of ridges with high elevations on either side limiting open views of the proposed turbines from large areas, in particular, the high value West Cork Peninsula. The remaining 3 no. turbines, T3, T4, T6 (now referred to as T1, T2, and T3) were chosen based on their coherent arrangement, taking into consideration the contiguous and connected sequence to each other visually and maintaining consistent spacing. The siting of these three turbines also took into account the infrastructure works associated with constructing each turbine. Deliberate placement allowed for development works to be confined and concentrated to certain areas of the Site making use of the existing wind farm infrastructure creating a reduced development footprint. The revised layout strategically positions the three turbines within a well-defined topographical setting, enclosed by landforms to the north, east, and northwest. Overall, the 3 turbines are well-integrated into the upland landscape, with surrounding topographical features, with no theoretical visibility across the Gougane Barra, West Cork Peninsula, and other High Value Landscapes of County Cork.

Iteration no.4 has a reduced tip height from the initial 178.5m to 156.5m achieving a 22m reduction in tip height and has furthermore significantly reduced the scale of the Proposed Development. The reduction in tip height is a direct response to concerns raised about the potential visual and landscape impacts on the surrounding West Cork area.

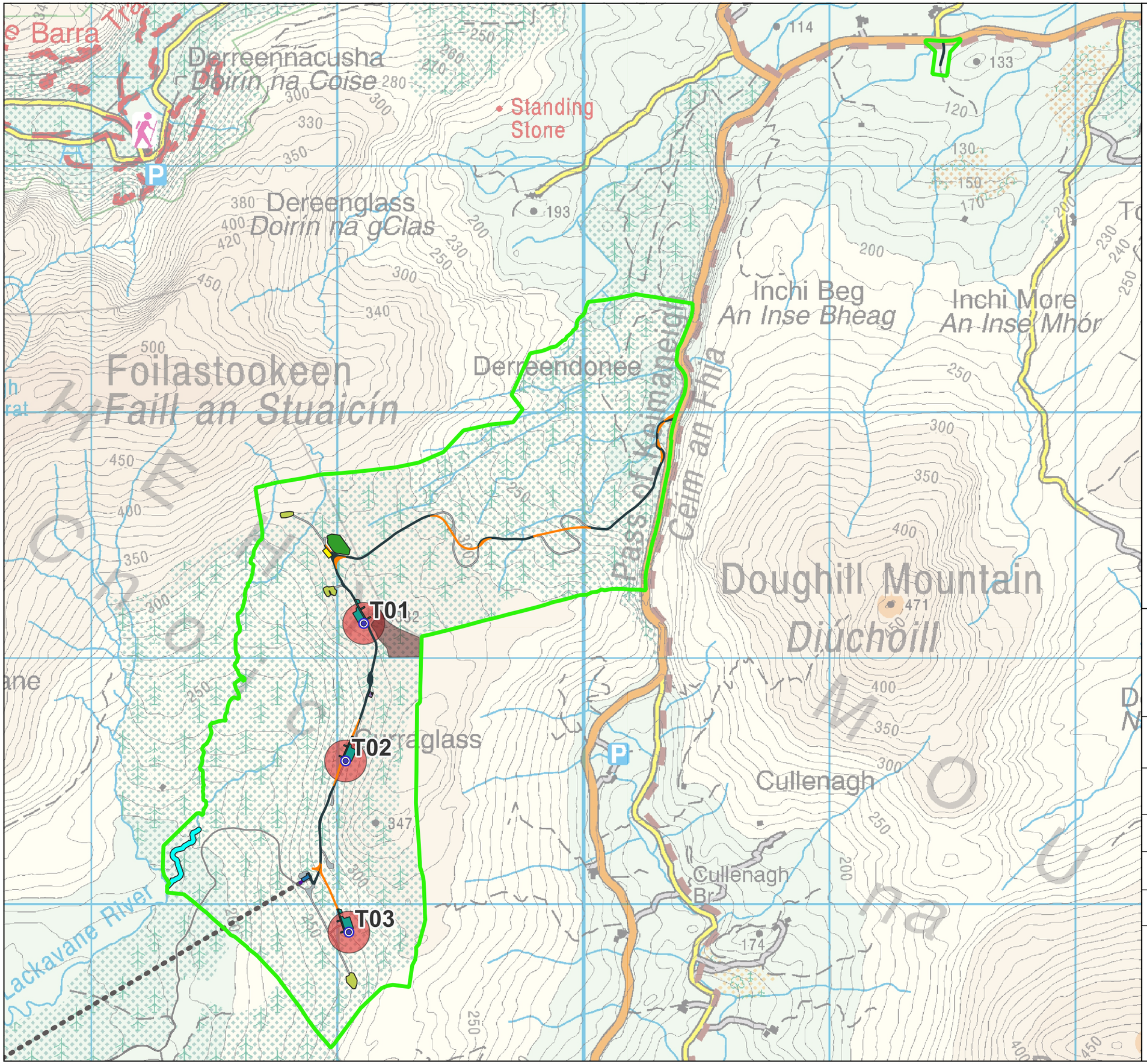
Proposed Layout Iteration No. 5 – Final Proposed Layout

During the finalisation of iteration no.4, and in consideration of on-site environmental constraints, the Applicant was informed of additional telecommunications links operating within the study area and crossing paths with T3. To avoid potential interference, a review of turbine T3 was carried out. As a result, T3 was shifted approximately 70 metres to the southeast to avoid any potential interference with telecommunication links while preserving optimal turbine spacing and overall site efficiency, as shown in Figure 3-7 above.

The final proposed layout utilises the spine road of the original wind farm at this site. As a result of the reduced layout, there is a significantly lower requirement for the construction of new access roads, minimising ground disturbance and environmental impact. The design prioritises the use of existing wind farm infrastructure wherever possible, reducing the need for extensive new development and thereby further limiting the project's footprint on the landscape. This approach supports a more sustainable and efficient construction process, while also responding to concerns regarding habitat loss/disruption and visual intrusion.

The final proposed turbine layout, as presented in Figure 3-7, takes account of all site constraints (e.g. ecology, Birds, hydrology, archaeology, etc), design constraints (e.g. setback distances from houses and distances between turbines on site, landscape characteristics etc) and existing wind farm infrastructure (existing roads, and existing 38kV overhead line), the layout also takes account of the results of all site investigations and baseline assessments that have been carried out during the EIAR process. In addition, the layout addresses and considers apprehensions that arose in the previous planning application regarding visual impact.

The final chosen turbine layout is considered the optimal layout, making use of the previous turbine infrastructure and existing 38kV overhead line, applying consideration to refusal reasonings, and ultimately reducing potential for greater environmental effects.



Map Legend

- EIAR Site Boundary
- Proposed Turbines
- Proposed Hardstands
- Proposed Met Mast
- Proposed Met Mast Hardstand
- Proposed Borrow Pit
- Existing Roads to Upgrade
- Proposed New Roads
- Existing Wind Farm Infrastructure
- Temporary Construction Compound
- Proposed Peat & Spoil Management Areas
- Eco Enhacement - Peatland Enhancement
- Eco Enhancement - Kerry Slug Enhancement
- Eco Enhancement - Riparian Planting
- Existing 38kV Onsite Substation
- Existing 38kV Underground Cabling
- Existing 38kV Overhead Line

Drawing Title
Final Proposed Development Layout

Project Title
Curraglass Wind Farm, Co. Cork

Drawn By	Checked By
EM	EC
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A comparison of the potential environmental effects of the initial iterations of the turbine layout compared against the final turbine layout are presented in Table 3-4 below.

Table 3-4 - Comparison of environmental effects when compared to the chosen option.

Environmental Consideration	Initial Turbine Layouts and all associated Infrastructure	Chosen Option of the Final 3 Turbine Layout and all associated infrastructure
Population & Human Health (incl Shadow Flicker)	No material environmental difference for population or human health. Potential for increased shadow flicker impacts on nearby sensitive receptors. Potential for increased impact on residential and tourist amenities within the local area of the Proposed Development.	No material environmental difference for population or human health. Potential for no shadow flicker impacts on nearby sensitive receptors due to the reduced number of turbines. Potential for reduced impact on residential and tourist amenities within the local area of the Proposed Development. Based on the assessment detailed in Chapter 5 (Population & Human Health) and the mitigation measures proposed, there will be no significant effects related to shadow flicker from the Proposed Development.
Biodiversity & Birds	Larger development footprint would result in greater potential for habitat loss; however, habitat enhancement and replacement would mitigate against this. Greater potential impact on identified sensitive ecological receptors due to location of infrastructure within designated setback buffers (i.e. Annex 1 habitat) With the implementation of the mitigation measures described in Chapter 7 (Birds), the residual effects for collision risk for a 10-turbine wind farm would not be significant.	As detailed in Chapter 6 Biodiversity, the development has been designed to avoid or mitigate impacts on biodiversity including bats and downstream aquatic receptors, by decreasing the scale of the development and associated construction works in order to reduce the footprint of the Site therefore reducing the potential for impact. The Proposed Development includes for a Biodiversity Management Enhancement Plan, improving the quality of the local biodiversity. Please see Appendix 6-5 for details. With the implementation of the mitigation measures described in Chapter 7 (Birds), the reduction in the Project scale

Environmental Consideration	Initial Turbine Layouts and all associated Infrastructure	Chosen Option of the Final 3 Turbine Layout and all associated infrastructure
		from a 10-turbine development to a 3-turbine development and a decrease in tip height to reduce ornithological casualties, the residual effects for collision risk are not significant.
Land, Soils & Geology	Neutral. Geotechnical investigations followed by careful design would lead to no significant environmental impacts. Potential geotechnical issues could have arisen had the micro-siting of infrastructure not taken place.	Smaller footprint would result in smaller volume of soils to be excavated and managed. As detailed in the assessment in Chapter 8 (Land, Soils and Geology), no significant effects on soils and subsoils will occur during the construction, operation or decommissioning phases. Geotechnical investigations followed by careful design would lead to no significant environmental impacts.
Water	Increased potential for impacts on groundwater schemes due to the location of infrastructure. Project design specific drainage design removes the potential for significant environmental effects.	Reduction in the Project scale from a 10-turbine development to a 3-turbine development decreases the possibility for significant environmental impact on hydrological receptors. Project design specific drainage design removes the potential for significant environmental effects. Field hydrochemistry measurements, surface water flow measurements and surface water samples were taken in order to model the characteristics of the groundwater levels and flow in the area surrounding the Site.
Air Quality	Neutral- Larger development footprint would result in marginally greater emissions.	A smaller site footprint to construct would result in reduced emissions and impact on air quality. As detailed in Chapter 10 (Air Quality), there will be no significant effects on air quality during the construction, and

Environmental Consideration	Initial Turbine Layouts and all associated Infrastructure	Chosen Option of the Final 3 Turbine Layout and all associated infrastructure
		decommissioning phases. There will be a Long-term Moderate Positive Impact on air quality by during the operational phase.
Climate	More turbines increase the potential to maximise the use of the Site wind resource and the opportunity to further reduce the country's dependence on fossil fuels.	Fewer turbines reduced the potential to maximise the use of the Site wind resource and the opportunity to further reduce the country's dependence on fossil fuels. As detailed in the assessment in Chapter 11 (Climate), over the proposed 35-year lifetime of the Proposed Development 333,725 tonnes of carbon dioxide will be displaced from traditional carbon-based electricity generation therefore creating a significant positive impact. The addition of an estimated 14.4MW clean energy to the national grid will be a positive contribution to the States renewable energy targets set out in the Climate Action Plan 2025.
Noise & Vibration	A larger number of turbines could have a greater noise impact. However, noise emissions can be controlled where deemed necessary.	Fewer turbines will generate reduced noise levels; fewer turbines sited 4x tip height from sensitive receptors. Based on the assessment in Chapter 12 (Noise) and the mitigation measures proposed, there will be no significant effects on sensitive receptors due to an increase in noise levels from the Proposed Development during the construction, operational and decommissioning phase. Predicted noise levels from the chosen layout indicate that the Proposed Development noise levels fall within best practise noise criteria as recommended in the Guidelines (DoEHLG, 2006).

Environmental Consideration	Initial Turbine Layouts and all associated Infrastructure	Chosen Option of the Final 3 Turbine Layout and all associated infrastructure
Landscape & Visual	Potential for greater visual impacts due to the wider visual extent of the proposed turbines. Increased number of turbines with a larger tip height would result in greater potential for significant landscape and visual effects and intensifying the overall scale and prominence of the development.	Reduced visual impacts due to the reduced visual extent of the proposed turbines. The strategic siting of infrastructure will mitigate any potential for significant landscape and visual effects. Fewer turbines with a lower tip height result in less visual clutter, helping to preserve the existing landscape character and reducing the overall scale and prominence of the development. A reduced layout also allows for better integration with the surrounding topography. This will result in less significant effects by minimising potential visual impacts from key viewpoints and designated scenic routes.
Cultural Heritage & Archaeology	Neutral- Larger development footprint may result in a marginally greater potential for impacts on unknown subsurface archaeology.	Neutral- smaller development footprint has a marginally reduced potential for impacts on unknown subsurface archaeology.
Material Assets	No material difference between the two options.	No material difference between the two options.
Vulnerability to Major Accidents Natural Disasters	No material difference between the two options.	No material difference between the two options.

3.2.5.3 Alternative Road Layout

Access tracks are required onsite in order to enable transport of infrastructure and construction materials within the Proposed Development. Such tracks must be of a gradient and width sufficient to allow safe movement of equipment and vehicles. Following finalisation of the Site layout, optimal routes between development components were determined, taking into account existing roads, physical and environmental constraints, associated buffer zones, and prioritising minimal site footprint. The Proposed Development makes use of the existing access tracks where available to minimise the potential for impacts by developing new roads as an alternative. Approximately 4km of internal tracks exists within the Site, 2.6km of these are required to be upgraded with 1.5km of new proposed road to be constructed for the Proposed Development. The tracks will be utilised where possible; with some requiring upgrading/widening to facilitate the movement of abnormal loads through the Site.

Locations were identified where upgrading of the existing road would be required and where new roads are to be constructed, in order to ensure suitable access to and linkages between the various project elements, and efficient movement around the Site (see Figure 3-7). Additionally, turning areas were designed and sited for minimum environmental effect along internal roads.

An alternative option to making maximum use of the existing road network within the Proposed Development would be to construct a new road network, having no regard to existing roads or tracks. This approach was not favoured, as it would require unnecessary disturbance to the Site and create the potential for additional cut and fill material to be used in the construction of new road networks. Please see Table 3-5 for a comparison of environmental effects when compared against the chosen option.

Table 3-5 Comparison of environmental effects when compared against the chosen option (maximising the use of the existing road network)

Environmental Consideration	New Road Network	Use and Upgrade of Existing Site Tracks
Population & Human Health	Potential for increased impacts on residential amenity due to increased disturbance during the construction stage.	The road upgrades will have potentially less of an impact on population and human health, with less disturbance during the construction stage
Biodiversity & Birds	Larger development footprint would result in greater habitat loss compared to the chosen option.	Smaller development footprint will result in a smaller habitat loss.
Land, Soils & Geology	Larger development footprint would result in greater volumes of spoil to be excavated and stored. Larger volume of stone required for road construction. No material difference between the two options for geotechnical/stability.	Smaller development footprint which leads to a reduction in spoil volumes to be excavated. No material difference between the two options for geotechnical/stability.
Hydrology and Hydrogeology	No material difference between the two options.	No material difference between the two options.
Air Quality	More ground disturbance, potential for greater emissions due to more plant on site and longer construction phase would result in increased dust and other emissions.	Less ground disturbance therefore potential for fewer emissions due to fewer plant on site and shorter construction phase therefor less potential for impact to arise.
Climate	No material difference between the two options.	No material difference between the two options.
Noise & Vibration	Potential for increased noise impacts on nearby sensitive receptors during the construction of the new roads.	Potential for less noise impacts on nearby sensitive receptors during the construction of the road upgrades.
Cultural Heritage & Archaeology	Larger development footprint would increase the potential for impacts on unrecorded, subsurface archaeology.	Smaller development footprint would decrease the potential for impacts on unrecorded, subsurface archaeology.
Landscape & Visual	There is potential for increased temporary visual impacts for sensitive receptors due to the presence of additional plant on site during the construction phase to excavate and construct a new road layout.	There will be a slight reduction in potential for visual impacts during the construction phase due to the decreased presence of plant on site.

Environmental Consideration	New Road Network	Use and Upgrade of Existing Site Tracks
Material Assets	Potential for greater traffic movements on site during construction phase due to larger development footprint. Greater potential for impacts on waste management due to increased plant on site giving rise to increase in hazardous waste materials. No material difference between the two options in potential for impact on gas, water, telecommunications aviation assets.	Smaller development footprint results in a reduced construction traffic movements on site due to smaller development footprint. No material difference between the two options in potential for impact on gas, water, telecommunications aviation assets.
Vulnerability to Major Accidents Natural Disasters	No material difference between the two options.	No material difference between the two options.

3.2.5.4 Alternative Borrow Pit Option

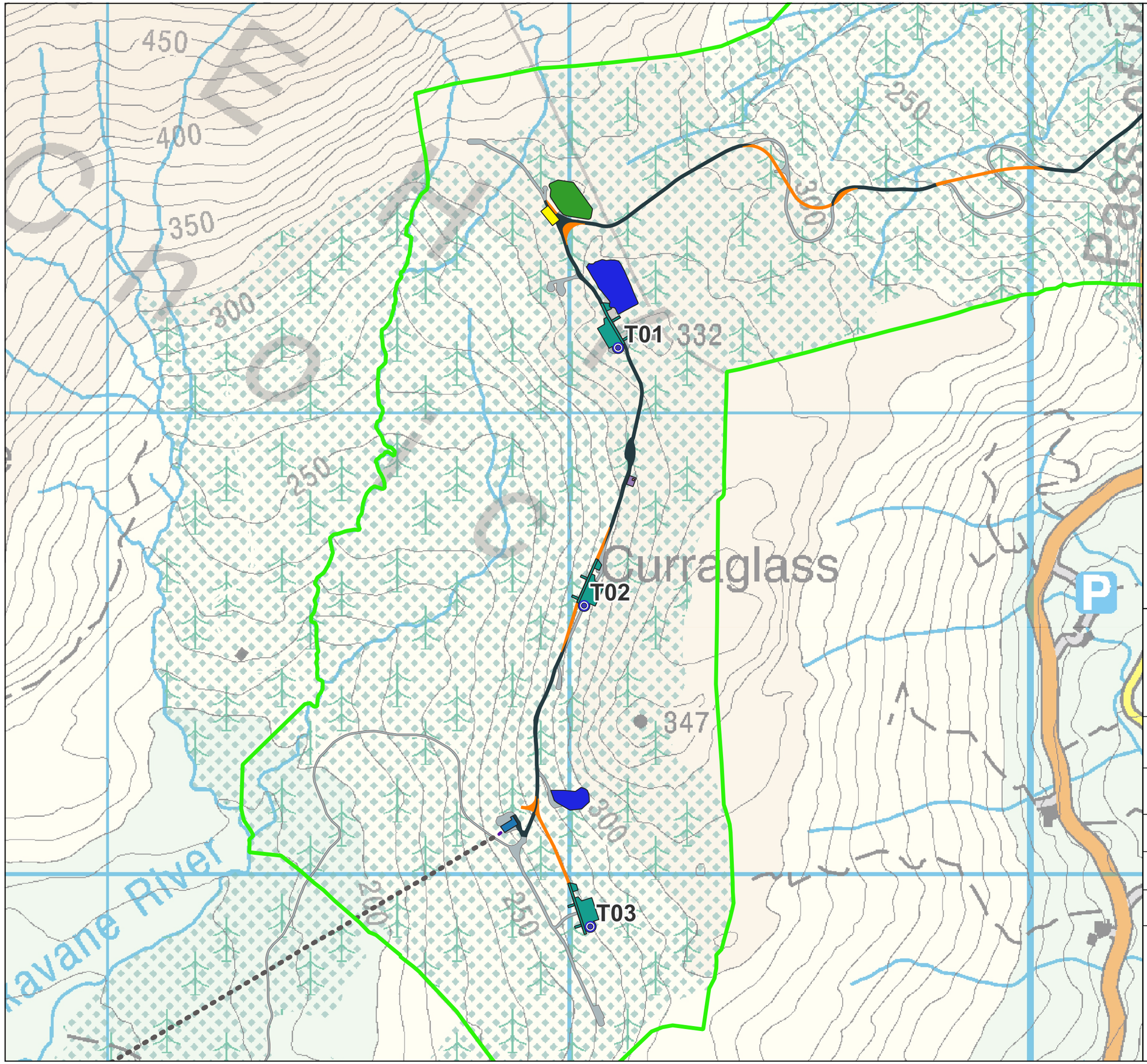
The use of an onsite borrow pit represents an efficient use of existing onsite resources and reduces the need to transport large volumes of construction stone materials along the local public road network to the Site. The use of an onsite resource, that would only be developed for the Proposed Development, reduces the use of off-site existing quarry material assets.

A review of potential construction phase borrow pit locations was carried out by geotechnical experts, Fehily Timoney and Irish Drilling Ltd. Site surveys were undertaken and existing GIS data and environmental constraints were also considered, namely aerial photography, soil and subsoil cover, biodiversity (habitats), on site drainage, proximity to the existing and proposed internal road network, and proximity to sensitive receptors.

Arising from this process, 7 no. test pit locations were selected. Trial pits were undertaken to determine a potential suitable location for a borrow pit. The findings of the geological site investigations concluded in the identification of 1 no. borrow pit within the Site with a potential of providing 1,500m^3 of construction stone material for the Proposed Development. Please see Figure 3-9 for final proposed borrow pit location and Figure 4-10 for cross section details. The extraction of material from the borrow pit will be during the construction phase of the Proposed Development only and will be a temporary operation carried out over a short period of time. Rock breaking and blasting are potential methods of extracting material from the borrow pit. Processing and crushing of stone material will also be required at the borrow pit to achieve the grading requirements for use in construction. The estimated maximum volume to be extracted from the borrow pit for the Proposed Development is up to 7,000m^3. The final volumes to be removed from the borrow pit will be confirmed at the time of construction and following detailed pre-construction site investigation works.

Following geophysical and environmental assessments a potential borrow pit location to the north of the Site was selected as the preferred location. This decision was based on a combination of environmental sensitivity, material suitability, logistical efficiency and aimed to build on the borrow pit locations proposed in the previous planning application. The previous application had two borrow pit locations proposed on site. The first was located to the north of the proposed turbine T1 which was ruled out for the Proposed Development due to greater levels of overburden removal required to access sufficient quality rock, making it less suitable to meet the material demands of the project. The second borrow pit was located between the proposed turbines T2 and T3, however it was ruled out as the size of this borrow pit on its own would not have been sufficient to service the Proposed Development.

The proposed borrow pit location for the Proposed Development was ultimately chosen due to its strategic location adjacent to existing access roads, significantly reducing the need for additional haul routes and associated land take. It offers adequate quantities of suitable rock and benefits from existing hard surfacing, minimising the need for new ground disturbance. This reuse of already-modified land limits vegetation clearance, reduces habitat disruption, and lowers the Site's overall environmental impact. Overall, the proposed borrow pit presented the best balance of geophysical suitability, environmental responsibility, and operational practicality.



Map Legend

- EIAR Site Boundary
- Proposed Turbines
- Proposed Hardstands
- Existing Onsite 38kV Substation
- Proposed Met Mast
- Proposed Met Mast Hardstand
- Temporary Construction Compound
- Proposed New Roads
- Existing Roads to Upgrade
- Existing Infrastructure
- Exisiting 38kV Overhead Line

Proposed Borrow Pit Options

- Previously Proposed Borrow Bit Option
- Proposed Borrow Pit

Drawing Title
Proposed Borrow Pit Options

Project Title
Curralgass Wind Farm, Co. Cork

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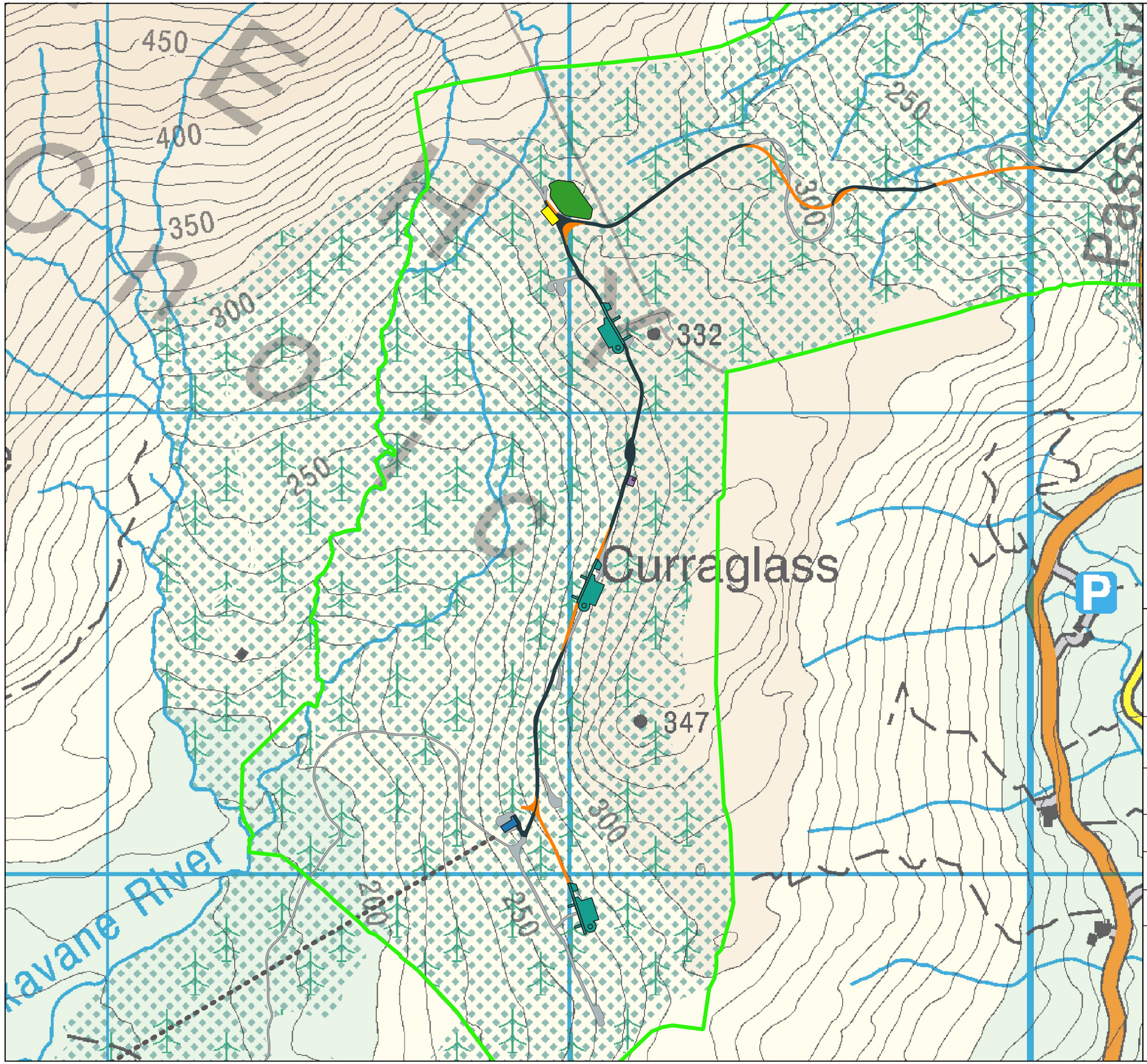

Map Legend

- EIAR Site Boundary
- Proposed Turbines
- Proposed Hardstands
- Existing Onsite 38kV Substation
- Proposed Met Mast
- Proposed Met Mast Hardstand
- Temporary Construction Compound
- Proposed New Roads
- Existing Roads to Upgrade
- Existing Infrastructure
- Exisiting 38kV Overhead Line
- Proposed Borrow Pit

Drawing Title
Final Proposed Borrow Pit

Project Title
Curralgass Wind Farm, Co. Cork

Drawn By	Checked By
EM	EC
Project No. 240614	Drawing No. Figure 3-9
Scale 1:8,000	Date 2025-09-03

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An alternative to using an on-site borrow pit was the option of sourcing all stone and materials from a licensed quarry or quarries in the vicinity of the Site. The movement of the volume of material required for the Proposed Development would result in a significant increase in construction traffic and heavy loads, in combination with a potential for an increase in noise and dust emissions along the haul routes and was therefore considered a less preferable option. The cost of importing the required volume of crushed stone was also a factor in choosing to obtain stone from an on-site borrow pit.

A comparison of the potential environmental effects when comparing the sourcing of all stone from local, off-site quarries against the chosen option (from on-site borrow pit) is presented in Table 3-6 below.

Table 3-6 Comparison of environmental effects of sourcing all materials off site when compared against the chosen option – onsite borrow pit and offsite quarries.

Environmental Consideration	Sourcing all stone from local, off-site quarries	Use of onsite borrow pit
Population & Human Health	Potential for increased vehicular, noise and dust emissions from increased traffic movements, due to the volume of rock to be transported to the Site along the public road network, which could be a nuisance to local residents along the haul route.	Lower dust and noise emissions, and traffic volumes due to reduced requirement for daily HGV presence on site during the construction phase. Temporary dust and noise emissions related to borrow pit extraction however, due to vegetation screening and distance from sensitive receptors, the residual effects are not significant.
Biodiversity & Birds	Reduced habitat loss and ground disturbance for flora, fauna and birds. Requirement for large areas to accommodate storage of peat and spoil.	Increase in habitat loss due to borrow pit footprint however, as assessed in the Chapter 6 (Biodiversity), this is habitat of low ecological value which comprises the majority of the Site and surrounding landscape. Furthermore, the borrow pit will be left to naturally revegetate post construction. The Proposed Development includes for a Biodiversity Management Enhancement Plan improving the quality of the local biodiversity and water quality. Please see Appendix 6-5 for details. Reduction in requirement for spoil placement areas.
Land, Soils & Geology	Slight reduction in spoil to be excavated, however, additional spoil placement areas would be required as an on-site borrow pit would not be available for the placement of excavated spoil. No material difference between the two options in relation to	Reduction in requirement for spoil placement areas, however larger excavation work is required for an on-site borrow pit in order to service the Site. No material difference between the two options in relation to geotechnical and stability concerns. Geotechnical investigations followed by careful design

Environmental Consideration	Sourcing all stone from local, off-site quarries	Use of onsite borrow pit
	geotechnical and stability concerns. Geotechnical investigations followed by careful design would lead to no significant environmental impacts.	would lead to no significant environmental impacts.
Hydrology and Hydrogeology	No material difference between the two options.	No material difference between the two options.
Air Quality	Potential for increased vehicular and dust emissions from increased traffic movements within the Site and on the local road network, due to the volume of rock to be imported.	More ground disturbance due to onsite borrow pit which can give rise to dust emissions however, lower traffic volumes arriving and departing site per day and reduced onsite traffic volumes therefore reducing dust and noxious emissions overall.
Climate	No material difference between the two options.	No material difference between the two options.
Noise & Vibration	Increased potential for noise and vibration effects on local sensitive receptors due to arrival and departure of heavy goods vehicles during the construction phase and reduced potential for noise and vibration effects on local sensitive receptors due to no breaking, blasting or crushing of materials won from onsite borrow pit.	Potential for less noise impacts on nearby sensitive receptors during the delivery of stone to the Site during the construction of the hardstands, existing access road upgrades and new access roads.
Cultural Heritage & Archaeology	Slightly smaller development footprint would reduce the potential for impacts on unrecorded, subsurface archaeology.	Slightly larger development footprint would increase the potential for impacts on unrecorded, subsurface archaeology.
Landscape & Visual	Reduced landscape and visual effects temporarily as no open rock face would be visible from certain viewpoints. Increased visual impact due to frequent arrival and departure of HGVs to and from the Site.	Potential for increased landscape and visual effects temporarily due to open rock face which may be visible from certain viewpoints. However, there would be a reduced HGV presence on site and on the local road network as a portion of the materials will be won onsite. Furthermore, the borrow pit will be reinstated onsite once exhausted.
Material Assets	Significantly higher HGV traffic volumes on the public road network during construction phase due to the volume of crushed stone required to be transported to the Site and empty	Reduced volume of HGVs traffic volumes on the public road network during construction as a considerable portion of materials will be won on site. Decreased potential for noise, dust and emissions due to the reduced volumes of HGV traffic on

Environmental Consideration	Sourcing all stone from local, off-site quarries	Use of onsite borrow pit
	HGVs leaving the Site. Significant volume of material removed from offsite locations and deposited at the Site No material difference between the two options in potential for impact on waste management, telecoms, aviation, electricity, water or gas.	the roads. Significantly less volume of material imported to the Site with volumes of material been relocated within the Site. No material difference between the two options in potential for impact on waste management, telecoms, aviation, electricity, water or gas.
Vulnerability to Major Accidents Natural Disasters	No material difference between the two options.	No material difference between the two options.

3.2.5.5 Alternative Temporary Construction Compound

The temporary construction compound (TCC) is proposed for the storage of all construction materials. The construction compound is located towards the north of the Site as seen in Figure 3-7 and accessed via the proposed internal road network.

Three potential options were assessed for the establishment of a suitable TCC. Option 1 was located in the northern half of the Site at the junction before T1. Option 2 was situated just north of T1 in an area of active forestry, while option 3 was located at the junction before T1 on an area of existing road surfacing adjacent to the chosen borrow pit location. Following a comprehensive evaluation of each location, Option 3 was selected as the preferred location. This decision was guided by multiple environmental constraints and potential impacts to the Site and are outlined below.

Option 1 was originally identified as a suitable location for the temporary construction compound, however, this location was subsequently identified as being the optimal location for the proposed on-site borrow pit. Preserving this location for aggregate extraction ensured the sustainable use of on-site resources and minimises the need to import material, thereby reducing transport-related impacts. It was therefore necessary to identify an alternative suitable location for the temporary construction compound.

Option 2 lies within a block of managed forestry. Selecting this site would necessitate tree clearance, resulting in habitat loss, fragmentation, and potential environmental disruption. By contrast, Option 3 avoids any such disturbance, preserving local biodiversity and supporting ecosystem processes.

Option 3 utilises existing road surfacing, meaning that limited additional ground clearance or excavation is required and construction impact is reduced. Siting the temporary compound along the existing tracks will result in less disturbances to the Site and a reduced visual impact arising from the development. This approach greatly reduces disruption to soil structure, avoids altering natural drainage patterns, and prevents the introduction of sediment into nearby watercourses. By selecting a partially pre-surfaced area, it reduces the risk of erosion, sediment runoff, and water pollution, thus aligning with best practice construction principles.

3.2.5.6 Alternative Design of Ancillary Structures

The ancillary structures required for the Proposed Development include underground electrical cabling and an on-site meteorological mast.

3.2.5.6.1 *Alternative Internal Site Cabling Route*

The internal 33kV site cabling will follow the internal road network throughout the Site, connecting all 3 no. turbines to the existing onsite 38kV substation. This was considered the more environmentally prudent option. The alternative to this would be to lay the cables 'as the crow flies' between the turbines and the existing onsite 38kV substation, however, this would lead to a greater environmental disturbance and a greater volume of spoil created.

3.2.5.6.2 *Alternative Meteorological Mast Location*

The meteorological mast is located at the mid-section of the Proposed Development. The met mast is located in an area of commercial forestry, which was shown to be an area of low ecological value.

While other locations to situate the proposed met mast within the Site were examined, the above location was deemed to be most suitable due to the low ecological value of the habitat, better wind exposure, and data accuracy.

3.2.5.7 Alternative Electricity Infrastructure

The 2020 Application at the Site, included for the connection to the national grid via a proposed new substation and associated underground cabling option in the townland of Curraglass, the need for the revised substation was driven by the generating potential of the 7-turbine layout. In contrast, the Proposed Development has opted to utilise the existing onsite 38kV substation and associated underground cabling connection to the existing 38kV overhead Line, limiting environmental disturbance and spoil generation at the Site while maximising the use of the existing wind farm infrastructure. By utilising the current substation, the Proposed Development avoids the need for additional land take, civil works, and habitat disruption thereby significantly reducing the overall environmental impact on the Site. Any alternative to this has the potential for greater environmental effects and deviates away from taking full advantage of the existing wind farm infrastructure and land-use that the Site possess.

3.2.5.8 Alternative Transport Route and Site Access

Wind turbine components (blades, nacelles and towers) are not manufactured in Ireland and therefore must be imported from overseas and transported overland to the Proposed Development. With regard to the selection of a transport route to the Proposed Development, alternatives were considered in relation to turbine components, general construction-related traffic, and site access locations.

3.2.5.8.1 *Port of Entry*

The alternatives considered for the port of entry of wind turbines into Ireland for the Proposed Development include Port of Galway, Shannon Foynes Port and Dublin Port. Shannon Foynes Port is the principal deepwater facility on the Shannon Estuary and caters for dry bulk, break bulk, liquid and project cargoes. Port of Galway and Dublin Ports also offers a roll-on roll-off procedure to facilitate import of wind turbines. All three ports and indeed others in the state, offer potential for the importing of turbine components. The primary chosen port of entry is Ringaskiddy Port due to its proximity and ease of access to the Proposed Development.

3.2.5.8.2 *Delivery to Site*

From the selected Port of Entry, the turbines will be transported via the N22 from Ringaskiddy Port via Crookstown. This route would see turbine deliveries travel via Crookstown along the R585 Regional Road to the junction with the R584 Regional Road in the village of Kealkill. From Kealkill, the turbine delivery route will continue on the R584 to Ballylickey, where a reversing manoeuvre occurs at

Ballylickey bridge. Once the manoeuvre is complete, the turbines will travel northeast back along the R584, through Kealkill towards Ballingeary. The turbines will then travel past the Site entrance, making a turn further along the R584 in the townland of Inchi More, before travelling back south along the same road and accessing the Site from the north via the existing Coillte entrance.

This route has been proven suitable for the transport of turbine components, and the transport analysis (as presented in Chapter 15 (Material Assets) of this EIAR), shows that the only minor accommodation works will be required to accommodate the proposed turbines. The turbine transport route will utilise the national and roads available to ensure the road network holds the capacity to manage large loads.

All construction traffic will use the designated haul routes only. An alternative to this would be to allow for more direct access to the Site using multiple approach routes; however, this is more likely to give rise to additional traffic and road impacts.

The delivery of turbine components including blades, tower sections and nacelles is a specialist operation owing to the oversized loads involved. As detailed in Section 15.1 of Chapter 15 (Material Assets) of this EIAR, turbine components will be delivered to site using a blade trailer. When considering turbines transport routes, alternative modes of transport, as well as alternative points of access were also considered. Alternatively, depending on the selected turbine delivery route and the turbine manufacturer, a blade adapter or blade transporter may also be used, if deemed appropriate, for delivery of turbines to the Proposed Development.

3.2.1 Alternative Mitigation Measures

Mitigation by avoidance has been a key aspect of the Proposed Development's evolution through the selection and design process. Avoidance of the most ecologically sensitive areas of the Site limits the potential for environmental effects. As noted above, the Site layout aims to make use of the existing wind farm infrastructure and existing 38kV overhead line which assists in avoiding any environmentally sensitive areas. Any forestry felled within the footprint of the Site will be replaced offsite, with no net loss. The alternative to this approach is to encroach on the environmentally sensitive areas of the Site and accept the potential environmental effects and risk associated with this.

The best practice design and mitigation measures set out in this EIAR will contribute to reducing any risks and have been designed to break the pathway between the Site and any identified environmental receptors. The alternative is to either not propose these measures or propose measures which are not best practice and effective and neither of these options is sustainable.