CONTENTS

4 PROJECT NEED AND ALTERNATIVES CONSIDERED 4-1

4.1 Introduction 4-1

4.2 Need for the Proposed Development 4-1

4.2.1 Renewable energy targets 4-1

4.2.2 Reduction of carbon emissions 4-2

4.2.3 Energy Security 4-2

4.2.4 Economic benefits 4-2

4.3 Policy context 4-3

4.3.1 Climate Action Plan (2023) 4-4

4.3.2 Ireland's Greenhouse Gas Emission Projections, 2022-2040 (EPA, June 2023) 4-4

4.3.3 Project Ireland 2040: The National Planning Framework (NPF, 2018) 4-4

4.3.4 National Development Plan 2021-2030 4-7

4.3.5 Southern Regional Spatial & Economic Strategy (RSES) 2020 4-8

4.3.6 Clare County Development Plan 2023-2029 (statutory) 4-11

4.3.7 Draft Clare Local Economic and Community Plan (LECP) 2023-2029 4-11

4.4 Consideration of alternatives 4-12

4.4.1 Introduction 4-12

4.4.2 Methodology 4-12

4.4.3 'Do-nothing' alternative 4-13

4.4.4 Alternative processes 4-13

4.4.5 Alternative locations – the site selection process 4-14

4.4.6 Alternative turbine heights and turbine models 4-16

4.4.7 Alternative site layouts and evolution of design 4-17

4.4.8 Alternative grid connection options and routes 4-31

4.4.9 Alternative turbine delivery routes 4-34

4.4.10 Alternatives for site access roads 4-35

TABLES

Table 4.1: NPF - Relevant National Policy Objectives (NPOs) 4-5

Table 4.2: Relevant regional policy objectives 4-8

Table 4.3: Energy-related Regional Policy Objectives (RPOs) for the Southern Region 4-9

Table 4.4: High-level site selection criteria 4-14

Table 4.5 Proposed Development Turbine Envelope 4-16

Table 4.6: Layout optimisation 4-22

FIGURES

Figure 4.1 Proposed Development Constraints Map (Western DA) 4-19

Figure 4.2 Proposed Development Constraints Map (Eastern DA) 4-20

Figure 4.3 Site Layout Iteration V1 4-24

Figure 4.4 Site Layout Iteration V2 4-25

Figure 4.5 Site Layout Iteration V3 4-26

Figure 4.6 Site Layout Iteration V4 4-27

Figure 4.7 Site Layout Iteration V5 4-28
Figure 4.8 Site Layout Iteration V6 4-29
Figure 4.9 Site Layout Iteration V7 4-30
Figure 4.10 Initial Grid Route Options..... 4-32
Figure 4.11 Access to the Eastern DA (option A – ruled out) 4-36
Figure 4.12: Proposed access arrangement for the Eastern DA (option B – final iteration)..... 4-37
Figure 4.13 Proposed access arrangement for the Western DA 4-39

4 PROJECT NEED AND ALTERNATIVES CONSIDERED

4.1 Introduction

This chapter sets out the need for the Proposed Development, which is driven by international, European and national policy on sustainable development and climate change. It also describes the reasonable alternatives studied by the developer for different elements, as relevant to the Proposed Development type, its location, and the characteristics of the receiving environment.

4.2 Need for the Proposed Development

The Proposed Development is proposed in response to international, European and national policy on climate change and targets for reduction in carbon emissions. Ireland's participation in international action on climate change, which seeks to limit global temperature rise to 1.5 degrees Celsius above pre-industrial levels, is confirmed in the country's ratification of the United Nations Framework Convention on Climate Change (UNFCCC) in April 1994 and the Kyoto Protocol in principle in 1997 and formally in May 2002.

Ireland's national energy and climate policy is derived from overarching European policy aimed at unifying the European Union in energy and climate goals. The National Planning Framework has a main objective of achieving transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. The Climate Action and Low Carbon Development (Amendment) Act 2021 commits Ireland to 2030 and 2050 targets for reducing greenhouse gas (GHG) emissions.

The country is now on a legally binding path to net-zero emissions no later than 2050, and to a 51% reduction in emissions by 2030. The route to achieve these targets is set out in the government's Climate Action Plan (2023) which seeks to achieve 50% of electricity demand met by renewables by 2025. That target will be met with 5 GW of onshore wind, increasing to 9 GW by 2030.

4.2.1 Renewable energy targets

In the context of increasing energy demand and prices, uncertainty in energy supply and the effects of climate change, the need to harness renewable energy (such as wind power) plays a critical role in sustainability.

National energy and climate policy is derived from overarching European Policy, which aims to unify the European Union in energy and climate goals. Renewable energy targets which are set out in relevant national policies will influence the development of Ireland in the coming decades with respect to energy production, carbon neutrality and climate change mitigation. These national policies include:

- Ireland's Climate Action Plan (CAP 2023);

- Ireland's Greenhouse Gas Emission Projections, 2022-2040 (June 2023);
- Project Ireland 2040: The National Planning Framework (NPF, 2018); and
- Project Ireland 2040: National Development Plan 2021-2030.

Targets as set out in the above-mentioned policy frameworks are discussed further in **Section 4.3**.

4.2.2 Reduction of carbon emissions

The production of renewable energy will assist in achieving the Government's and EU's stated goals of ensuring safe and secure energy supplies, promoting an energy future that is sustainable and competitively priced to consumers whilst combating energy price volatility and the effects of climate change. The Climate Action Plan 2023 (CAP23) aims to keep Ireland's emissions within its mandatory carbon budget and achieve the legally binding target of reducing emissions by 51% (from a 2018 baseline) by 2030. In addition, preliminary analysis suggests that this will require approximately €120 billion in investment between 2022 and 2030.

4.2.3 Energy Security

Secure supplies of energy are key to maintaining safe and comfortable living conditions for the population of Ireland. Energy import dependency is a significant indicator of the country's energy security. Potential disruptions to supply can be caused by (i) infrastructure or technical risks such as an outage of network infrastructure facilities, (ii) market risks such as expected imports being diverted to other markets due to sudden events and price responsiveness (this includes price risk rather than loss of physical supplies), and (iii) geopolitical risks such as when a key supply source becomes unavailable or significantly reduced due to global geopolitical events and/or natural disasters. As one of the most energy import dependent countries in the EU with limited diversity of supply, Ireland is exposed to this risk. In 2022, Ireland imported 82% of its fuel[1]. 48% of energy used in 2022 was from imported oil and nearly 31% from natural gas. 74% of Ireland's natural gas came from imports through two interconnectors from the UK.

The electricity produced by the Proposed Development will reduce dependence on imported fossil fuels and add to financial autonomy and energy stability in Ireland, further emphasising the need for the Proposed Development.

4.2.4 Economic benefits

The 'Value of Wind Energy to Ireland' report, published by Pőyry in March 2014, states that growth of the wind sector in Ireland could support 23,850 jobs (construction and operational phases) by 2030. If investment in wind energy is not pursued, then by 2030 Ireland will be reliant on natural gas for most of its electricity generation, at a cost of €671 million per annum in fuel import costs.

[1] Department of Environment, Climate and Communications, Energy Security in Ireland to 2030 – Energy Security Package, November 2023, https://assets.gov.ie/276471/2d15ce6d-e555-4ada-a3cf-b325a5d7ba20.pdf, accessed 18/12/2023.

At a regional level, the Proposed Development will help to supply the rising demand for electricity, resulting from renewed economic growth. During construction, additional employment will be created in the region through the supply of services and materials to the Proposed Development. The Proposed Development will also have a number of long-term benefits for the local economy including security of energy supply, energy sustainability and facilitating the transition to a low carbon economy.

According to the Sustainable Energy Authority of Ireland (SEAI) report titled 'A Macroeconomic Analysis of Onshore Wind Deployment to 2020' (June 2015)[2] puts direct construction jobs from wind farm developments at 1.07 jobs per MW. On the other hand, the European Wind Energy Association (EWEA) report titled 'Wind at Work' (January 2009)[3] estimates that 1.2 jobs per MW are created during installation of wind energy projects. Using these multipliers, with an installed capacity of approximately 60-66MW, the Proposed Development could create 72-79 direct jobs during its construction. It is likely that there will be additional direct employment for people living in the study area who may be qualified for construction related roles, and indirect employment opportunities for the many retail and service establishments in supplying materials and services to the Proposed Development. Materials will be sourced in the general locality where possible. This will assist in sustaining employment in the local construction related trades and businesses for the construction phase of the Proposed Development.

The Proposed Development also creates an opportunity to generate tangible benefits for the local community who may not have a direct involvement in the Proposed Development. It is proposed to deliver these benefits through a Community Benefit Fund, which is explained in further detail in the Community Report (found in **Appendix 1, Part 1, Section 8** of this planning application).

4.3 Policy context

As mentioned, national energy and climate policy is derived from the overarching European Policy which aims to unify the European Union in relation to renewable energy and climate change goals. The following section sets out the relevant national policies which will influence Ireland's development in the coming decades with respect to energy production, carbon neutrality and climate change mitigation.

These policies are supported by the latest Program for Government (2020) 'Our Shared Future' which presents strong climate governance in rapidly reducing climate to protect and improve public health and overall quality of life. The government are committed to rapid decarbonisation of the energy sector with an aim of providing the necessary actions to deliver national renewable electricity targets. These government ambitions support the ongoing generation of renewable energy from onshore wind sources, as detailed below.

[2] SEAI, A Macroeconomic Analysis of Onshore Wind Deployment to 2020: An Analysis using the Sustainable Energy Economy Model, June 2015, https://www.seai.ie/publications/A-Macroeconomic-Analysis-of-Onshore-Wind-Deployment-to-2020.pdf, accessed 09/06/2023.

[3] EWEA, Wind at Work: Wind Energy and Job Creation in the EU, http://www.ewea.org/fileadmin/files/library/publications/reports/Wind_at_work.pdf, January 2009, accessed 21/06/2023.

4.3.1 Climate Action Plan (2023)

The Climate Action Plan 2023 (CAP 23), launched in December 2022, is the second annual update of the Climate Action Plan 2019 and the first plan to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2015. The CAP 23 implements the carbon budgets and sectoral emission ceilings and sets a roadmap for taking decisive action to halve Ireland's GHG emissions by 2030. The CAP 2023 sets out how Ireland can accelerate the actions that are required to respond to the climate crisis, putting climate solutions at the centre of Ireland's social and economic development.

Among the most important measures in CAP2023, is to increase the proportion of renewable electricity to 80% by 2030 and a target of 9 GW (or 9,000MW) from onshore wind, 8 GW from solar, and at least 5 GW of offshore wind energy by 2030.

4.3.2 Ireland's Greenhouse Gas Emission Projections, 2022-2040 (EPA, June 2023)

The Department of Environment, Climate and Communications' national climate change position, which includes the Climate Action Acts of 2015 and 2019, designated the Environmental Protection Agency (EPA) with responsibility for developing annual national emissions projections for greenhouse gases for all key sectors of the economy, including electricity. The EPA publishes greenhouse gas emission projections on an annual basis and submits emission projections to the Commission, as required under Monitoring Mechanism Regulation EU No. 525/2013.

The EPA's publication entitled Ireland's Greenhouse Gas Emissions Projections 2022-2040 (June 2023) provides an updated assessment of Ireland's projected GHG emissions out to 2040, which includes an assessment of progress towards achieving its emission reduction targets to 2030.

Ireland's new 2030 target under the EU's Effort Sharing Regulation (EU No. 842/2018) is to limit its greenhouse gas (GHG) emissions by at least 42% by 2030. This target was set in April 2023 upon amendment of the EU Effort Sharing Regulation (ESR). The 42% reduction defines the trajectory with annual binding emission limits over the period to 2030. According to the EPA, reaching the new 42% EU emission reduction target '*will require full and rapid implementation of Climate Action Plan 2023 measures and further measures to be implemented*'.

The EPA report (June 2023) provides the following summary:

> *'Ireland is not on track to meet the 51% emissions reduction target (by 2030 compared to 2018) based on these projections which include most 2023 Climate Action Plan measures. Further measures still need to be identified and implemented to achieve this goal'.*

4.3.3 Project Ireland 2040: The National Planning Framework (NPF, 2018)

As a strategic development framework, Project Ireland 2040: National Planning Framework (NPF, 2018), aims to join up ambitions for improvement across the different areas of Irish life, bringing the various government departments, agencies, State owned enterprises and local authorities together behind a shared set of strategic objectives for rural, regional and urban development.

"The National Planning Framework is a planning framework to guide development and investment over the coming years. It does not provide every detail for every part of the country; rather it empowers each region to lead in the planning and development of their communities, containing a set of national objectives and key principles from which more detailed and refined plans will follow".

The Vision for the NPF (Section 1) states that there is significant alignment between the UN Sustainable Development Goals (SDGs) and the National Planning Framework's National Strategic Outcomes (NSOs) in areas such as climate action, clean energy, sustainable cities and communities, economic growth, reduced inequalities and innovation and infrastructure, as well as education and health.

The NPF sets out the strategic goals and objectives for the State, and central to this is the theme of *Realising Our Sustainable Future*. In particular, Section 9.2 of the NPF entitled '*Resource Efficiency and Transition to a Low Carbon Economy*' states the following:

"Our transition to a low carbon energy future requires:

- *A shift from predominantly fossil fuels to predominantly renewable energy sources;*
- *Increasing efficiency and upgrading to appliances, buildings and systems;*
- *Decisions around development and deployment of new technologies relating to areas such as wind, smart grids, electric vehicles, buildings, ocean energy and bio energy; and*
- *Legal and regulatory frameworks to meet demands and challenges in transitioning to a low carbon economy".*

The NPF is supported by a series of NSOs, which the framework seeks to deliver. The purpose of the NSOs is to create a single vision, through a shared set of goals for every community across the country. The most pertinent outcomes in the context of the proposed renewable energy development in Co. Clare are as follows:

- **National Strategic Outcome 3**: Strengthened Rural Economies and Communities;
- **National Strategic Outcome 5**: A Strong Economy Supported by Enterprise, Innovation and Skills; and
- **National Strategic Outcome 8**: Transition to a Low Carbon and Climate Resilient Society.

A series of National Policy Objectives (NPOs) were developed to set the context for national, regional and local planning policy in Ireland. In the context of the Proposed Development the following NPOs set out in **Table 4.1** are considered the most relevant:

Table 4.1: NPF - Relevant National Policy Objectives (NPOs)

Policy Objective	Description
National Policy Objective 15	Support the sustainable development of rural areas by encouraging growth and arresting decline in areas that

Policy Objective	Description
	have experienced low population growth or decline in recent decades and by managing the growth of areas that are under strong urban influence to avoid over-development, while sustaining vibrant rural communities.
National Policy Objective 21	Enhance the competitiveness of rural areas by supporting innovation in rural enconomic development and enterprise through the diversification of the rural economy into new sectors and services, including ICT based industries and those addressing climate change and sustainablilty.
National Policy Objective 23	Faciliate the development of the rural economy through supporting a sustainable and economically efficient agriculture and food sector, together with forestry, fishing and aquaculture, energy and extractive industries, the bio-economy and diversification into alternative on-farm and off-farm activeities, while at the same time noting the importance of maintaining and protecting the natural landscape and built heritage which are vital to rural tourism.
National Policy Objective 52	The planning system will be responsive to national environmental challenges and ensure that development occurs within environmental limits, having regard to the requirements of all relevant environmental legislation and the sustainable management of our natural capital.
National Policy Objective 54	Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for GHG emissions reductions.
National Policy Objective 55	Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achiveing a low carbon economy by 2050.

NPF Section 1.2: Making the Vision a Reality, recognises the need for new energy systems and transmission grids in order to deliver a more distributed, renewable focused national energy system, in order to harness the potential from wind, wave and solar energy sources:

> *"The National Climate Policy Position establishes the national objective of achieving transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050.*
>
> *This objective will shape investment choices over the coming decades in line with the National Mitigation Plan and the National Adaptation Framework. New energy systems and transmission grids will be necessary for a more distributed,*

renewables-focused energy generation system, harnessing both the considerable on-shore and off-shore potential from energy sources such as wind, wave and solar and connecting the richest sources of that energy to the major sources of demand."

With regard to planning and investment for rural locations, Section 5.4 of the NPF: Planning and Investment to Support Rural Job Creation, recognises the key role of energy production in assisting in the rejuvenation of rural towns and villages to create and sustain vibrant rural communities.

"Rural areas have significantly contributed to the energy needs of the country and will continue to do so, having a strong role to play in securing a sustainable renewable energy supply. In planning Ireland's future energy landscape and in transitioning to a low carbon economy, the ability to diversify and adapt to new energy technologies is essential. Innovative and novel renewable energy solutions have been delivered in rural areas over the last number of years, particularly from solar, wind and biomass energy sources."

The Department of Housing, Local Government and Heritage commenced the first revision of the NPF in June 2023, in order to take account of the growing global prominence of climate issues, an accelerated increase in population during 2022/2023, the impact of Covid in relation to emergence of blended working, and the ongoing conflicts in Ukraine and, more recently, the Middle East, etc.

4.3.4 National Development Plan 2021-2030

The National Development Plan 2021-2030 (NDP) published in October 2021, in tandem with the NPF, sets out the Government's over-arching public investment strategy and budget for the period 2021-2030.

The plan aims to balance the demand for public investment across all sectors with focus on improving the delivery of infrastructure projects. The NDP provides a platform from which investment can be provided and strategized in terms of economic growth, development and sustainability needs.

The key role of the NDP is to set out the updated configuration for public capital investment over the next 10 years in order to achieve the NSOs as set out within the NPF. The NDP outlines a number of key energy initiatives that set out to diversify our energy resources, and to assist in the transition towards a decarbonised society.

The NDP emphasises National Strategic Outcome 8: Transition to a Climate-Neutral and Climate Resilient Society, noting that:

"The Government will continue to support the deployment of additional electricity generation through the auction-based Renewable Electricity Support Scheme (RESS)".

In order to achieve a Climate-Neutral and Climate Resilient Society, the NDP outlines strategic investment priorities that should be actioned. These relate to the aims of the Renewable Electricity Support Scheme. It is stated that the Renewable Energy Support Scheme (RESS) auctions will deliver competitive levels of onshore wind electricity generation, which indicatively could be up to 8GW of onshore wind by 2030. The NDP also outlines that the RESS will also support the delivery of up to 5GW of additional

offshore renewable electricity generation by 2030. It should be noted that these targets have been increased by CAP 23. It is considered that such schemes, in conjunction with greater investment in renewable energy, diversity of supply, and increased utilisation and adoption of electricity storage, will significantly assist in promoting a low-carbon/less energy intensive supply. The investments outlined within the NDP will make a critical contribution to the achievement of a low carbon and resilient electricity system within the Country. The Proposed Development will contribute to the aims of the NDP in providing renewable electricity generation to the national grid.

4.3.5 Southern Regional Spatial & Economic Strategy (RSES) 2020

The Southern Regional Spatial & Economic Strategy (RSES) came into effect in January 2020. The RSES sets out a strategy to implement the NPF at a regional level. It also sets out a strategic vision which includes actions to mitigate against climate change. The RSES recognises the urgency to transition towards a low carbon economy and increase the use of renewable energy sources across the key sectors of electricity supply, heating, transport and agriculture in order to safeguard and enhance the region, driving the transition to a low carbon and climate resilient society.

The RSES states the following in relation to wind energy:

> *"Wind energy is currently the largest contributor of renewable energy and it has the potential to achieve between 11-66GW of onshore wind and 30GW of offshore wind by 2050 (SEAI, 2026). The sector can make a significant contribution to meeting national energy demands while attaining our energy targets for 2020 and beyond".*

The Southern RSES sets out innovative Regional Policy Objectives (RPOs) to promote: Rural Development, the Low Carbon (Circular) Economy, the Environment, Renewable Energy and Indigenous Renewable Energy Production and Grid Injection. These innovative regional policy objectives all support the Proposed Development and are summarised in **Table 4.2**.

Table 4.2: Relevant regional policy objectives

Policy	Description
RPO 50	It is an objective to further develop a diverse base of smart economic specialisms across the rural Region, including innovation and diversification in (among other things) renewable energy as a dynamic driver for the rural economy.
RPO 56 (a-c)	a. The RSES recognises the urgency to transition to a low carbon future and it is therefore an objective to accelerate the transition towards low carbon economy and circular economy through mechanisms such as the Climate Action Competitive Fund. b. It is an objective to develop enterprises that create and employ green technologies. c. Local authorities should ensure that the development of green industry and technologies incorporates careful consideration of potential environmental impacts at project level including the capacity

Policy	Description
	of receiving environment and existing infrastructure to serve new industries.
RPO 95	It is an objective to support implementation of the National Renewable Energy Action Plan (NREAP)4, and the Offshore Renewable Energy Plan and the implementation of mitigation measures outlined in their respective SEA and AA and leverage the Region as a leader and innovator in sustainable renewable energy generation.
RPO 99	It is an objective to support the sustainable development of renewable wind energy (on shore and offshore) at appropriate locations and related grid infrastructure in the Region in compliance with national Wind Energy Guidelines.
RPO 100	It is an objective to support the integration of indigenous renewable energy production and grid injection.

The Southern Regional Assembly's **RSES Chapter 8: Water and Energy Utilities** highlights that:

'A safe, secure and reliable supply of energy is critical to a well-functioning Region. With projected increases in population and economic growth, the demand for energy is set to increase in the coming years. In moving towards a more energy efficient society and an increase in renewable sources, there is a need to set a policy approach which will meet national targets for renewable electricity generation, climate change and security of energy supplies'.

SRA RSES Chapter 8 continues,

'There is significant potential to use renewable energy across the Region to achieve climate change emission reduction targets. With costs actively driven down by innovation in solar, onshore and offshore wind in particular, the renewable industry is increasingly cost competitive. The RSES supports renewable industries and requirements for transmission and distribution infrastructure.'

In pursuit of this aim, the Southern SES Chapter 8: Water and Energy Utilities sets out specific energy-related regional policy objectives for the Southern Region of Ireland which support the Proposed Development in Co. Clare. Relevant RPOs are set out in **Table 4.3** below.

Table 4.3: Energy-related Regional Policy Objectives (RPOs) for the Southern Region

Policy	Description
RPO 219	It is an objective to support the sustainable reinforcement and provision of new energy infrastructure by infrastructure providers (subject to appropriate environmental assessment and the planning process) to ensure the energy needs of future population and economic expansion within designated growth areas and across the Region can be delivered in a sustainable and timely

	manner and that capacity is available at local and regional scale to meet future needs.
RPO 220	It is an objective to support the Integrated Single Electricity Market (I-SEM) as a key priority for the Region and seek the sustainable development and reinforcement to the energy grid including grid connections, transboundary networks into and through the Region and between all adjacent Regions subject to appropriate environmental assessment and planning processes.
RPO 221	Local Authority City and County Development Plans shall support the sustainable development of renewable energy generation and demand centres such as data centres which can be serviced with a renewable energy source (subject to appropriate environmental assessment and the planning process) to spatially suitable locations to ensure efficient use of the existing transmission network; The RSES supports strengthened and sustainable local/community renewable energy networks, micro renewable generation, climate smart countryside projects and connections for such initiatives to the grid. The potential for sustainable local/community energy projects and micro generation to both mitigate climate change and to reduce fuel poverty is also supported; The RSES supports the Southern Region as a Carbon Neutral Energy Region.
RPO 222	It is an objective to support the development of a safe, secure and reliable supply of electricity and to support and facilitate the development of enhanced electricity networks and facilitate new transmission infrastructure projects that might be bright forward in the lifetime of this plan under EirGrid's (2017) Grid Development Strategy (subject to appropriate environmental assessment and the planning process) to serve the existing and future needs of the Region and strengthen all-island energy infrastructure and interconnection capacity.
RPO 223	It is an objective to support the sustainable development of international energy interconnection infrastructure and support the sustainable development (subject to appropriate environmental assessment and the planning process) of the Celtic Interconnector project between Ireland and France from a location in the Region.
RPO 224	Local Authorities shall work in partnership with existing service providers to facilitate required enhancement and upgrading of existing infrastructure and networks (subject to appropriate environmental assessment and the planning progress) and support the safeguarding of strategic energy corridors from enforcement by other development that could comprise the delivery of energy networks.

The Proposed Development supports the delivery and realisation of numerous regional policy objectives, as set out in the RSES including: diversification of the rural economy, climate actions to mitigate climate change, and the sustainable development of wind energy at an appropriate location.

Crucially, the Proposed Development supports regional policy objectives in relation to renewable energy and indigenous renewable energy production and grid injection thereby reducing the need to import energy from outside the State. In addition, the Proposed Development aligns with the regional policy approach, which will enable the region to contribute to meeting national targets for renewable electricity generation, climate change and security of energy supplies.

4.3.6 Clare County Development Plan 2023-2029 (statutory)

The Clare County Development Plan (2023-2029) was adopted in March 2023 and came into effect in April 2023. The following volumes, policy and objectives of the Clare County Development Plan (2023-2029) are relevant to the Proposed Development:

- Clare CDP Volume 1: Written Statement (Chapters 1, 2, 3, 6, 8, 10, 11, 14, 15 and 16).
    - Each written statement is discussed in detail within the planning report of this planning application (Part 1, Section 8).
- Clare CDP Volume 5: Clare Renewable Energy Strategy (RES).
- Clare CDP Volume 6: Clare Wind Energy Strategy (WES).

4.3.6.1 Clare CDP Volume 5: Clare Renewable Energy Strategy 2023-2029 (RES)

Clare Renewable Energy Strategy (RES) outlines the renewable energy resource that is deliverable in County Clare. Its Vision, consistent with that of the Clare County Development Plan 2023-2029, is '*to position the County as the national leader in renewable energy generation, supporting energy efficiency and conservation, with an accessible modern telecommunications infrastructure, achieving balanced social and economic development and assisting Ireland's Climate Action Plan'*.

4.3.6.2 Clare CDP Volume 6: Clare Wind Energy Strategy 2023-2029 (WES)

Section 1 Introduction of the WES states that it is a key priority, given the wind resource in County Clare, to identify sites of strategic regional and national importance that have the potential to accommodate wind energy development. The WES 2023-2029 built on the original WES 2005, which was based on the Clare Landscape Character Assessment (LCA). The current WES 2023-2029 has been carried forward from the 2011-2017 County Development Plan (CDP).

4.3.7 Draft Clare Local Economic and Community Plan (LECP) 2023-2029

The Draft LECP023 – 2029 will shape the future sustainable development of Clare over the next six years. At the time of preparing this EIAR, the Draft Clare LECP was at the important public consultation phase. The Plan aims to make Co. Clare an even better place in which to live, work and visit by creating new opportunities, improving connectivity between rural and urban areas, and by protecting and enhancing services in the community.

The Draft LECP is designed to enhance the wellbeing and quality of life for everyone in County Clare. This includes not only the residents but also those who work, invest, or visit the area. The plan outlines the high-level goals and actions for economic and community development within the county over a six-year period, taking into account the needs and aspirations of its diverse population.

4.4 Consideration of alternatives

4.4.1 Introduction

Article 5 (1) of the Environmental Impact Assessment (EIA) Directive (2011/92/EU) on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU (the EIA Directive) requires that the EIAR prepared by the developer contains at least:

> *'d)_a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.*
>
> *f) 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 (2) further states:

> *'2) 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 project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.'*

In accordance with European Commission Guidance on the preparation of the Environmental Impact Assessment Report (2017), this section of the EIAR contains a description of the reasonable alternatives studied for the Proposed Development, and an indication of the main reasons for selecting the chosen option with regards to their environmental impacts.

4.4.2 Methodology

The EU Guidance Document on the preparation of the Environmental Impact Assessment Report (2017) outlines the requirements of the EIA Directive and states that, in order to address the assessment of reasonable alternatives, the developer needs to provide the following:

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

There is limited European and National guidance on what constitutes a 'reasonable alternative', however, the EU Guidance states that reasonable alternatives *"must be relevant to the proposed project and its specific characteristics, and resources should only be spent assessing these alternatives"*.

The guidance also acknowledges that *"the selection of alternatives is limited in terms of feasibility. In addition, an alternative should not be ruled out simply because it would cause inconvenience or cost to the developer. At the same time, if an alternative is very*

expensive or technically or legally difficult, it would be unreasonable to consider it to be a feasible alternative".

The EPA EIAR Guidelines (2022) state that *"It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were considered is deciding on the selected option".*

In line with the above legislation and guidance, this section describes alternatives considered for the Proposed Development under the following headings:

- 'Do nothing' alternative;
- Alternative locations – the site selection process;
- Alternative turbine heights and turbine models;
- Alternative site layouts and evolution of design;
- Alternative grid connection points and routes;
- Alternative turbine delivery routes;
- Alternatives for site access; and
- Alternative mitigation measures.

4.4.3 'Do-nothing' alternative

Article IV, Part 3 of the EIA Directive states that the EIAR 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 EIAR guidance (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.*"

If the proposed wind energy development were not to proceed, the existing use of the site would continue. As a result, the site would not be used to contribute to County Clare's renewable energy resource and meeting Government and EU targets for the production and consumption of electricity from renewable resources.

4.4.4 Alternative processes

Alternative sources of energy generation form part of the renewable energy development portfolio of the applicant, and a number of options were considered at a high level prior to initiation of this project. Alternative renewable energy sources include solar, hydro and bioenergy, yet none of these are a viable option for the site for the following reasons:

- Solar – topography of the site and heavy forestry cover mean site is not viable for solar.
- Hydro – site does not contain any large waterbodies and pumped hydro would require large scale excavation.
- Bioenergy - presence of peatlands and forestry mean site would be inappropriate for biomass production for bioenergy.

4.4.5 Alternative locations – the site selection process

In selecting the site for the Proposed Development, technical, planning and environmental criteria were used to assess potential sites (see **Table 4.3**).

There are several factors that must be considered when selecting a site for wind energy development to achieve an economically viable project. In combination with policy and environmental considerations, the matters to be considered include the wind resource available at the site, access to the national electricity grid, available land, and the ability to achieve a minimum setback from dwellings as set out in national guidelines. The site selection exercise generally entails the application of key criteria to determine the most viable site for further testing and development. Orsted conducted a technical review of potential candidate sites for the wind energy development.

Planning policy also informed the site selection process. The county strategies are developed in accordance with the Wind Energy Development Guidelines (2006) which prescribe a step-by-step process in a sieve analysis to identify locations most suitable for wind energy development. This includes the available wind resource (Step 1), landscape sensitivity mapping (Step 2), and built and natural heritage and amenity designations (Step 3). This sieve analysis is the basis for identifying areas "where wind energy developments would be 'acceptable in principle', where they would be 'open for consideration', and where they would be 'not normally permissible'". In Step 4, the results of Step 3 are integrated with information on accessibility to electricity transmission and distribution grids to identify those areas which are readily capable of development or where further grid works are required to accommodate wind energy development.

A summary of the selection criteria and outline of basis for assessment for each criterion which contributed to the selection of the Proposed Development site are listed in **Table 4.4.**

Table 4.4: High-level site selection criteria

Criteria	Description	Suitability of the Proposed Development
Technical		
Available wind resource	Estimation of the future energy production of a wind farm in accordance with The Irish Wind Atlas, (Sustainable Energy Authority of Ireland (SEAI)) findings.	Average wind speeds at a height of 100 metres at the Proposed Development site are 7.9-8.6 metres per second. This indicates viable values for wind energy development at this location, considering values of 3-5 metres per second are required for turbines to start operating.
Grid connection feasibility	Assessment of potential connection to the electrical grid and the means of connection.	Availability of grid capacity at substations at Ardnacrusha and Drumline; viable connection options whether overhead or underground, and any other

Criteria	Description	Suitability of the Proposed Development
		potential routes; and proximity to connection options.
Environmental		
Designated Sites	It is preferable that wind energy development is not located in an area designated as a European site.	Whilst certain designated sites (e.g., Lower River Shannon SAC) are immediately adjacent to elements of the Proposed Development (e.g., the TDR), all European sites are at least 2km from the Proposed Development turbine areas. One nationally designated site, Gortacullin Bog NHA, is located within 10m of the Proposed Development.
Proximity to dwellings and other properties	The 2019 Consultation Draft Guidelines on Wind Energy Development advise a minimum amenity setback of 4 times the blade tip height of a turbine from the nearest point of curtilage of non-financially associated dwellings, subject to a minimum 500m.	Taking a precautionary approach in the site-level assessment, with a maximum turbine height of 180m, an amenity buffer distance of 720m was applied to the nearest point of curtilage of non-financially associated dwellings to determine the site area and extent available for wind energy development.
Planning		
Planning history	Planning history of the site and other wind farm projects in the vicinity and wider area.	The site was selected based on its proximity to the nearest consented and operational wind energy developments which are located over 5km away.
Planning policy	Identification of appropriately zoned areas for the Proposed Development.	The Proposed Development site is located in an area designated as a Strategic Area for wind energy development. Ten turbines are located within this designated 'Strategic Area' and one turbine (T4) is located in an area designated as 'Acceptable in Principle', on the southern edge of the Strategic Area for wind development.

Oatfield was selected as it presents an attractive site for a wind farm for a number of reasons. It has a quality prevailing wind resource in an elevated location, with a suitably large unconstrained land area to hold a wind farm of this scope. The proximity to a number of 110kV overhead lines makes connecting to the grid a more straight forward

process in theory, while regional proximity to large urban and industrial centres like Limerick, Ennis and the Shannon Estuary mean that demand for power is likely to be greater. From a policy perspective, the site is predominantly designated as a Strategic wind development area, meaning it has previously been identified by Clare County Council as a priority area for wind development in the county.

4.4.5.1 Site-specific assessment

Following identification of a suitable site (the Proposed Development site), site-specific assessments were then conducted by Orsted's wind development team with input from relevant subject experts where required, to further assess the Proposed Development site to determine if it was suitable to bring forward for preliminary engineering design and environmental assessment.

The site-specific assessments included desktop studies, site visits and surveys, and consultations to:

- determine general landscape character, visibility from scenic routes or protected views;
- identify other potential constraints such as waterbodies, overhead lines, telecoms masts, forested areas, etc.
- confirm of the potential presence/absence of sensitive habitats and protected species; and
- assess potential turbine transport routes.

4.4.6 Alternative turbine heights and turbine models

Three different turbine models were assessed, namely the Nordex N133, Nordex N149 and Vestas V150, with varying turbine layouts depending on the turbine model. The details of each turbine model considered in the EIAR are presented in **Table 4.5** below. Planning permission is being sought for the envelope of turbines listed in **Table 4.5**.

Table 4.5 Proposed Development Turbine Envelope

Turbine Type	Output (MW)	Hub Height (m)	Rotor Diameter (m)	Tip Height (m)
Nordex N149	5.7	105	149	179.5
Nordex N133	4.8	110	133	176.5
Vestas V150	6.0	105	150	180.0

In the case of residential amenity effects (based on maintaining a setback from proposed turbines of four times the tip height to the nearest point of non-financially involved dwellings, as referred to in Section 6.18 of the 2019 Draft Revised Wind Energy Guidelines), a GIS model was created to examine the amenity effects from public roads and properties surrounding the Proposed Development site. As mentioned, taking a precautionary approach in this regard, with a maximum turbine height of 180m, an amenity buffer distance of 720m was applied to the nearest point of non-financially

associated dwellings to determine the site area and extent available for wind energy development. Further, when considering landscape and visual effects, the pertinent aspect of the design envelope relates to the turbine dimensions used to prepare the photomontages, upon which, the visual impact assessment is based. Therefore, the highest possible tip height and hub height combination of 180m and hub height of 105m (Vestas V150) represents the maximum potential turbine envelope for the Proposed Development[5].

Similarly, for noise effects, a preliminary noise model for each turbine type was created to determine, in the first instance, the turbine model suitable for the site based on the preliminary effects on the nearest noise sensitive receptors. Secondly, this preliminary testing informed the appropriate locations for baseline noise monitoring. Following this testing, the turbine model selected for noise modelling to inform the impact assessment was the Vestas V150, as it was determined to be the noisiest out of three potential candidate turbine models[6].

In respect of shadow flicker effects, a study area of ten times the rotor diameter is defined, as at distances greater than ten rotor diameters from a turbine, the potential for shadow flicker is very low (as per 2006 Wind Energy Development Guidelines). As such, a buffer of 1,500m was applied to consider the effects of shadow flicker on sensitive receptors, based on a maximum rotor diameter of 150m (Vestas V150). However, because shadow flicker effects are variable, full shadow flicker assessments[7] have been conducted for each candidate turbine model to determine the effects of the envelope of turbines in **Table 4.5**.

4.4.7 Alternative site layouts and evolution of design

4.4.7.1 Key design drivers for the Proposed Development

Following on from selection of the turbine envelope, the design of the Proposed Development has been a collaborative process from the outset involving designers, developers, engineers, environmental, hydrological and geotechnical, archaeological specialists and traffic consultants, and through consultation with landowners, and various stakeholders.

Throughout the preparation of the EIAR, the layout of the Proposed Development has been revised and refined to take account of the findings of site surveys and assessments, which have brought the design from a 12 turbine layout to the current proposed 11 turbine layout.

The layout of the Proposed Development has been designed to minimise potential environmental effects, while simultaneously maximising the energy yield of the wind resource available at the site.

The design of the Proposed Development site was informed by the constraints listed below and illustrated in **Figure 4.1** and **Figure 4.2.**

[5] Refer to EIAR Chapter 14 Landscape and Visual for further information.

[6] Refer to Chapter 13 Noise and Vibration for further information.

[7] Refer to Chapter 12 Shadow Flicker for further information.

- Maintaining a setback from proposed turbines of 720m (four times the tip height) to the nearest point of non-financially involved dwellings), subject to a mandatory minimum distance of 500m for all dwellings (per Section 6.18 of the 2019 Draft Revised Wind Energy Guidelines);
- Maintaining a buffer of at least 20m from known archaeological monuments and cultural heritage features;
- Maintaining a buffer of at least 15m from minor watercourses and land drains (except where they are crossed by tracks or, in in the case of minor land drains, where a lesser buffer is applied or where the drain is re-directed);
- Maintaining a buffer of at least 50m from major surface water features;
- Maintaining a buffer of at least 25m from known karst features;
- Avoiding known buffers of existing telecommunications infrastructure links; and,
- Avoiding defined buffers for known areas of protected nesting birds, in accordance with good practice guidance (refer to EIAR **Chapter 7: Biodiversity**, **Appendix 7.1 SHMP**).

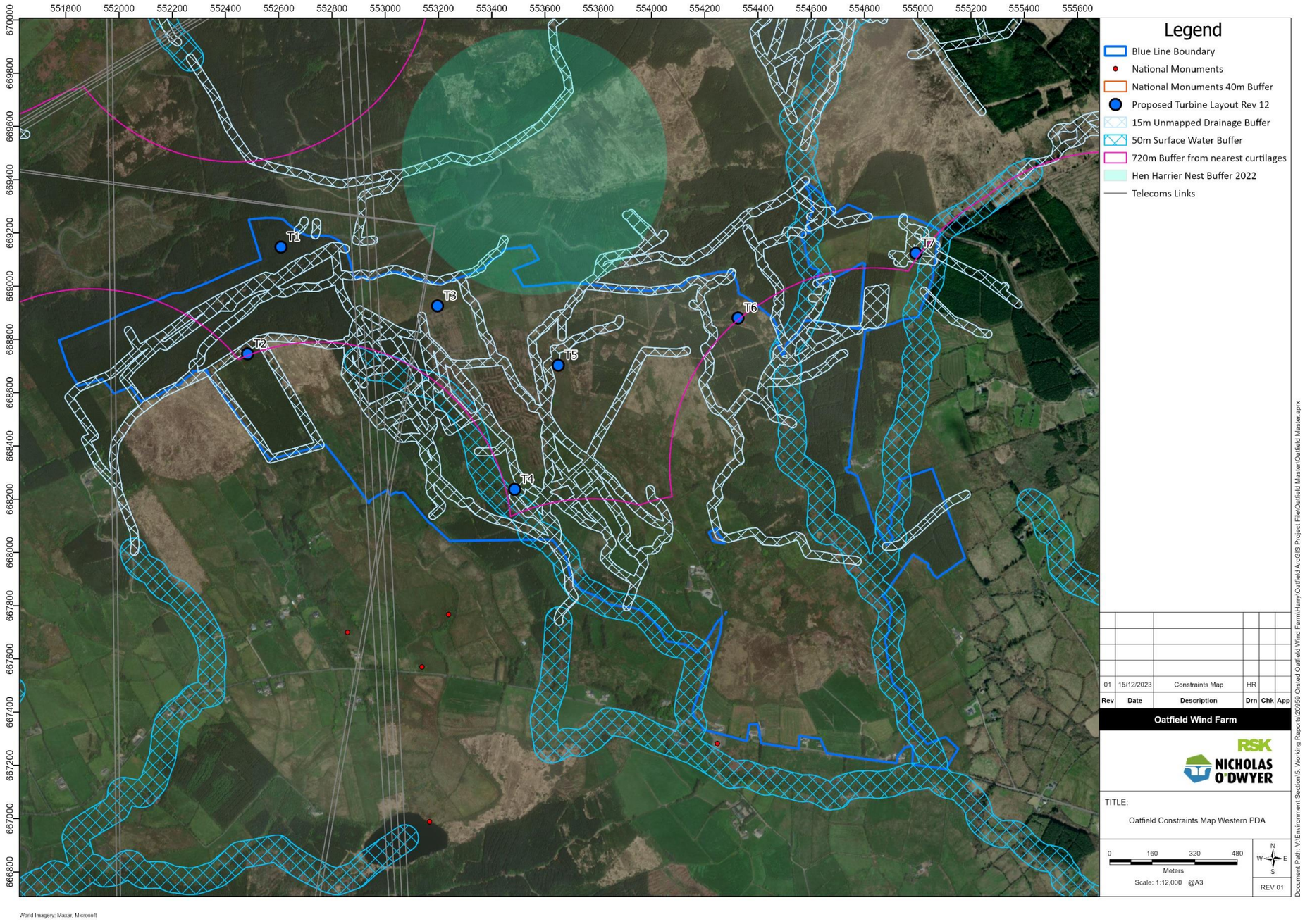


Figure 4.1 Proposed Development Constraints Map (Western DA)

Figure 4.2 Proposed Development Constraints Map (Eastern DA)

The Proposed Development is located within an upland setting dominated by commercial coniferous plantation forestry, blanket bog, wet heath, and rough/wet grassland. There is also agricultural land bounded by hedgerows, and conifer plantations. The design process aimed to minimise impact on any farm operations during construction and operation stages and to maximise the use of existing tracks. It was also an objective to minimise the impact on hedgerows and to capitalise on opportunities for biodiversity enhancements. In respect of these objectives, the owners of the involved lands for the wind farm site (delineated in blue in **Figure 4.1** and **Figure 4.2**) were consulted throughout the design process.

The design of the Proposed Development and the selection of preferred options for various elements (i.e., grid connection route, turbine delivery route, and access to the wind farm site) evolved in response to findings from:

- baseline surveys;
- the construction solutions and mitigation measures recommended from the assessment of likely significant effects of the proposals on the environment; and,
- feedback received from community and stakeholder engagements, as reported in EIAR **Chapter 3. Scoping Consultations, Community Engagement and Key Issues**.

4.4.7.2 Turbine layouts

In the layout, turbines were positioned to optimise access track layout and configuration of hardstands and crane pads; and to observe the established setbacks and buffers referred to in **Section 4.4.7.1**. Each shift of a turbine had a potential effect on other turbine positions. Therefore, each change required cross-checking to ensure appropriate separation distances would be maintained, thus ensuring that the viability of the Proposed Development was not compromised.

4.4.7.3 Internal access track design

Internal access tracks are required to enable the transport of turbine components and construction materials to each of the turbine locations. Internal access tracks must be of a gradient and width sufficient to allow safe movement of equipment and vehicles, especially at junctions.

Alternative access track layouts were considered in tandem with any changes to the proposed turbine layout, as the design evolved. As turbine locations were assessed and finalised, the most suitable routes between turbine locations were identified, considering both the environmental and engineering constraints of the site. The design evolution ensured that the internal access tracks utilised the most direct route between turbines to minimise the footprint of the Proposed Development.

The aim of the access track design was to utilise the configuration of existing farm tracks as far as possible. Temporary access tracks will be used to achieve the required turning radii, contingent upon the final selected turbine blade length. This is to facilitate the transport of turbine components around the site and for maneuvering at turbine positions for the set down of components and assembly process.

Existing farm tracks are to be upgraded to provide the width and strength required for the transport of turbine components and passage of heavy goods vehicles across the site during the construction phase. The main aim for track upgrades or introducing temporary access tracks was to ensure minimal disruption to current operations in the area, by minimising land take, while simultaneously minimising impacts on biodiversity. The final iteration of the site layout is provided in **Figure 4.9**.

4.4.7.4 Location of ancillary infrastructure and temporary works

The ancillary structures required for the Proposed Development include the site entrances, temporary construction compounds and areas for the temporary storage of excavated material, and a permanent meteorological mast.

The examination of alternatives for site entrances and the selection of the preferred site access arrangement for the construction and operation stages is discussed in detail in **Section 4.4.10**.

The locations and configurations of the temporary construction compounds were selected based on the final track layout, in a location central to the site, and after consultation with the relevant landowners. Following an engineering assessment of the earth materials required to be excavated from the site, and the earth materials to be brought on to the site to construct the infrastructure, including consideration of phasing, the amount, configuration and location of designated areas for the temporary storage of earth materials was determined.

The location of the electrical substation on the site was selected based on appropriate separation distances from the turbines and based on landowner agreements.

The optimal location of the permanent meterological mast must either be central to the site or downwind of turbine positions, and its height should be equal to hub height of the proposed turbines, in this case, between 105m to 110m. The final position of the metereological mast was selected to avoid a surface water buffer. Potential effects in relation to landscape character of visual amenity for the permanent meterological mast were amongst the considerations when choosing the selected location.

4.4.7.5 Optimising the wind farm site layout

Following the evolution of design as described in the sections above, **Table 4.6**. summarises the changes made to turbine positions and the reasons for each.

For ease of reference, this is illustrated in

Figure 4.3 to Figure 4.9 showing the previous and revised design of the wind farm site.

Table 4.6: Layout optimisation

Section	Description of change	Reason for change
T2	T2 – shifted 48m North.	T2 was shifted to maintain the 720m residential amenity buffer.
T2, T4, T6, T9	T2 – shifted 11m north. T4 – shifted 19.7m north.	During the design process (where the EIAR team was also involved) the location of the turbines were

Section	Description of change	Reason for change
	T6 – shifted 5m north-west. T9 – shifted 11m west.	shifted accordingly to maintain the 720m residential amenity buffer, while taking into consideration environmental constraints.
T4	T4 – shifted 136m north-west.	T4 was shifted to avoid a 25m unmapped drainage buffer, as specified by the project hydrologist.
Access Track to T9	This access track was modified.	The modification was required to avoid an archaeological feature, as specific by the project archaeologist. A 40m buffer was applied around the feature identified.
Western Development Area access track	This access track was modified.	The modification was required to avoid encroaching into third party lands.
Meteorological mast	The meteorological mast was shifted.	The meteorological mast was shifted to avoid a 50m surface water buffer, as specified by the project hydrologist. The shift was also required to maintain appropriate separation distance of 375m from the turbines.
T4 hardstand only	The hardstand was reoriented.	The hardstand was reoriented in order to reduce encroaching into a 50m surface water buffer and 15m unmapped drainage buffer, as specified by the project hydrologist.

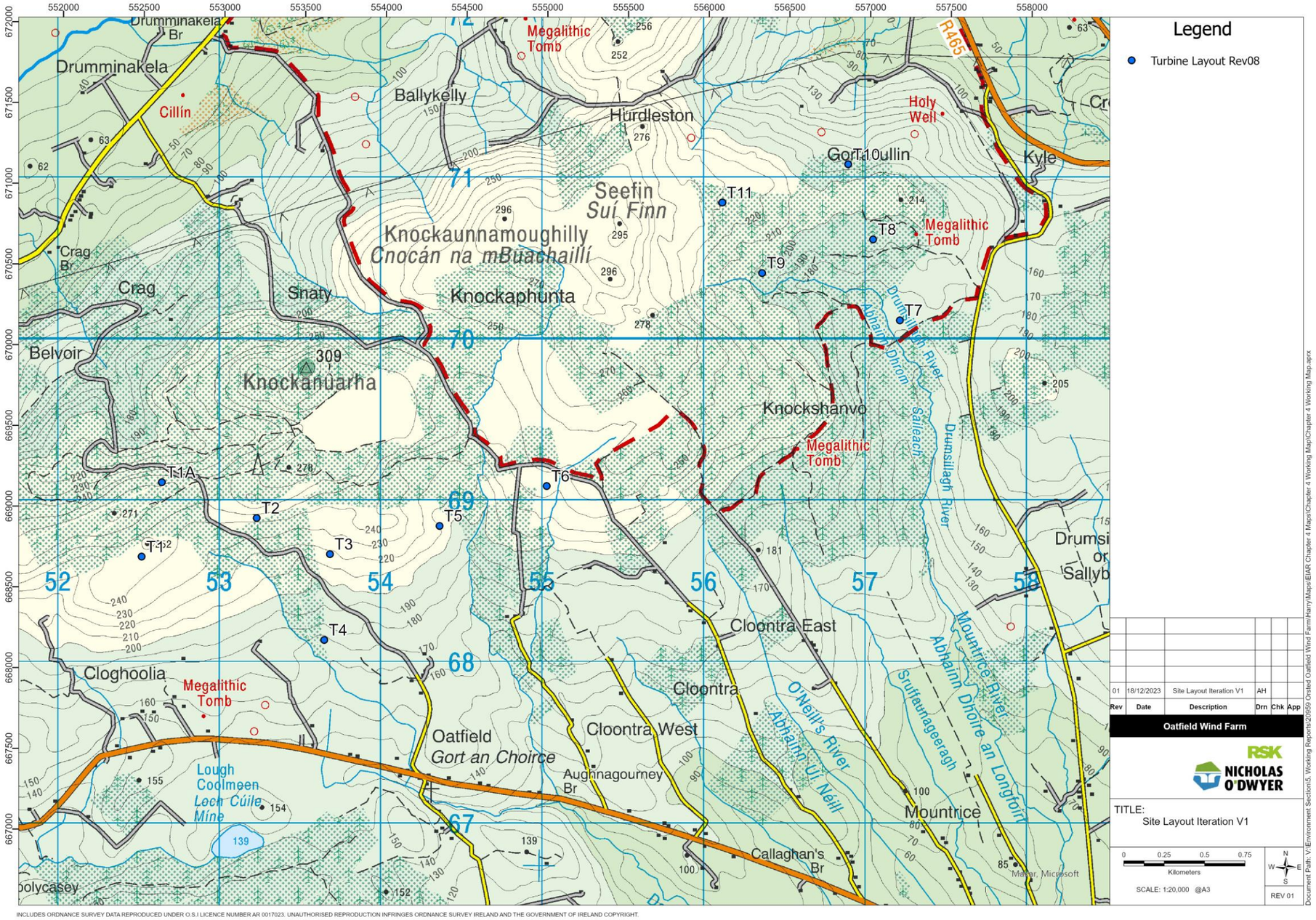


Figure 4.3 Site Layout Iteration V1

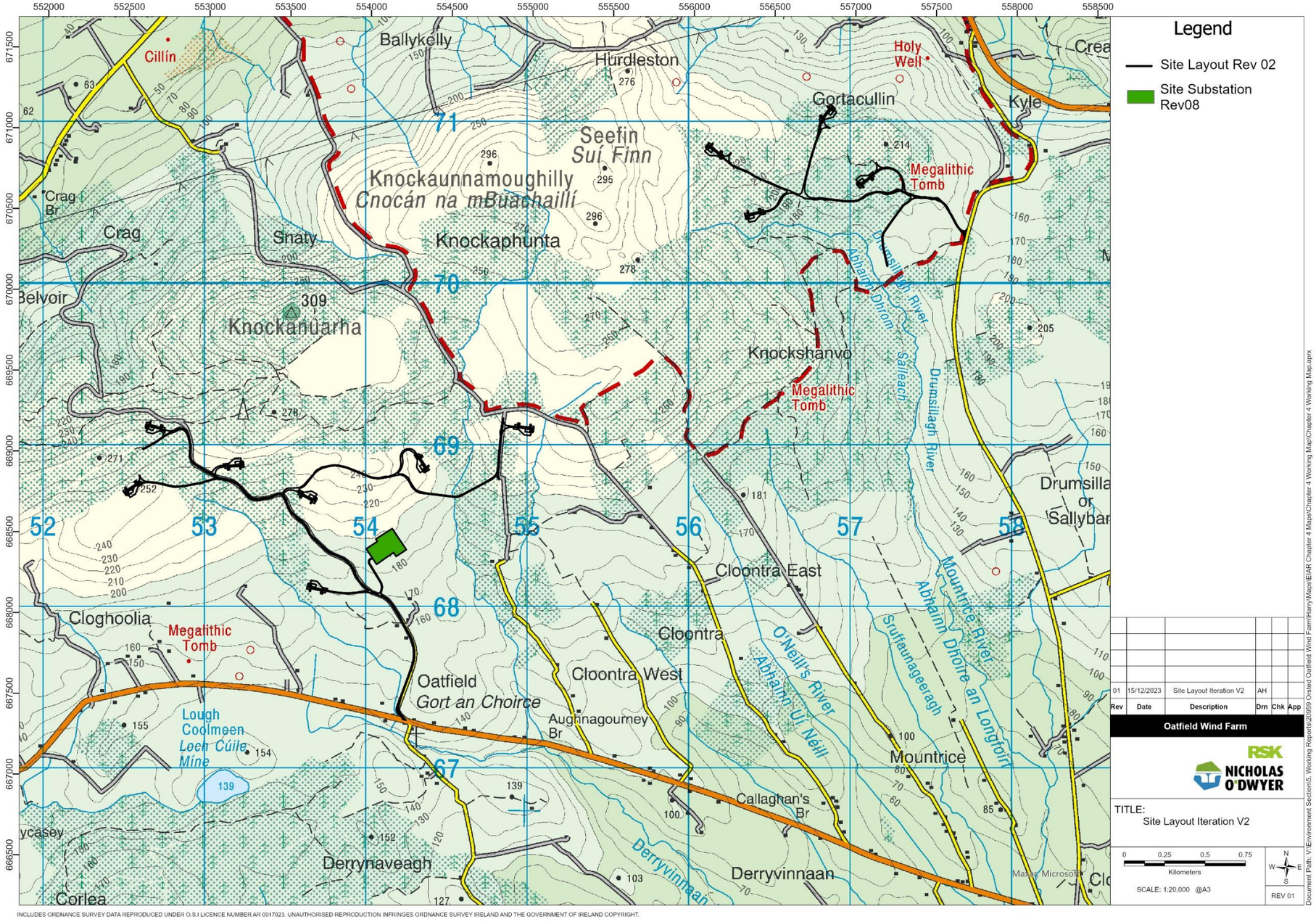


Figure 4.4 Site Layout Iteration V2

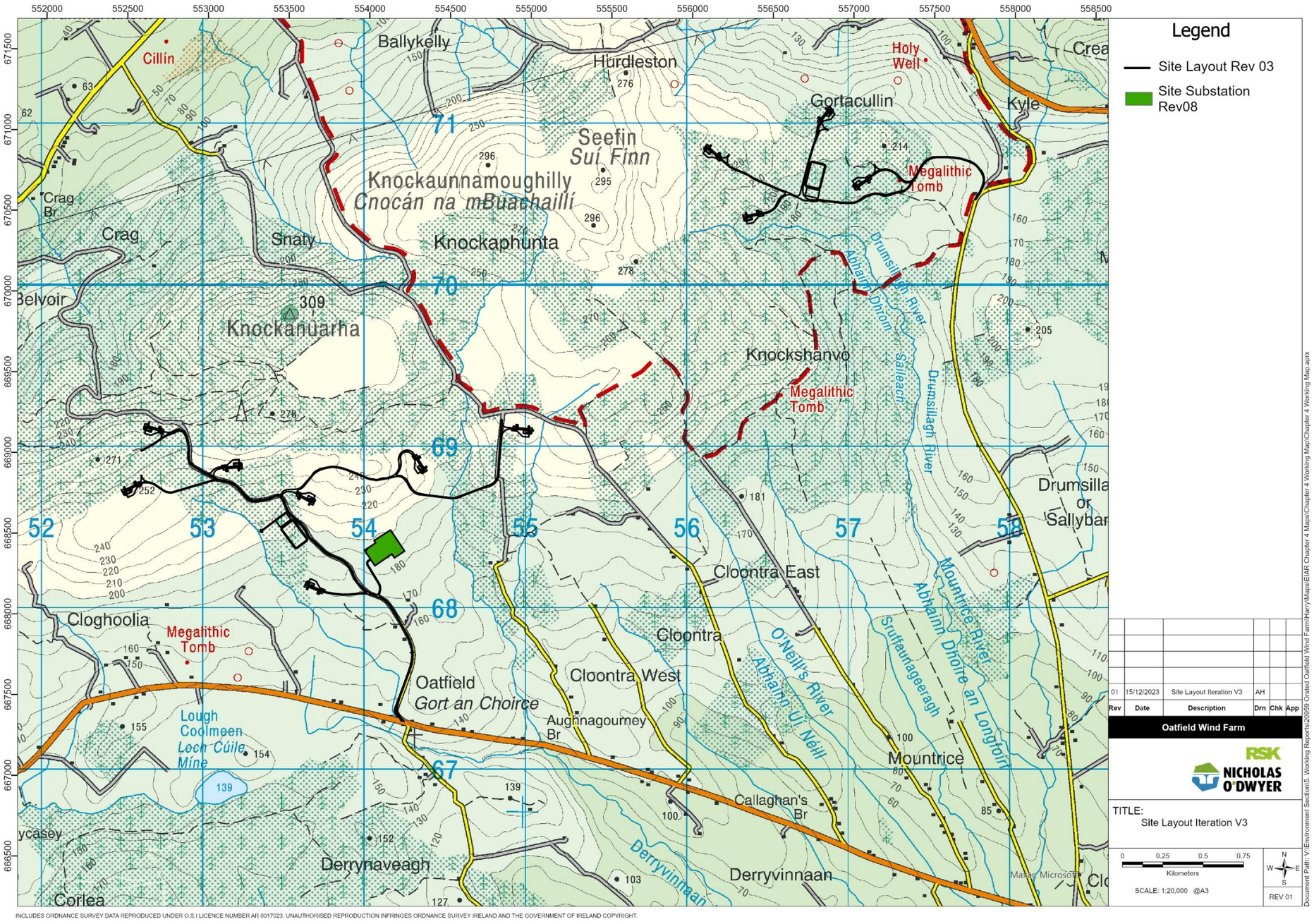
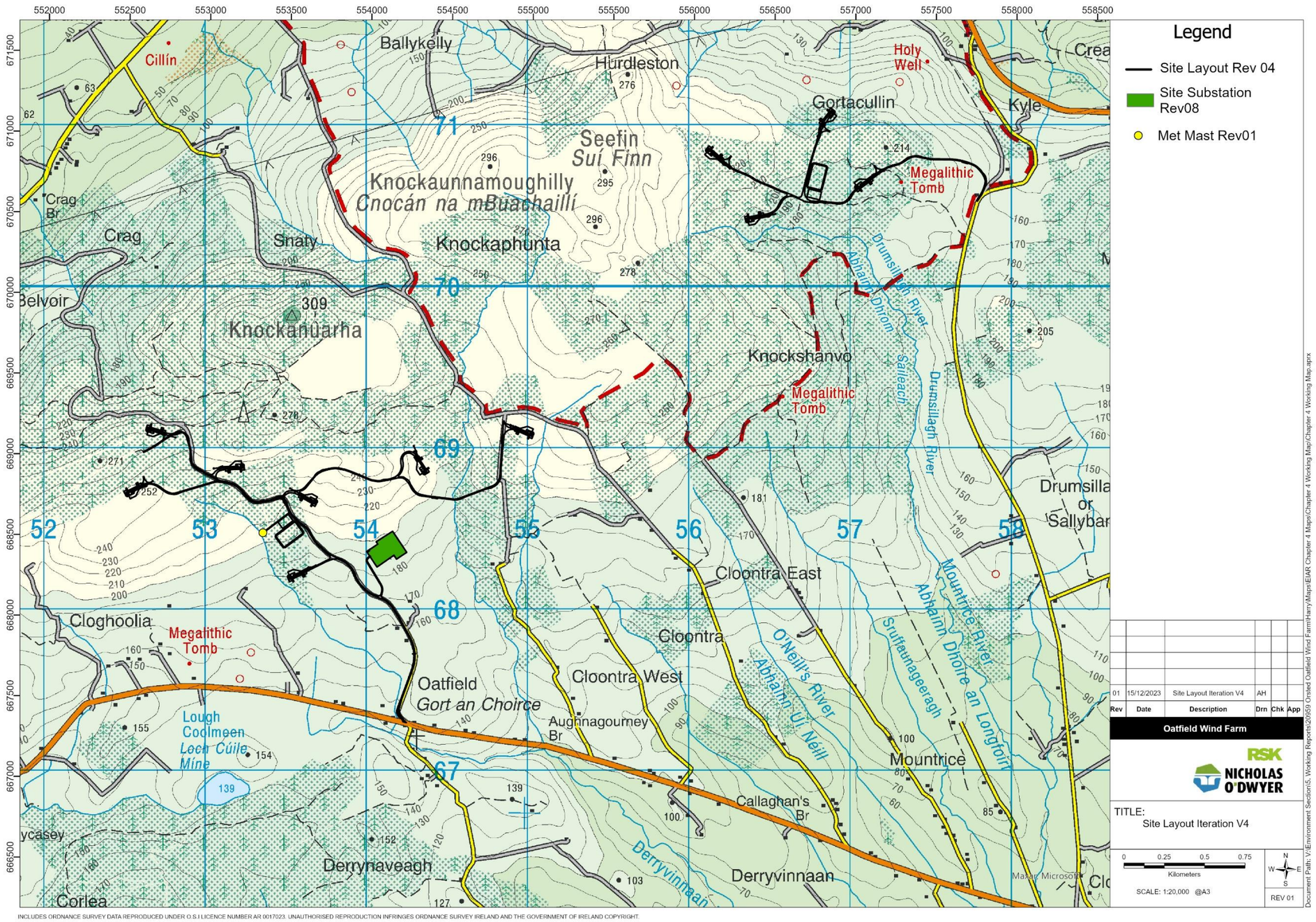


Figure 4.5 Site Layout Iteration V3



Rev	Date	Description	Drn	Chk	App
01	15/12/2023	Site Layout Iteration V4	AH		

Figure 4.6 Site Layout Iteration V4

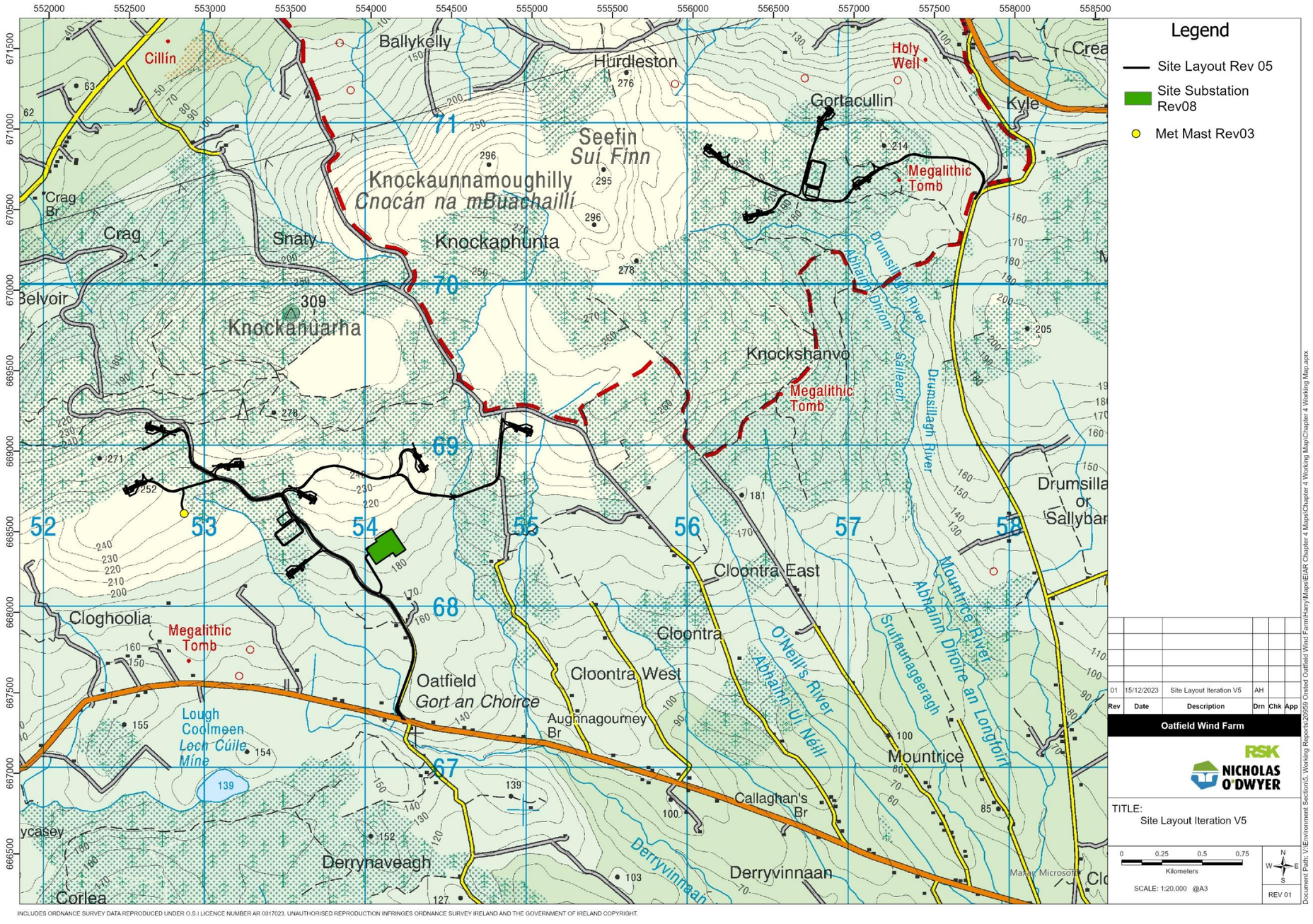


Figure 4.7 Site Layout Iteration V5

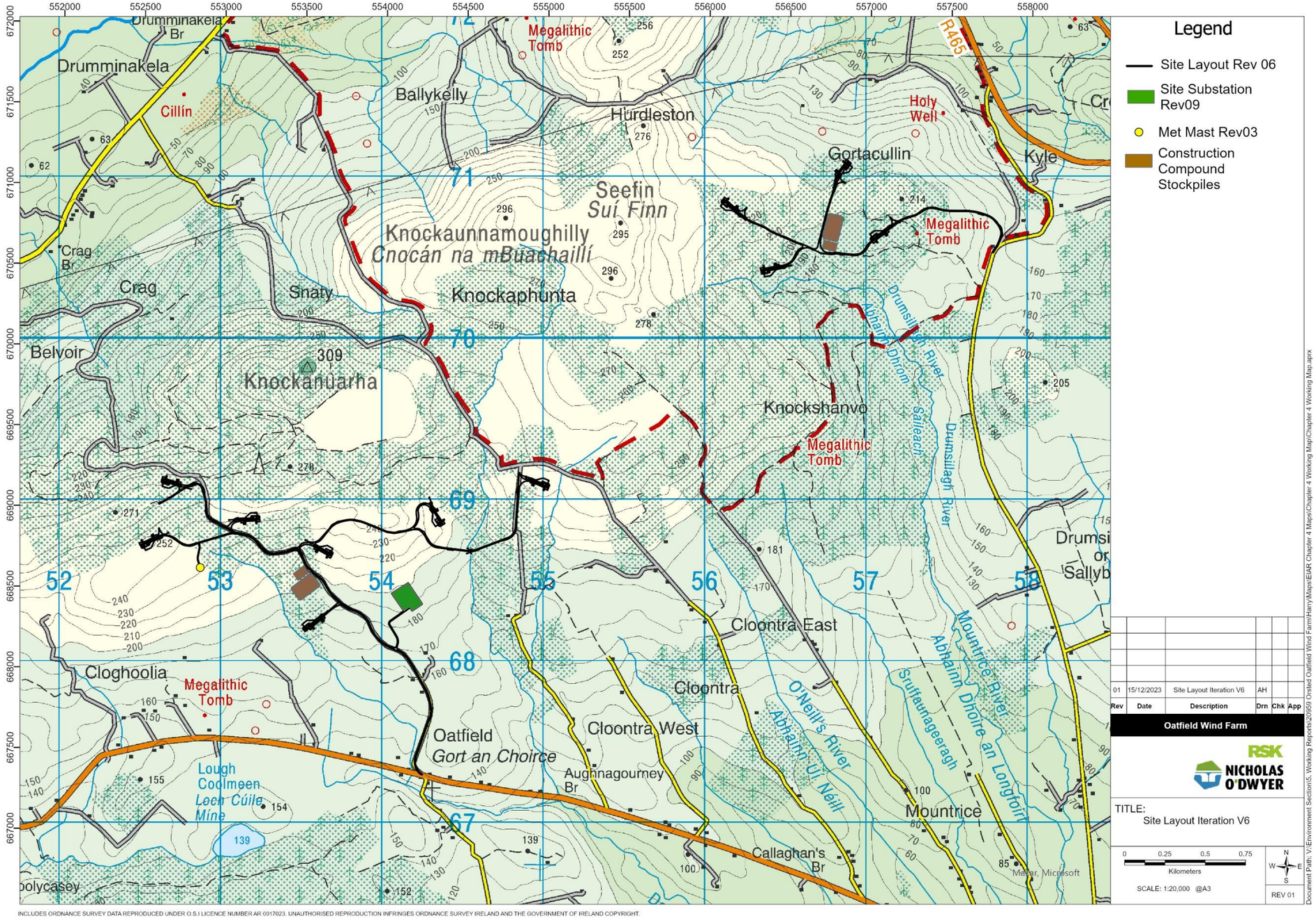


Figure 4.8 Site Layout Iteration V6

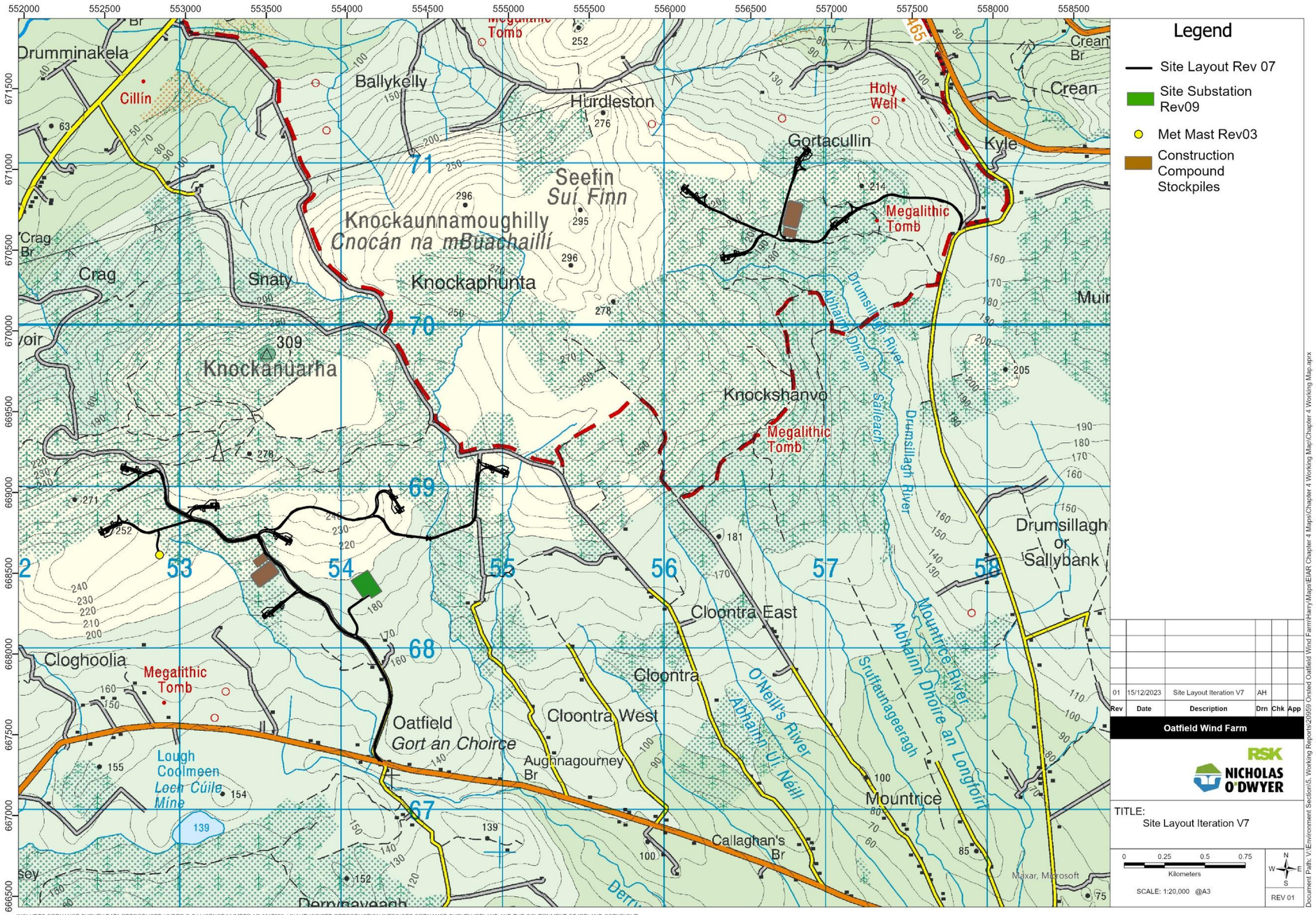


Figure 4.9 Site Layout Iteration V7

4.4.8 Alternative grid connection options and routes

4.4.8.1 Connection to national grid

At an early stage of the design/development process, consideration was given to connecting the Proposed Development to Ardnacrusha 110kV substation, located ca. 9km south of the Proposed Development. It was noted, however, based on publicly available information, that the remaining connection bay available at the Ardnacrusha substation could potentially be unavailable by the time the application for planning permission was lodged for the Proposed Development. It was noted that other similar projects in the area, which were further along in the planning process at the time of evaluation (based on publicly available information), were proposing a connection to the Ardnacrusha substation.

Following this conclusion, Orsted proposed two additional connection methods for evaluation in preliminary design:

1. A connection to the Drumline 110kV substation located ca. 13km south-west of the Proposed Development, or
2. A connection to the existing overhead 110kV line via a loop in connection to the existing overhead lines located at Ballycar, located ca. 3.3km South of the Proposed Development.

Both the above options will be undergrounded and constructed primarily within the existing road corridor and through private lands (with landowner agreements in place).

The three proposed grid connection routes described above are illustrated in **Figure 4.10**.

Figure 4.10 Initial Grid Route Options

Based on a cost-benefit analysis of the Drumline connection option and a high-level engineering assessment, with input from specialist grid engineers, of the possible routes for connection, it was concluded that:

- Of the two routes proposed for connection (one of which passed through the town of Sixmilebridge), there were several pinch points and design issues noted.
- Due to the fact that the Drumline 110kV substation is located ca. 13km from the Proposed Development, and when considering the various pinch points, this option would entail:
    - Several nodes required for accommodation works to overcome pinch points and design issues;
    - Traffic disruptions associated with accommodation works; and
    - Due to the above, this option would not be cost effective.

Based on a cost-benefit analysis of the connection via a loop in connection to the existing overhead lines located at Ballycar and a high-level engineering assessment, with input from specialist grid engineers, of the possible route for connection, it was concluded that:

- Of the available route proposed for connection, there were fewer pinch points and design issues noted than the Drumline option; and
- Due to the fact that the location proposed for the overhead line via a loop in masts is located ca. 3.3km from the Proposed Development, and when considering the various pinch points and comparing these to that of the Drumline connection option, this option would entail:
    - Fewer nodes required for accommodation works to overcome pinch points and design issues;
    - Minimal disruptions to traffic associated with accommodation works, and,
    - Due to the above, this option would be most cost effective.

Following the conclusions above, Orsted proposes to connect the Proposed Development to existing overhead 110kV line via a loop-in connection to the existing overhead lines located at Ballycar. It should be noted that there are two existing overhead line connection tie in options at this location (for which Orsted is applying for permission for both).

The design of the grid connection and connection to the national grid via the loop-in connection to the existing 110kV overhead line will comply with ESBN / EirGrid specifications and technical and operational requirements.

EIAR Chapter 5: Description of the Proposed Development provides details of the grid connection option pinch points and proposed solutions for each.

4.4.8.2 Connecting the Western Development area to the Eastern Development Area

As the Proposed Development consists of two distinct Proposed Development Areas (due to third party lands), an Independent Power Producer (IPP) connection is required to connect the turbines located on the Eastern Proposed Development Area (Eastern PDA) to the 110 kV on site substation located in the Western Proposed Development

Area (Western PDA). The IPP cables will be installed within the body of the local public road network.

EIAR Chapter 5: Description of the Proposed Development provides details of the IPP pinch points and proposed solutions for each.

4.4.9 Alternative turbine delivery routes

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

The proposed temporary accommodating works along the turbine delivery route to facilitate the delivery of large components to the site is considered as part of the assessment in this EIAR. The alternatives considered for the delivery of turbine components from the port of entry are described below.

4.4.9.1 Port of Entry

The port of entry selected for import of wind turbines for the Proposed Development is Foynes Port. With their roll-on roll-off facilities, this port is established as a point of entry to Ireland, serving wind farms across southern counties. Various route options from this port have been considered, given that it is the closest commercial port to the site of the Proposed Development.

4.4.9.2 Turbine Delivery Route

An initial assessment of four proposed options was carried out by a transportation engineer to identify the optimum delivery route to site.

- TDR Option 1a route to site originates at Foynes port, passes through the Limerick tunnel, through Ballinphunta, before continuing to the Proposed Development site.
- TDR Option 2 route to site originates at Foynes port, continues along the N18, then along the M7, before passing through Grangewood, Daly Cross, O'Brien's Bridge, and Cloonlara, before continuing to the Proposed Development site.
- TDR Option 3 route to site originates at Foynes port, continues along the N18, then along the M7, before passing through Grangewood, Coolderry, Cloonlara and Ballina, before continuing to the Proposed Development site.
- TDR Option 3a route to site originates at Foynes port, continues along the N18, then along the M7, before passing through Grangewood, Coolderry, Cloonlara and the new Killaloe bypass, which is currently being constructed, before continuing to the Proposed Development site.

Of the four routes examined above in **EIAR Chapter 16 Traffic and Transport,** TDR Option 3a was selected as the preferred route, which has been put forward for assessment and planning permission in this EIAR.

Appendix 16.5 in EIAR Chapter 16 Traffic and Transport provides a summary of the TDR pinch points and proposed accommodation solutions. Any accommodation works will be carried out in advance of the turbine deliveries, following further analysis by the appointed haulage contractor, and consultation and agreement with the local authority.

4.4.10 Alternatives for site access roads

4.4.10.1 Access to the Eastern DA

A new permanent road is proposed for access into the Eastern DA. This access road will be the only road for access into the Eastern DA and will therefore also be used during both the construction phase and the operational phase. Due to uninvolved third party landholdings surrounding the Proposed Development, other access road options to the Eastern DA were limited. The first access route considered (Option A), was primarily along an existing trackway but would also require a section of new road. The existing trackway would also require upgrading. Option A was, however, ruled out due to third party land constraints and due to an identified archaeological feature in the right of way of the proposed access option (see **Figure 4.11**).

A second option was then proposed (Option B). This option complied with third party land requirements and was selected as the option for planning permission. This option requires the construction of a new access road. The final proposed access (Option B) arrangement into the Eastern DA is illustrated in **Figure 4.12.**

Figure 4.11 Access to the Eastern DA (option A – ruled out)

Figure 4.12: Proposed access arrangement for the Eastern DA (option B – final iteration)

4.4.10.2 Access to the Western DA

An upgrade to an existing public road off the R471 is proposed for access into the Western DA. Due to third party lands surrounding the Proposed Development, other access road options to the Western DA are limited. The only feasible access route considered due to access (Option C), is along an existing trackway. This trackway would require upgrading (from 2m width to 5m width) and is illustrated in **Figure 4.13.**

Figure 4.13 Proposed access arrangement for the Western DA

4.4.10.3 *The selected options for site access to the Eastern DA and Western DA*

The primary concerns with the selection options for site access, as discussed in the sections above, were to ensure the safety of road users, protect rural character, protect natural and cultural features of importance, and conserve to biodiversity.

The Applicant has provided a Construction Traffic Management Plan (CTMP) with the planning application (**EIAR Chapter 5: Description of the Proposed Development**, **Appendix 5.2**). The purpose of the CTMP is to ensure that the residual effects on the public road network during the construction phase are minimised and that transport related activities are carried out as safely as possible and with minimum disruption to other road users. The CTMP identifies appropriate and safe methods of access for construction traffic to the site for the transportation of construction materials, turbine components, equipment, and personnel along the public road network to facilitate the construction phase.