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Acronyms and Abbreviations

SLR	SLR Consulting Limited
COSHH	Control of Substances Hazardous to Health
EIAR	Environmental Impact Assessment Report
EIA	Environmental Impact Assessment
EU	European Union
IGI	The Institute of Geologists of Ireland
EPA	Environmental Protection Agency
ISIS	Irish Soil Information System
GI	Ground Investigation
GSI	Geological Survey of Ireland
IFS	Irish Forestry Soils
IGH	Irish Geological Heritage
NHA	Natural Heritage Area
OSI	Ordnance Survey Ireland
ERT	Electrical Resistivity Tomography
TDR	Turbine Delivery Route
Main Wind Farm Development Site	The site where the Proposed Development is located. As defined in Chapter 1 of this EIAR.
Proposed Project	Refers to the Proposed Development including the GCR.
Turbine Delivery Route (TDR)	Refers to the proposed turbine delivery route as defined in Chapter 1 of this EIAR.
Grid Connection Route (GCR)	Refers to the proposed Grid Connection Route as defined in Chapter 1 of this EIAR.

6.0 LAND, SOILS AND GEOLOGY

INTRODUCTION

Background

6.1 This chapter of the EIAR provides a description of the existing land, soils and geological setting at the regional and local scale. It presents an assessment of the likely significant effects of the Proposed Project on the land, soils and geological features of the area and also other geological aspects of the Proposed Project during the construction, operation and decommissioning phases. The Proposed Project as assessed in this EIAR comprises the Proposed Development together with the GCR as described in **Chapter 2** of this EIAR. The GCR will not form part of the planning application but is assessed in this EIAR. All elements of the Proposed Project are described in **Chapter 2.**

Statement of Authority

6.2 This chapter of the EIAR was prepared by the following SLR staff:

- Paul Gordon (EurGeol PGeo MIMMM) is a Technical Director with SLR and has a BSc in Geology and an MSc in Environmental Management. He has over 20 years' professional experience, primarily in the Irish natural resources industry, including the writing of land, soils and geology chapters for EIARs in Ireland.
- Hannah McGillycuddy (MIT) has a BSc in Geology and an MSc in Exploration Field Geology and has 8 years' professional experience in writing land, soils and geology chapters for EIARs in Ireland.
- Ruairidh Aitken (Meng Civil and Structural Engineering) is an Associate Civil Engineer at SLR Consulting, based in Edinburgh with six years of experience. He has worked on a range of engineering projects, including wind farm design, track design, renewable energy developments, and earthworks.
- Alan Huntridge (BSc (Hons), MSc) is a Principal in SLR's Land Quality & Remediation team, with 14 years of experience in the sector. Alan was responsible for the Peat Landslide Hazard Risk Assessment, appended to this chapter.
- Ruari Watson (BSc (Hons) Civil Engineering) is an Associate Geotechnical Engineer in SLR's Land Quality & Remediation team, based in Scotland. Ruari has over 12 years' experience within the geotechnical engineering sector. This experience has been gained while working for both specialist contractors and consultants, managing ground investigations and undertaking geotechnical assessments.
- Ronan Killeen is a Chartered Engineer with over thirty years professional experience in the geotechnical investigation sector including project management and reporting. He is a Director of Irish Drilling since 2003.
- Damien O' Reilly is an Associate Engineer with over twenty-five years professional experience in the geotechnical investigation sector including project management and PSCS. He is an Associate Director of Irish Drilling since 2025.

6.3 A Site walkover was carried out by SLR Consulting in February 2023. Peat probing and sampling was undertaken in August 2023, September 2024 and February 2025. The peat probing was undertaken by Ruairidh Aitken and Saul Sanchez, both of whom are SLR employees, with survey design by Paul Gordon. A GI was carried out by Irish Drilling Ltd (IDL) with supervision provided by Ruairidh Aitken.

Scope and Consultation

6.4 This EIAR is based on studies of the Main Wind Farm Development Site and surrounding lands (refer to **Sections 6.19 to 6.22**) using the following:

- Information from published online geological data sources (refer to Reference Section below).
- A walkover Site visit (February 2023).
- Peat probing surveys carried out by SLR in August 2023, September 2024 and February 2025.
- GI carried out over two phases by Irish Drilling in September to November 2024.

6.5 This chapter of the EIAR has also considered the submission made by the Geological Survey of Ireland (GSI) in May 2024 during the scoping process. The Scoping Report is provided as **Technical Appendix 3-3** in **Chapter 3**. The Scoping Report provides a list of online geological data sources which the GSI recommends using where considered relevant to the assessment. These data sources have informed the baseline environment discussed in **Sections 6.46 to 6.51, 6.52 to 6.55, 6.56 to 6.57 and 6.68 to 6.71**. In addition, as discussed in **Section 6.55**, the GSI refer to two Geoheritage sites within the vicinity of the Main Wind Farm Development Site which have been considered in the impact assessment. The GSI scoping submission also refers to groundwater considerations which are separately considered in **Chapter 7**.

6.6 The EIAR has assessed all design permutations from the turbine dimensions set out in **Table 1-1** of this EIAR.

Legislation Guidance and Policy

EU Directives

6.7 The following EU Directives relate to Land, Soils and Geology at the Main Wind Farm Development Site in this EIAR and have been considered and complied with as relevant in the preparation of this EIAR chapter:

- Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries ('Management of Waste Directive' as amended); and Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage ('Environmental Liability Directive' as amended).
- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment ('the EIA Directive').
- The EIA Directive sets out the information required in an EIAR.
- The Management of Waste Directive and the Environmental Liability Directive regulate the activities at the Proposed Development Site.

Irish Legislation

6.8 The following legislation relates to Land, Soils and Geology at the Main Wind Farm Development Site in this EIAR and have been considered and complied with as relevant in the preparation of this EIAR chapter:

- The Planning and Development Act 2000 as amended.
- S.I. No. 272/2009 – European Communities Environmental Objectives (Surface Waters) Regulations 2009, and subsequent amendments.
- S.I. No. 9/2010 – European Communities Environmental Objectives (Groundwater) Regulations) 2010, and subsequent amendments.
- S.I. No. 473 of 2011, European Union (Environmental Impact Assessment and Habitats) Regulations 2011.
- S.I. No. 584 of 2011, European Union (Environmental Impact Assessment and Habitats) (No.2) Regulations 2011.
- S.I. No. 296 of 2018, European Communities (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

Guidelines

6.9 This chapter of the EIAR has been prepared in accordance with the following guidelines:

- Good Practice Guide for Handling Soils. Sheets 1 & 2. Ministry of Agriculture, Fisheries and Food (UK) (2000).
- Wind Energy Development Guidelines; Department of Housing, Local Government and Heritage (2006).
- Environmental Impact Assessment of National Road Schemes - A Practical Guide; National Roads Authority (2008).
- Geological Survey of Ireland, Irish Concrete Federation Geological Heritage Guidelines for the Extractive Industry (2008).
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes; National Roads Authority (2009).
- Best Practice Guidelines for the Irish Wind Energy; Irish Wind Energy Association (2012).
- Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements; Institute of Geologists of Ireland (2013).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment; Department of Housing, Planning and Local Government (2018).
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Environmental Protection Agency (2022).

6.10 In addition, this assessment has had regard to the following draft guidance:

- Draft Revised Wind Energy Development Guidelines December 2019; Department of Housing, Planning and Local Government (2019).

APPROACH AND METHODOLOGY

6.11 This assessment involved a review of published literature and information, the findings from a walkover survey of the Main Wind Farm Development Site and the surrounding geological

context, GI carried out across the Main Wind Farm Development Site and peat probing surveys carried out across the Main Wind Farm Development Site.

6.12 This baseline study describes the receiving environment at, and in the immediate vicinity of the Main Wind Farm Development Site using the available baseline information gathered, specifically:

- **Context of the receiving environment** - location/ magnitude/ spatial extent and trends of the environmental factors.
- **Character of the receiving environment** - distinguishing aspects of the environment being considered here.
- **Significance of the receiving environment** - the quality, value or designation is assigned to the existing environment.
- **Sensitivity of the receiving environment** - how sensitive is this aspect of the environment to change.

6.13 The baseline study is a qualitative assessment of the available information based on professional experience and interpretation of the available data.

6.14 The GI consisted of 32 no. machine-excavated trial pits and 16 no. rotary boreholes. Laboratory testing was carried out on a selection of samples taken as part of the GI, see **Technical Appendix 6-1** for details of results.

6.15 The GI was conducted across the Main Wind Farm Development Site (see **Technical Appendix 6-1**). The GI was carried out in accordance with the IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Ground Investigations with precedence given to IS EN 1997-2 where applicable.

6.16 A Peat Landslide Hazard & Risk Assessment (PLHRA) was undertaken by SLR as part of the baseline assessment of the Main Wind Farm Development Site (**Technical Appendix 6-2**).

6.17 The purpose of the PLHRA is to consider the potential risk of peat slides occurring at the Main Wind Farm Development Site such that suitable controls and appropriate methodologies can be employed during construction and commissioning of the wind farm to mitigate against these risks. The PLHRA incorporates data gathered during the Main Wind Farm Development Site walkover and Phase 1 and 2 peat surveys carried out across the Main Wind Farm Development Site.

6.18 The turbine hardstanding and foundation requirements may vary, with up to 22 m reinforced concrete caps for piled foundations or up to 27 m for gravity foundation diameter. The dimensions of the main crane hardstandings can be utilised to a maximum of 82 m by 35 m. The dimensions of the designated blade laydown areas are 90 m x 25 m. There are no material differences in the footprint / area of ground disturbance resulting from operational infrastructure and therefore no difference in the likely significant effects predicted.

Geographical and Temporal Study Area

6.19 For the purposes of this assessment, the geographical study area includes the Main Wind Farm Development Site and a 2 km offset from it when considering land, soils and geology aspects (**Figure 6-1**). This is in line with the recommended study area in the Institute of Geologists of Ireland (IGI's) 'Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapter of Environmental Impact Statements' (2013).

6.20 The Grid Connection Route (GCR) is a 110kV underground cable to Bellacorick Substation which will be located entirely within the public road. Although the GCR is assessed in this EIAR as part of the Proposed Project, it does not form part of the Proposed Development for

which planning permission is sought. As the GCR will follow an existing road and in the context of the assessment in this chapter, the study area for the GCR is confined to the GCR route only.

6.21 The TDR will follow an existing road network with no likely direct interaction with land, soils or geology, with the exception of 3 no. over-run areas. In the context of the assessment in this chapter, the study area for the TDR follows the TDR route only (including over-run areas).

6.22 The temporal scope of the assessment covers the construction, operation and decommissioning phases for the Proposed Project.

Sources of Information

6.23 The following sources of information were consulted in the preparation of the receiving environment baseline study for Land, Soils and Geology:

- Geological Survey of Ireland (GSI) (www.gsi.ie). Accessed 26th February 2026.
- Geoscience Regulation Office Information Hub (https://experience.arcgis.com/experience/a186544ca13f491cb25cb4721f19c948/page/Home). Accessed 26th February 2026.
- Teagasc subsoil mapping for Irish Forestry Soils Project (www.epa.ie). Accessed 26th February 2026.
- Irish Soils Information System (www.teagasc.ie/soils). Accessed 26th February 2026.
- Environmental Protection Agency (https://gis.epa.ie/EPAMaps/). Accessed 26th February 2026.
- Irish Geological Heritage Programme (https://www.gsi.ie/en-ie/programmes-and-projects/geoheritage/Pages/default.aspx/1000). Accessed 26th February 2026.
- Ordnance Survey Ireland, Cassini 6" map (1830s - 1930s), 6" historical map (1837 – 1842), 25" historical map (1888 - 1913) and aerial imagery (1995 – 2018) (https://www.geohive.ie/). Accessed 26th February 2026.
- Google Earth Historical Imagery (various dates between October 2010 – April 2025 using Google Earth Pro https://www.google.com/earth/versions/). Accessed 26th February 2026 (desktop version 7.3).

BASELINE CONDITIONS

Land

6.24 From review of Ordnance Survey Ireland (OSI) mapping, the topography across the Main Wind Farm Development Site is generally flat and low lying ranging from approximately 3 m AOD at the southern end to approximately 33 m AOD at the northeastern portion.

6.25 A review of the OSi 6" historical maps and the 25" historical map shows the Main Wind Farm Development Site was mapped as bog/marsh, with no farmsteads or field boundaries recorded during these periods (1839s-1942 and 1888 – 1913) (OSI, 2025).

6.26 A review of Google Earth imagery (May 2004 – April 2025) and OSI aerial imagery (1995 – 2018) indicates that at some stage before 1995 peat extraction was carried out on the northern and central part of the Main Wind Farm Development Site. Imagery from 1985 is too low resolution to indicate the land use at that time, however it does appear to be different from that on the land surrounding the Main Wind Farm Development Site. The current forestry

in the southern part of the Main Wind Farm Development Site was planted before 2004, while the forestry in the northwest was planted between September 2009 and August 2010.

6.27 The study area outside the Main Wind Farm Development Site consists of a mixture of bog, farmland and scattered dwellings. There is a small concentration of houses centred around a crossroads at Gweesalia, c. 500 m south of the Main Wind Farm Development Site boundary.

6.28 The proposed grid connection route (GCR) between the Main Wind Farm Development Site and the existing substation at Bellacorick east of Bangor Erris, predominantly comprises an existing road network with grass margins and/or hedgerows and treelines adjacent to the road margins. Corine Landcover 2018 classifies that there are three broad (level 1) land uses on the Main Wind Farm Development Site and within the study area (see **Figure 4-3**). These are forest and semi-natural areas, agricultural lands and wetlands.

6.29 The TDR is in current use as part of the existing regional, national and road network between the Main Wind Farm Development Site and Killybegs Port. There are three over-run areas along the TDR as follows:

- No. 1 in the townland of Tristia onto the L1206.
- No. 2 in the townland of Moneynierin at the junction of the N59 and the R312.
- No. 3 in the townland of Bangor off the R313.

6.30 Over-run No. 1 comprises of lands which are currently classed as wetlands according to Corine Landcover 2018. Google Earth imagery indicates this area is a peat bog which has been unmodified since at least 2006 while Ordnance Survey Ireland 6" historical maps and the 25" historical map indicates it was open marsh or peatland.

6.31 Over-run No. 2 comprises of lands which are currently classed as wetlands according to Corine Landcover 2018. However, a review of Google Earth imagery shows (September 2024) that an access road has been previously established at this location. Ordnance imagery indicates that the access track pre-dates 1995 at least.

6.32 Over-run No. 3 also comprises of lands which are currently classed as wetlands according to Corine Landcover 2018. A review of Google Earth imagery shows (April 2025) that at least part of this land has been modified and an access track is being constructed within part of the area.

Soils Baseline

6.33 Soil is defined as the top layer of the earth's crust and is formed by mineral particles, organic matter, water, air and living organisms. Soil is an extremely complex and variable living medium and its characteristics are a function of parent subsoil or bedrock materials, climate, relief and the actions of living organisms over time.

6.34 Soil formation is an extremely slow process and can take thousands of years to evolve; soil can be considered essentially as a non-renewable resource.

6.35 As the interface between the earth, the air and the water, soil performs many vital functions it supports food and other biomass production (forestry, biofuels etc.) by providing anchorage for vegetation and storing water and nutrients long enough for plants to absorb them. Soil also stores, filters and transforms other substances, including carbon and nitrogen, and has a role supporting habitats serving as a platform for human activity.

National Soils

6.36 The ISIS project was undertaken by the Environmental Protection Agency (EPA) and Teagasc and has gathered together existing information and data from soil survey work in

Ireland, which has been augmented with new field data, leading to the production of a new national soil map at a scale of 1:250,000 (www.teagasc.ie/soils).

6.37 The ISIS project has identified a number of Soil Associations across Ireland, which are each comprised of a range of soil types (or 'Series'), each of them different in properties, with different environmental and agronomic responses. For each soil type, the properties have been recorded in a database maintained by Teagasc.

6.38 The soil association classified beneath the Main Wind Farm Development Site is the peat series (1xxa) and the specific peat type is lowland bog (see **Figure 6-1**).

6.39 Two other soil associations are found within 2 km of the Main Wind Farm Development Site: Screen (900i) and Glenary (0843f). Screen is described as sandy, stoneless drift. Glenary is primarily composed of blanket peat and podzols. It is a loamy drift with siliceous stones and poor drainage.

6.40 Soils immediately beneath the TDR and GCR where they underlie the road network are comprised of engineered fill/Made Ground (**Figure 6-1a**). Soils beneath the Bellacorick substation comprise River alluvium, which is surrounded by peat (see **Figure 6-1c**). Soils beneath over-run areas 1, 2 and 3 are mapped as comprising peat, however in the case of at least over-run area 2, made ground is also present where the historical access road is located (see **Figures 6-1a-d**).

Subsoils

6.41 The Quaternary (Subsoil) deposits were deposited during the last 2 million years, and essentially comprise the unconsolidated materials overlying bedrock. The two predominant types of quaternary subsoils in Ireland are glacial till, deposited at the base of ice sheets, and sand & gravel deposits, associated with the melting of the ice sheets and are generally termed 'glaciofluvial outwash sands and gravels.' Other extensive Quaternary subsoils in Ireland include peat, river alluvium and coastal process deposits. Most Quaternary subsoils in Ireland were deposited after the maximum of the last glaciation, the Midlandian, which occurred approximately 17,000 years ago.

6.42 The subsoils across Ireland have been mapped on a national basis by Teagasc as part of the EPA Soil and Subsoil Mapping Project for the Irish Forestry Soils (IFS) project. The subsoil mapping was undertaken at a national level using existing Quaternary Geology maps, publications, remote sensing, field mapping and sampling.

6.43 The subsoils within the study area have been mapped under the IFS project. The Main Wind Farm Development Site and wider study area is underlain predominately by Blanket Peat, with pockets of Metamorphic Till in the northwest, east, south and southwest (see **Figure 6-2**). There are also lesser occurrences of Estuarine Sediments, Marine Sands and Gravels and Bedrock (at or close to surface).

6.44 Aerial imagery and a Site Walkover both showed indications of peat extraction having taken place in the past, however, no clear records to show this are available (See Section "*Site Investigations and Field Assessments*", below).

6.45 Subsoils immediately beneath the TDR and proposed GCR where they underlie the road network are comprised of engineered fill/Made Ground (see **Figure 6-2a**). Subsoils beneath the substation at Bellacorick also comprise Made Ground. Subsoils beneath Over-run Areas 1, 2 and 3 comprise of blanket peat (see **Figures 6-2b-d**).

Bedrock Geology

6.46 The Main Wind Farm Development Site is entirely underlain by Precambrian foliated orthogneisses of the Annagh Division (**Figure 6-3**). The Annagh Division, also known as the

Annagh Gneiss Complex, contains the oldest known bedrock in Ireland, with an estimated age of c. 1.3 billion years.

6.47 The Annagh Division is faulted against psammites of the Precambrian Benmore Formation, to the south of the Main Wind Farm Development Site and within the study area.

6.48 The Bellacorick substation is underlain by the Downpatrick Formation, a sequence of cross-bedded sandstones and siltstones, of Carboniferous age (See **Figure 6-3c**).

6.49 Given the length of the TDR (including over-run areas) and GCR (see **Figures 6-3a-d**), they traverse a wide range of bedrock units including sedimentary limestones mudstones and sandstones, metamorphic gneisses and schists. At the TDR over-run area 1 bedrock comprises the Doon-na-Dell Schist Formation, Ballybeg Park Limestone Formation and the Inver Schist Formation. At TDR over-run area 2 it comprises the Downpatrick Formation and the Annagh Division at over-run area 3.

6.50 There is no bedrock outcrop recorded by GSI at the Main Wind Farm Development Site. There are some clusters of outcrop to the east and northeast of the Main Wind Farm Development Site. Both clusters are on hillsides, at elevations of 40-120 m (See **Figure 6-3**).

6.51 There is a significant fault between the Annagh Division to the north, and the Benmore Formation to the south approximately 1.5 km south of the Main Wind Farm Development Site (See **Figure 6-3**). The fault trends ENE-WSW and is interpreted to be downthrowing to the south. The Annagh Division is a folded anticline beneath the Main Wind Farm Development Site with the axis trending ESE-WNW. There are also regional SW-NE trending faults in the study area A review of public borehole data files, kept by the Department of Environment, Climate and Communications, indicates that there are no known boreholes at the Main Wind Farm Development Site or within the study area. Ground investigation comprising drilling carried out at the Main Wind Farm Development Site confirmed the presence of orthogneiss, as expected. Please see **Technical Appendix 6-1** for details.

Geological Heritage

6.52 There are two Geoheritage sites (which are both County Geological Sites (CGS)) within the study area as follows (see **Figure 6-4**).

6.53 Blacksod Bay is an audited site, and it is listed under Irish Geological Heritage Theme IGH3, Coastal Geomorphology. The Geoheritage site has also been recommended as a geological Natural Heritage Area (NHA). It is described as 'A large bay extending from Belmullet and the Mullet peninsula (north) to Achill Island (south), and bordered by a coastline of cliffs, promontories, inlets, shallow sandy bays and estuaries, beaches, sand dunes, and low-lying bogland and rocky shoreline.'

6.54 Doolough Gneiss is an audited site, and it is listed under Irish Geological Heritage Theme IGH5, Precambrian. It is described as a "low rocky shoreline on the headland occupying the northwest end of Doolough beach, situated on the northeast side of Blacksod Bay. Best rock exposures in the intertidal zone."

6.55 It should be noted here that the GSI referred in a scoping response (May 2024) that the Bellacorick geoheritage site (a CGS) is in the vicinity of the Proposed Project but outside of the geographical study area. Bellacorick is an audited site which is listed under Irish Geological Heritage Theme IGH14, Fluvial and Lacustrian Geomorphology. It is described as *"meandering river channels within an extensive area of Atlantic blanket bog".* Bellacorick audited site is c. 20 m south of the GCR and the Bellacorick substation site while the TDR passes over the audited site using the N59 (see **Figure 6-4a**).

Economic Geology

6.56 A review of the GSI's mineral localities (GSI, 2023) shows that there are three mineral localities within the study area and none within the Main Wind Farm Development Site. Two of the localities are recorded as containing feldspar, and one as containing sand and gravel. The GSI's aggregate potential mapping indicates that granular aggregate potential is unlisted for the majority of the study area, and where it occurs it is noted to be of very low potential (see **Figure 6-5**. Within the Main Wind Farm Development Site, the crushed rock potential is very low ,whereas along the TDR and GCR, the potential varies between very low to very high.

6.57 No current or historical pits have been noted.

Site Investigations

6.58 The GI (**Technical Appendix 6-1**) confirmed the presence of variable peat thicknesses overlying till deposits, with a maximum depth of 5.6 metres below ground level (mbgl) recorded at BH-13. Peat was not confirmed in BH01, BH05, BH06, BH09, BH12 and BHMM2 due to no recovery.

6.59 Till deposits were encountered underlying the peat consisting of generally granular material. Cohesive material described as silt was also encountered in thin layers throughout the superficial material. The top of till was encountered underlying the peat between 1 to 5.6 mbgl with the exception of BH01, BH06, BH09, BH12 and BHMM2 where the top of till was unconfirmed due to no recovery.

6.60 Bedrock was proven across the Main Wind Farm Development Site and consisted of the Annagh Division and was generally described as medium strong to very strong Orthogneiss. The bedrock was encountered underlying the superficial material between 3.55 to 13.9 mbgl. Bedrock was proven to a depth of 20.3 mbgl in BH-07. Weathered bedrock was also recorded in BH-01, BH-06, BH-07, BH-08 and BH-MM2. In BH-06 only weathered bedrock was encountered in BH-06 between 13.1 to the end of hole at 20.0 mbgl.

6.61 Groundwater was encountered at the Main Wind Farm Development Site with trial excavations between depths of 1.1 and 3.7 mbgl.

Field Assessments

6.62 The PLHRA identifies that the Main Wind Farm Development Site is located in a low-lying area, with a flat topography with no significant hill slope gradients.

6.63 The thickness of the peat was assessed using a graduated peat probe. A peat auger was used to recover disturbed samples from a range of depths (0.2 – 6.4 mbgl) for an estimate of moisture content.

6.64 The survey found an average thickness of 2.5 m across the surveyed area (**Technical Appendix 6-2**), with a maximum depth of 6.4 m (c. 200 m south of turbine T7).

6.65 Peat was present at 3,186 of the 3,379 locations that were surveyed. Of the remaining locations surveyed, 144 showed no peat or soil and 49 comprised of peaty soil.

6.66 There are no slopes greater than 4° on the Main Wind Farm Development Site and due to this flat-lying nature, the PLHRA (**Technical Appendix 6.2, Figure 6-2-9a-j**) found there are no areas of potential instability within the Main Wind Farm Development Site.

6.67 SLR has developed a Peat Management Plan (see **Technical Appendix 6-3**) which has been informed in part by the GI and the PLHRA.

Geohazards

Landslides/Slope Stability

6.68 Landslides/mass movements/slope stability issues typically occur due to erosion of features such as cliffs, or due to factors such as slope, saturation/drainage, vegetation, soil structure and loading/disturbance on sites with unconsolidated deposits such as peat.

6.69 The study area and Main Wind Farm Development Site is predominantly within an area of low landslide susceptibility (GSI, 2023). More than 90% of the Main Wind Farm Development Site, including all proposed access tracks and turbine locations, are classified as low or moderately low for landslide susceptibility (GSI, 2023). All of the turbines have been situated in areas with a low landslide susceptibility, see PLHRA in **Technical Appendix 6-2** for more information.

6.70 The access track leading to T10 and T11 is partly located across areas noted as “moderately low”. One area of “moderately high” landslide susceptibility is located within the Main Wind Farm Development Site adjacent to the existing access track leading to T10 and T11. The Proposed Project has avoided this area by using existing access tracks.

6.71 No evidence of historic peat instability was identified during the site walkover. During the geotechnical investigation by trial pits, 28 of the 32 trial pit side walls were noted as being stable, with 4 recording spalling or collapsing indicating predominantly stable soil conditions within the exploratory locations.

Radon

6.72 Radon is a naturally occurring radioactive gas which forms from the radioactive decay of uranium in predominantly igneous rocks and associated soils. Radon gas can cause lung cancer when a person is exposed to high levels of the gas over a prolonged period of time. The acceptable level (reference level) for workplace radon in Ireland is 300 Bq/m^3. However, outdoor work settings offer little threat from radon exposure as the gas can only become confined and concentrated indoors within a building.

6.73 Radon mapping at the Main Wind Farm Development Site indicates that 1 in 10 homes are likely to have high radon levels, while outside the Proposed Development Site, but within the study area, that likelihood changes to 1 in 20 (EPA, 2026). There is a separate radon map for workplaces which presents if a radon test is required or if it is a recommendation. Radon mapping for workplaces states that the risk within the Main Wind Farm Development Site is “*other areas: the EPA recommends a radon test*”.

Karst

6.74 As there is no limestone in the area (refer to 6.53 to 6.55), there is no karst development. The GI (**Technical Appendix 6-1**) confirmed the presence of metamorphic orthogneiss at the Main Wind Farm Development Site.

Contaminated Land

6.75 Based on a review of historical aerial imagery (refer to **Sections 6.23 – 6.32,** above) and site investigations, it is considered that the potential of encountering contaminated land is considered highly unlikely.

ASSESSMENT OF EFFECTS

Evaluation Methodology

6.76 This evaluation of impacts in this chapter is based on a methodology which adheres to the "*Guidelines for the Assessment of Geology,* Hydrology *and Hydrogeology for National Road Schemes*" (National Roads Authority, 2009), the "*Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements*" published (IGI, 2013) and *"Guidelines on the Information to be contained in Environmental Impact Assessment Reports"* (EPA, 2022).

6.77 For the identification of receptor sensitivity/importance and for the description of impact magnitude, a common framework of assessment criteria and terminology has been used based on the EPA's Guidelines on the Information to be Contained in EIARs (EPA, 2022), with some modifications made to increase clarity. The descriptions for value (sensitivity) of receptors are provided in **Table 6-1** and the descriptions for magnitude of impact are provided in **Table 6-2**.

Table 6-1: Environmental Importance (Sensitivity) and Descriptions

Importance (sensitivity) of receptor / resource	Typical description
High	High importance and rarity, national scale, and limited potential for substitution. For example: • Attribute has a high quality, significance or value on a Global/European/National designation; • Large volumes of nationally or locally important peat; • Well drained and highly fertile soils; • Proven economically extractable mineral resource; and • Human health.
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution. For example: • Regionally important sites; • Sub-economic extractable mineral resource; and • Moderately drained and/or moderate fertility soils.
Low	Low or medium importance and rarity, local scale. For example: • Locally designated sites; • Uneconomically extractable mineral resource; and • Poorly drained and/or low fertility soils
Negligible	Very low importance and rarity, local scale.

Table 6-2: Magnitude of Impact and Typical Descriptions

Magnitude of impact (change)	Typical description	
High	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.

Magnitude of impact (change)	Typical description	
		Significant harm to human health - death, disease, serious injury, genetic mutation, birth defects or the impairment of reproductive functions. Significant harm to buildings/infrastructure/plant - Structural failure, substantial damage or substantial interference with any right of occupation.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Medium	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Low	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Adverse	Very minor loss or alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.

6.78 **Table 6-3** shows the matrix for significance of effect used in this assessment. Residual effects of Large or Profound significance are considered to be significant in EIA terms for the purposes of this assessment.

Table 6-3: Significance Matrix

	Magnitude of Impact (Degree of Change)				
Environmental Importance (Sensitivity)		**Negligible**	**Low**	**Medium**	**High**
	High	Slight	Slight or moderate	Moderate or large	Profound
	Medium	Imperceptible or slight	Slight or moderate	Moderate	Large or profound
	Low	Imperceptible	Slight	Slight	Slight or moderate
	Negligible	Imperceptible	Imperceptible or slight	Imperceptible or slight	Slight

Selection of Sensitive Receptors

Land

6.79 Land use in the Main Wind Farm Development Site will change due to the Proposed Project. Removal of forestry will be required at eight turbine locations, in addition to some linear loss due to the creation of additional internal access tracks. There will be a loss, of forestry of between 27.17 hectares (ha) and 31.37 ha depending on the turbine selected throughout the lifetime of the project. See **Technical Appendix 2-2** for further information. It is proposed

that the turbine foundations will remain in situ following decommissioning, as this is considered to be a less disruptive option than removal.

6.80 Land use for conifer forestry will be lost due to the Proposed Project within the Main Wind Farm Development Site .

6.81 Consideration within this chapter is given only to the subject of land take/land use loss.

Soils and Subsoils

6.82 There will be a disturbance to soils and subsoils within the Main Wind Farm Development Site, including removal of soils for the turbine bases and the excavation of soils for the cable laying. The quaternary deposits at the Main Wind Farm Development Site are ubiquitous in a regional context. However, consideration will be given further in the assessment on the potential impacts to quaternary sediments due to the Proposed Project.

Bedrock Geology

6.83 The bedrock within the Main Wind Farm Development Site is metamorphic rock from the Annagh Division and the Proposed Project may involve the extraction of rock at some turbine locations (subject to suitable substrate depth being identified) to allow for robust foundations to be emplaced. Consideration will be given further in the assessment to the potential impact to bedrock (e.g. leaks and spills seeping into the bedrock and for use of the bedrock resource, see economic geology, below).

Geological Heritage

6.84 There are two geological heritage sites within the study area and one noted by the GSI in proximity. There are no geoheritage sites on the Main Wind Farm Development Site. Geological heritage will be considered further in this assessment.

Economic Geology

6.85 No quarries have been identified within the study area or the Main Wind Farm Development Site and the potential for crushed rock or granular aggregate potential is very low. It is noted that crushed rock potential has been noted as very high potential along part of the TDR and GCR, however, these are road networks and it is considered quarrying is therefore not feasible along the routes. Quarrying at the Main Wind Farm Development Site is also not considered feasible as it has been scored with very low crushed rock aggregate potential and is not noted to be identified as a mineral locality. Any potential quarries outside the Main Wind Farm Development Site but within the study area will not be impacted by the Proposed Project. No further consideration is given to economic geology.

Geohazards

6.86 No historical evidence of landslides is recorded within the study area. The Main Wind Farm Development Site has been assessed during a Site walkover, peat probing, SI and a PLHRA and is not considered to be at risk of instability. Slopes are low in the area. Further consideration will be given to ground instability at the Main Wind Farm Development Site.

6.87 While the majority of the Main Wind Farm Development Site is located within a moderate radon risk area, site works during construction, operations and potential decommissioning will be outdoors in nature. Radon risk is associated with indoor exposure over a prolonged period, and, as this will not occur in the context of the Proposed Project, radon risk will not be considered further in this assessment.

6.88 Karst is scoped out for further assessment as there is no limestone in the area.

6.89 Receptors to geohazards (i.e. ground instability) are considered to be humans and built structures.

Summary

6.90 The potential for an impact to occur at a receptor has been determined using the understanding of the baseline environment and its properties and consideration of whether there is a feasible linkage between a source of impact and each receptor (i.e. a conceptual site model).

6.91 In terms of the land, soils and geology baseline considered here, the principal sensitive receptors are shown in **Table 6-4**, below. Importance and reasoning is sourced from National Roads Authority Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (2008) in relation to aspects to be considered and assessment approach.

Table 6-4: Status and Importance Land, Soil and Geology Receptors

Receptor	Importance and Reasoning
Land	Low (forest removal and land take of former cutaway peat bog within the Main Wind Farm Development Site area, no particular value to locality but will be partially removed from the Main Wind Farm Development Site as a result of the Proposed Project).
Soils and subsoils	Low (no designation, no rarity, Site importance for sediments to be extracted, moved and/or reused within the Main Wind Farm Development Site as part of the Proposed Project works).
Bedrock Geology	Low (it does not have any particular value, and while it is of geological interest, no outcrops are present within the Main Wind Farm Development Site).
Geoheritage	Medium (Has a National designation but no part of the Geoheritage site is within the Main Wind Farm Development Site).
Human Health and built Structures	High (human health) and Medium (built structures such as turbines) – these receptors may be potentially impacted by a geohazard (i.e. ground instability).

POTENTIAL EFFECTS

6.92 The main potential impacts and associated effects that will be considered in the assessment relate to the following:

- Activities or events that might impact quaternary sediment quality during construction and operation phase (e.g. soil contamination by a fuel or oil spill or leakage or soil compaction).
- Geotechnical instability arising due to soils/subsoils.
- Extraction of sediments and bedrock and their relocation and reuse within the Main Wind Farm Development Site as part of development works.
- Activities or events that might impact on the Geoheritage sites during either construction or operation.

6.93 These are considered and assessed in the following sections.

Potential Effects – Construction

6.94 **Table 6-6** below, summarises the potential effects discussed in the following subsections. All elements of the Proposed Project are described in **Chapter 2** of this EIAR.

Impacts to Land

6.95 The Main Wind Farm Development Site predominantly consists of a mixture of agricultural land, primarily grazing, and forestry. The works associated with the Main Wind Farm Development Site will all involve land take whereby existing forestry and cutaway bog is used for the turbine (and associated infrastructure and electricity substation) land use, and to act as a buffer between the development and potential bat activity. Approximately between 27.17 ha and 31.37 ha, depending on the model of turbine selected, of forestry will be felled to enable the Proposed Project. The potential impact due to land take is considered to be low adverse and the significance of the effect is considered to be **Slight** (**Not Significant** in the context of the EIA Directive) for the turbine locations.

6.96 During the construction phase, temporary land take will be required (consisting of crane hardstands, two construction compounds and three over-run areas).

6.97 Land use will not permanently change along the TDR. The TDR will follow existing roads and thereby align with the existing land use. There are three over-run areas which will require a temporary change in land use during the construction phase to allow for the establishment of an access road to facilitate turbine component haulage. One of these Over-run Areas (Over-run Area No. 2) already contains a former access track, albeit it is not currently in use.

6.98 The grid connection cable will be underground and there will be a temporary disturbance to land use during construction as cables are laid, but there will be no permanent change in land use. The potential impact due to land take is considered to be low adverse and the significance of the effect is considered to be **Slight** (**Not Significant** in the context of the EIA Directive) of either laying of the TDR over-run areas or GCR.

Impacts to Soils, Subsoils and Bedrock

6.99 Material (soils, subsoils and bedrock) will be required to be excavated at the turbine locations and associated infrastructure, BESS and electricity substation. In the case of the turbines (and associated infrastructure), and BESS this excavation is needed so that infrastructure components can be installed along with fill material. No borrow pits are planned, but it may be necessary to remove weathered bedrock at some locations to ensure stable foundations for the turbines. In addition, piling works (whether bored with temporary casing or continuous flight augered) at turbine locations will produce small volumes of spoil material as soil and subsoil are displaced.

6.100 The GCR will involve the laying of cables underground. A bedding layer of sand will be added to the trench and PVC ducts and couplers will be installed on top of this. Trenches will then be backfilled.

6.101 An estimation of the cut and fill quantities required for the Proposed Project has been made (refer to **Table 2-4** of **Chapter 2**). To ensure a robust assessment, it has been assumed that all aggregate required for construction will be imported to the Main Wind Farm Development Site. An estimated total of 254,398 m^3 of aggregate material will be required for the construction of the Proposed Project. There may be some direct loss of in-situ bedrock at the Main Wind Farm Development Site if heavily weathered bedrock is encountered. Soils (including peat) will be removed at the Main Wind Farm Development Site at turbine locations and associated infrastructure, BESS and at the electricity substation. It is proposed that construction phase will require excavation of peat (estimated to be 107,080m^3 – refer to **Table D** of **Technical Appendix 6-3**) and subsoil to create a suitable area for the foundation of the

base. The loss of onsite geological resources (bedrock, soils and subsoils) is considered to be of low impact and the effect significance is considered to be **Slight** (**Not Significant** in the context of the EIA Directive).

6.102 The TDR will not require the excavation of soil, subsoil or bedrock where it follows the existing road network. Limited excavation of soil will be required in the over-run areas along the TDR to facilitate the development. The potential impact to soils and subsoils through excavation is considered to be low adverse and the significance of the effect is considered to be **Slight** (**Not Significant** in the context of the EIA Directive).

6.103 Disturbance will occur to local soils along the GCR. Excavated material will be reused during backfilling of the trenches, where possible. No excavated soils will be sent offsite, all soils will be reused within the Main Wind Farm Development Site. The potential impact to soils and subsoils through excavation along the GCR is considered to be low adverse and the significance of the effect is considered to be **Slight** (**Not Significant** in the context of the EIA Directive).

Fuel spills

6.104 Fuel and oil leaks and spills are a potential indirect impact associated with construction machinery and construction work areas/compounds within the Main Wind Farm Development Site (i.e. turbines, BESS and substation). During soil and rock extraction, there is an increased risk to soil and bedrock should a leak or spill occur. However, construction works associated with the turbine locations and site compounds will involve shallow earthworks and infilling of excavations as part of foundation works which will occur within a short time period, reducing the potential exposure risk. The potential magnitude of impact to bedrock, soils and subsoils is considered to be low and the potential significance of effect is considered to be **Slight** (**Not Significant** in the context of the EIA Directive).

6.105 With respect to the GCR, during construction, excavation will be carried out by excavators and heavy machinery which have the potential to leak/spill fuels and oils. However, given the confined natured of the work along the GCR (i.e. small working trench area), small numbers of heavy vehicles will be in use at any one time while excavating or backfilling the trench route. It is considered unlikely in this scenario that a large-scale fuel or oil leakage could occur and any incidents will be small and easily contained before substances could leak into the underlying sediments and bedrock. The potential impact to soils/subsoils and bedrock from a fuel/oil leak or spill during the GCR construction works is considered to be negligible adverse and the significance of the effect is considered to be **Imperceptible** (**Not Significant** in the context of the EIA Directive).

6.106 The TDR is an existing road network which does not allow the direct infiltration of spills and leaks to soils, subsoils or bedrock. Further consideration of the TDR is scoped out for soils, subsoils and bedrock where it is an existing road. There is a potential for direct infiltration of spills and leaks to soils, subsoils or bedrock within the TDR over-run areas during their establishment and/or removal. However, given the confined natured of the work along the TDR (i.e. small working area), small numbers of heavy vehicles will be in use at any one time while excavating or constructing the haul route. It is considered unlikely in this scenario that a large-scale fuel or oil leakage could occur, and any incidents will be small and easily contained before substances could leak into the underlying sediments and bedrock. The potential impact to soils/subsoils and bedrock from a fuel/oil leak or spill is considered to be negligible adverse and the significance of the effect is considered to be Imperceptible (**Not Significant** in the context of the EIA Directive).

Compaction

6.107 With regards to the movement of vehicles, and stockpiling of material during the construction phase over areas of exposed soil (within the Main Wind Farm Development Site, TDR over run areas and GCR), there is a potential for soil compaction to occur which may reduce the ability of the soil to store water and support vegetation and can lead to an increase in run-off and erosion. As part of the Proposed Project, existing agricultural tracks will be upgraded, and floating site access tracks will also be established. Construction haulage will be directed to use these routeways to allow minimisation of works with unfinished surface areas. The potential impact to soils is considered to be negligible adverse and the significance of the effect is considered to be **Imperceptible** (**Not Significant** in the context of the EIA Directive).

Impacts to Geoheritage

6.108 With regards to geoheritage, there are two sites within the study area, however there is no direct or indirect impact likely due to the Proposed Project. No excavation of soil, subsoil or geology or change to the use of the sites is required from either Blacksod Bay or Doolough Gneiss. The third site (Bellacorick) is not within the study area but noted by the GSI in their scoping response for the project as being in the vicinity. There is no direct or indirect impact likely due to the Proposed Project and Bellacorick either. No excavation of soil, subsoil or geology is required and no change in land use is required. The potential impact to geoheritage is considered to be negligible adverse and the significance of the effect is considered to be **Imperceptible** (**Not Significant** in the context of the EIA Directive).

Impacts to Receptors from Geohazards

6.109 The PLHRA (**Technical Appendix 6-2**) identifies that the initial site walkover carried out by SLR considered the following:

- There is no evidence of historical or current peat slide activity at the Main Wind Farm Development Site (having reviewed historical imagery dating back to 1985).
- There is little elevation change across the Main Wind Farm Development Site , with the topography best described as gently undulating.
- Conclusions of a detailed walkover and results from peat probing and GI.

6.110 The initial site walkover assessed that the potential for peat sliding was negligible. Further analysis then considered the terrain at the Main Wind Farm Development Site using GIS to analyse slopes and gradients (**Technical Appendix 6-2, Figure 6-2-8a-j**). The site-specific slope data has been combined with site specific peat depth data and using Scottish Government guidance for the assessment of the risk of instability in peat, and an assessment of peat slide risk (**Technical Appendix 6-2**).

6.111 The PLHRA's method of risk and hazard assessment has been developed with reference to the Scottish Guidance[1]. Key factors which may have an effect on the stability of the peat deposits have been identified leading to an assessment of the risk of peat instability.

6.112 Risk scores were determined, which, when combined with an assessment of vulnerability of potential targets, were developed into an assessment of the hazard. In order to differentiate between risk and hazard, the following nomenclature has been adopted (see **Table 6-5**).

[1] "Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments". Scottish Government, April 2017.

Table 6-5: Risk and Hazard

Risk	Hazard
Negligible	Insignificant
Low	Significant
Medium	Substantial
High	Serious

6.113 The characteristics of peat failure phenomena have been incorporated in the PLHRA to evaluate the risk of instability occurring. Of the 3,379 locations that were surveyed, 95 (2.8%) have been classified as low risk and 3,140 (92.9%) as negligible risk (see Annex A of **Technical Appendix 6-2**). No peat was found at 144 (4.3%) locations. No medium or high-risk locations were identified. These quantitative results are consistent with observations made during the site walkover and the subsequent peat probing survey.

6.114 It is considered that the potential magnitude of landslides to human health/built structures due to the presence of peat is considered to be negligible-low and the potential significance of effect is considered to be **Slight to Moderate** (**Not Significant** in the context of the EIA Directive).

Table 6-6: Evaluation of Initial Construction Impacts and their Effect Significance (without mitigation)

Project Phase	Receptor	Sensitivity	Source of Impact/Description of Change	Impact Magnitude	Level of Effect
Construction	Land	Low	Forestry and agricultural land loss within the Main Wind Farm Development Site.	Low adverse (turbines (and associated infrastructure), BESS, electricity substation)	Slight adverse (turbines and associated infrastructure, BESS, electricity substation) (**Not Significant)**
			Temporary disruption to land use as GCR is lain.	Negligible adverse (GCR)	Slight (GCR) (**Not Significant)**
			Temporary disruption to land use as over-run areas are modified and used.	Negligible adverse (TDR over-run areas)	Slight (TDR over-run areas) (**Not Significant)**
Construction	Soil and subsoil	Low	Material (soils, subsoils) will be required to be excavated at the turbine locations and access tracks. Permanent loss but excavated material will remain onsite and will be reused to build infrastructure items such as access tracks, turbine, hardstanding and substation foundations. In the case of the GCR cable, soils and subsoils will be removed but will be reused during backfilling of the trenches, as will similarly occur in the over-run areas for the TDR.	Low adverse (turbines and associated infrastructure, BESS, GCR and TDR over-run areas).	Slight adverse (turbines and associated infrastructure, BESS, GCR and TDR over-run areas) (**Not Significant)**
			Fuel and oil spills and leaks to soils and subsoils during construction within the Main Wind Farm Development Site and along the GCR or in exposed areas within the TDR over-run areas.	Low adverse (turbines and associated infrastructure, BESS, GCR and TDR over-run areas)	Slight adverse (turbines and associated infrastructure, BESS, GCR and TDR over-run areas). (**Not Significant)**

Project Phase	Receptor	Sensitivity	Source of Impact/Description of Change	Impact Magnitude	Level of Effect
			Soil and subsoil compaction due to vehicle movement within the Main Wind Farm Development Site and along the GCR or in exposed areas within the TDR over-run areas.	Negligible adverse	Imperceptible (**Not Significant**).
Construction	Bedrock geology	Low	Material (weathered bedrock) may be required to be excavated at the turbine locations. Permanent loss but excavated material will remain onsite for reuse.	Low adverse (turbines)	Slight adverse (turbines) (**Not Significant)**
			Fuel and oil spills and leaks during construction on the Main Wind Farm Development Site and along the GCR or within the TDR over-run areas.	Low adverse (turbines and associated infrastructure, GCR or TDR over-run areas)	Slight adverse (turbines and associated infrastructure, GCR or TDR over-run areas) (**Not Significant)**
Construction	Geoheritage	Medium	No direct or indirect impacts predicted.	Negligible adverse	Imperceptible (**Not Significant**).
Construction	Human health/built structure	High	Peat instability, risk of landslide.	Negligible to low adverse (turbines and associated infrastructure)	Slight to Moderate adverse (**Not Significant)**

Potential Effects – Operational

6.115 **Table 6-7**, below, summarises the potential effects discussed in the following subsections.

Impacts to Land, Soils, Subsoils and Geology

6.116 During the operational phase of the Proposed Project, there will be no new direct effects to land, soils, subsoils and bedrock due to the Proposed Project. Routine site maintenance of the turbines (and associated infrastructure) will be undertaken which has the potential to indirectly (through potential fuel and oil spills and leaks) affect soils, subsoils and bedrock at the Main Wind Farm Development Site. Given that there will be no exposed excavations and a small number of vehicles/equipment required for maintenance, the magnitude of impact from fuel and oil leaks and spills is considered to be negligible and the potential significance of effect is considered to be **Imperceptible** (**Not Significant** in the context of the EIA Directive).

6.117 Similar to the operational phase associated with the turbines (and associated infrastructure), the operational phase for the GCR and TDR will have no new direct effects on land, soils, subsoils or bedrock. Routine site maintenance will also be required for the GCR (but not the TDR) and the magnitude of impact from fuel and oil leaks and spills is considered to be negligible and the potential significance of effect is considered to be **Imperceptible** to soils, subsoils and geology (**Not Significant** in the context of the EIA Directive).

Impacts to Receptors from Geohazards

6.118 During the construction phase inherent design measures will be implemented to reduce the risk of peat instability (such as the design and implementation of drainage management systems onsite, refer to **Sections 7.1 to 7.5** of **Technical Appendix 6-2**). These design measures will be in place during the operational phase and it is considered that the potential effect to human health or built structures is negligible and the potential significance of effect is considered to be **Slight** (**Not Significant** in the context of the EIA Directive).

Table 6-7: Evaluation of Operational Impacts and their Effect Significance

Project Phase	Receptor	Sensitivity	Source of Impact/Description of Change	Impact Magnitude	Level of Effect
Operations	Soils, subsoils	Low	Fuel and other substance leaks and spills from machinery and plant onsite	Negligible adverse (turbines and associated infrastructure and GCR)	Imperceptible (**Not Significant)**
Operations	Bedrock geology	Low (as an in situ feature)	Fuel and other substance leaks and spills from machinery and plant onsite	Negligible adverse (turbines and associated infrastructure and GCR)	Imperceptible (**Not Significant)**
Operations	Human health/built structures	High (human beings/workers)	Peat instability	Negligible adverse (turbines and associated infrastructure)	Slight (**Not Significant)**

Potential Effects – Decommissioning

6.119 **Table 6-8**, below, summarises the potential effects discussed in the following subsections.

6.120 The Proposed Project seeks a 35-year operational period. Wind turbines may, subject to planning permission, be replaced with a new set of turbines or the Proposed Project may be decommissioned. Consideration will be given here in the following subsections to the potential effects arising from decommissioning of the Proposed Project.

Impacts to Land

6.121 The foundations will be covered over and allowed to re-vegetate naturally. Leaving turbine foundations in situ is considered a more environmentally sensible option as to remove the reinforced concrete associated with each turbine will result in environmental nuisances such as noise and vibration and dust. It is proposed that the internal Site access tracks will be left in situ, subject to agreement with Mayo County Council and the relevant landowners. It is expected that the remaining wider forestry and agricultural uses will still be in-situ during the decommissioning phase and the most likely land use for the Main Wind Farm Development Site will be a return to forestry and agriculture.

6.122 The proposed substation will be taken in charge by ESBN /EirGrid upon completion and is anticipated to be left in place forming part of the national electricity network along with the GCR. It is anticipated that the substation and GCR will be in situ on a permanent basis and not time limited as will be the case for the infrastructure on the Main Wind Farm Site.

6.123 The potential impact of this decommissioning and return to agriculture and forestry land use is considered to be negligible and the potential significance of effect is considered to be **Slight (Not Significant** in the context of the EIA Directive).

Impacts to Soils, Subsoils and Bedrock

6.124 Underground cabling will be cut back and left in situ along the GCR. Checks will be carried out to ensure that no environmental risks remain when the cabling is left behind.

6.125 Similar to the construction and operation phases, machinery and plant operating in the Main Wind Farm Development Site areas represents a potential fuel and oil spill risk. The magnitude of impact from fuel and oil leaks and spills is considered to be negligible as works areas will be limited in extent (foundations and internal access tracks are proposed to be left in-situ) within a short time period, reducing the potential exposure risk and the potential significance of effect is considered to be **Imperceptible** (**Not Significant** in the context of the EIA Directive).).

Impact to Receptors from Geohazards

6.126 Given the construction phase will be designed to reduce the risk of peat instability (through mitigation measures detailed below), and these will continue into the operational phase, inherent design measures will be in place during the decommissioning phase to reduce the risk of peat instability (such as the design and implementation of drainage management systems onsite, refer to **Sections 7.1 to 7.5** of **Technical Appendix 6-2**), it is considered that the potential impact magnitude is negligible and the potential significance of effect is considered to be **Slight (Not Significant** in the context of the EIA Directive).

Table 6-8: Evaluation of Initial Decommissioning Phase Impacts and their Effect Significance

Project Phase	Receptor	Sensitivity	Source of Impact/Description of Change	Impact Magnitude*	Level of Effect *
Decommissioning	Land	Low	Return to peatland and forestry	Negligible beneficial (turbines and associated infrastructure and GCR)	Slight (**Not Significant**)
Decommissioning	Soils, subsoils	Low	Fuel and other substance leaks and spills from machinery and plant onsite	Negligible adverse (turbines and associated infrastructure and GCR)	Imperceptible (**Not Significant)**
Decommissioning	Bedrock geology	Low (as an insitu feature)	Fuel and other substance leaks and spills from machinery and plant onsite	Negligible adverse (turbines and associated infrastructure and GCR)	Imperceptible (**Not Significant)**
Decommissioning	Human health	High (human beings/workers)	Peat instability (during removal of the turbines)	Negligible adverse (turbines and associated infrastructure)	Slight (**Not Significant)**

MITIGATION MEASURES

Mitigation Measures - Construction

Turbines (and Associated Infrastructure) TDR (including over-run areas) and GCR

6.127 The following mitigation measures will be implemented in full during the construction phase:

- Site operations will be managed in accordance with relevant health and Safety legislation (Safety, Health & Welfare at Work Act (2005, as amended);
- Construction phase activities will take place in accordance with the Construction Environmental Management Plan (CEMP). A CEMP is provided at **Technical Appendix 2-1.**
- Following a grant of permission, a licence will be sought from the Department of Agriculture, Food and the Marine to replant lands elsewhere to compensate for the loss of forestry land within the Main Wind Farm Development Site by replanting forestry at an alternative site within the State.
- In order to reduce the risk of localised erosion during excavation and infilling, the area of bare or exposed soils and rock will be kept to a minimum, insofar as practicable. Where required, stockpiled soils (pending re-use) or exposed surfaces (pending further backfilling to final ground level) will be temporarily covered.

- All aspects of the proposed backfilling / construction phase works will be undertaken in accordance with relevant best practice environmental guidance published by the Environmental Protection Agency and other regulatory agencies. All activities will be undertaken in accordance with the provisions in the Waste Management Act 1996 (as amended).

6.128 Measures that will be implemented to reduce the risk of potential fuel / oil spills consist of the following:

- It will be ensured that any refuelling of mobile plant undertaken within the compound at a dedicated impermeable refuelling pad or by mobile double bunded bowsers with a 50 m buffer from watercourses (refer to the CEMP in **Technical Appendix 2-1)**.
- Good site management practices will be implemented to reduce risks of spills, including regular monitoring and inspection of storage vessels and regular maintenance and servicing of construction plant and equipment (refer to the CEMP in **Technical Appendix 2-1)**.
- The Applicant will ensure that necessary plant and resources are provided and operated in accordance with best waste management practice and that activities comply fully with environmental management systems and planning consents.
- Contingency plans / procedures will be developed to deal with potential leaks and spills. Absorbent pads/granules in the case of an accidental leak/spillage will be available at the temporary construction compounds (refer to the CEMP in **Technical Appendix 2-1)**.

6.129 The following is a list of mitigation measures that will be incorporated into construction methodologies for the works in all areas of peat:

- An appropriately experienced and qualified engineering geologist/geotechnical engineer will be appointed during the construction phase, to provide advice during the setting out and construction phases of the works.
- A Geotechnical Risk Register will be developed and maintained by the appointed geotechnical engineer.
- Undercutting of peat slopes will be avoided. Where this cannot be avoided, a more detailed geotechnical stability assessment of the area of concern by the geotechnical engineer will be undertaken to include review of site-specific ground investigation data and site inspection. As outlined in the PLHRA (**Technical Appendix 6-2**), a geotechnical risk register will be prepared post-consent following location specific stability analyses.
- Use of floating track across areas of deep peat.

6.130 Notwithstanding any of the above controls and mitigation measures, construction practices will consider the particular ground conditions (including weather conditions/weather factors) and the specific works at each location throughout the construction period.

6.131 To minimise the risk of potentially inducing peat landslides during construction of the Proposed Project, the following will be implemented:

- Raise Health and Safety awareness of the peat environment at the Proposed Project, for construction staff by incorporating the issue into the site induction.
- Include peat slide risk assessment information (e.g. peat instability indicators, best practice and emergency procedures) in toolbox talks with relevant operatives e.g. plant operatives.

- Carry out confirmatory pre-construction surveys and ground investigations prior to the commencement of works.
- Minimise off-track plant movements within areas of peat, use trackways once constructed.
- For sections of track that require track side cuttings into peat, suitable support measures will be implemented to maintain the stability of the adjacent peat terrain.
- Implement and update the 'Peat Landslide and Hazard Risk Assessment' (**Technical Appendix 6-3**) to provide instructions for site staff in the event of a peat slide or discovery of peat instability indicators. **Technical Appendix 6-3** provides details on the frequency of proposed monitoring during operations.

Access Tracks and Excavations

6.132 In order to maintain the current level or improve the stability of the peat mass, it will be ensured that the construction methods do not seriously disrupt the established drainage and that no areas are surcharged, either by water discharge or spoil through the Mitigation Measures that are described in **Chapter 7**, **Section 7.213 to 7.274 inclusive**.

6.133 The following principles will be adopted:

- Where track construction is required over peat areas in excess of 1 m deep, this will be undertaken with a floating track construction, where the integrity of the peat allows;
- Cut and fill will be avoided in peat greater than 1 m deep if possible; if not, the following requirements on side long ground (across contours) will be adopted;
    - Excavate to a sound stratum;
    - The majority of construction surfaces to be essentially horizontal with a slight fall to aid drainage;
    - Where the depth of cut is deemed unstable, employ a stepped or benched surface with the intention of minimising the exposed surface of the up-slope cut face;
    - Protect all exposed peat surfaces from erosion and desiccation, by ensuring the integrity and moisture content of the peat is maintained; and
    - The top of cut slopes should be provided with a small bund to retain the peat to prevent desiccation and maintain the local stability of the peat.

Mitigation Measures - Operational

Turbines (and Associated Infrastructure)

6.134 Site operations will be managed in accordance with relevant health and Safety legislation (Safety, Health & Welfare at Work Act (2005, as amended)).

6.135 Measures that will be implemented to reduce the risk of potential fuel / oil spills consist of:

- It will be ensured that any refuelling of mobile plant undertaken within the Proposed Development Site is only undertaken using double skinned bowsers;
- No oils, greases, hydraulic fluids or hazardous substances (or any associated wastes) will be stored across the Main Wind Farm Development Site. All such materials will be stored under cover, over fuel spill trays / bunded containers within designated

Control of Substances Hazardous to Health (COSHH) storage areas within the substation and BESS compounds.

- Mitigation measures in line with best practice in the CEMP will be implemented to reduce risks of spills, including regular monitoring and inspection of storage vessels and regular maintenance and servicing of plant and equipment;
- The Applicant will ensure that such plant and resources as are necessary to ensure that the Main Wind Farm Development Site will be managed and operated in accordance with best waste management practice and that activities comply fully with environmental management systems and planning consents; and
- The EIRP will be implemented and to include contingency plans / procedures to deal with potential leaks and spills. An emergency spill response kit will be held on Site.

Mitigation Measures - Decommissioning

Turbines (and Associated Infrastructure) and GCR

6.136 Site operations will be managed in accordance with relevant health and safety legislation (Safety, Health & Welfare at Work Act (2005, as amended).

6.137 Stockpiles will be monitored during and following rainfall events and kept stable for safety and to minimise erosion.

6.138 The mitigation measures that will be implemented for potential fuel / oil spills consist of those referred to in **Section 6.127**.

6.139 In order to reduce the risk of localised erosion during the excavation and infilling, the area of bare or exposed soils and rock will be kept to a minimum, insofar as practicable, by progressive restoration of final and backfilled surfaces. Where required, stockpiled soils (pending re-use) or exposed surfaces (pending further backfilling to final ground level) will be temporarily vegetated.

6.140 All aspects of the proposed backfilling works will be undertaken in accordance with relevant best practice environmental guidance published by the Environmental Protection Agency and other regulatory agencies. All activities will be undertaken in accordance with the provisions in the Waste Management Act (1996) as amended.

6.141 Mitigation measures in the construction phase for peat instability will be implemented during the decommissioning phase, refer to **Section 6.129**.

FURTHER SURVEY REQUIREMENTS AND MONITORING

6.142 Periodic site inspections will be undertaken of the Main Wind Farm Development Site to inspect ground conditions during all phases, particularly after heavy rainfall events.

FUTURE BASELINE

6.143 The future baseline relevant to land, soils and geology is one where the Proposed Project, does not go ahead and the Main Wind Farm Development Site will continue to consist of peatland and forestry. No soils or geology will be extracted from the Main Wind Farm Development Site and no clearance of forestry (beyond normal felling and replanting) will occur.

RESIDUAL IMPACT ASSESSMENT

Residual Effects - Construction

6.144 With the implementation of the proposed mitigation measures, it is considered that the potential effects of fuel spill on soils and bedrock, will reduce to Imperceptible (**Not Significant** in the context of the EIA Directive).

6.145 Residual effects for land from land use change, where relevant, will remain at Slight (**Not Significant** in the context of the EIA Directive) as land use will remain changed in the locality.

6.146 The residual effects for soils, subsoils and bedrock through the loss of material in excavation is considered to be unchanged at Slight (**Not Significant** in the context of the EIA Directive) given the loss of in situ material cannot be offset.

6.147 The residual effects for soils and subsoils from compaction is considered to be unchanged at Imperceptible (**Not Significant** in the context of the EIA Directive).

6.148 The residual effect of the potential peat instability will reduce to Slight (**Not Significant** in the context of the EIA Directive) with the implementation of the mitigation measures.

Residual Effects - Operations

6.149 The residual effect to soils and bedrock through the indirect impact of leaks and spills is considered to be **Imperceptible** (**Not Significant** in the context of the EIA Directive), or unchanged from the initial assessment.

6.150 The residual effects of potential peat instability will remain at **Slight** (**Not Significant** in the context of the EIA Directive).

Residual Effects - Decommissioning

6.151 With the implementation of the proposed mitigation measures, it is considered that the potential effects of fuel spillage on soils and bedrock, will reduce to **Imperceptible** (**Not Significant** in the context of the EIA Directive).

6.152 The residual effects of potential peat instability will remain at **Slight** (**Not Significant** in the context of the EIA Directive).

Cumulative Effects

6.153 In terms of all proposed and permitted developments within the vicinity of the Main Wind Farm Development Site the details of projects considered in the cumulative assessment are presented in **Technical Appendix 2-3** 'Projects Considered in the Cumulative Assessment'.

6.154 In the context of land, soils and geology, the potential for cumulative impacts on land, soils and geology is influenced by the proximity of such receptors between project areas. Land, soil and geology are fixed assets with limited potential for cumulative effects the more distal sites are from each other. A search of the National Planning Map Viewer (myplan.ie) indicates that there are no other major planned developments in the vicinity (within 20 km) of the Main Wind Farm Development Site that have recently been granted planning permission that have the potential to give rise to any significant adverse land, soils or geological cumulative impacts.

6.155 The nearest recent major development to the site which has been granted permission is Sheskin South windfarm (refer to ref. ABP-315933-23 in **Technical Appendix 2-3**) which is planned to comprise of 21 no. wind turbines 15.4 km to the east of the Main Wind Farm

Development Site. It is considered too distant to generate any potential adverse cumulative effects for land, soils or geology.

6.156 A proposed SEAI substation (refer to ref. PL16.247758 in **Technical Appendix 2-3**) is noted to be 12.7 km north-east of the Main Wind Farm Development Site, however, it is also considered to be too distant to generate any potential adverse cumulative effects for land, soils or geology.

6.157 In addition, Bunnahowen Wind Farm (refer to ref. 18/873 in **Technical Appendix 2-3**) a smaller scale development comprising of 3 no. wind turbines is noted to be 4.6 km north of the Main Wind Farm Development Site. This wind farm is extant and it is considered that there is no potential for cumulative impacts on land, soils and geology between the Main Wind Farm Development Site and Bunnahowen Wind Farm. Land use has been modified already at Bunnahowen Wind Farm and access tracks, foundations and turbines have already been established. It is considered that potential impacts to soils or geology could occur at Bunnahowen Wind Farm from an oil or fuel spill or leak during maintenance activities, however, it is considered that such an event would be small scale in the nature and would have no potential for a cumulative effect between the Main Wind Farm Site and Bunnahown Wind Farm on soils or geology.

ASSUMPTIONS, LIMITATIONS, AND CONFIDENCE

6.158 This assessment is compiled based on published regional and local data, guidance documents. No difficulties were encountered in compiling the required information.

6.159 During the GI investigations peat was not confirmed in BH01, BH05, BH06, BH09, BH12 and BHMM2 due to no recovery.

6.160 During the GI the top of till was unconfirmed in BH01, BH06, BH09, BH12 and BHMM2 due to no recovery.

SUMMARY OF PREDICTED EFFECTS

6.161 This chapter has presented an assessment of the potential effects of the Proposed Project on Land, Soils and Geology.

6.162 The design of the Proposed Project considered a range of best practice measures to ensure avoidance and reduction of effects throughout the construction, operational and decommissioning phases.

6.163 This chapter comprehensively assesses all scenarios within the Turbine Range which is described in **Table 2-1 of Chapter 2** of this EIAR. The potential effects that could arise from the Proposed Project during the construction, operational and decommissioning phases are set out in this conclusion.

6.164 With mitigation measures in place at the Main Wind Farm Development Site, GCR and over-run areas of the TDR the significance of potential effects during the construction, operational and decommissioning stages were assessed as being **not significant** in terms of the EIA Regulations.

STATEMENT OF SIGNIFICANCE

6.165 The effects of the Proposed Project on Land Soils and Geology has been assessed using appropriate legislation, guidance and policy. Following the implementation of mitigation measures, potential residual effects due to the Proposed Project are considered not significant under the EIA Regulations.

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Figures

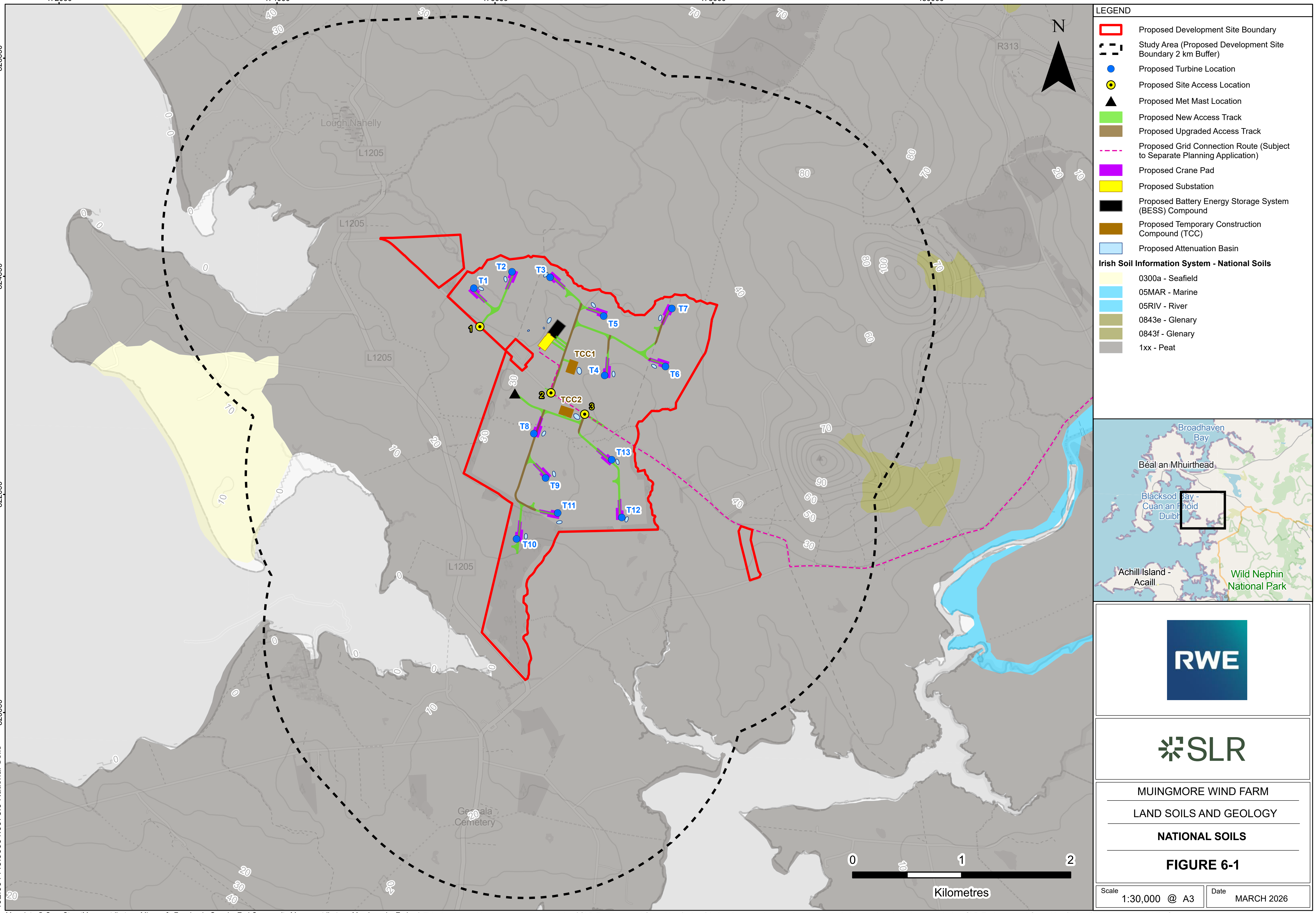
Technical Appendices

Technical Appendix 6-1 **Ground Investigation Factual Report**

Technical Appendix 6-2 **Peat Landslide Hazard Risk Assessment**

Technical Appendix 6-3 **Peat Management Plan**

(Refer to EIAR Volume 3 for Technical Appendices)


LEGEND
Proposed Development Site Boundary
Study Area (Proposed Development Site Boundary 2 km Buffer)
Proposed Turbine Location
Proposed Site Access Location
Proposed Met Mast Location
Proposed New Access Track
Proposed Upgraded Access Track
Proposed Grid Connection Route (Subject to Separate Planning Application)
Proposed Crane Pad
Proposed Substation
Proposed Battery Energy Storage System (BESS) Compound
Proposed Temporary Construction Compound (TCC)
Proposed Attenuation Basin
Irish Soil Information System - National Soils
0300a - Seafield
05MAR - Marine
05RIV - River
0843e - Glenary
0843f - Glenary
1xx - Peat
Lough Nahelly
L1205
R313
TCC1
TCC2
Broadhaven Bay
Béal an Mhuirthead
Blacksod Bay - Cuan an Fhóid Duibh
Achill Island - Acaill
Wild Nephin National Park
Kilometres
472000
474000
476000
478000
480000
826000
824000
822000
820000

RWE

SLR

MUINGMORE WIND FARM

LAND SOILS AND GEOLOGY

NATIONAL SOILS

FIGURE 6-1

Scale	Date
1:30,000 @ A3	MARCH 2026

402.064443.00001.0075.0 National Soils

480000 500000 520000 540000 560000 580000 600000

900000 880000 860000 840000

Irish Soil Information System - National Soils

- 0300a - Seafield
- 0360a - Burren
- 0410a - Carrigvahanagh
- 05LAK - Lake
- 05MAR - Marine
- 05RIV - River
- 0660c - Puckane
- 0660d - Puckane
- 0660e - Ballywilliam
- 0700b - Kilrush
- 0700c - Drumkeeran
- 0700d - Straffan
- 0700h - Kilrush
- 0760c - Howardstown
- 0760e - Ballinamore
- 0800a - Black Rock Mountain
- 0800c - Ballycondon
- 0843e - Glenary
- 0843f - Glenary
- 0900a - Cooga
- 0900b - Kiltealy
- 0900e - Ross Carbery
- 0900h - NBP4
- 0960c - Borrisoleigh
- 0xx - Blown Sand / Dune
- 1000a - Elton
- 1000c - Elton
- 1000g - Elton
- 1000x - Elton
- 1030a - Crosstown
- 1030b - Rathowen
- 1100c - Clashmore
- 1100h - Borris
- 1100n - Clashmore
- 1100q - Mullabane
- 1100s - Broomhill
- 1130a - Moord
- 1150a - Baggotstown
- 1150b - Ballincurra
- 1150c - Faoldroim
- 1xx - Peat
- Island
- Rock
- Salt Marsh
- Tidal marsh
- Urban
- Waterbody

N

Ardara
Killybegs
Donegal
Donegal Bay
Ballyshannon
Bundoran
Lough Melvin
Drumcliff Bay
Sligo Bay
Sligo
Mahorhamilton
Lough Gill
Dromahair
Ballysadare Bay
Killala Bay
Broadhaven Bay
Inishcrone
Collooney
County Sligo
County Leitrim
Lough Allen
Ballymote
Tobercurry
Drumshanbo
Crossmolina
Lough Conn
Foxford
Wild Nephin National Park
Charlestown
Swinford
Boyle
Lough Gara
Carrick-on-Shannon
County Mayo
Newport
Ballaghaderreen

OVER-RUN AREA 1
Figure 6-7d
Figure 6-7c
Figure 6-7b
OVER-RUN AREA 3
OVER-RUN AREA 2

0 10 20
Kilometres

LEGEND

- Proposed Development Site Boundary
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Turbine Delivery Route
- Over-run Area Location
- Killybegs Harbour Location

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LAND, SOILS AND GEOLOGY

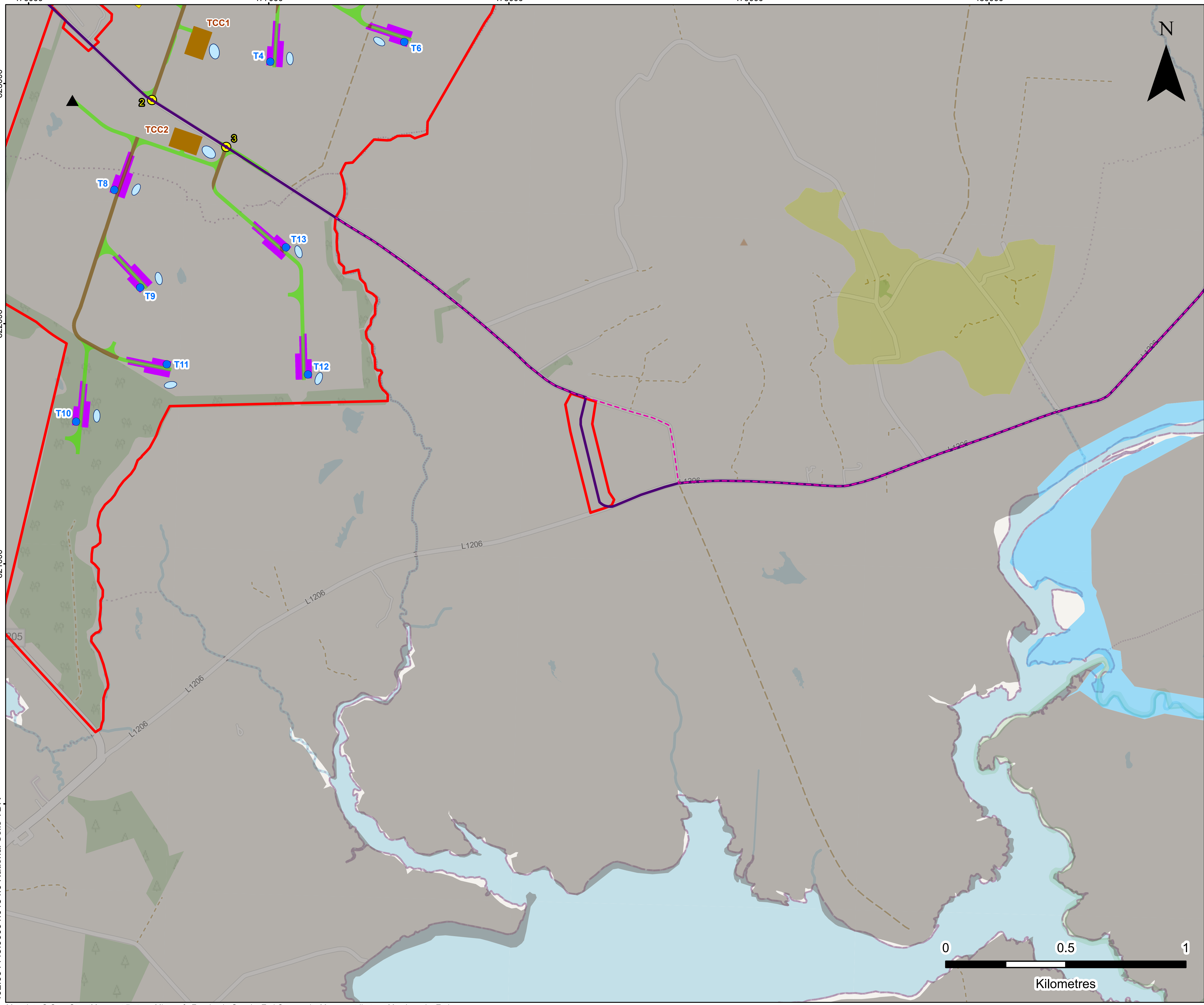
NATIONAL SOILS TDR OVER-RUN AREAS: OVERVIEW

FIGURE 6-1a

Scale 1:400,000 @ A3

Date MARCH 2026

402.064443.00001.0170.0 National Soils TDR Overview

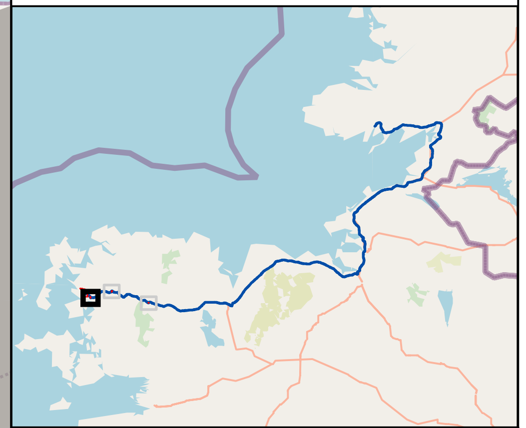


LEGEND

- Proposed Development SIte Boundary
- Proposed Turbine Location
- Proposed Site Access Location
- Proposed Met Mast Location
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Crane Pad
- Proposed Substation
- Proposed Temporary Construction Compound
- Proposed Turbine Delivery Route
- Proposed Attenuation Basin

Irish Soil Information System - National Soils

- 05MAR - Marine
- 05RIV - River
- 0843f - Glenary
- 1xx - Peat



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LAND, SOILS AND GEOLOGY

NATIONAL SOILS TDR OVER-RUN AREAS: OVER-RUN AREA 1

FIGURE 6-1b

Scale	Date
1:15,000 @ A3	MARCH 2026

402.064443.00001.0154.0 National Soils TDR

496000 497000 498000 499000 500000

821000 820000 819000

N59 Owenmore Bellacorick 110kV Substation Owenmore Bellacorrick AGI River Muing River Muing N59 N59 N59 R312 R312 R312 R312 Lough D

N

0 0.5 1

Kilometres

LEGEND

- Proposed Development SIte Boundary
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Turbine Delivery Route

Irish Soil Information System - National Soils

- 05RIV - River
- 1xx - Peat
- Urban
- Waterbody

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LAND, SOILS AND GEOLOGY

NATIONAL SOILS TDR OVER-RUN AREAS: OVER-RUN AREA 2

FIGURE 6-1c

Scale 1:15,000 @ A3

Date MARCH 2026

402.064443.00001.0154.0 National Soils TDR

483000 484000 485000 486000 487000

825000 824000 823000

N

LEGEND

- Proposed Development SIte Boundary
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Turbine Delivery Route

Irish Soil Information System - National Soils

- 05RIV - River
- 0843e - Glenary
- 1xx - Peat
- Urban
- Waterbody

R313 L52543 L12044 L1204 Munhin River Carrafull 323.4 m L12065 L1206 Barrets Quarry Bangor Erris N59 Wastewater Treatment Plant Owenmore Bangor Trail Bangor Erris Cemetery

0 0.5 1 Kilometres

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LAND, SOILS AND GEOLOGY

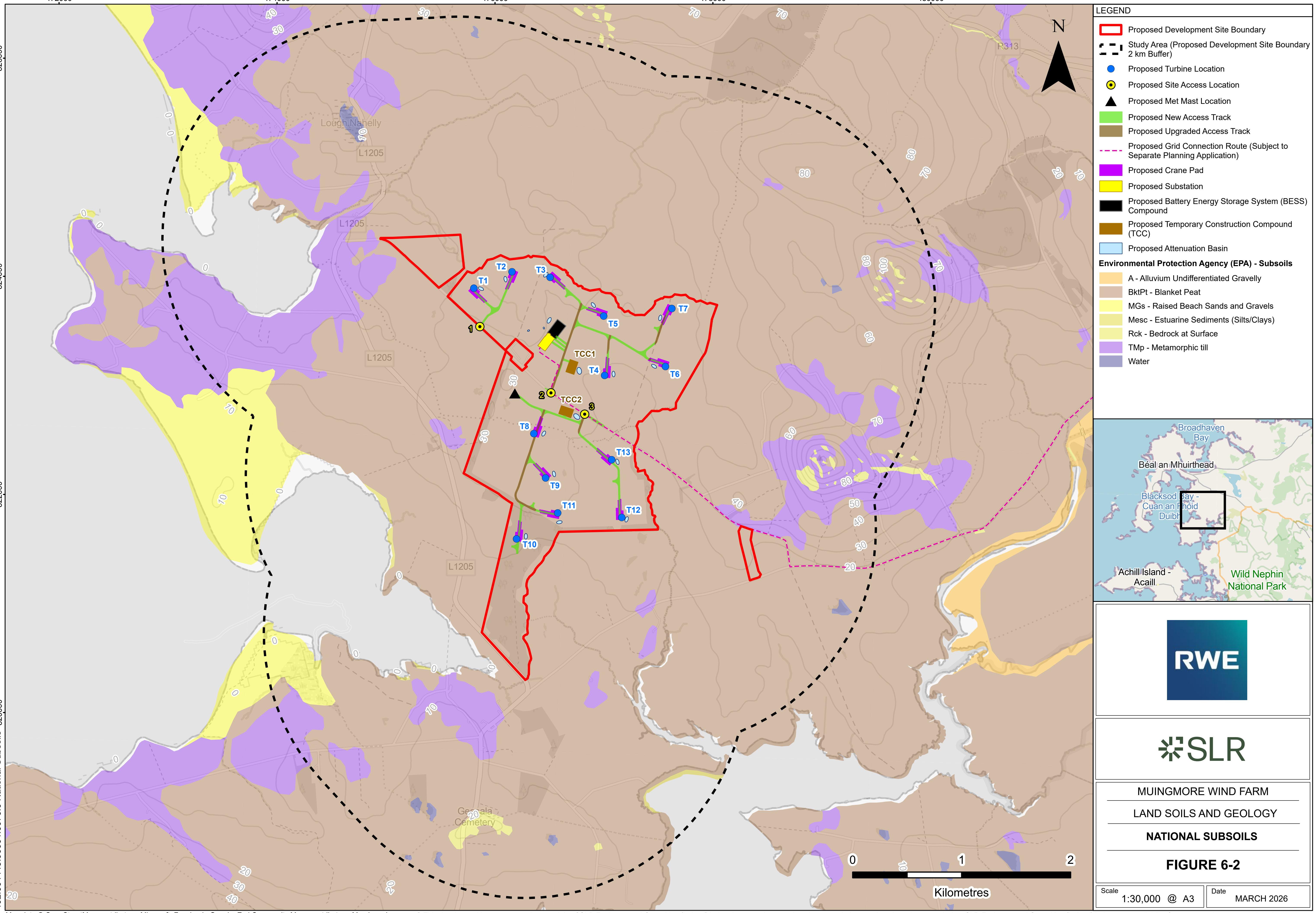
NATIONAL SOILS TDR OVER-RUN AREAS: OVER-RUN AREA 3

FIGURE 6-1d

Scale 1:15,000 @ A3

Date MARCH 2026

402.064443.00001.0154.0 National Soils TDR



472000
474000
476000
478000
480000
826000
824000
822000
820000
402.064443.00001.0076.0 National Subsoils
N
Lough Nahelly
L1205
R313
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
T13
TCC1
TCC2
1
2
3
Gerrala Cemetery
0
1
2
Kilometres
LEGEND
Proposed Development Site Boundary
Study Area (Proposed Development Site Boundary 2 km Buffer)
Proposed Turbine Location
Proposed Site Access Location
Proposed Met Mast Location
Proposed New Access Track
Proposed Upgraded Access Track
Proposed Grid Connection Route (Subject to Separate Planning Application)
Proposed Crane Pad
Proposed Substation
Proposed Battery Energy Storage System (BESS) Compound
Proposed Temporary Construction Compound (TCC)
Proposed Attenuation Basin
Environmental Protection Agency (EPA) - Subsoils
A - Alluvium Undifferentiated Gravelly
BktPt - Blanket Peat
MGs - Raised Beach Sands and Gravels
Mesc - Estuarine Sediments (Silts/Clays)
Rck - Bedrock at Surface
TMp - Metamorphic till
Water
Broadhaven Bay
Béal an Mhuirthead
Blacksod Bay - Cuan an Fhóid Duibh
Achill Island - Acaill
Wild Nephin National Park
RWE
SLR

MUINGMORE WIND FARM

LAND SOILS AND GEOLOGY

NATIONAL SUBSOILS

FIGURE 6-2

Scale 1:30,000 @ A3

Date MARCH 2026

Map data © OpenStreetMap contributors, Microsoft, Facebook, Google, Esri Community Maps contributors, Map layer by Esri. Irish National Soils Map, 1:250,000k, V1b(2014). Teagasc, Cranfield University.Jointly funded by the EPA STRIVE Research Programme 2007-2013 and Teagasc."
© COPERNICUS (2025)

480000 500000 520000 540000 560000 580000 600000

900000 880000 860000 840000

Environmental Protection Agency - Subsoils

- A - Alluvium Undifferentiated Gravelly
- Ac
- AcEsk - Acidic Esker sands and gravels
- Aeo - Aeolian sediments undifferentiated
- Ag - Alluvium undifferentiated sandy
- Asi - Alluvium undifferentiated clayey
- BasEsk - Basic Esker Sand and Gravel
- BktPt - Blanket peat
- Cut - Cutover Peat
- FenPt - Fen Peat
- GBi - Basic igneous sands and gravels
- GCh - Chert sands and gravels
- GCSsS - Sandstone and Shale Sands and Gravels Cambrian Precambrian
- GDCSs - Sandstone sands and gravels Devonian Carboniferous
- GDSs - Sandstone sands and gravels Devonian"
- GGr - Granite sands and gravels
- GLPDSs - Sandstone Sands and Gravels Lower Palaeozoic
- GLPS - Shale sands and gravels Lower Palaeozoic Devonian
- GLPSs - Sandstone sands and gravels Lower Palaeozoic
- GLPSsS - Sandstone and shale sands and gravels Lower Palaeozoic
- GLs - Limestone Sand and Gravel Carboniferous
- GMp - Metamorphic sands and gravels
- GNSSs - Shales and sandstone sands and gravels Namurian
- GQz - Quartzite sands and gravels
- IrSTAv - Acid volcanic till with matrix of Irish Sea Basin origin
- IrSTCSsS - Sandstone and shale till Cambrian Precambrian
- IrSTLPSsS - Sandstone and shale till Lower Palaeozoic
- IrSTDSs - Sandstone and shale till (Devonian) with matrix of Irish Sea Basin origin
- IrSTLs - Limestone till Carboniferous
- KaRck - Karstified limestone bedrock at surface
- KaRrck - Karstified limestone bedrock at surface
- L - Lake Sediments Undifferentiated
- Lc - Lake sediments clayey
- Ls - Lake sediments sandy
- Lsi - Lake sediments silty
- Made Ground
- Marsh
- Mbs - Beach sands
- Mc - Marine Clays
- Mesc - Estuarine sediments (silts/clays)
- MGs - Raised beach sands and gravels
- Mrl - Marl shell
- Msi - Marine silts
- Rck - Bedrock at Surface
- RsPt - Raised Bog
- Scree
- TAv - Acid volcanic till
- TBi - Basic igneous till
- TCh - Chert till
- TCSsCh - Chert and Carboniferous sandstone till
- TCSsS - Sandstone and shale till Cambrian/Precambrian
- TDCSs - Sandstone till Devonian/Carboniferous
- TDCSsS - Sandstone and shales till Devonian/Carboniferous
- TdlMr - Tidal Marsh
- TDSs - Sandstone till Devonian
- TGr - Granite till
- TLPDSs - Sandstone till Lower PAlaeozoic/Devonian
- TLPS - Shale till Lower PAlaeozoic
- TLPSs - Sandstone till Lower PAlaeozoic
- TLPSsS - Sandstone and Shales Till Devonian/Carboniferous
- TLs - Limestone Till Carboniferous
- TMp - Metamorphic till
- TNCSSs
- TNSSs
- TQz - Quartzite till
- Water
- Ws - Blown sand
- Wsd - Blown sand in dunes

OVER-RUN AREA 1
Figure 6-8d
Figure 6-8c
Figure 6-8b
OVER-RUN AREA 3
OVER-RUN AREA 2

Ardara
Killybegs
Donegal
Donegal Bay
Ballyshannon
Bundoran
Lough Melvin
Drumcliff Bay
Sligo Bay
Sligo
Manorhamilton
Lough Gill
Ballysadare Bay
Dromahair
Inishcrone
Colloony
County Sligo
County Leitrim
Lough Allen
Crossmolina
Ballina
Ballymote
Tobercurry
Drumshanbo
Lough Conn
Wild Nephin National Park
Foxford
Charlestown
Swinford
Boyle
Lough Gara
Carrick-on-Shannon
County Mayo
Newport
Ballaghaderreen

N

0 10 20
Kilometres

LEGEND

- Proposed Development Site Boundary
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Turbine Delivery Route
- Over-run Area Location
- Killybegs Harbour Location

RWE

SLR

MUINGMORE WIND FARM

LAND, SOILS AND GEOLOGY

NATIONAL SUB-SOILS TDR OVER-RUN AREAS: OVERVIEW

FIGURE 6-2a

Scale 1:400,000 @ A3

Date MARCH 2026

402.064443.00001.0171.0 National SubSoils TDR Overview

476000 477000 478000 479000 480000

823000 822000 821000

TCC1 T4 T6 2 TCC2 3 T8 T13 T9 T11 T12 T10

L1206

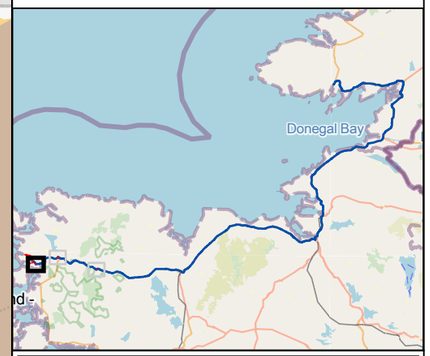
N

LEGEND

- Proposed Development Site Boundary
- Proposed Turbine Location
- Proposed Site Access Location
- Proposed Met Mast Location
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Crane Pad
- Proposed Substation
- Proposed Temporary Construction Compound
- Proposed Turbine Delivery Route
- Proposed Attenuation Basin

Environmental Protection Agency - Subsoils

- A - Alluvium Undifferentiated Gravelly
- BktPt - Blanket peat
- Mesc - Estuarine sediments (silts/clays)
- Rck - Bedrock at Surface
- TMp - Metamorphic till
- Water



0 0.5 1

Kilometres

RWE

SLR

MUINGMORE WIND FARM

LAND, SOILS AND GEOLOGY

NATIONAL SUB-SOILS TDR OVER-RUN AREAS: OVER-RUN AREA 1

FIGURE 6-2b

Scale 1:15,000 @ A3

Date MARCH 2026

402.064443.00001.0155.0 SubSoils TDR

496000 497000 498000 499000 500000

821000 820000 819000

N

LEGEND

- Proposed Development Site Boundary
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Turbine Delivery Route

Environmental Protection Agency - Subsoils

- A - Alluvium Undifferentiated Gravelly
- BktPt - Blanket peat
- Made Ground
- Rck - Bedrock at Surface
- TDCSs - Sandstone till Devonian/Carboniferous
- Water

Bellacorrick 110kV Substation
Bellacorrick AGI
Owenmore
River Muing
N59
R312
Lough D
Donegal Bay

0 0.5 1
Kilometres

RWE

SLR

MUINGMORE WIND FARM

LAND, SOILS AND GEOLOGY

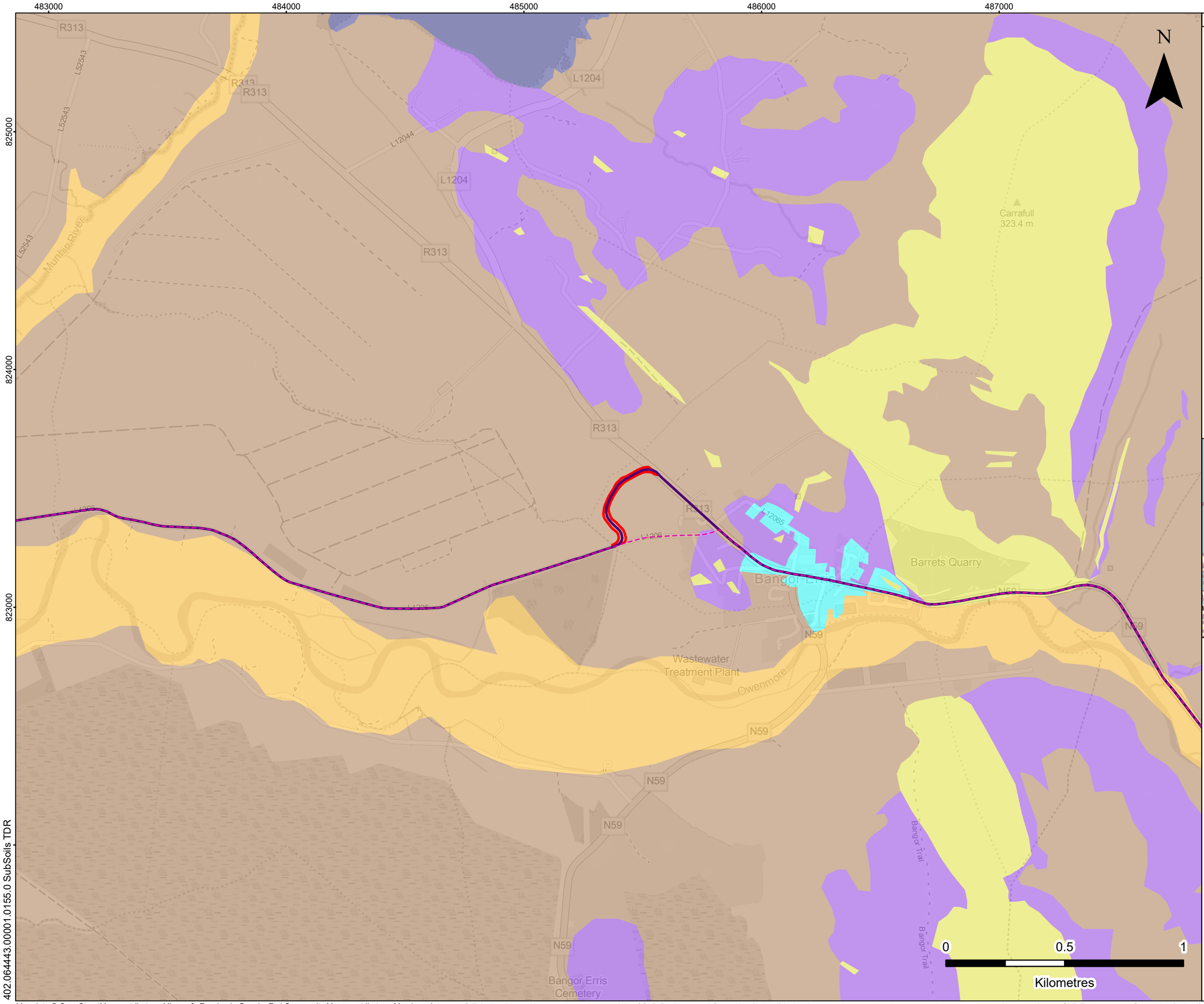
NATIONAL SUB-SOILS TDR OVER-RUN AREAS: OVER-RUN AREA 2

FIGURE 6-2c

Scale 1:15,000 @ A3

Date MARCH 2026

402.064443.00001.0155.0 SubSoils TDR

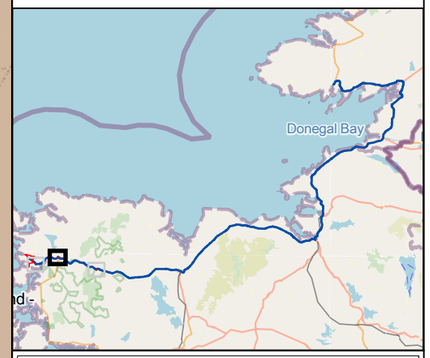


LEGEND

- Proposed Development Site Boundary
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Turbine Delivery Route

Environmental Protection Agency - Subsoils

- A - Alluvium Undifferentiated Gravelly
- BktPt - Blanket peat
- Made Ground
- Rck - Bedrock at Surface
- TMp - Metamorphic till
- Water



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LAND, SOILS AND GEOLOGY

NATIONAL SUB-SOILS TDR OVER-RUN AREAS: OVER-RUN AREA 3

FIGURE 6-2d

Scale 1:15,000 @ A3

Date MARCH 2026

472000 474000 476000 478000 480000

826000 824000 822000 820000

N

Lough Nahelly

L1205

R313

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13

1 2 3

TCC1 TCC2

Gerrala Cemetery

0 1 2

Kilometres

Bedrock Structural Feature

- Strike and Dip of First Foliation
- Strike and Dip of Overturned Bedding
- Strike and Dip of Second Foliation
- Strike and Plunge of First Generation Fold Axis
- Strike and Plunge of Second Generation Fold Axis

Linear Geology

- Anticlinal Axis
- Boundary of Igneous Intrusion
- Fault
- Slide

Bedrock Geology

- Annagh Division (undifferentiated)
- Bellagarvaun Formation
- Benmore Formation\ Broad Haven Form
- Ballybeg Park Limestone Formation
- Doon-na-Dell Schist Formation
- Doolough (per-alkaline) Granite Gne
- Inishderry Formation
- Inver Schist Formation
- Kanfinalta Formation
- Metadolerite
- Pollacappul Formation
- Srahlaghy Limestone Formation

LEGEND

- Proposed Development Site Boundary
- Study Area (Proposed Development Site Boundary 2 km Buffer)
- Proposed Turbine Location
- Proposed Site Access Location
- Proposed Met Mast Location
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Crane Pad
- Proposed Substation
- Proposed Battery Energy Storage System (BESS) Compound
- Proposed Temporary Construction Compound (TCC)
- Proposed Attenuation Basin

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LAND SOILS AND GEOLOGY

BEDROCK GEOLOGY

FIGURE 6-3

Scale 1:30,000 @ A3

Date MARCH 2026

402.064443.00001.0077.0 Bedrock Geology

480000 500000 520000 540000 560000 580000 600000

900000 880000 860000 840000

N

Ardara
Killybegs
Donegal
Donegal Bay
Ballyshannon
Bundoran
Lough Melvin
Drumcliff Bay
Sligo Bay
Sligo
Manorhamilton
Lough Gill
Dromahair
Ballysadare Bay
Collooney
Broadhaven Bay
Killala Bay
Inishcrone
Mhuirthead
Bay-
Fhoid
Ballina
Crossmolina
County Sligo
County Leitrim
Lough Allen
Ballymote
Tobercurry
Drumshanbo
Wild Nephin
National Park
Lough Conn
Foxford
Charlestown
Swinford
Boyle
Lough Gara
Carrick-on-Shannon
County Mayo
Newport
Ballaghaderreen

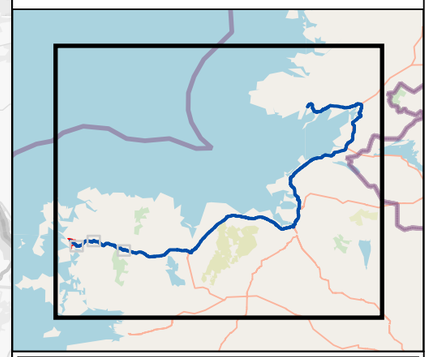
OVER-RUN AREA 1
Figure 6-9d
Figure 6-9c
Figure 6-9b
OVER-RUN AREA 3
OVER-RUN AREA 2

0 10 20
Kilometres

LEGEND

- Proposed Development Study Area
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Turbine Delivery Route
- Over-run Area Location
- Killybegs Harbour Location

Note
Bedrock Geology layers can be found from 6-8b onwards



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LAND, SOILS AND GEOLOGY

BEDROCK GEOLOGY TDR OVER-RUN AREAS: OVERVIEW

FIGURE 6-3a

Scale 1:400,000 @ A3

Date MARCH 2026

402.064443.00001.0172.0 Bedrock Geology TDR Overview

476000 477000 478000 479000 480000

823000 822000 821000

TCC1 T4 T6 2 TCC2 3 T8 T13 T9 T11 T12 T10

L1206

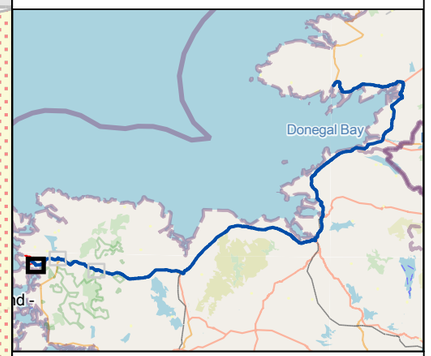
N

LEGEND

- Proposed Development Site Boundary
- Proposed Turbine Location
- Proposed Site Access Location
- Proposed Met Mast Location
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Crane Pad
- Proposed Substation
- Proposed Temporary Construction Compound
- Proposed Turbine Delivery Route
- Proposed Attenuation Basin

Bedrock Geology

- Annagh Division (undifferentiated)
- Benmore Formation\ Broad Haven Form



0 0.5 1

Kilometres

RWE

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LAND, SOILS AND GEOLOGY

NATIONAL SUB-SOILS TDR OVER-RUN AREAS: OVER-RUN AREA 1

FIGURE 6-3b

Scale 1:15,000 @ A3

Date MARCH 2026

402.064443.00001.0156.0 Bedrock Geology.TDR

496000 497000 498000 499000 500000

821000 820000 819000

N

LEGEND

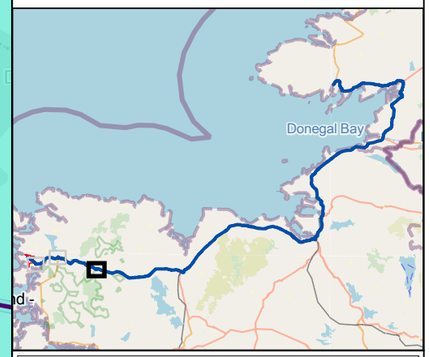
Proposed Development Site Boundary

Proposed Grid Connection Route (Subject to Separate Planning Application)

Proposed Turbine Delivery Route

Bedrock Geology

Downpatrick Formation



Owenmore

Bellacorick 110kV Substation

Bellacorrick AGI

River Muing

N59

R312

0 0.5 1

Kilometres

RWE

SLR

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LAND, SOILS AND GEOLOGY

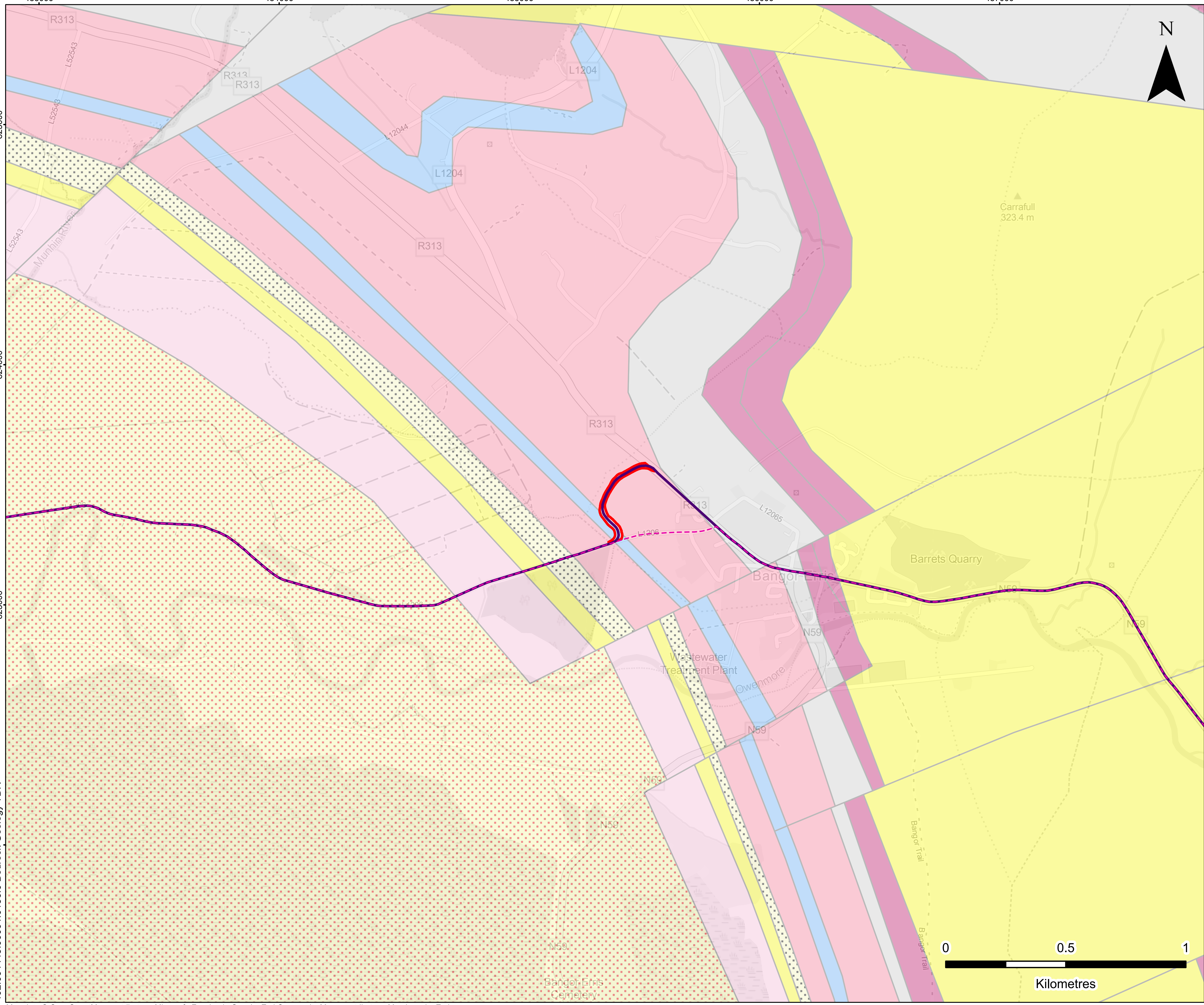
NATIONAL SUB-SOILS TDR OVER-RUN AREAS: OVER-RUN AREA 2

FIGURE 6-3c

Scale 1:15,000 @ A3

Date MARCH 2026

402.064443.00001.0156.0 Bedrock Geology TDR

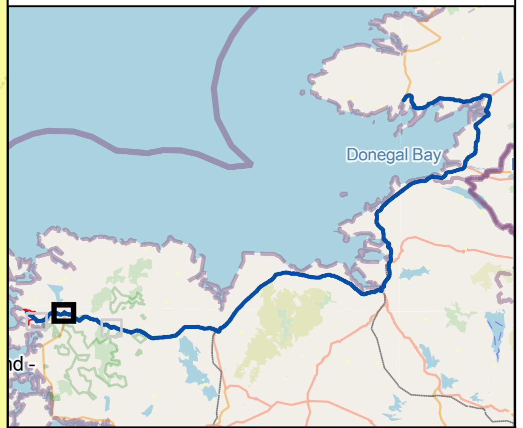


LEGEND

- Proposed Development Site Boundary
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Turbine Delivery Route

Bedrock Geology

- Bangor/Corslieve Formation
- Bellagarvaun Formation
- Benmore Formation\ Broad Haven Form
- Ballybeg Park Limestone Formation
- Briska Boulder Bed Formation
- Bangor Church Banded Member
- Bangor Reservoir Dolomitic Schist M
- Doon-na-Dell Schist Formation
- Inishderry Formation
- Inver Schist Formation
- Kanfinalta Formation
- Pollacappul Formation



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LAND, SOILS AND GEOLOGY

NATIONAL SUB-SOILS
TDR OVER-RUN AREAS:
OVER-RUN AREA 3

FIGURE 6-3d

Scale	Date
1:15,000 @ A3	MARCH 2026

402.064443.00001.0156.0 Bedrock Geology TDR

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472000 474000 476000 478000 480000

826000 824000 822000

N

MO012 Blacksod Bay
MO048 Doolough Gneiss

Lough Nahelly
L1205
R313
Geesala Cemetery

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13
TCC1 TCC2
1 2 3

0 1 2
Kilometres

LEGEND

- Proposed Development Site Boundary
- Study Area (Proposed Development Site Boundary 2 km Buffer)
- Proposed Turbine Location
- Proposed Site Access Location
- Proposed Met Mast Location
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Crane Pad
- Proposed Substation
- Proposed Battery Energy Storage System (BESS) Compound
- Proposed Temporary Construction Compound (TCC)
- Proposed Attenuation Basin
- Geological Heritage Site (Audited)

Note
Point feature infrastructure not drawn to scale

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LAND, SOILS AND GEOLOGY

GEOLOGICAL HERITAGE

FIGURE 6-4

Scale 1:30,000 @ A3

Date MARCH 2026

402.064443.00001.0078.0 Geological Heritage

495000 496000 497000 498000 499000

822000 821000 820000

402.064443.00001.0176.0 Geological Heritage TDR

N

MO011
Bellacorick

Lough Nagarnal

Bellacorick
110kV
Substation

Bellacorrick AGI

Owenmore

River Muing

N59

R312

0 0.5 1
Kilometres

LEGEND

- Proposed Development Study Area
- Bellacorick 110 kv Substation
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Turbine Delivery Route
- Geological Heritage Site (Audited)

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LAND SOILS AND GEOLOGY

GEOLOGICAL HERITAGE

FIGURE 6-4a

Scale 1:15,000 @ A3

Date MARCH 2026

472000 474000 476000 478000 480000

826000 824000 822000

Lough Nahelly
L1205
R313
Geesala Cemetery

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13
TCC1 TCC2
1 2 3

N

0 1 2
Kilometres

LEGEND

- Proposed Development Site Boundary
- Study Area (Proposed Development Site Boundary 2 km Buffer)
- Proposed Turbine Location
- Proposed Site Access Location
- Proposed Met Mast Location
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Grid Connection Route (Subject to Separate Planning Application)
- Proposed Crane Pad
- Proposed Substation
- Proposed Battery Energy Storage System (BESS) Compound
- Proposed Temporary Construction Compound (TCC)
- Proposed Attenuation Basin

Mineral Location

- Non-Metallic

Crushed Rock Aggregate Potential

- Very High Potential
- High Potential
- Moderate Potential
- Low Potential
- Very Low Potential

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LAND SOILS AND GEOLOGY

AGGREGATE POTENTIAL, CRUSHED ROCK POTENTIAL AND MINERAL LOCALITIES

FIGURE 6-5

Scale 1:30,000 @ A3

Date MARCH 2026

402.064443.00001.0153.0 Aggregate Potential