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Peat Stability Risk Assessment (PSRA) for Derryadd Wind Farm

TOBIN
CONSULTING ENGINEERS

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DISCLAIMER

REVISION SUMMARY

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00	29/11/2023	-	-
01	21/03/2025	All	Revision to address client comments.

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EXECUTIVE SUMMARY

Gavin and Doherty Geosolutions (GDG) was commissioned by Tobin to undertake a Peat Stability Risk Assessment (PSRA) for the proposed Derryadd Wind Farm (the "Proposed Development"). In accordance with the planning guidelines complied by the Department of the Environment, Heritage and Local Government (DoEHLG, 2019), where peat is present on a proposed wind farm development, a peat stability assessment is required.

The findings of the peat assessment showed that the site has an acceptable margin of safety and is suitable for the proposed wind farm development.

Consultation with published GSI maps and the observations from site investigations indicate that a large proportion of the site consists of cut-over Raised Peat. Peat is mapped across the site, aside from several areas of Glacial Till adjacent to the site. There are also some bodies of Till derived from limestones (TLs) mapped within the proposed wind farm site, forming small, tear-shaped islands within the peat. These pockets of Glacial Till are mapped underlying the proposed T01, T02, and T03 locations. These are pockets of Till located to the south of T04, north of T11, to the west of T16 and T17, and directly south of T20. Peat thickness encountered by intrusive investigations across the site varies from 0m to a maximum thickness of 6.2m, with an average of 1.38m recorded. In total, 47% of recorded peat thicknesses were under 1m, and 77% were under 2m. Peat depths over 2m were encountered within the southern part of the site, concentrated around the vicinity of T19, T20 and T22. The deepest areas of peat (depth 6.2m) were recorded in isolated locations at the east of T01 and T02 at a location where no infrastructure is proposed and at discrete locations east of the proposed internal floated access road between T8 and T14.

A desk study, site walkovers, ground investigation campaigns, stability analyses and a risk assessment were carried out to assess the risks posed by peat failures within the proposed wind farm site. The risks were assessed following the principles in Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Scottish Government, 2017).

The stability analysis aims to determine the stability, i.e., the Factor of Safety (FoS) of the peat slopes. The FoS provides a direct measure of the degree of stability of a peat slope. A FoS of less than 1.0 indicates that a slope is unstable; an acceptable FoS for slopes is 1.3 or greater. The results of the factor of safety analysis, indicate that the site is stable and safe for the construction and operation of the proposed development. The FoS analysis highlighted the localised areas of a low factor of safety along the steep faces of the existing drainage and historic peat extraction faces at the site. These linear features are not considered to be a landslide or bog burst risk but are indicative of potential localised instability risks which can be easily managed during construction. Management and reinstatement of these localised instability risks is outlined in the associated Peat and Spoil Management Plan (PMP) in Appendix 9.2 of the Soil Chapter.

A risk assessment was carried out considering the FoS value calculated in the stability analysis and other factors that could influence peat stability, considering how damaging a peat slide would be to this particular site's environment. The results of the stability risk assessment suggest that the Proposed Development has a negligible to low stability risk.

The site was found to have both acceptable factors of safety and levels of risk against peat instability. No immediate peat hazard has been identified during the desk study, the site reconnaissance and stability factor analysis. For this reason, no peat stability construction buffer zones are highlighted within or adjacent to any of the proposed wind farm site.

It is suggested that any peat deposition adjacent to the existing site drainage must maintain a minimum offset of 1m from the edge of the drain.

1 INTRODUCTION

Gavin and Doherty Geosolutions (GDG) was commissioned by Tobin Consulting Engineers to undertake a Peat Stability Risk Assessment (PSRA) for the Derryadd Wind Farm site.

GDG has been involved in many wind farm developments in both Ireland and the UK at various stages of development, i.e. preliminary feasibility, planning, peat stability assessment, design and construction. In addition to this, the GDG team, comprised of engineering geologists, geomorphologists, geotechnical engineers and environmental scientists, has developed expertise in landslide hazard mapping. GDG's experience includes leading a recent national landslide hazard mapping pilot study which included extensive landslide runout and hazard mapping and calculation in Irish blanket peat.

1.1 STATEMENT OF AUTHORITY

This document was prepared by Gavin & Doherty Geosolutions (GDG). GDG is a specialist engineering consultancy with a foundation in geoscience, environmental services and geotechnical engineering.

The members of the GDG team involved in this assessment include:

- Paul Quigley (Project Director). Paul is a Chartered Engineer with 28 years of experience in geotechnical engineering and UK Registered Ground Engineering (RoGEP) Adviser. He has worked on a wide variety of projects for employers, contractors and third parties gaining a range of experience including earthworks for major infrastructure schemes in Ireland and overseas, roads, tunnelling projects, flood protection schemes, retaining wall and basement projects, ground investigations and forensic reviews of failures. Paul has published numerous peer-reviewed technical papers and has acted as an independent expert for a number of legal disputes centred on ground-related issues. He is a reviewer for the ICE Geotechnical Engineering Journal, a member of the Eurocode 7 review panel at NSAI and a former Chairman of the Geotechnical Society of Ireland.
- John O'Donovan leads the onshore renewable sector at GDG. He completed his PhD at Imperial College investigating the use of DEM to model wave propagation techniques to measure small-strain soil stiffness. Following completion of the PhD John spent 2.5 years working with Buro Happold's Ground Engineering Group. He has over 12 years of experience in engineering and nine years in his current role. At GDG John manages onshore wind farm projects and solar farm projects. John specialises in dealing with difficult ground conditions and providing robust designs for projects in peatland areas. John also works on the landfall and onshore aspects of offshore windfarms including cable routing and onshore substation foundation design.
- Stephen Curtis is a senior engineering geologist on the onshore renewable team. He has over seven years of experience in both site investigation contracting and geotechnical consultancy environments. He is Chartered with the Institute of Geologists of Ireland (IGI) and the European Association of Geographers. Stephen has worked on multiple renewable energy projects; primarily solar and wind farm projects in Ireland and the UK for over four years. He has been involved in the feasibility study, planning, design and construction stages of wind and solar farm developments, with a particular focus on geotechnical risk management, and mitigation for construction in upland peat areas and Irish glacial ground conditions.
- Tomás McGrath. Tomás is a Chartered Engineer with 9 years' post graduate experience in civil and geotechnical engineering. He joined the Infrastructure team of Gavin and Doherty

Geosolutions Ltd. in 2018. His role since joining the team has included geotechnical interpretation, geotechnical design, structural design, design review, project management of multidisciplinary teams, and bid management. Tomás has led the design team or contributed to the detailed design of several onshore wind and solar farm developments across Ireland and the UK. His area of expertise includes turbine foundation design and site inspection, pile design for wind turbine foundations, stability analysis in soft ground, access track design, hardstand design for site compounds, substations, crane lifts and laydown areas, and other temporary works for grid infrastructure in peat.

- Chris Engleman is a Professional Geologist (PGeo, EuroGeol) with an MGeol from the University of Leeds. He is Chartered with the Institute of Geologists Ireland (IGI), and the European Federation of Geologists. Chris has five years of industry experience within the onshore renewables sector and the field of geological mapping; predominantly working on projects for peat stability and management (including PSRAs), ground investigation, rock and soil logging, GIS mapping and geotechnical design. He has experience in peat stability analysis, geological/geomorphological mapping (with a particular focus on Quaternary geology), site investigation, project management and GIS mapping. He has worked on several EIAR projects in both Ireland and Scotland, including Peat Stability Risk Assessments, Peat and Spoil Management Plans, and Soils and Geology Chapters.
- Johan van Niekerk is a design engineer working in the GDG Onshore Renewables team. He has over five years of experience in consultancy and has worked on a variety of projects in the energy and mining industry, mostly focused on the geotechnical design of infrastructure.
- Kelly Griffin. Kelly is a graduate civil engineer within the onshore renewables team in GDG with over two years of industry experience. Kelly has completed structural and geotechnical design work on various projects including temporary works design, retaining wall design, shallow foundation design and earthworks in Ireland and the UK. Kelly authored the initial revision of the report.

1.2 PROPOSED DEVELOPMENT

The proposed Derryadd Wind Farm is located in south County Longford, located primarily on three bogs within the Mountdillon Group of peat production bogs, namely Derryaroge, Derryadd and Lough Bannow cutaway bogs and a very small proportion of a fourth cutaway bog, Derryshannoge. The proposed development site has a total area of approximately 1900 hectares and is located in an area surrounded by the towns and villages of Lanesborough, Derraghan, Keenagh, and Killashee.

A detailed map of the proposed site's administrative locations is provided in Figure A-1 In Appendix A.

The proposed development infrastructure will comprise the following:

- 22 no. wind turbines with a blade tip height of 190 m, blade rotor diameter of 165 m, hub height of 107.5 m and the associated infrastructure including tower sections, nacelle, hub, and rotor blades and all associated foundations and hard-standing areas in respect of each turbine;
- New internal site access roads, approximately 27,500 m in length including passing bays and associated drainage;
- 2 no. permanent Meteorological Masts, both of which will be 120 m in height, and associated hardstanding areas for both masts, as well as the decommissioning and removal of an existing 100 m Meteorological Mast on-site in Lough Barrow Bog;

- 4 no. Borrow pits in Derryadd Bog; All works associated with the opening, gravel and spoil extraction and decommissioning of the borrow pits;
- 4 no. temporary construction compounds, including material storage, site welfare facilities, and site offices;
- 4 no. temporary security cabins at the main construction site entrances as well as at a number of access points around the proposed wind farm site;
- 1 no. 110 kV electrical substation compound in Derryaroge Bog. The substation will consist of 2 no. control buildings, a 36 m high telecommunications tower, associated electrical plant and equipment, groundwater well, wastewater holding tank and welfare facilities.
- All associated underground electrical and communications cabling connecting the turbines and masts to the proposed electrical substation, including road crossing at N63 and associated grid connection via a 110 kV loop-in connection to the existing Lanesborough-Richmond 110 kV overhead line which traverses the proposed wind farm site;
- 1 no. 16 MW battery storage facility;
- 2 no. Peat Deposition Areas, one to the north of the proposed substation compound in Derryaroge Bog and one in Derryadd Bog;
- New site access entrances, temporary improvements and modifications to existing public road infrastructure to facilitate delivery of abnormal loads including
locations on N6 Eastbound Slip Road, N6/N61 Roundabout at Athlone, N61/N63 Roundabout at Roscommon, N63 Roscommon Arts Centre Roundabout and N61/N63 Roundabout, Northeast of Roscommon.
- Hinge 3 No. Permanent lighting fixtures in Folio RN40465F in Roscommon town to facilitate the delivery of abnormal loads (i.e. turbine blades);
- Approximately 7,500 m of dedicated amenity access tracks to provide linkages between the proposed wind farm site roads, Royal Canal Greenway (to the east), the Corlea Visitor Centre amenity areas (to the south) and the Midlands Trail Networks project (to the north).;
- 3 no. Permanent amenity carparks, one of which is situated in Derryaroge Bog (19 no. car parking spaces in total) and two carparks in Derryadd Bog (19 no. car parking spaces in each carpark);
- All associated site work and ancillary works including new drainage and updating existing drainage, access road, earthworks, site reinstatement and erosion control, which will be aligned with the existing and future site rehabilitation plans; and,
- A 10-year planning permission is being sought with a 30-year operational life from the date of commissioning of the entire wind farm.

This report examines the conditions at the proposed wind farm site as defined in Chapter 3 of the EIAR.

1.3 OVERVIEW OF PEAT LANDSLIDES

1.3.1 PEAT LANDSLIDE TYPES

The literature typically refers to two general groups of peat landslides: peat slides and bog bursts. Some descriptions of each type are provided in Table 1-1.

Table 1-1: Peat landslide types.

Characteristics	Peat slide	Bog burst
Outstanding characteristic	Shallow translational failures	Particularly fluid failures without necessarily a clear scar margin. The liquefied basal material is expelled through surface tears followed by settlement of the overlying mass.
Mechanism	Shear failure along discrete shear surfaces, typically at the peat-substrate interface	Subsurface creep, swelling
Peat depth	≤ 2 m	≥ 1.5 m
Slope angle	5 – 15° (moderate)	2 – 10° (gentle), where deeper peat is more likely
Spatial distribution	Scotland, England and Wales	Ireland

A review of the landslide information on the GSI Irish Landslides Database indicated that the nearest recorded landslides occurred approximately 9 km north-east of the development area (ID GSI_LS16-0043 and 044), as shown in Figure F-1 In Appendix F. Both events are described as peat slides and happened in February 2016. They are characterised by an area of raised peat that has undergone some slippage. In their description of the features, the GSI (2025) note that the peatslide appears to be relatively large and other possible slippages have occurred on the same raised bog previously. No available information could be found indicating the cause or trigger for these peat slide events.

Two additional landslides are also shown in Figure F-1 ca. 13 km away from the proposed wind farm site, GSI_LS03-0007 and GSI_LS-0033. These occurred in January 1818 and January 1809 respectively and very little information about these events is given.

Although there is no evidence of landslides within the proposed wind farm site, this does not necessarily mean that landslides have never occurred at the proposed site location. It is noted that the geomorphological features associated with peat landslides (peat slides and bog bursts) are softened with time through erosion, drying and re-vegetation (Feldmeyer-Christe & Küchler, 2002; Mills, 2003). Additionally, the peat extraction activities across the proposed site obscure the identification of possible historical landslides.

1.3.2 CONTROLS OF PEAT INSTABILITY

The spatial and temporal occurrence of landslides, including peat landslides, is controlled by *conditioning* and *triggering factors*.

The conditioning factors explain the spatial distribution of landslides and are related to the inherent properties of the terrain, such as soil type, slope angle, curvature (convex/concave) of the slopes and drainage.

The triggering factors explain the frequency of landslides. They can be distinguished between fast and slow triggers:

- Fast triggers:
  - Intense rainfall (the most frequent trigger);
  - Snowmelt (very frequent trigger; Warburton, 2022);

    - Rapid ground accelerations (e.g. from blasting rock);
    - Undercutting of peat by natural processes (e.g. fluvial) or man-made; or
    - Loading the peat.
- Slow triggers:
    - Low intensity but constant rainfall;
    - Afforestation / Deforestation (wildfires, pollution-induced vegetation change); or
    - Weathering (physical, chemical, biological).

Slow triggers can start landslides by themselves and can also act as *preparatory factors* for fast triggers by lowering their threshold to start landslides.

1.3.3 PRE-FAILURE INDICATORS

The presence of conditioning factors and low-pace triggers before failure is often indicated by ground conditions, features and morphologies that can be identified remotely or during the fieldwork by the geomorphologist or through basic monitoring techniques.

According to the guidelines provided by the Scottish Government (2017), the following critical features are indicative of the susceptibility or proneness to failure in peat environments:

- Presence of historical and recent failure scars and debris;
- Presence of features indicative of tension (e.g. cracks);
- Presence of features indicative of compression (e.g. ridges, thrusts, extrusion features);
- Evidence of peat creep (typically associated with tension and compression features);
- Presence of subsurface drainage networks or water bodies;
- Presence of seeps and springs;
- Presence of artificial drains or cuts down to substrate;
- Presence of drying and cracking features;
- The concentration of surface drainage networks;
- Presence of soft clay with organic staining at the peat and (weathered) bedrock interface; and
- Presence of iron pans or similar hardened layers in the upper part of the mineral substrate.

Other evidence of peat instability unrelated to landslides has been considered, namely quaking peat in horizontal areas with very low bearing capacity.

1.3.4 PEAT STABILITY ASSESSMENT WORKFLOW

GDG has carried out the PSRA for the proposed wind farm site following the principles set out in the *Proposed electricity generation developments: peat landslide hazard best practice guide* (Scottish Government, 2017). This guide has been used in this report as it provides best practice methods to identify, mitigate and manage peat slide hazards and associated risks concerning consent applications for electricity generation projects.

Figure 1-1**Error! Reference source not found.** Shows a workflow diagram showing the general methodology for the PSRA. The methodology can be summarised into the following steps:

1) Completion of the desk study.
2) Undertake in situ reconnaissance of the proposed site including:
    - Carry out geo-investigations especially concentrated at the proposed infrastructure areas, including peat probing, hand shear vane testing and trial pitting;
    - Record geological and geomorphological features, including exposures of the soil profile and evidence of peat instability; and
    - Record hydrologic and vegetation features.
3) Risk assessment, including:
    - Interpolation of the peat probe values and generation of the peat depth map;
    - Creation of the Factor of Safety (FoS) maps using a deterministic approach (Bromhead, 1986) for drained and undrained conditions;
    - Qualitative hazard assessment by combining the FoS with observations of the peat condition identified both on aerial imagery and during fieldwork.
    - Qualitative consequences assessment;
    - Calculation of the peat landslide risk by multiplying hazards and consequences;
    - Reclassification of the risk values into four classes:
        - Negligible;
        - Low;
        - Medium; and
        - Serious.
4) Review the proposal of actions required for each infrastructure element.

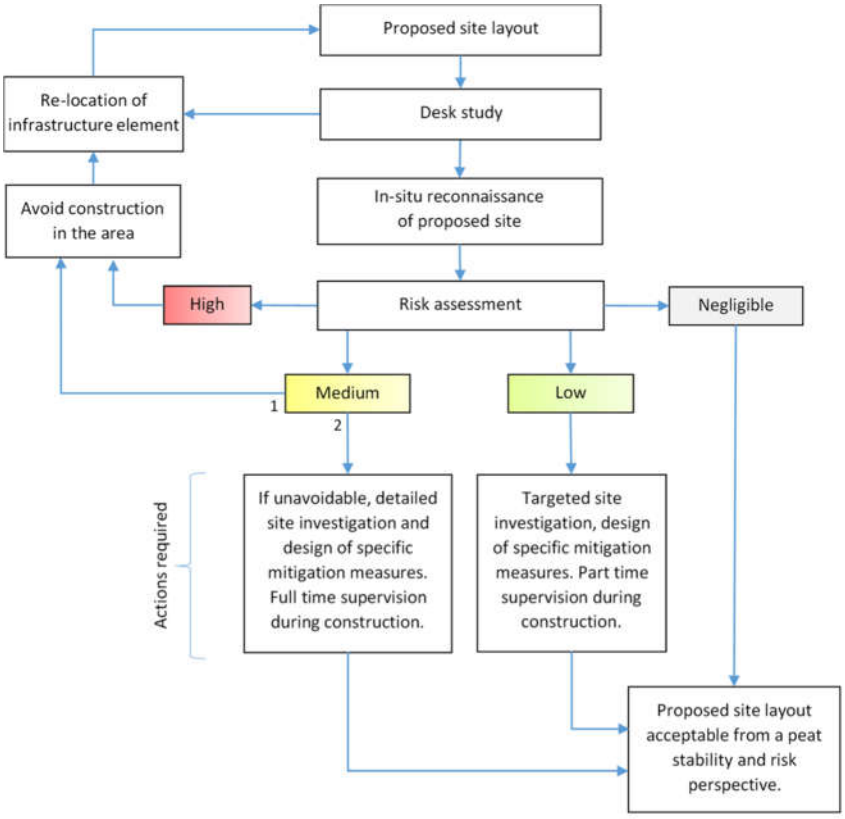

Figure 1-1: Workflow of the PSRA methodology for the acceptability of the proposed site layout.

2 DESK STUDY

For a preliminary site suitability analysis and background knowledge of local peat stability and ground conditions, the following areas have been considered:

1) Geology and Quaternary sediments (subsoils);
2) Soils;
3) Hydrogeology;
4) Multi-temporal aerial / Satellite imagery;
5) Topography;
6) Landslide inventories and landslide susceptibility;
7) Hydrology;
8) Land cover and land use;
9) Relevant academic literature and publications.

2.1 BEDROCK GEOLOGY

The bedrock geology on the 1:100,000 scale mapping from the GSI indicates the regional geological setting of the proposed wind farm site and the surrounding environment. The regional setting of the proposed wind farm is characterised by 13 geological formations within 6 km of the proposed wind farm site boundary.

At Derryaroge and Derryadd the underlying bedrock is predominantly Visean Limestone (Undifferentiated). The bedrock geology at the Proposed Development is outlined in Figure B-1 to Figure B-3 in Appendix B.

The southern portion of the proposed wind farm at the Lough Bannow Bog is characterised by eight formations. The formations in this area are:

- Visean Limestone (Undifferentiated);
- Argillaceous Limestones;
- Ballysteen Formation;
- Meath Formation;
- Moathill Formation;
- Rinn Point Limestone Formation;
- Waulsortian Limestones; and
- Lucan Formation.

The regional bedrock geological formations are described in Table 2-1.

Table 2-1: Regional bedrock geology descriptions

Formation	Abbreviation	Description
Meath Formation	ME	Limestone, calcareous sandstone
Moathill formation	MH	Limestone, calcareous sandstone, shale
Rinn Point Limestone Formation	RP	Basal clastics
Ballysteen Formation	BA	Dark muddy limestone, shale
Fearnaght Formation	FT	Pale conglomerate and red sandstone
Lucan Formation	LU	Dark limestone and shale, calp
Argillaceous Limestones	AL	Dark limestone and shale, chert
Visean Limestone (undifferentiated)	VIS	Undifferentiated limestone
Waulsortian Limestones	WA	Massive unbedded lime-mudstone

The underlying bedrock for each proposed turbine location and key infrastructure elements is presented in Table 2-2. This table shows four types of bedrock formation underlying the proposed turbine locations and proposed infrastructure. Faults are shown on the geological mapping in Appendix B, running through Lough Bannow close to turbines T16, T17, T21 and T22. No bedrock outcrops are indicated within the proposed wind farm site extent in the geological mapping.

Table 2-2: Underlying bedrock formation of each proposed turbine and infrastructure location.

Infrastructure Location	Bedrock Formation	Bedrock lithology
T1 to T15	Visean Limestones (Undifferentiated)	Undifferentiated Limestone
T16 and T18 to T21 and met mast	Moathill Formation	Limestone, calcareous, sandstone and shale
T17	Argillaceous Limestones (Visean)	Dark limestone, shale and chert
T22	Ballysteen Formation	Dark muddy limestone and shale
Borrow Pit Location BP01 to BP04	Visean Limestone (Undifferentiated)	Undifferentiated Limestone
Substation (including grid connection)	Visean Limestone (Undifferentiated)	Undifferentiated Limestone
Battery Storage Area	Visean Limestone (Undifferentiated)	Undifferentiated Limestone
Construction Compound No. 1	Visean Limestone (Undifferentiated)	Undifferentiated Limestone
Construction Compound No. 2	Visean Limestone (Undifferentiated)	Undifferentiated Limestone
Construction Compound No. 3	Argillaceous Limestones (Visean)	Dark limestone, shale and chert
Construction Compound No. 4	Ballysteen Formation	Dark muddy limestone and shale
Amenity Car Park	Visean Limestone (Undifferentiated)	Undifferentiated Limestone
Security hut no.1 and no.2	Visean Limestone (Undifferentiated)	Undifferentiated Limestone
Security hut no.3	Argillaceous Limestones (Visean)	Dark limestone, shale and chert
Security hut no.4	Ballysteen Formation	Dark muddy limestone and shale

The GSI database contains records of historical ground investigations carried out within and nearby to the development area. The locations of these historic ground investigations are within the proposed wind farm boundary (within Lough Bannow Bog) and within 1 km of the proposed wind farm site boundary. Logs of all but two of the boreholes are available from the database which indicate that the boreholes were drilled for mining exploration purposes. Limestone, sandstone, dolomite, wackestone, siltstone and claystone were recorded in these boreholes. These lithological descriptions are generally in agreement with those provided by the GSI as shown in Table 2-1. The

depths to bedrock identified during these ground investigations range between 3.0mbgl and 18.0mbgl.

Ground investigations specific to the proposed development are outlined in Section. 3.2, and described in detail in Chapter 9 (Lands, Soils and Geology) of the EIAR. These specific ground investigations broadly support the GSI mapping.

2.2 QUATERNARY SEDIMENTS

The GSI Quaternary Sediments Map (1:50k) at the local scale is shown in Figure B-4 to Figure B-6 in Appendix B. Peat is encountered across the proposed wind farm site, mapped throughout by the GSI as cut-over raised peat. There are also some bodies of Till derived from limestones (TLs) mapped within the proposed wind farm site, forming small, tear-shaped islands within the peat. These pockets of Glacial Till are mapped underlying the proposed T01, T02, and T03 locations. These are pockets of Till located to the south of T04, north of T11, to the west of T16 and T17, and directly south of T20. The bodies of Till are related to drumlins mapped by the (illustrated on Figure B-4 to Figure B-6 as "subglacial lineation landforms". Glacial Till typically comprises a heterogeneous mix of sand, gravel, cobbles, and boulders, usually held in an over-consolidated clay matrix. A number of small areas mapped as bedrock at or near the surface can be seen in the far south of the proposed wind farm site, indicating the potential presence of bedrock within 1 m of the surface in these locations. The results of the ground investigations carried out as part of the proposed wind farm, and of historic ground investigations carried out in the surrounding areas are discussed in Section. 3.2, but broadly show agreement with the GSI mapping.

2.3 SOILS

The EPA/Teagasc (National Soils Map, 2018) databases indicate that the proposed wind farm is generally underlain by cutover-raised peat. The peat, which is shown to underly all of the bogs within the proposed wind farm site, is Holocene in age. It was formed as an extensive deposit across the landscape in the area since deglaciation approximately 7,000 – 10,000 years ago. The bogs were used for peat extraction by Bord na Móna. There is an area of made ground within the proposed wind farm site at the Mountdillon Works. There are two areas of Basic Poorly Drained Mineral Soils with Peaty Topsoil noted within the proposed wind farm site extents: north of Turbine T03 and south of Turbine T20. Figure C-1 to Figure C-3 Appendix C presents the national soils map at the local scale.

2.4 MULTI-TEMPORAL AERIAL/SATELLITE IMAGERY

The aerial/satellite imagery used for this report is the Ordnance Survey Ireland (OSI) aerial imagery (1995-2013), Google Earth multi-temporal imagery (2009 onwards), and Bing Aerial Imagery (shown in Table D-1 in Appendix D). This imagery has been used in conjunction with the historic OSI historic 6-inch and 25-inch mapping (Table D-1) to:

- Identify any evidence of peat failures;
- Identify pre-conditioning factors for failure (where visible at the resolution of the imagery);
- Observe, where possible, vegetation cover, drainage regime and dominant drainage pathways; and
- Identify evidence for land management practices with the potential to influence ground conditions (e.g. burning, artificial drainage, peat cutting and forestry).

It is noted that the time-lapse of the available imagery is too short to identify old peat instability evidence that may have been eroded or re-vegetated with time or changes in land management.

2.5 TOPOGRAPHY

The topography of the proposed wind farm site is relatively flat with elevations generally ranging from 34mAOD to 59mAOD. The proposed wind farm site covers three different bogs, from north to south: Derryaroge, Derryadd, and Lough Bannow. Each bog consists largely of flat, cut-over /cutaway bog, with low ridges trending NNW-SSE forming the local topographic highs. Localised, man-made changes in topography in the form of areas of shallow excavation are also present due to the historic peat extraction. Small 'islands' encompassing low NNW-SSE trending ridges within the Derryadd and Lough Bannow Bog extents are excluded from the proposed wind farm site. The topography of the proposed wind farm site is illustrated in Figure E-1 to Figure E-3 in Appendix E.

The Derryaroge bog is largely flat-lying, ranging from topographic lows of 34mOD in drains at the north of the bog, to highs of 46m OD, in a small NNW-SSE trending low ridge in the centre of the bog. The Derryadd bog is largely flat-lying cutaway bog, with low points of 39m OD in drains in the north of the bog, and topographic highs of 50m OD at the edge of the low ridges which are outside of the proposed wind farm site. The Lough Bannow bog also consists largely of flat, cut-over /cutaway bog, with topographic lows of 43m OD in the NW corner of the bog, and topographic highs of 59m OD in the SE corner, close to the proposed wind farm boundary.

Assessment of the topographic DEM dataset issued by Tobin outlines the slopes at the ground profile slopes at the proposed wind farm site predominantly range between 0° and 5°. Areas within the proposed wind farm site with slopes over 5° are manmade slopes mostly related to existing peat cuttings from industrial harvesting and drainage excavations.

The topographic information within the northern area of the site in the land adjacent to T6 and T7 is limited as the LiDAR survey collected is limited by the presence of surface water. The area was observed from a distance during the site visit and the GDG engineers have noted that there are no evident rises or falls in the topographic elevations. The area appears to be a flat, peat bog or wetland area with some extensive low vegetation.

2.6 LANDSLIDE MAPPING

A review of the landslide information on the GSI Irish Landslides Database (GSI, 2025) indicates that the nearest recorded landslides occurred approximately 9 km north-east of the proposed wind farm site (ID GSI_LS160043 and 044), as shown in Figure F-1 in Appendix F. Both events are described as peat slides and happened in February 2016. They are characterised by an area of raised peat that has undergone some slippage. In their description of the features, the GSI (2025) notes that the peat slide appears to be relatively large and other possible slippages have occurred on the same raised bog previously.

Two additional landslides are also shown ca. 13 km away from the proposed wind farm site. Figure F-1, GSI_LS030007 and GSI_LS-0033. These occurred in January 1818 and January 1809 respectively and very little information about these events is given.

The proposed wind farm site is in a region of low rainfall and relatively flat topography, and there is no record of past landslide events from the national landslide database nor the desk study and fieldwork within the proposed wind farm site boundary.

Figure F-1 shows the Regional Landslide Susceptibility while Figure F-2 to Figure F-4 Show the Local Landslide Susceptibility. This map was obtained by using an empiric probabilistic method at a regional scale and did provide input into site-specific scale engineering studies. The proposed wind

farm site is designated as 'Low' susceptibility, with a very localised band designated as 'Moderately Low' running along the southeastern proposed wind farm site boundary.

2.7 HYDROGEOLOGY

2.7.1 BEDROCK AQUIFERS

The bedrock aquifer types mapped by the GSI (2025) within the proposed wind farm site boundary and surrounding area are shown in Figure G-1 in Appendix G. According to GSI's groundwater map viewer, the proposed wind farm site is underlain by two different aquifer bodies. The majority of the proposed wind farm site (Derryaroge and Derryadd Bogs) is underlain by a Regionally Important karstified (Conduit) Aquifer (Rkc). The southern end of the proposed wind farm site at Turbines T17 to T22 (Lough Bannow Bog) is underlain by a Locally Important (Ll) aquifer, defined as being a moderately productive bedrock aquifer in local zones.

Regionally important aquifers are generally capable of supplying regionally important abstractions (e.g. large public water supplies), or excellent yields (>400 m^3/d). Bedrock aquifer units generally have a continuous area of >25 km^2 and groundwater predominantly flows through fractures, fissures, joints or conduits. Locally important aquifers are capable of supplying locally important abstractions (e.g. smaller public water supplies, group schemes), or good yields (100-400 m^3/d). In the bedrock aquifers, groundwater predominantly flows through fractures, fissures, joints or conduits. Bedrock is anticipated to consist of a limited and relatively poorly connected network of fractures, fissures and joints, giving a low fissure permeability which tends to decrease with depth (GSI, 2025).

2.7.2 GROUNDWATER VULNERABILITY

Groundwater vulnerability in Ireland, as defined in the EC Water Framework Directive – Recharge and Groundwater Vulnerability, is a function of the thickness and permeability of the subsoil that overlies bedrock. These factors strongly influence the attenuation processes and the time it takes for contamination to be released into the subsurface. The GSI Groundwater Vulnerability map containing groundwater vulnerability classifications for the proposed wind farm site (GSI, 2025) at the regional view is shown in Figure G-2 in Appendix G

The majority of the proposed wind farm site exhibits 'Low' degrees of groundwater vulnerability with some localised isolated areas of 'Moderate' groundwater. Vulnerability transitions from 'Moderate' to 'High' and at some locations to 'Extreme' and 'Rock at or near Surface or Karst' in areas to the south of the proposed wind farm site. The areas of 'Extreme' vulnerability and 'Rock at or near Surface or Karst' are southwest of T16 and T17 and correspond to areas mapped as Bedrock Outcrop/Subcrop (Rck) in the GSI Quaternary Sediments map (Section. 2.2). Areas of 'Moderate' vulnerability mapped just outside of the proposed wind farm site conform to the outlines of possible drumlins and reflect the wider regional trend of localised bulbous-shaped areas of elevated groundwater vulnerability due to drumlin geomorphologies of higher permeability soils.

Due to the localised variability within the proposed wind farm site, pre-development vulnerability observed at individual wind turbines and other infrastructure such as borrow pits, site compounds and peat storage areas will vary depending on location.

2.7.3 SUBSOIL PERMEABILITY

The subsoil permeability affects how easily rainwater can soak down into the ground and fill up the groundwater resource (aquifer). An aquifer is a body of rock and/or sediment that holds groundwater. The GSI Subsoil Permeability Map (2025) for the proposed wind farm site at the regional view is shown in Figure G-3.

The Subsoil Permeability map shows how permeable the subsoils are in Ireland. The map shows the subsoil permeability category at any point on the land surface as long as the subsoil is greater than 3 metres thick. There are three categories: 'High', 'Moderate' or 'Low'. The majority of the proposed wind farm site is underlain by 'Low' subsoil permeability. Localised areas adjacent to the southern boundary and southeast are currently 'Not Mapped' due to assumed low depth to bedrock and sections of bedrock outcropping.

There are no sand and gravel aquifers within the proposed wind farm site boundary or in the vicinity, although it is possible that localised perched groundwater is present within granular layers and lenses within the Glacial Till and alluvial soils.

2.8 HYDROLOGY

According to the Ordnance Survey Ireland (OSI) shapefile of rivers, lakes and catchments/basins (Figure H-1 in Appendix H), the proposed wind farm site is located within the upper Shannon sub-catchment.

Derryaroge Bog is approximately 1.20km south of the River Shannon which runs in a northwest direction to the proposed wind farm site. Lough Bannow Bog is approximately 0.5 km to the west of the Royal Canal which runs in a northwest to east direction.

2.9 LAND COVER AND LAND USE

Land cover mapping by Corine (2018, Figure I-1 in Appendix I) indicates that almost the entirety of the proposed wind farm site is covered by peat bog, with small patches of transitional woodland scrub mapped directly to the east and south of T08, and to the west and southwest of T17. Much of the land directly adjacent to the proposed wind farm boundary is recorded as pastureland, with small patches of coniferous and broad-leaved forest mapped close to the southern boundary. Overall, the proposed wind farm site varies greatly from areas that are re-vegetating rapidly since they came out of industrial peat extraction to bare peat areas that were still subject to peat extraction until the cessation of the practice in Derryadd in 2019. The majority of the site is now developing pioneer cutaway habitats. Some parts of the site have recently developed pioneer wetlands communities including Reed beds. The drier sections of the site have developed areas of Birch-dominated scrub (Refer to Chapter 7 (Biodiversity – Flora and Fauna) for more detail).

3 SITE RECONNAISSANCE AND GROUND INVESTIGATION

3.1 SITE RECONNAISSANCE

GDG conducted three separate site reconnaissance visits as part of this assessment:

- Visits for the previous turbine layouts in October 2016 and January 2017 to record geomorphological features concerning the proposed wind farm development, peat depths (peat probing) and peat strength (hand shear vanes),
- A further visit to the current Proposed Development layout in November 2023. This visit consisted of visits to all turbine locations, geomorphological mapping and peat probing. Access was not available to Turbines 5, 6 and 7 due to ponded surface water.

An indication of the existing site terrain with a flat topography is shown in Figure 3-1, Figure 3-2, and Figure 3-3. No evidence of any previous landslides or peat instability was identified during the walkover.

Figure 3-1: General site terrain and conditions in the northern area of the site

Figure 3-2: General site terrain and conditions at the middle area of the site (exposed peat surface with ponded water).

Figure 3-3: General site terrain and conditions at the middle area of the site (localised ponding of surface water).

3.2 GROUND INVESTIGATION

Site surveys relating to the soil and geological environment and ground investigations were undertaken in several phases between October 2016 to February 2023. These included:

- GDG - 28th of October 2016 to 11th of January 2017. Site walkover to review the ground conditions and assess the topography, geomorphology and requirements for further investigations and 25 no. Trial Pits are presented in Appendix 9.1.1 of the EIAR;
- Tobin - April 2017 – 8 no. Trial Pits at potential substation locations, presented in Appendix 9.1.2 of the EIAR;
- Tobin – December 2017- 35 no. Trial pits at proposed borrow pits, presented in Appendix 9.1.3 of the EIAR;
- Tobin – March-April 2018- 49 no. Trial pits at proposed turbine locations, along access tracks and at potential borrow pits presented in Appendix 9.1.4 of the EIAR;
- Hand shear vane tests on the material encountered in the trial pits, March 2017 – April 2018 presented in Appendix 9.1.3 and Appendix 9.1.4 of the EIAR;
- Irish Drilling Ltd. - June 2017- 5no. Rotary core drillings to assess interconnectivity of the proposed development site with nearby turloughs; (this information informed the subsequent and separate borrow pit assessment) presented in Appendix 9.1.5 of the EIAR;
- Irish Drilling Ltd. - April 2017 - 70no. Peat probes at proposed turbine locations, along access tracks and at potential borrow pits presented in Appendix 9.1.6 of the EIAR;
- Tobin – March 2018- 131 no. Peat probes at proposed turbine locations, along access tracks presented in Appendix 9.1.7 of the EIAR;
- Lab testing from 2017 GDG trial pits, presented in Appendix 9.1.8 of the EIAR.

- Irish Drilling Ltd.- February-May 2021, presented in Appendix 9.1.9 of the EIAR. An extensive ground investigation campaign was carried out across the site. These ground investigation locations related to the previously approved proposed development layout as described in Section 2.3 of Chapter 2 (Background to the Proposed Development) of the EIAR. The ground investigation campaign was composed of the following:
    - 94 no. Cable percussion boreholes,
    - 90 no. Rotary boreholes for recovery of overburden and bedrock cores,
    - 336 no. Trial pits,
    - 343 no. Dynamic probes,
    - Geophysical investigation carried out by Minerex Ltd. composed of the following:
        - Electronic Resistivity Tomography (ERT),
        - Seismic refraction,
        - Multi-channel Analysis of Surface Waves (MASW),
        - Wenner Array.
    - A range of in-situ tests were carried out including Standard Penetration Testing (SPT) and variable head testing,
    - Geotechnical and geochemical laboratory testing.
- Irish Drilling Ltd. – January-February 2023, presented in Appendix 9.1.10 of the EIAR. An extensive ground investigation campaign was carried out across the site. These ground investigation locations related to the revised turbine and substation layout of the proposed development as part of this planning application and EIAR. The ground investigation campaign was composed of the following:
    - 3no. Rotary core drillings,
    - 34no. trial pits.
    - Logging of the soil layers and sampling of each stratum encountered; and
- GDG - November 2023- 97no. peat probes and site inspections at the updated proposed infrastructure locations presented in Appendix 9.1.11 of the EIAR.

The site investigation locations considered the following criteria:

- Spatial distribution of the proposed infrastructure;
- Distance between probe points to avoid interpolation of peat depths across large distances;
- Changes in slope angle, as peat depths are likely to be shallower on steeper slopes;
- Changes in vegetation, which can reflect changes in peat condition;
- Changes in hydrological conditions; and
- Changes in land use.

Ground investigation locations are shown in Figure J-1, Figure J-2 and Figure J-3 in Appendix J.

Table J-1 to Table J-22 in Appendix J present the observations made at the proposed infrastructure.

3.2.1 PEAT DEPTH ENCOUNTERED

The ground investigations indicate that the ground conditions at the site comprise predominantly of areas of cut-over/cutaway raised peat generally of thicknesses less than 2.0m, but isolated pockets of thicknesses of up to approximately 6.2m were identified.

Peat thickness encountered by intrusive investigations at 773 No. Locations across the site, recording peat thicknesses up to 6.2m, with an average of 1.38m recorded. The frequency of different peat thicknesses is shown in Figure 3-5. In total, 47% of recorded peat thicknesses were under 1m, and 77% were under 2m. Peat depths in excess of 2m were encountered within the southern part of the site, concentrated around the vicinity of T19, T20 and T22, with peat of over 2m depth also recorded at the T5 and T18 locations. The deepest areas of peat (depth 6.2m) were recorded in isolated locations to the east of T01 and T02 at a location where no infrastructure is proposed and at discrete locations east of the proposed internal floated access roads. A summary of the recorded average peat depths at each infrastructure location is illustrated in Table 3-1. A photo of the 2m deep peat observed in GDG TP108 (near T19) can be seen in Figure 3-4.

Table 3-1: Average peat depths at infrastructure locations.

Infrastructure Location	Average Peat Depth (m)	Infrastructure Location	Average Peat Depth (m)
Turbine 1	0.26	Turbine 19	0.89
Turbine 2	0.37	Turbine 20	1.21
Turbine 3	0.53	Turbine 21	0.37
Turbine 4	1.25	Turbine 22	1.79
Turbine 5	2.35	Battery Storage compound	0.9
Turbine 6	1.86	Substation	1.7
Turbine 7	1.57	Construction Compound 1	3.1
Turbine 8	0.70	Construction Compound 2	3.4
Turbine 9	0.68	Construction Compound 3	0
Turbine 10	0.29	Construction Compound 4	1.8
Turbine 11	0.41	Met Mast 1 (Derryaroge Bog)	1.9
Turbine 12	0.29	Met Mast 2 (Lough Bannow Bog)	2.9
Turbine 13	0.84	Borrow Pit 01	0.82
Turbine 14	0.46	Borrow Pit 02	0.91
Turbine 15	0.86	Borrow Pit 03	0.6

Turbine 16	1.79	Borrow Pit 04	0.82
Turbine 17	0.62	Peat Deposition Area (Derryaroge Bog)	1.6
Turbine 18	2.63	Peat Deposition Area (Derryadd Bog)	1.5

Figure 3-4: Photo through Trial pit (GDG TP08) near T19 showing cut-over peat underlain by cohesive Glacial Till (Photo Dated November 2016)

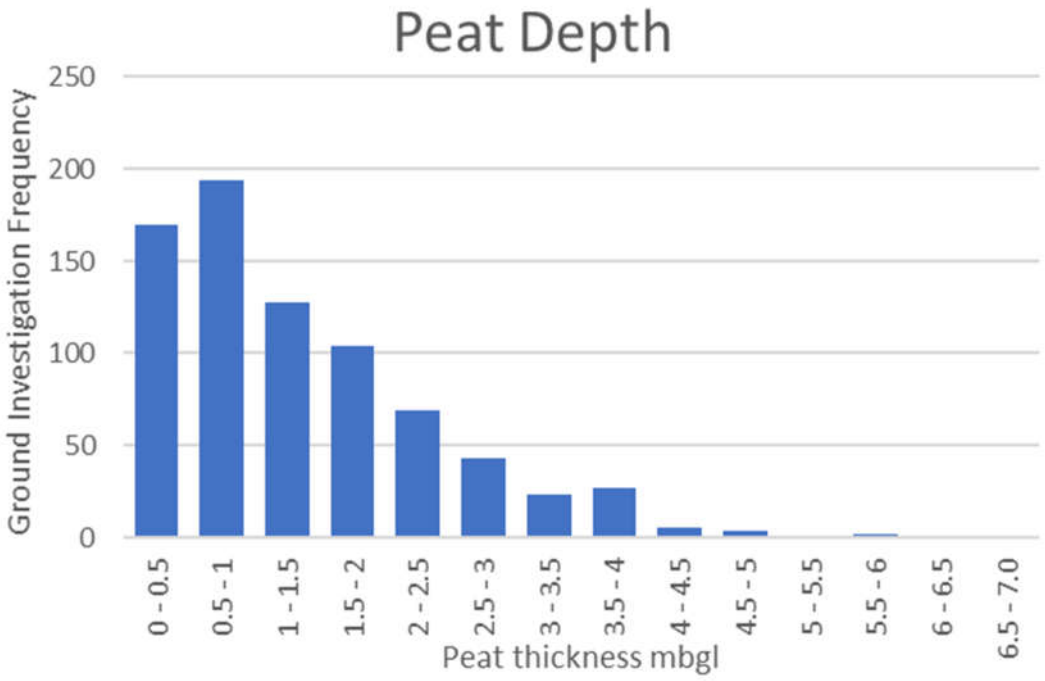

Figure 3-5: Histogram of peat probe thickness results across the site

It is noted that data obtained through peat probing cannot be utilised in classifying the peat material, given that peat probing does not fully distinguish between the different types of peat material and between peat and other soft ground. The observations, sampling recovery and description from the trial pits were considered the most reliable source of representative peat depths across the site. However, it is considered that the peat probing data generally compares well with trial pitting data, and so all available data types: peat probe, shear vane and trial pit locations, have been used in the peat thickness assessment.

A raster map was created in GIS software presenting the interpolated peat depth across the site from the peat probe points using the inverse Distance Weighted (IDW) method. This interpolated raster of peat depths is represented in Figure J-4 to Figure J-7 in Appendix J.

3.2.2 PEAT STRENGTH ASSESSMENT

In addition to peat depths, assessment of peat condition and strength has been carried out throughout the ground investigation campaigns.

In general, the peat is described as pseudo fibrous or fibrous with a Von Post measurement (from Hobbs, 1986) varying between H3-H5 (very slightly to moderately decomposed peat), some occasional thin thicknesses (<0.5 m) of strongly decomposed amorphous peat with a Von Post reading >H6 (moderately highly decomposed peat or higher) is recorded. There is little evidence of any trend in the Von Post results in plan, or laterally throughout the site. It was common for the Von Post number to increase with depth, although there was considerable local variation and reversals of this trend were also observed.

Over 600 No. Shear vane tests were carried out during the several site investigation campaigns at locations throughout the proposed wind farm site. The tests were carried out in trial pits, and at 0.5m depth intervals through the peat material encountered at the site to best understand any variation within the peat material with depth. A large variation in shear vane results was seen throughout the peat material ranging up to 45 kPa. The weakest peat recorded was a shear strength

of 5 kPa was found at scattered locations of the site. These low shear strength results were generally found in the upper part of the ground profile (< 0.5 m). There was no evidence for particularly weak zones being present at depth (>1.5m) within the peat mass. No clear trend was evident between variation in the shear vane result and the Von Post description.

3.2.3 LIMITATIONS DURING SITE VISITS

During the 2023 peat probing and site reconnaissance campaign access was not possible to the Turbine 6 and Turbine 7 locations due to ponded surface water. Access was gained as close as safely possible to these locations and ground investigation information has been gathered in these areas in past site investigation campaigns.

The topographic information at these locations was also limited as the LiDAR survey collected is limited by the presence of surface water. The area was observed from a distance during the site visit and the GDG engineers have noted that there are no evident rises or falls in the topographic elevations. The area appears to be a flat peat bog or wetland area with some extensive low vegetation.

The construction phase contractor will be required to develop a methodology for investigating these areas and will include these in their design assessments. The findings of the 2023 site reconnaissance at Turbine 6 and Turbine 7 are outlined in Table J-6 and Table J-7 of Appendix J.

4 PEAT STABILITY ASSESSMENT

The peat stability assessment is one of the inputs required for the peat hazard assessment and risk calculation. This section presents:

- A review of the general approaches to assess peat stability;
- The concept of Factor of Safety (FoS);
- The methodology adopted for this report and the parameters required; and
- The resulting FoS delineates safety buffers and peat stockpile restricted areas if required.

4.1 MAIN APPROACHES TO ASSESS PEAT STABILITY

There are several possible approaches for assessing peat stability. However, there are two main approaches typically used in Ireland for assessing peat stability for wind farm developments:

1) Qualitative geomorphological judgement; and
2) Quantitative assessment:
    a) Empirical probabilistic approach.
    b) Physically-based deterministic approach (Factor of Safety - FoS).

Approach 1 is subjective and thus not adopted for this study. Approach 2a is objective and quantitative but is more appropriate for land planning and decision-making studies at a regional scale. However, the 2a method does not provide an engineering indication of physical stability as Approach 2b does. In this report, the peat stability assessment is carried out by using Approach 2b: the deterministic (FoS) approach (Bromhead, 1986), as this is considered the most comprehensive assessment of peat slope stability. This approach is further discussed in the following sections.

4.2 THE FACTOR OF SAFETY (FOS) CONCEPT

The factor of safety is a measure of the stability of a slope. For any slope, the degree of stability depends on the balance between the landslide driving forces (weight of the slope) and its inherent shear strength, illustrated in Figure 4-A.

Figure 4-A: Balance of forces in a slope (Scottish Government, 2017).

Therefore, the factor of safety provides a direct measure of the degree of stability of a slope by the ratio of the shear resistance along a potential surface of failure and the landslide driving forces acting on such surface. Multiple potential surfaces of failure are possible, but the FoS assigned to a slope is that of the surface of failure with the lowest value of FoS.

- FoS < 1 indicates a slope is unstable and prone to failure.
- FoS = 1 indicates a slope is theoretically stable but may not be safe particularly if any changes to loading or environmental conditions were to occur.
- FoS ≥ 1.3 was the acceptable safety threshold in the previous code of practice for earthworks British Standard BS 6031:1981 (BSI, 1981). This document states that for a first-time failure with a good standard of site investigation, a FoS greater than 1.3 indicates that the slope is stable and safe.

Eurocode 7 (EC7) (I.S. EN 1997 1.2005+AC.2009) is the current code of practice for the design of geotechnical engineering works. The design philosophy used in EC7 applies partial factors to soil parameters, actions and resistances. Unlike the traditional FoS approach, EC7 does not provide a direct measure of stability, as global factors of safety are not used.

Therefore, to provide a direct measure of the peat stability across proposed wind farm site, the BS 6031:1981 FoS method has been used for this assessment rather than EC7 partial factors. As a general guide, the FoS limits for peat slopes used in this report are summarised in Table 4-1.

Table 4-1: Factor of Safety limits used in this report.

Factor of Safety limits	Slope stability
FoS < 1	Unstable
1 ≤ FoS <1.3	Stable but not safe
FoS ≥ 1.3	Stable and safe

4.3 METHODOLOGY ADOPTED AND PARAMETERS

The stability of a peat slope is dependent on several factors working in combination, namely the slope angle, the shear strength of the peat, the depth of the peat, the pore water pressure and the loading conditions. An adverse combination of these factors could potentially result in peat failure. An adverse value of one of the above-mentioned factors alone is unlikely to result in peat failure. The infinite slope model (Skempton and DeLory, 1957) is used to combine these factors to determine a factor of safety for peat sliding in the proposed wind farm site. This model is based on a translational slide, which is a reasonable representation of the dominant mode of movement for peat failures.

To determine the stability of the peat slopes in the proposed wind farm site, short-term stability during construction (using undrained soil strength conditions) and long-term stability during operation, using undrained soil strength conditions, analyses have been carried out.

4.3.1 UNDRAINED SOIL STRENGTH CONDITIONS

The undrained loading condition applies in the short-term during construction and until construction, induced pore water pressures dissipate.

Undrained shear strength values (c_u) for peat are used for the total stress analysis. Based on the findings of the Derrybrien failure, undrained loading during construction was found to be the critical failure mechanism.

The shear strength values obtained within the peat material during the ground investigations ranged between 5 and 45kPa (Section. 3.2.2). Based on GDG's experience in the assessment of similar cutaway raised peat and values reviewed in literature, the lower bound value from the ground investigation information of 5 kPa is considered conservative and as such has been adopted for the undrained calculation.

The formula used to determine the factor of safety for the undrained condition in the peat (Bromhead, 1986) is as follows:

$$F = \frac{c_u}{\gamma z sin\alpha cos\alpha}$$ Equation 4.3-1

Where,

F = Factor of Safety;

c_u = Undrained strength (5 kPa in the proposed wind farm site);

γ = Bulk unit weight of the material (assumed 10 kN/m^3);

z = Depth to failure plane assumed as the depth of peat (this is the interpolated raster of peat depth); and

α = Slope angle (in each pixel of 1 m. This is obtained from the 1-m DEM provided by the Client).

4.3.2 DRAINED SOIL STRENGTH CONDITIONS

The drained loading condition applies in the long term. The condition examines the effect of the change in groundwater level as a result of rainfall on the existing stability of the natural peat slopes.

A drained analysis requires effective cohesion (c') and effective friction angle (ø') values for the calculations. These values can be difficult to obtain because of the disturbance experienced when sampling peat and the difficulties in interpreting test results due to the excessive strain induced within the peat. To determine suitable drained strength values, a review of published information on peat was undertaken. Table 4-2 shows a summary of the drained parameters used in published literature. Based on GDG's experience in the assessment of similar cutover/cutaway peats, and the values reviewed in the literature, it was considered appropriately conservative to use design values below the averages, namely c' = 4 kPa and ø' = 25°.

Table 4-2: Effective cohesion and friction angle values from the literature

Reference	Cohesion, c' (kPa)	Friction Angle
Hanrahan et al. (1967)	5 to 7	36 to 43
Rowe and Mylleville (1996)	2.5	28
Landva (1980)	2 to 4	27.1 to 32.5
Landva (1980)	5 to 6	-
Carling (1986)	6.5	0
Farrell and Hebib (1998)	0	38
Farrell and Hebib (1998)	0.61	31
Rowe, Maclean and Soderman (1984)	3	27
McGreever and Farrell (1988)	6	38
McGreever and Farrell (1988)	6	31
Hungr and Evans (1985)	3.3	-
Madison et al. (1996)	10	23
Dykes and Kirk (2006)	3.2	30.4
Dykes and Kirk (2006)	4	28.8
Warburton et al (2003)	5	23.9
Warburton et al (2003)	8.74	21
Entec (2008)	3.8	36.8
Komatsu et al (2011)	8	34
Zhang and O'Kelly (2014)	0	28.9 to 30.3

The formula used to determine the factor of safety for the drained condition in the peat (Bromhead, 1986) is as follows:

$$F = \frac{c' + (\gamma z - \gamma_w h_w)\cos^2 \alpha \tan \phi'}{\gamma z \sin \alpha \cos \alpha}$$ Equation 4.3-2

Where,

F = Factor of Safety;

c' = Effective cohesion (4 kPa);

γ = Bulk unit weight of the material (10 kN/m^3);

z = Depth to failure plane assumed as the depth of peat (this is the interpolated peat depth);

γ_w = Unit weight of water (9.81 kN/m^3);

h_w = Height of the water table above the failure plane (= z i.e. surface level);

α = Slope angle (in each pixel. This is obtained from the 1-m contour lines provided by the Client);

ϕ' = Effective friction angle (25°).

The following assumptions have been made as part of the analysis:

1) Peat depths are based on the maximum peat depths recorded in each probe from the walkover surveys (as outlined in Section 3).
2) The slope angles derived from the DEM, as outlined in Section 2.5, accurately represent slope angles on site.
3) The surface of failure is assumed to be parallel to the ground surface.
4) The peat stability is calculated in pixels of 1 m across the fringe containing information on peat depth and the proposed infrastructure.

Two surcharging conditions are considered for the stability analysis:

- No surcharging load; and
- Surcharging load of 10 kPa, equivalent to 1 m of stockpiled or side-cast peat.

4.4 FoS Results

The factors of safety obtained for the two different conditions (undrained and drained) and for the two surcharge scenarios (no surcharge and 1 m of peat surcharge) are presented in table format and map format.

Table K-1 and Table K-2 in Appendix I show the FoS calculation process in the proposed turbine sites only for undrained and drained conditions, respectively. The FoS calculation for the rest of the sites, i.e. the proposed substation, temporary construction compounds, access roads, borrow pit, substation, battery storage, security compounds, etc. (more than 5000 pixels of 1 m), has been carried out semi-automatically in GIS by implementing Equation 4.3-1 and Equation 4.3-2 in the GIS raster calculator.

4.4.1 FoS for Undrained Conditions

The spatial distribution of the FoS values calculated for undrained conditions (no surcharge) is shown in Figure K-1 to Figure K-3 in Appendix K. At each turbine location, the construction compound, the substation and borrow pit location, the pixels exhibit a FoS > 1.3 (green: stable and safe). Several

small isolated areas of 1 ≤ FoS <1.3 (yellow: stable but not safe), and FoS <1 (red: not stable) are identified. These areas correlate with existing drainage excavations generally orientated northwest to southeast. The narrow linear features are associated with steep slopes at drainage excavations and are not considered to present a significant peat landslide risk.

4.4.2 FoS for Undrained Condition and Surcharge of 10 kPa

Figure K-4 to Figure K-6 in Appendix I depict the spatial distribution of the FoS values calculated for undrained conditions and with a 10 kPa surcharge. The 10kPa simulated the placement of 1m of peat material on the ground surface. In terms of the factor of safety results, the undrained condition with the 10kPa surcharge is considered to be the critical stability scenario. Almost all of the pixels are shown to be stable and safe (FoS > 1.3, green), including each turbine location, the construction compound, the substation, battery storage areas, security compounds and borrow pits several small isolated areas were identified with 1 ≤ FoS <1.3 (yellow: stable but not safe), and FoS <1 (red: not stable). The narrow linear features are associated with steep slopes at peat-cut faces and drainage excavations and are not considered to present a significant peat landslide risk. However, the construction methods and mitigations outlined in the associated Peat and Spoil Management Plan will ensure the safe and stable construction of the proposed structure in these locations.

4.4.3 FoS for drained conditions

The spatial distribution of the FoS values calculated for undrained conditions (no surcharge) is shown. in Figure K-7 to Figure K- 9 in Appendix K. Each of the pixels exhibits a FoS > 1.3 (green: stable and safe). Several small isolated areas were identified with 1 ≤ FoS <1.3 (yellow: stable but not safe), and FoS <1 (red: not stable). These areas correlate with existing drainage excavations generally orientated northwest to southeast. The narrow linear features are associated with steep slopes at drainage excavations and are not considered to present a significant peat landslide risk.

4.4.4 FoS for Drained Condition and Surcharge of 10 kPa

The spatial distribution of the FoS values calculated for undrained conditions (no surcharge) is shown in Figure K-10 to Figure K-12 in Appendix K. At each turbine and hardstand location, the pixels exhibit a FoS > 1.3 (green: stable and safe). Several small isolated areas were identified with 1 ≤ FoS <1.3 (yellow: stable but not safe), and FoS <1 (red: not stable). These areas correlate with existing drainage excavations generally orientated northwest to southeast. The narrow linear features are associated with steep slopes at drainage excavations and are not considered to present a significant peat landslide risk.

4.5 Assessment and Interpretation of FoS Results

The interpretation of the factor of safety analysis and accurate assessment of the peat stability conditions is an approach which combines the developed polygon areas of the FoS results, areas of risk identified during the site walkovers and potential risk areas identified from the examination of peat depths and site topography. It is noted that the results from all FoS analyses (drained/undrained, with and without surcharge) are used, highlighting any areas indicative as having a FoS of less than 1.3 in the worst-case surcharged condition with 10kPa. These areas were then cross-examined with the observations from the site visits and topographic models (see Appendix E for LiDAR DEM drawings).

The results of the FoS analysis indicate that the peat conditions at the site are stable and safe in their natural (unsurcharged) conditions using both undrained and drained soil strengths, except for the steep cut faces at locations of previous peat extraction and land drainage. These narrow linear features are located away from the footprint of the key wind farm infrastructure and are considered to not be a significant peat landslide risk. Any potential failure which could occur here would be a very small localised failure of the peat extraction face. These areas have been examined during site walkovers, with the observations supporting this conclusion.

The results of the assessment which include a surcharge indicate low FoS results along existing drainage and peat extraction faces. The linear areas indicating a low factor of safety with the surcharge are more extensive and occur adjacent to and, in limited areas, within the footprint of the proposed wind farm. These areas are considered to not be a significant peat landslide risk. However, the Contractor will be required to follow the construction methods and mitigations outlined in the associated Peat and Spoil Management Plan will ensure the safe and stable construction of the proposed structure.

Required mitigation methods include:

- the offset of peat reinstatement by at least one meter from the edge of peat cutting, or
- the reinstatement of the peat-cutting face with excavated acrotelm peat to restore a safe, natural slope on the peat surface.

Both methods are subject to the Detailed Designer's local and global stability assessment and should consider variable and static surcharge loading from engineered fill materials and associated construction activities.

5 PEAT STABILITY RISK ASSESSMENT (PSRA)

A peat stability risk assessment (PSRA) has been carried out at each of the proposed infrastructure locations, taking into consideration the landslide hazard probability and potential consequences at each location. The peat stability factor of safety is the most significant factor in generating a risk rating. The production of a PSRA risk rating for the site access tracks is not possible as they are linear structures which cover significant distances, but the same considerations were used in the design and assessment of the stability of the access road alignment. The results of the FoS analysis have been considered for all access tracks.

5.1 RISK DEFINITION

Risk is the potential or probability of adverse consequences, including economic losses, environmental or social harm or detriment. Risk is expressed as the product of a hazard (e.g. peat landslide) and its adverse consequences (Lee & Jones, 2004; Corominas et al., 2014) (Equation 5.1-1). Some use approximate synonyms and refer to risk as the product of the likelihood and the impact or the product of susceptibility and the exposure.

$$\text{Risk} = (\text{Hazard}) \times (\text{Adverse Consequences}) \qquad \text{Equation 5.1-1}$$

5.2 General Methods for Risk Assessment

There are various levels of risk assessment, ranging between:

- Detailed quantitative risk assessments (QRA) where the objective is to generate more precise measures of the risks (e.g. expressing risk as a specific probability of loss). These require a large amount of quantitative input and time; and
- High-level qualitative assessments where the objective is to develop an approximate estimate of the risks, particularly in relative terms (e.g. low, medium and high levels of risk).

A qualitative approach has been followed for this PSRA given the availability of information and the time frame. To apply Equation 5.1-1, the quantitative information (e.g. FoS) and the qualitative information (e.g. geomorphic observations relevant to the stability of peat) that determine the hazard and the consequences need to be transformed into subjective ratings. The following sections address the calculation of the two risk components: hazard and consequence.

5.3 Hazard Assessment

Landslide hazard is the likelihood or probability of landslide occurrence in each location and a given period. The likelihood or hazard of peat landslides has been determined according to the guidelines for geotechnical risk management given by Clayton (2001) in *Managing geotechnical risk*, taking into account the approach of MacCulloch's (2005) *Guidelines for the risk management of peat slips on the construction of low volume/low-cost roads over peat.* The available data from the desk study, site reconnaissance and site investigations was used in combination with these guidelines.

The hazard is calculated from a variety of weighted factors, including the FoS and thirteen secondary factors related to geomorphic observations, topography, hydrology, vegetation, peat workings, existing loads and slide history (Appendix L). These secondary factors are difficult to quantify in a stability calculation but may contribute to peat instability. These factors are drawn from the Scottish Government Best Practice Guidelines (2017), Mills and Rushton (2023) and past experience on previous projects.

Each hazard factor has been reclassified into one of four classes with rating values ranging from 0 to 3 (Appendix L). A rating of 0 indicates that the hazard factor is not relevant; ratings 1, 2 and 3 indicate low, moderate and high correlation to peat slide hazard, respectively.

Weighting values have been assigned to these factors to reflect their relative importance in peat stability. Both the rating and the weighting values have been assigned according to the expert criteria of the project team and are presented in Appendix L. The hazard score of each factor is the multiplication of its rating value and weight value. These factors and their corresponding weightings are presented in Table 5-1.

The hazard values for a given infrastructure element are the sum of the scores of all the hazard factors divided by the maximum hazard value possible to obtain a normalised hazard value ranging from 0 to 1 (see tables in Appendix L). Hazard is grouped into four categories: Negligible, low, medium and high.

Table 5-1: Factors affecting peat stability and hazard.

Hazard factors			Role in peat stability	Weight
Factor of Safety			This is the most critical factor, including the slope angle, the peat depth, the peat density, the peat cohesion in the drained and undrained conditions, as well as the effective friction angle. This is the complete factor. See Section 4 for further details.	10
Secondary factors	Topography	Curvature Plan (across the slope)	This represents the curvature across the slope and the funnelling/dispersion of the runoff.	1
		Curvature Profile (downslope)	This represents the curvature down-slope and, therefore, the capacity of water retention and infiltration. Convex slopes are typically more prone to landslides.	
	Hydrology	Distance from watercourse (m)	This tends to affect the likelihood of landslides, especially in sectors where this distance is short.	
		Evidence of piping	The presence of piping is clear evidence of potential peat instability.	
		The direction of existing drainage ditches	Drainage ditches that are aligned cross slope can affect the overall stability of a slope face.	
	Vegetation	Bush	This is an indicator of the type of peat at the site and the hydrological nature of the site.	
		Forestry	The vigour of forestry is another indicator of peat stability, with stunted trees more frequent in unstable sectors.	
	Peat workings	Peat cuts presence	This factor evaluates the effect of various peat workings on the stability of the peat.	
		Peat cuts vs contour lines	Where the peat cuts parallel the contour lines, the potential instability increases.	
	Existing loads	Roads	Side-cast of solid roads and floating roads pose a load to the peat blanket.	
	Slide history	Distance to previous slides (km)	This suggests that landslides at the site are likely if a peat slide has occurred at the site or within a 10-kilometre radius. The weight assigned doubles the weights for the other secondary factors	2
		Evidence of peat movement (e.g. tension cracks, compression features).	This factor evaluates the effect of any existing peat movement indicators on-site, such as tension cracks. The weight assigned doubles the weights for the other secondary factors.	

5.4 ADVERSE CONSEQUENCES ASSESSMENT

The impacts of peat landslides on the infrastructure elements, surrounding environment, and existing assets may typically generate a variety of adverse consequences. This report assessed these consequences qualitatively following the Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (PLHRABPG, Scottish Government, 2017). Both the rating and the weighting values have been assigned according to the expert criteria of the project team and are presented in Appendix L.

Table 5-2 Summarises the consequences considered for the PSRA of the proposed wind farm.

Table 5-2: Consequences considered for the PSRA

Consequence factors	Description	Weight
Volume of potential peat flow (function of distance from the nearest watercourse and peat depth in the area)	This is the second most heavily weighted factor. It is estimated based on the distance from the nearest defined watercourse and the depth of peat in the area. The longer the distance and the deepest the peat depth, the larger the landslide.	3
Downslope features	This factor accounts for the type/shape of downslope features that may hamper or favour the propagation downhill of the peat flow.	1
Proximity from the defined valley (m)	This is the distance from the site to the nearest defined river valley. Rivers close to potential landslide sectors are more vulnerable to a landslide event.	
Downhill slope angle	This factor accounts for the runout distance as a matter of slope angle.	
Downstream aquatic environment	Reflects the severity of a peat slide event's impact on the receiving aquatic environment.	
Public roads in the potential peat flow path	Rates the impact of a peat slide striking a public road.	
Overhead lines in the potential peat flow path	Rates the impact of a peat slide striking a service line.	
Buildings in the potential peat flow path	Rates the impact of a peat slide striking a habitable structure.	
Capability to respond (access and resources)	Rates the capability of the site staff to respond to a peat instability event.	

The nine consequence factors considered have been reclassified in the same fashion the hazard factors were reclassified (Appendix L). A rating of 0 indicates that the consequence factor is not relevant and a rating of 3 indicates high consequences.

'Volume of potential landslide' has been assigned a weight of 3 to reflect its relative importance in the potential consequences. The rest of the factors have been assigned a weight of 1. Both the rating and the weighting values have been assigned according to the expert criteria of the project team. The score of each consequence factor is the multiplication of its rating value and its weight value (Appendix L).

The consequences value for a given infrastructure element is the sum of the nine consequences scores. This total value is then divided by the maximum consequence value possible to obtain a normalised consequence value ranging from 0 to 1 (see tables in Appendix L). Consequences are grouped into four categories: Negligible, low, medium and high.

5.5 RISK CALCULATION

The risk in each proposed wind farm infrastructure element is calculated with Equation 5.1-1, i.e. multiplying the scores of the hazard and the scores of the consequences, in line with the PLHRABPG (Scottish Government, 2017). The risk rating ranges between 0 and 1 and the following levels of risk rating have been distinguished (Table 5-1 and Table 5-2):

- High (0.6 to 1): Avoid project development at these locations. Mitigation is generally not feasible.
- Medium (0.4 to 0.6): The project should not proceed unless risk can be avoided or mitigated at these locations without significant environmental impact to reduce risk ranking to low or negligible.
- Low (0.2 to 0.4): Project may proceed pending further investigation to refine assessment and mitigate hazard through relocation or implementation of mitigation measures at these locations.
- Negligible (0 to 0.2): Project should proceed with monitoring and mitigation of peat landslide hazards at these locations as appropriate.

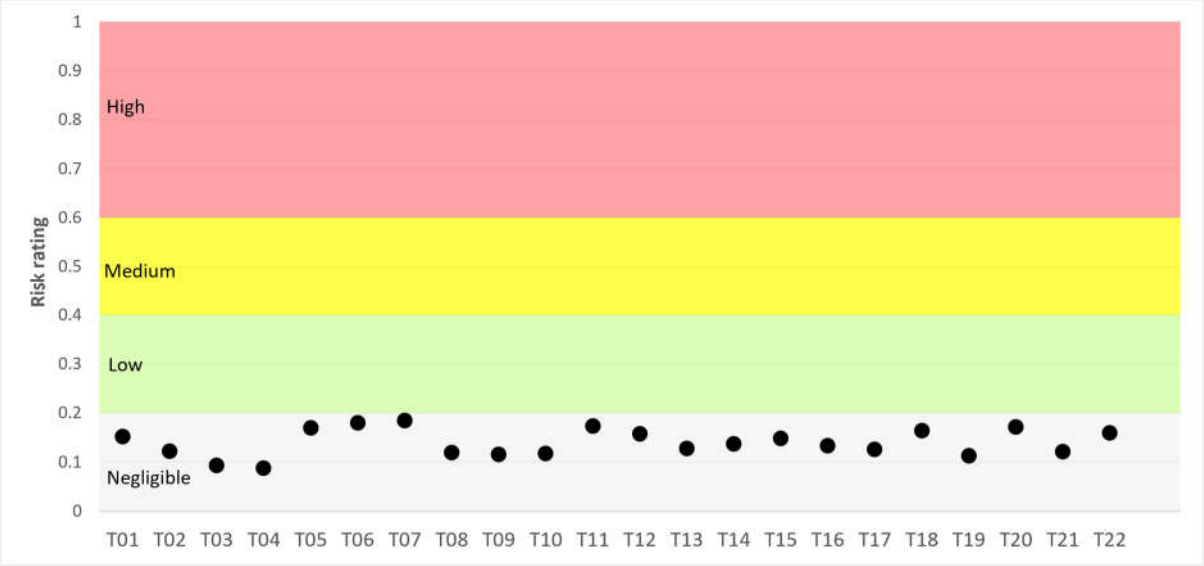

Figure 5-A: Risk ratings at the proposed turbine locations

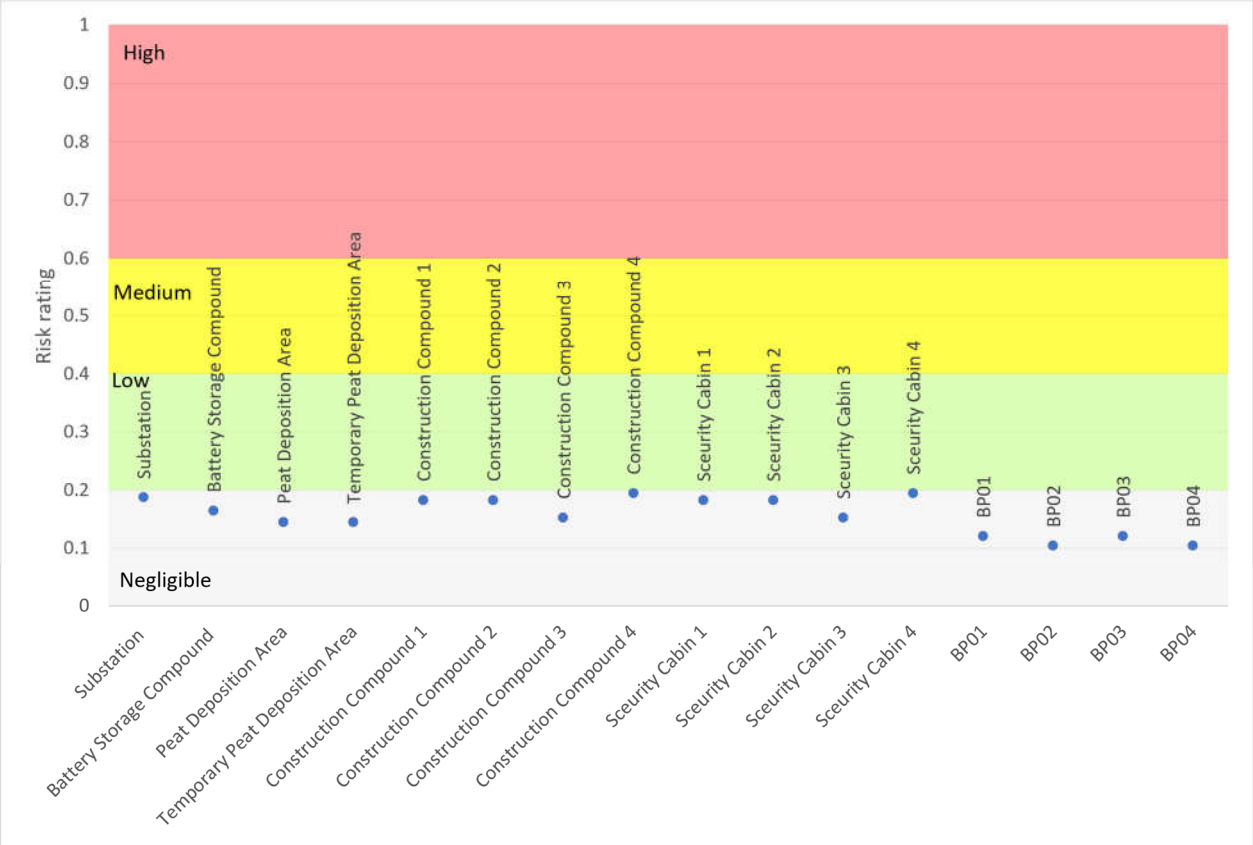

Figure 5-B: Risk ratings at the proposed substation, battery storage compound, peat deposition areas, construction compound, security cabins, and borrow pits

Appendix L gathers the risk calculation process at each turbine considering the four scenarios of hazard: Undrained; undrained with a surcharge of 1 m; drained; and drained with a surcharge of 1m. Figure 5-A and Figure 5-B Summarise the risk rating obtained at the turbines and other infrastructure locations. All the turbines and infrastructure elements are located in sectors of negligible risk.

It is stressed that the resulting risk rating does not indicate a probability of a landslide occurring; it simply expresses a rating of the potential risk.

6 MITIGATION MEASURES

As outlined in Section 5.5, the peat stability risk assessment has yielded a negligible risk rating for each infrastructure location. The Scottish Government Best Practice Guidelines (2017) state the following for areas with negligible risk levels: “Project should proceed with monitoring and mitigation of peat landslide hazards at these locations as appropriate.”

All earthworks shall be designed by a competent geotechnical designer who shall be informed where necessary by a post-consent detailed ground investigation campaign which will need to include intrusive methods such as trial pitting and borehole locations with a specified suite of in-situ and geotechnical laboratory testing to further assessment the engineering characteristics of the infrastructure locations.

Possible mitigation measures in relation to peat instability are considered below. Additional mitigation measures relating the handling and deposition of peat are outlined in the Peat and Spoil Management Plan (GDG, 2025) in Appendix 9.2.

6.1 MITIGATION BY AVOIDANCE

Site infrastructure has been sited to avoid areas of medium or high risk where possible, and all main infrastructure locations are assessed as being of negligible risk.

6.2 ENGINEERING MITIGATION MEASURES

Many of the site-specific (e.g. peat depth, slope angle) and site-independent variables (e.g. weather) that contribute to the incidence of natural peat landslides are beyond engineering control without significant damage to the peat itself. However, several engineering measures exist to minimise the risks associated with potential triggers (such as short-term peaks in hydrogeological activity).

6.2.1 CONSTRUCTION MANAGEMENT

Inappropriate storage of excavated peat and overburden, as well as uncontrolled loading of peat material, is considered one of the main causes of peat instability and landslide event triggers during the wind farm construction process. The management and control of these activities is key to de-risking peat stability at the wind farm site. It is required that the construction method statements for the project also take into account, but not be limited, to the guidance documents listed in Section 1.3.4 and the recommendations and requirements outlined throughout this document.

The general requirements for the management of peat and the mitigation of peat instability at the site are as follows:

- Appointment of experienced and competent contractors and designers;
- The construction works on site will be supervised by experienced and qualified personnel;
- Allocate sufficient time for the project to be constructed safely with all peat stability mitigation measures included in the programme;
- Set up, maintain and report findings from monitoring systems, including sightline monitoring;
- Maintain vigilance and awareness through Tool-Box-Talks (TBTs) on peat stability;
- Prevent undercutting of slopes and unsupported excavations;
- Prevent placement of loads/overburden on marginal ground;
- Manage and maintain a robust drainage system. This will be the responsibility of the appointed contractor and their designer;
- Storage of peat material including temporary and side casting be carried out in the permitted areas only.
- Acrotelm (upper) peat material may be used as landscaping material where topography allows and the detail designer has assessed the stability risk;
- Uncontrolled placement of peat or loading of peat material must be avoided;
- Water flows within drainage systems will be controlled. Velocities of slows must be controlled using check damns within drainage systems and the uncontrolled release of water onto slopes can create a landslide risk and must be avoided,
- All construction requiring cut and fill earthworks required a robust monitoring and inspection programme. The details of this inspection programme will depend on the purpose and methodologies of the works and the ground conditions;
- A method statement and risk assessment (RAMS) which considers the potential causes and mitigations of peat instabilities and landslides is required and must be regularly

communicated to all site staff. An observational approach by all site staff to the ground conditions and the risks should be promoted and any changes in the ground or site conditions should be reported and the risk dynamically assessed. The RAMS will be reviewed for compliance with the PSRA, prior to acceptance by the developer.

6.2.2 Drainage Measures

The drainage measures are outlined in Chapter 3 (Description of the Proposed Development) of the EIAR. Surface water drainage plans will be implemented to account for modified flows created by construction, which in turn may affect peat stability, pollution and wildlife interests. Drainage measures need to be carefully planned to minimise any negative impacts.

Runoff will be maintained at the existing runoff rates. Controlled discharge will be maintained at existing pumping rates. The layout of the proposed wind farm site has been designed to collect surface water runoff from hard standing areas within the development and discharge to associated surface water attenuation lagoons adjacent to the proposed infrastructure. It will then make its way into the existing field drains and existing IPC settlement / slit pond infrastructure before being discharged through existing discharge points by pump or gravity flow. From here the water will outfall at the appropriate existing run-off rates. Where temporary excavations for turbines and borrow pits, water will be stored within the existing topographical depressions.

6.3 Monitoring

The installation of movement monitoring posts is recommended for areas where works are taking place on or adjacent to identified peat depths greater than 2m.

Movement monitoring posts shall be installed upslope and downslope of the works areas and shall be as outlined:

- Posts shall be 1m to 1.5m in length, installed at 5m intervals with no less than seven posts in each line of sight (~30m).
- A string line shall in attached to the first and last post with all intermediate posts in contact with one side of the string line,
- A numbering system shall be designed for the monitoring posts and a record shall be kept of this numbering system.

Movement monitoring posts shall be observed at least once a day with more frequent inspections in which adjacent works are ongoing. Should movements be recorded the frequency of these inspections will be increased. Records shall be kept of all monitor post inspections concerning date, time and any relative movement between posts, if any. Any movement identified in the posts shall be recorded concerning the post numbering system.

The contractor shall also develop a routine inspection of all areas surrounding work in peat, not just exclusively on the monitoring posts. These inspections shall include an assessment of ground stability and drainage conditions. These inspections should identify any cracking or deformation on the peat surface, excessive settlement on structures, drain blockages or springs etc.

6.4 Engineering Mitigation Measures to Control Landslide Impacts

Although the stability of the peat and overburden is considered to be safe for the construction activities proposed, the peat and spoil should be managed in line with the details of this document, to ensure the risk of a peat failure or landslide is negligible. However, it is important to consider the

actions which shall be carried out if signs of instability are identified during the outlined monitoring or should a failure occur at the site.

The full methodologies for these activities will be outlined in the construction contractor RAMS and include the methodologies for immediate and long-term response.

6.4.1 Movement or Instability Observed in Monitoring Areas

Where excessive movement has been observed in the installed monitoring outlined in Section 6.3 The following measures will be taken;

- All construction activities will be suspended in the area,
- The Contractors Geotechnical Engineer shall carry out an assessment of the peat instability including drainage. The Contractor's Geotechnical Engineer shall compile a report outlining the surveys undertaken, the potential cause of the instability, an assessment of any increased risk caused by the instability, and the further measures required to manage this risk,
- An increased monitoring regime shall be specified including an increase in the number of monitoring post lines, a decrease in monitoring post spacing and an increase in the frequency of monitoring post observations,
- Should no further movement be detected, construction activities will be recommenced while maintaining the increased monitoring regime,
- Should further excessive movement be detected, the Contractor's design and project geotechnical engineer will need to be informed and the design of further reinstatement works will be required such as excavation of the disturbed material, installation of granular berms or similar.

6.4.2 Emergency Response to a Landslide Event

If the scenario of a landslide, bog burst or peat slide occurs at the site the following steps shall be carried out by the contractor:

- All members of the project will be alerted immediately or as it is safe to do so;
- All site works will be ceased, and all available resources will be used for the management and mitigation of the risks posed by the event;
- The key initial activity will be to prevent displaced materials from reaching any watercourses or sensitive environments. Given the terrain of the Proposed Development Site, the key risk is the development of a propagation landslide or slip within topographic valleys and watercourses. Where possible, check barrage structures or catch ditches on land or within these topographic valleys and watercourses shall be constructed to aid prevent further runout of the disturbed peat or spoil material.

6.4.2.1 Check Barrages

Check barrages are permeable granular structures constructed within the path of a landslide to prevent the further downhill or downstream movement of the disturbed material. Typically, these will be constructed of locally generated stone material, often of large sizing. The large material sizing will allow water to pass through the check barrage material, avoiding a build-up in hydrostatic pressure while containing the debris within the slide. Check barrage will typically be a dam structure

between 1 and 1.5m high, with slopes between 1(V):1.5(H) or 2(H), and constructed across the full section of topographic valley and/or watercourse.

The check barrage is an emergency preventative measure only to restrict or reduce the movement of displaced material downslope and away from a watercourse. Further assessment and reinstatement works will likely be required should a landslide occur, and engagement and reporting of the incident will be required by all parties involved in the project. Should the check barrage no longer be required it may be removed and the area reinstated.

The use of check barrages is only proposed for use in the unlikely event of a large landslide event. The proposed locations are only indicative, targeting potential topographic channels but will vary depending on the location and nature of the slide event. The Contractors will need to include an assessment of potential check barrage locations and methods for their construction within the emergency procedures in their associated Method Statement documentation.

6.4.2.2 CATCH DITCHES

Similarly, ditches may also slow or halt runout, although it is preferable that they are cut in non-peat material. Simple earthwork ditches can form a useful low-cost defence. Paired ditches and barrages have been observed (Tobin, 2003) to slow peat landslide runout at failure sites.

7 GEOTECHNICAL RISK REGISTER

Table 7-1: Geotechnical Risk Register

Ref.	Risk	Contributing Factor	Mitigation
1	The collapse of dried peat berms/ peat slippage	Overestimation of soil strength parameters	The soil parameters are based on the hand shear vane test carried out during the site investigations. The interpreted undrained shear strength values take into account a conservative reduction factor for the influence of the fibres within the peat. Extensive sampling ground investigation at infrastructure location including trial pitting to assess the composition and strength of the peat and collect samples for testing. The derived values were compared with a literature review of the most common general drained and undrained parameters for each type of soil and on the descriptions. It is expected that further testing and assessment of the peat during further ground investigation campaigns will be required before construction. This will allow for a robust understanding of the ground conditions and the detailed design of access roads and structures. An extensive testing protocol shall be developed by the Construction phase contractor and the design team. These tests shall be observed by a suitably qualified engineer and reported to the owner's engineer. It would be expected that an observational approach will be required when constructing on peat due to the limitations associated with testing and verifying its strength and the contractor is required to frequently inspect the peat material and provide proof of inspection.
2	The collapse of berm/peat slippage	Underestimation of peat depth	Extensive ground investigation including trial pitting and peat probing has been carried out across the site. GI locations

Ref.	Risk	Contributing Factor	Mitigation
			have been carried out at locations where access was possible. Access was limited to some areas of the site as outlined in section 3.2.3 due to ponded surface water. Further GI will be required at these locations during the detailed design and construction phase to assess peat depths in these areas. This will be carried out by the detail designer and Contractor's team. The design team shall develop their own testing criteria to satisfy and de-risk the possibility of larger peat depth occurring at these locations.
3	Failure of peat slope due to loading or agitation of existing instability	Failure to identify existing instability/ peat deformation at the site	Assessment of satellite imagery and topographical data for evidence of past landslide events was carried out as part of the desk study, finding no evidence of past instabilities or landslide events within the site area. The Geological Survey of Ireland (GSI) landslide database was examined identifying no landslide events in the local region within 5km of the site, the closest approx. 9km from the site boundary. During the site walkovers, the site GDG engineers examined the landscape and the areas surrounding the proposed infrastructure for evidence of instability or past landslide events. No past landslide or instability events were identified. Although there is no evidence of landslides within the proposed wind farm site, this does not necessarily mean that landslides have never occurred at the proposed wind farm site. It is noted that the geomorphological features associated with peat landslides (peat slides and bog bursts) are softened with time through erosion, drying and re-vegetation, particularly given the forestry and peat extraction activities which have taken place at this site. Further inspection will be required during the detailed design and

Ref.	Risk	Contributing Factor	Mitigation
			construction stage to inspect for peat instabilities. This will be carried out by the detail designer and Contractors team. The design team shall develop their own inspection and testing criteria to satisfy and de-risk the possibility of larger peat depth occurring at these locations.
4	The collapse of peat berm/peat slippage	Failure due to excessive loading of peat	The peat stability analysis factor of safety exercise examines the peat in the drained and undrained condition both without and with the addition of a surcharge equating to 1m of peat loading. Areas indicative of a low FoS result with the 1m peat surcharge within or adjacent to the proposed site infrastructure have been outlined in Section 4.4. Requirements for the safe and sustainable storage of peat and spoil material are outlined in the associated Peat and Spoil Management Plan (PSMP) document (GDG, 2025). The requirements and restrictions for peat and spoil management outlined in this document must be adhered to during the construction phase.
5	Instability of peat slippage	Variations in the groundwater conditions at the site	The groundwater conditions were examined during the walkovers and within the borehole and trial pit locations. A worst case scenario of groundwater at ground level has been assumed for the peat stability analysis. Areas of saturated surface peat were identified during the walkovers as outlined in Section 3 and these have been considered in the risk assessment and findings of the report. Water strikes, peat water content and groundwater conditions are noted in the trial pit locations. The groundwater conditions and peat moisture content may vary seasonally and/or more frequently with the immediate weather conditions. Long-

Ref.	Risk	Contributing Factor	Mitigation
			term groundwater monitoring across the site should be considered in further design stage ground investigations and further lab testing of the peat in its in-situ condition will need to be assessed for the construction design.
6	Instability due to unmapped subsurface karst features	Voids and subsidence due to karstic weathering of the underlying limestone bedrock.	The existing geological mapping and GI indicate the proposed wind farm site sits on limestone bedrock, which may be susceptible to karstic weathering. There are two turloughs and a group of enclosed depressions approximately 3 to 4 km to the west of the southern portion of the proposed wind farm site, and another group of enclosed depressions approximately 2 km to the east of the northern portion of the proposed wind farm site. An enclosed depression is regarded by the GSI as a water entry point into the ground in the form of, for example, a doline or a sinkhole. Karst surface features were not observed on site walkovers, although it is noted that karst features would not be easy to identify as the site is predominantly cut bog. Rotary drilling of bedrock within Derryadd Bog identified weathered limestone bedrock. Some joints in the limestone bedrock have been described as open (0.5 to 2.5 mm wide) and moderately wide (10 - 100 mm wide), indicating some minor dissolution at joints. The drilling did not encounter any significant karstic features such as voids. It is possible that karst features (voids, conduits and highly weathered zones) are located below the site extents which have not been identified due to the thick cover of peat and subsoils.

8 CONCLUSIONS AND RECOMMENDATIONS

Following the guidance of the Scottish Government (2017), a review of the relevant published information (e.g. geology, soils, existing landslides) available from the GSI, EPA etc., and relevant background literature was undertaken for the proposed wind farm (Section 2). Site reconnaissance and site investigations were carried out to validate and enhance the desk study information. Based on the available data, the fieldwork and GDG's professional judgement, it is concluded that significant peat slides are unlikely on the proposed wind farm site with diligent peat management and careful consideration of the peat conditions at the site at the detailed design and construction phase.

A deterministic Factor of Safety was calculated across the proposed infrastructure locations, and from this, a robust peat stability risk assessment (PSRA) was performed. The findings of the peat assessment showed that the site has an acceptable margin of safety and is suitable for the proposed turbine locations.

The peat stability risk for the proposed infrastructure is negligible. However, the results of the factor of safety deterministic calculation and the site walkover allowed for the identification of some areas of potential local instability where the proposed wind farm footprint is on or adjacent to historic peat extraction works or drainage excavations. These narrow linear areas are not considered to be a landslide or bog burst risk and may only cause a local failure or small volume by failure of the existing cutting face. The Contractor shall follow the construction methods and mitigations outlined in the associated Peat and Spoil Management Plan (GDG, 2025) relating to these existing cuttings to ensure the safe and stable construction of the proposed structures. As per section 6, mitigation methods include the offset of peat reinstatement by at least one meter from the edge of peat cutting or the reinstatement of the peat cutting face with excavated acrotelm peat to restore a safe, natural slope on the peat surface. These must be adhered to in future phases of the proposed wind farm.

All earthworks will be designed by a competent geotechnical designer which will be informed by a detailed ground investigation.

Construction works shall follow the recommendations of the Peat and Spoil Management Plan (GDG, 2025). During construction, it is strongly recommended to carry out frequent monitoring works, especially after heavy rainfall events or prolonged rainfall.

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peat. *Proceedings of the Institution of Civil Engineers-Geotechnical Engineering*, *167*(1), 40-50.

Appendix A Location and Administrative Limits

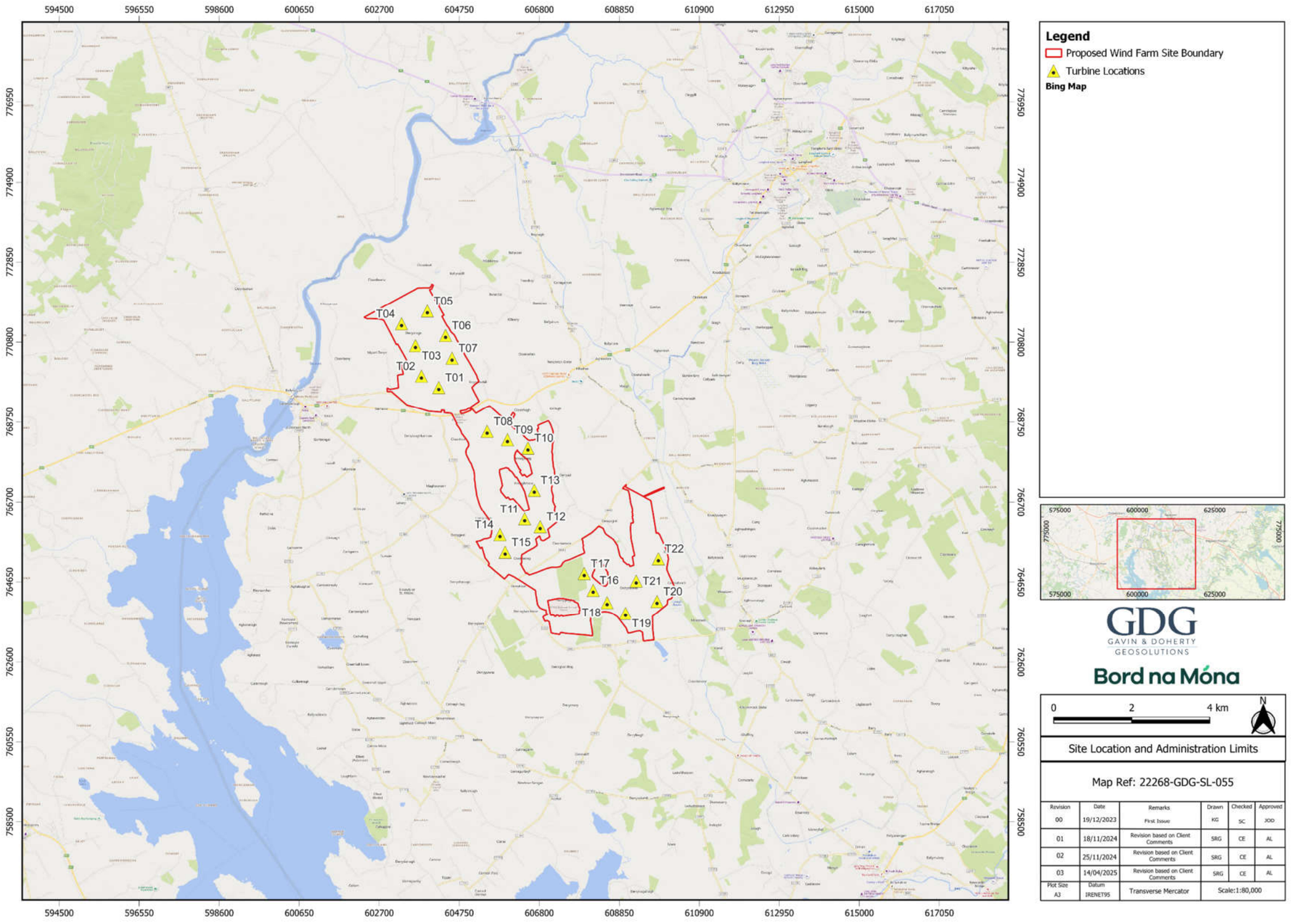


Figure A-1 : Location of the proposed site and administrative limits

Appendix B Geology

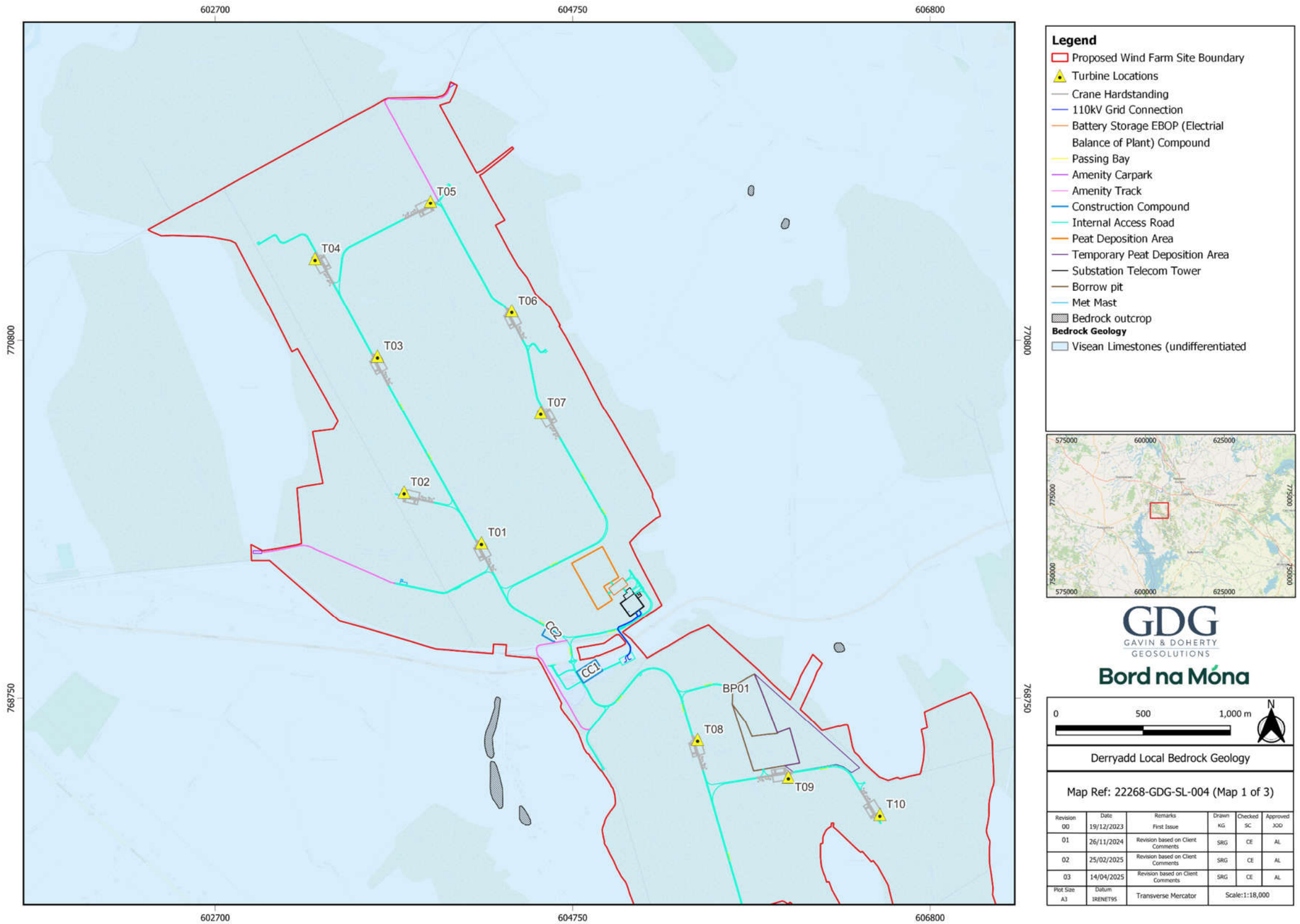


Figure B-1: Local bedrock geology (GSI)

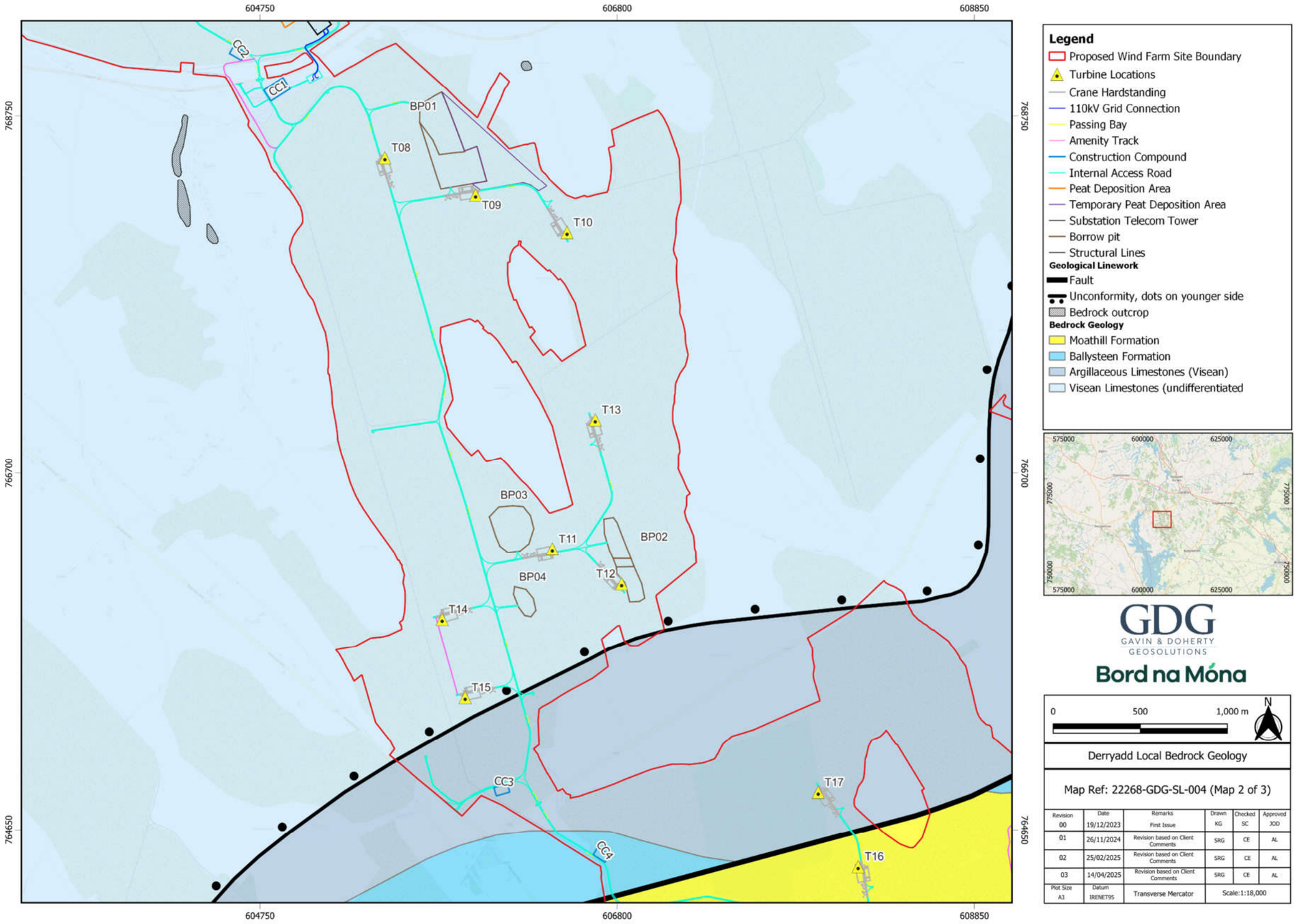


Figure B-2: Local bedrock geology (GSI)

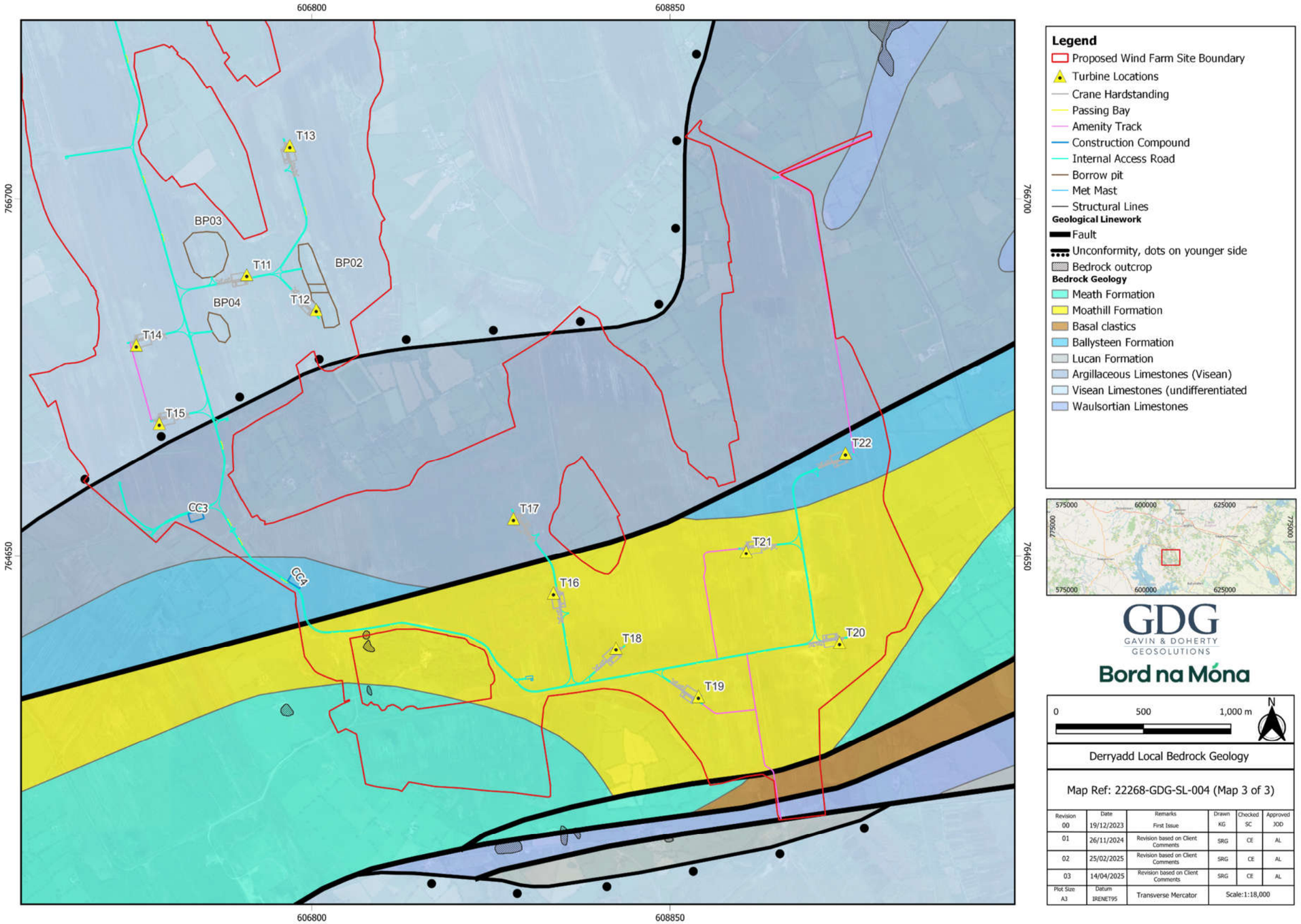


Figure B-3: Local bedrock geology (GSI)

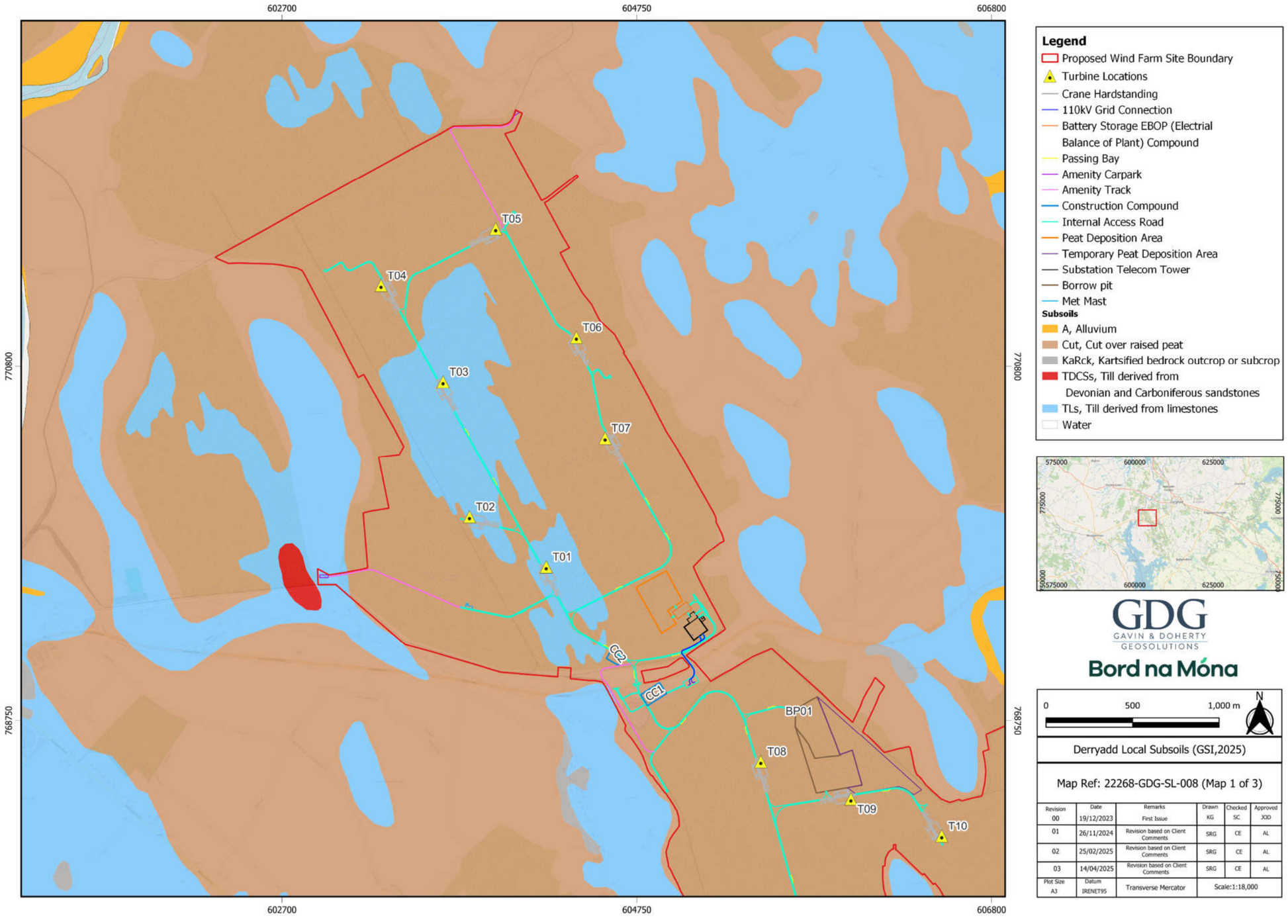


Figure B-4: Local Subsoils (GSI Quaternary Sediments)

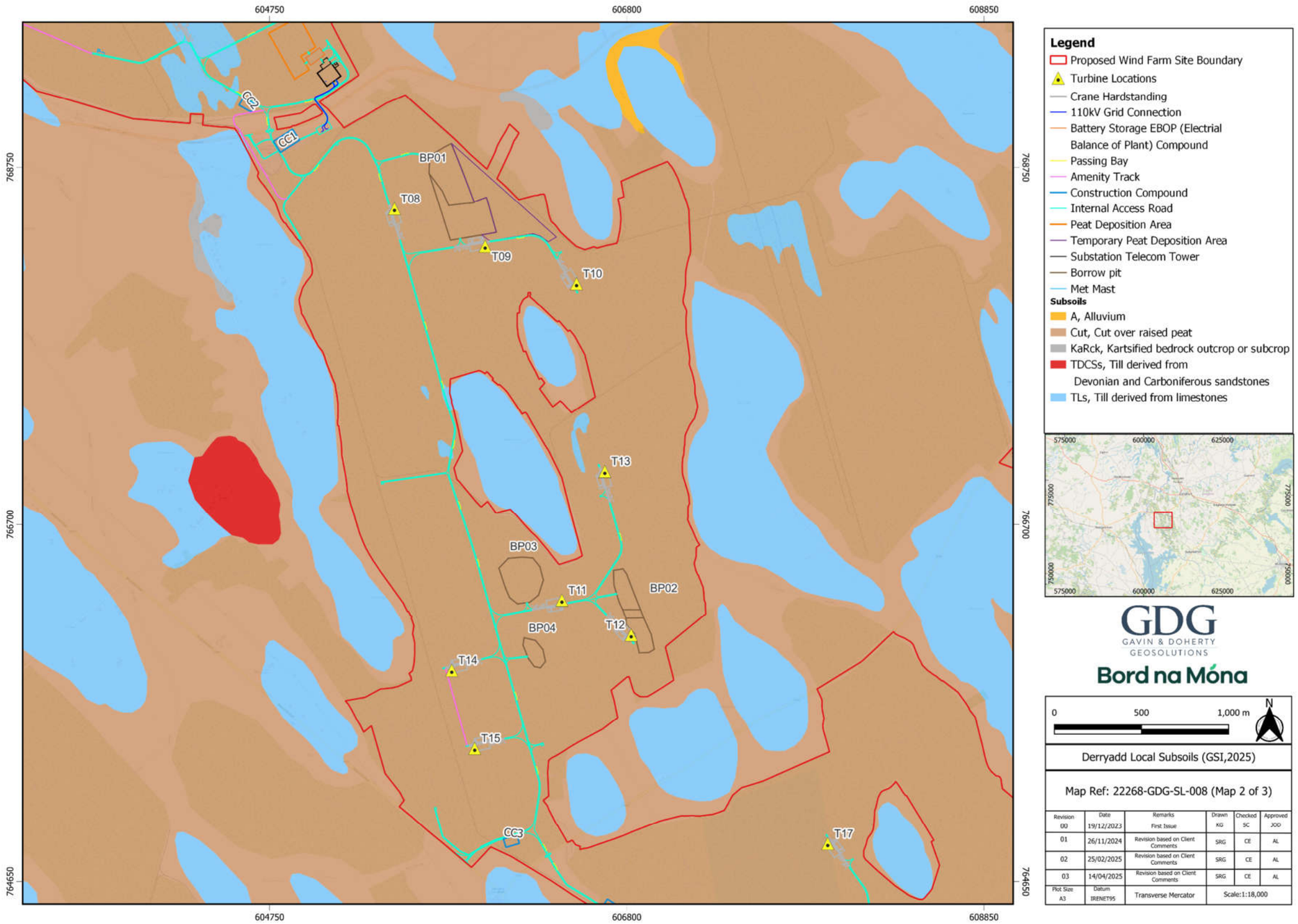


Figure B-5: Local Subsoils (GSI Quaternary Sediments)

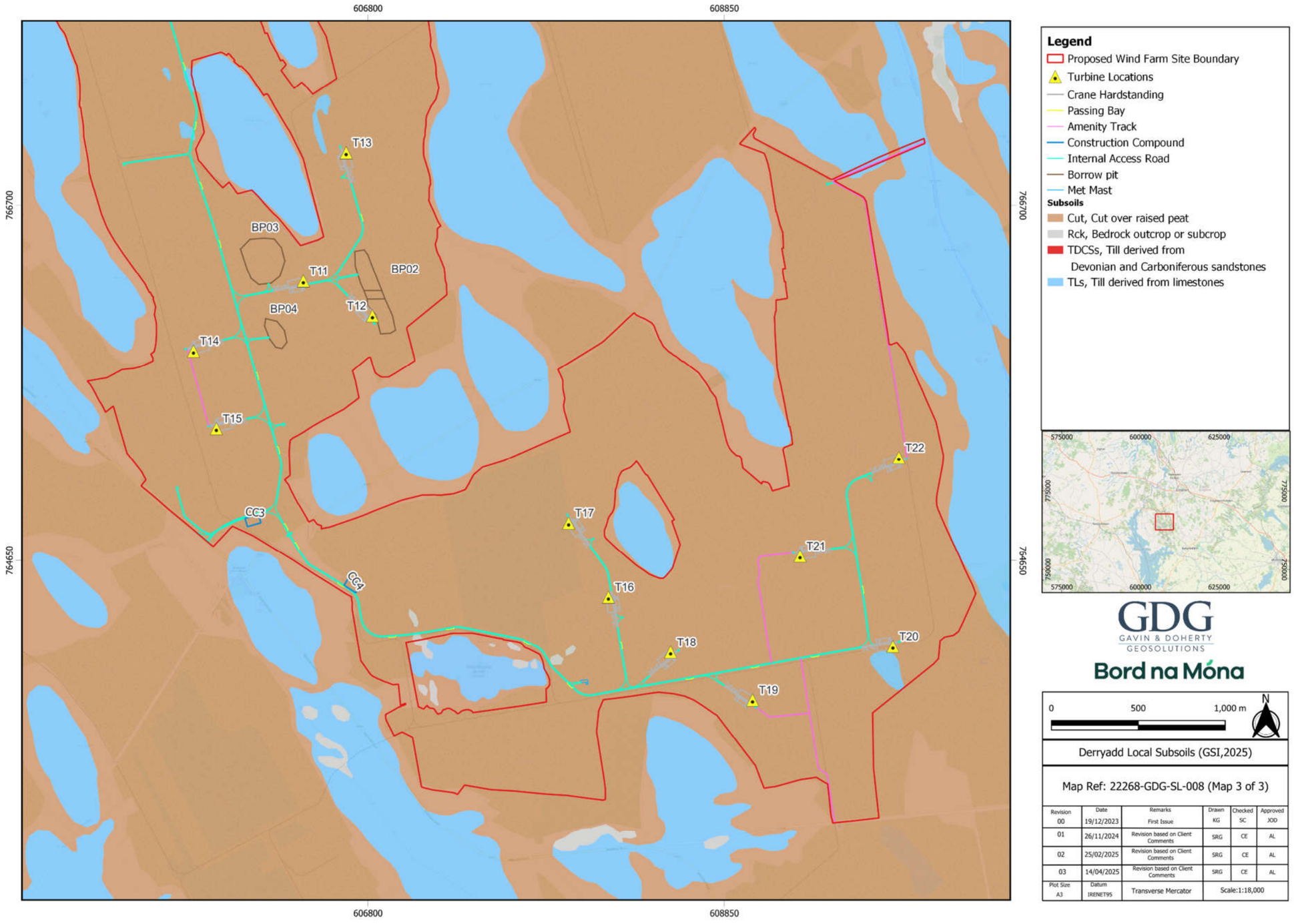


Figure B-6: Local Subsoils (GSI Quaternary Sediments)

Appendix C Soils

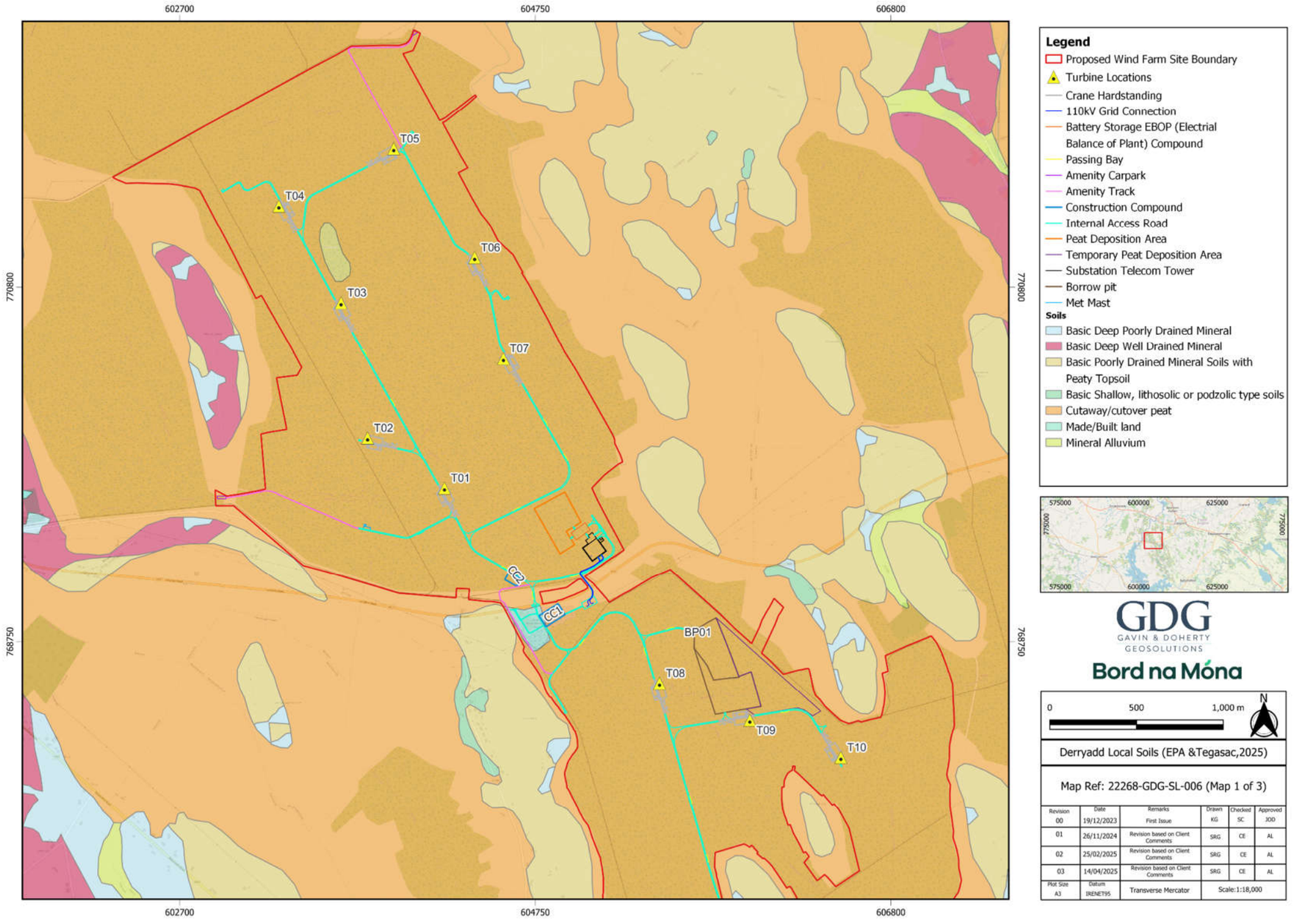


Figure C-1: Local Soils (EPA/Teagasc National Soils)

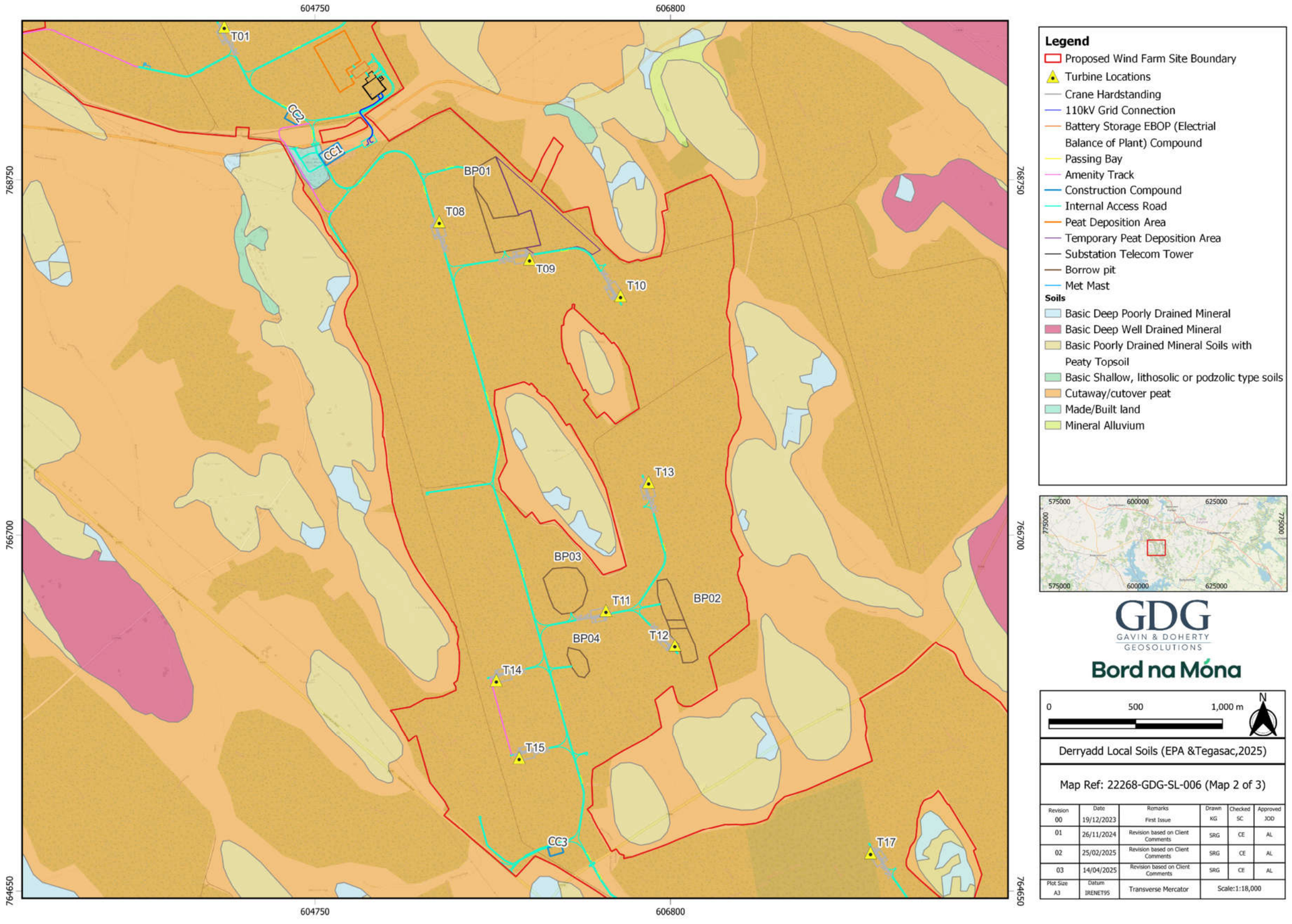


Figure C-2: Local Soils (EPA/Teagasc National Soils)

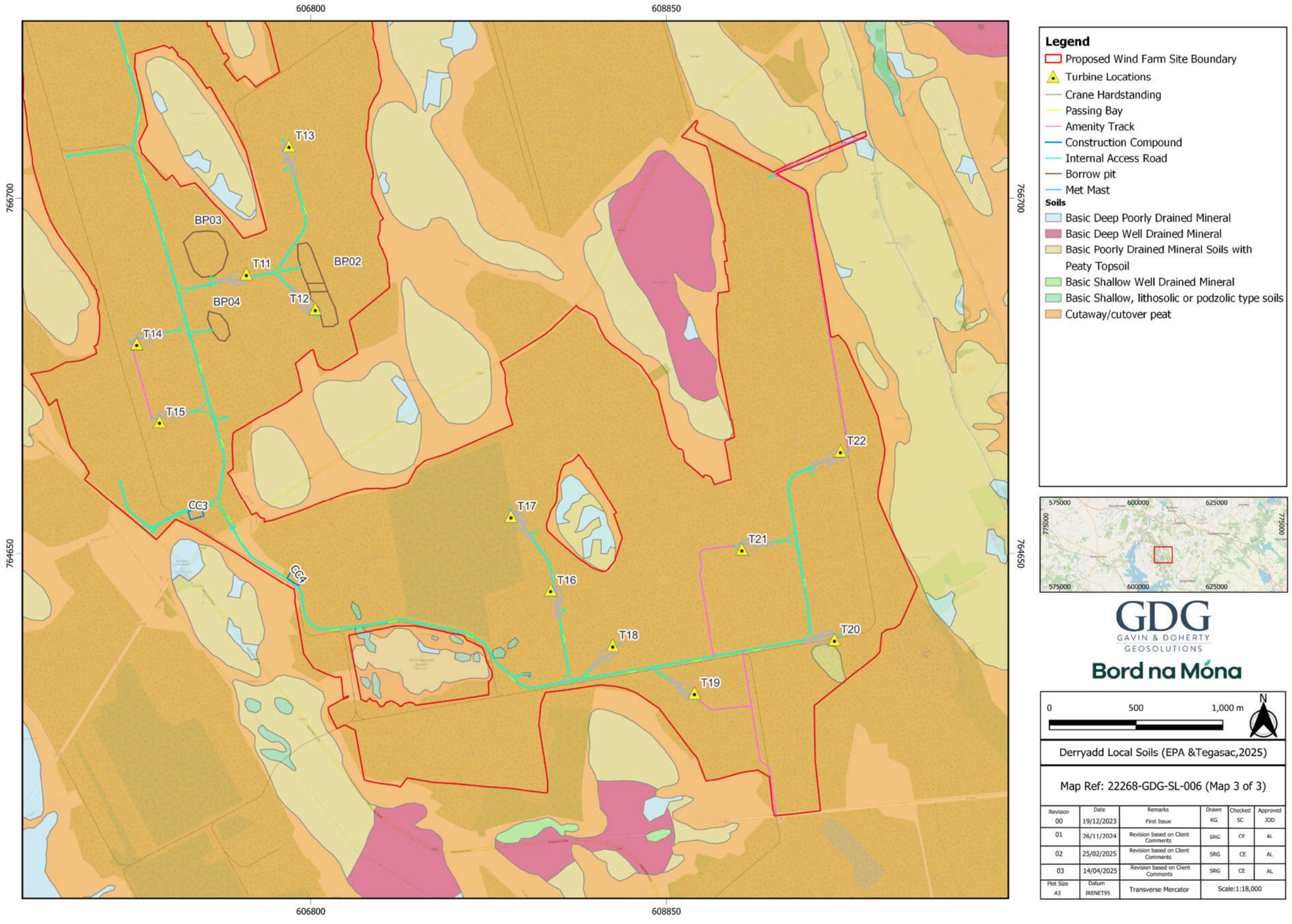
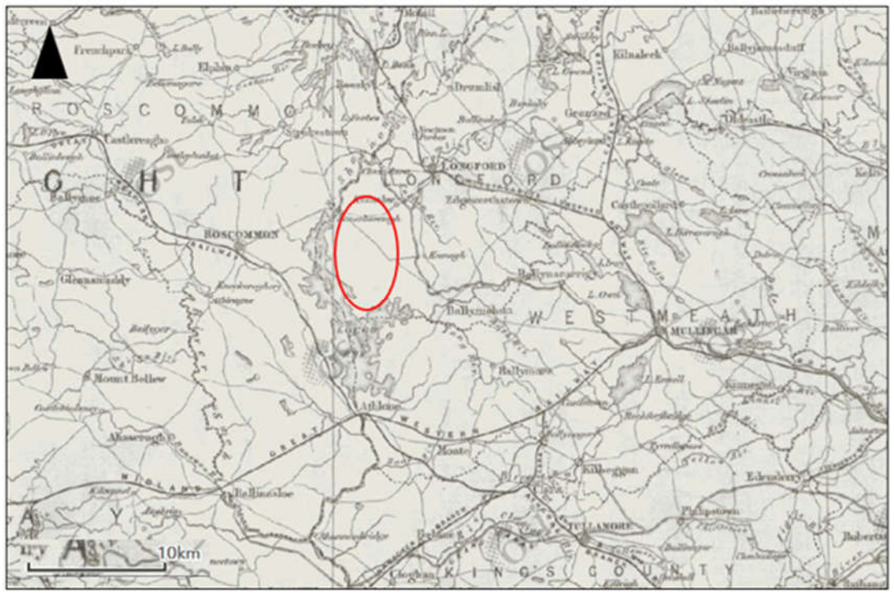


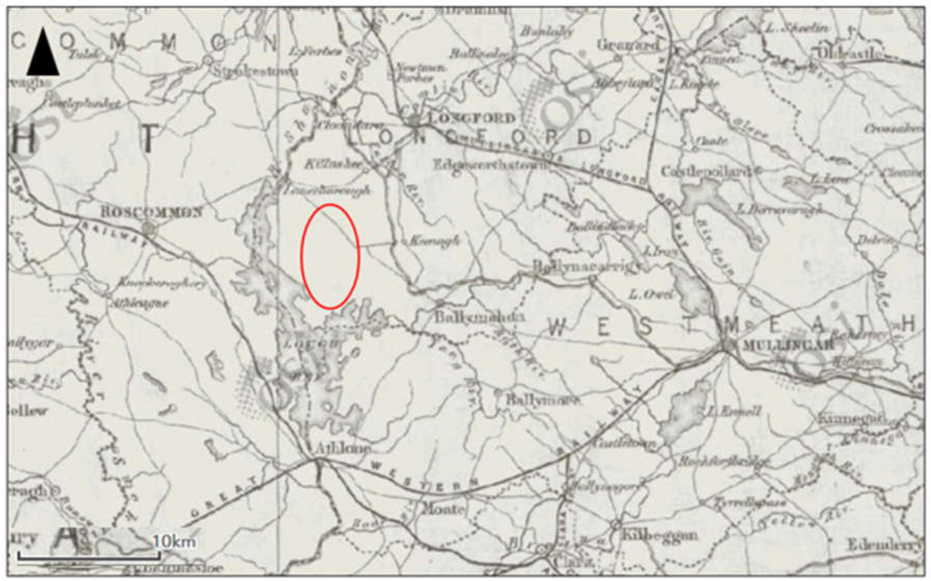
Figure C-3: Local Soils (EPA/Teagasc National Soils)

Appendix D HISTORIC MAPPING AND MULT-ITEMPORAL AERIAL IMAGERY

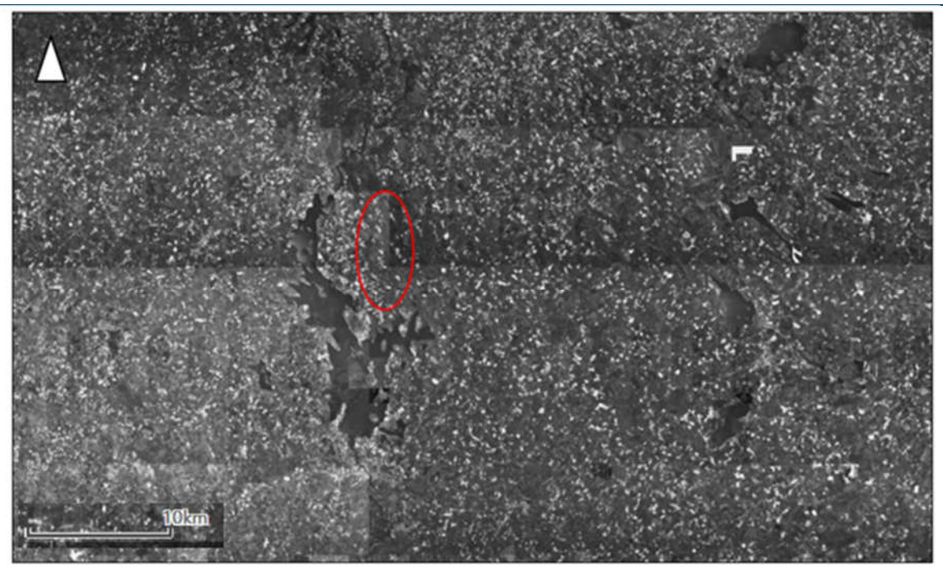
Table D-1: historic Mapping and Multi-temporal aerial imagery.



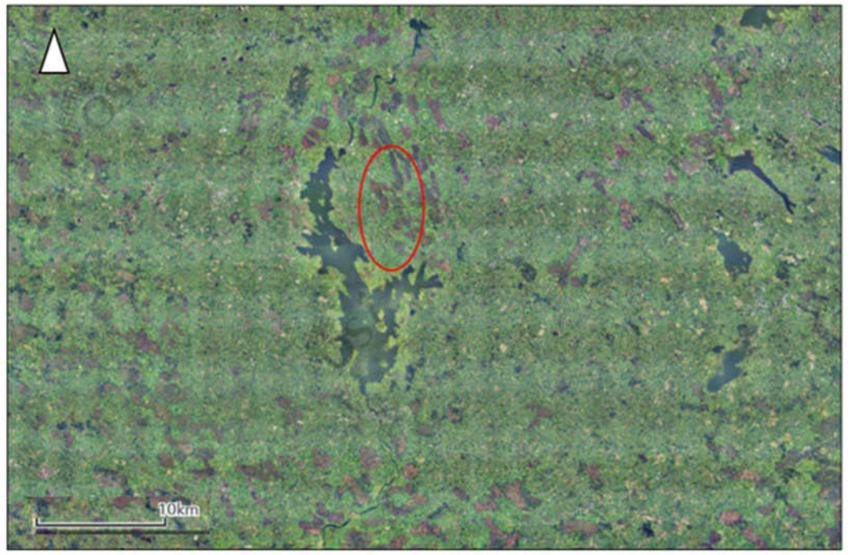
a) OSI Map Genie 6 Inch



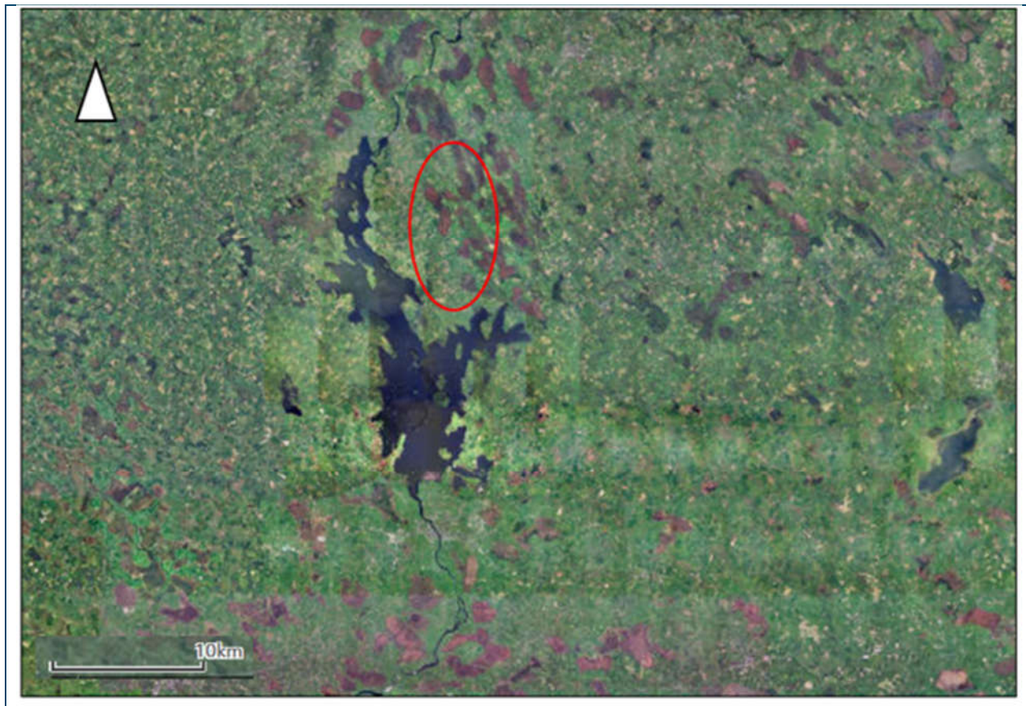
b) OSI Map Genie 25 Inch



c) OSI Aerial imagery 1995.

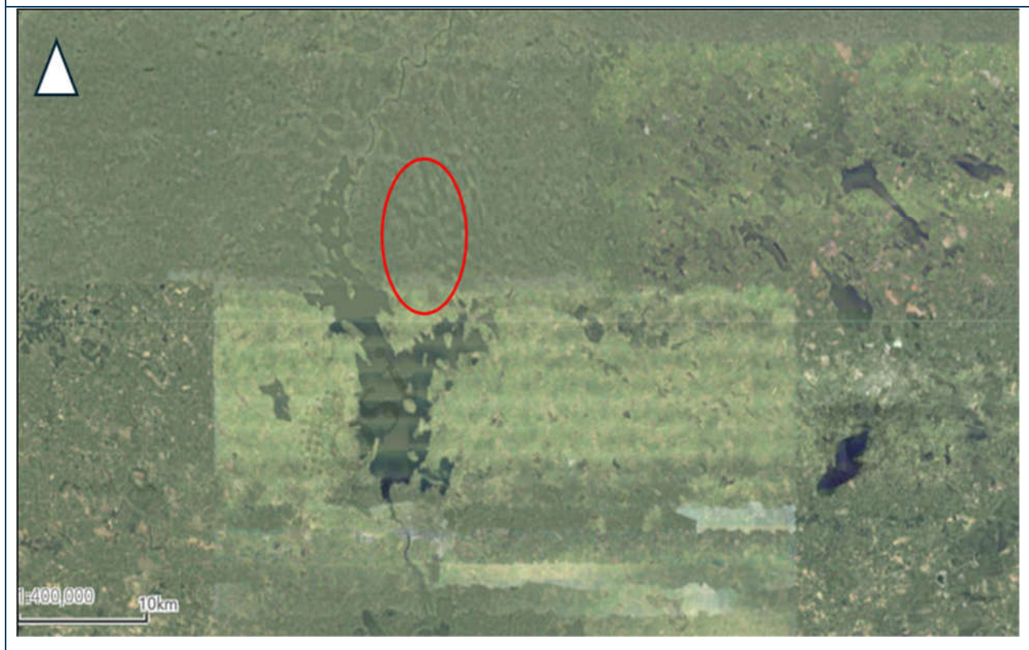


d) OSI Aerial imagery 2001

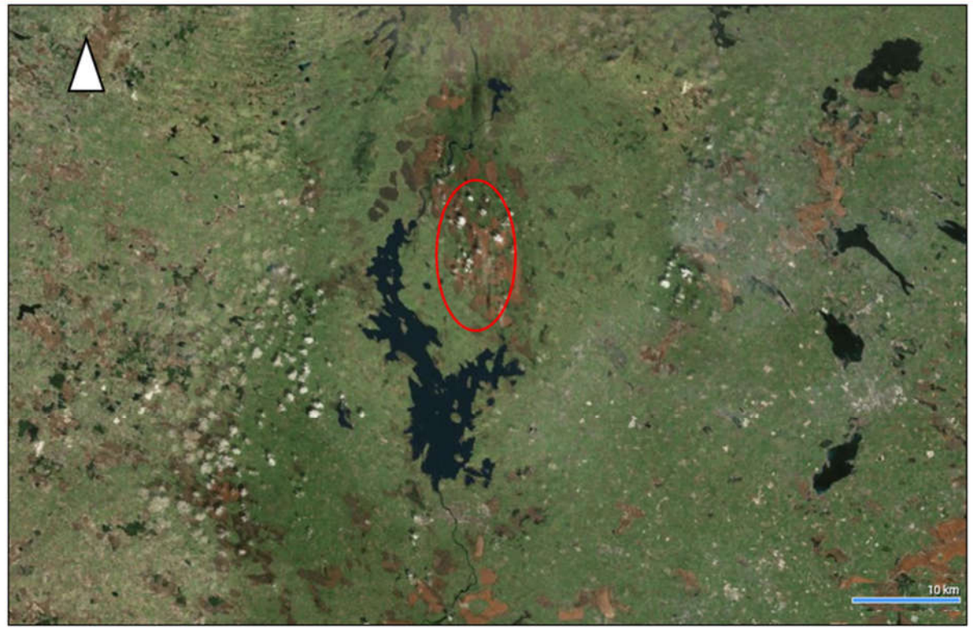


e) OSI Aerial imagery 2006.

f) OSI Aerial imagery 2013



g) Google Earth Aerial imagery 2018.



h) Bing Aerial imagery 2025

Appendix E TOPOGRAPHY

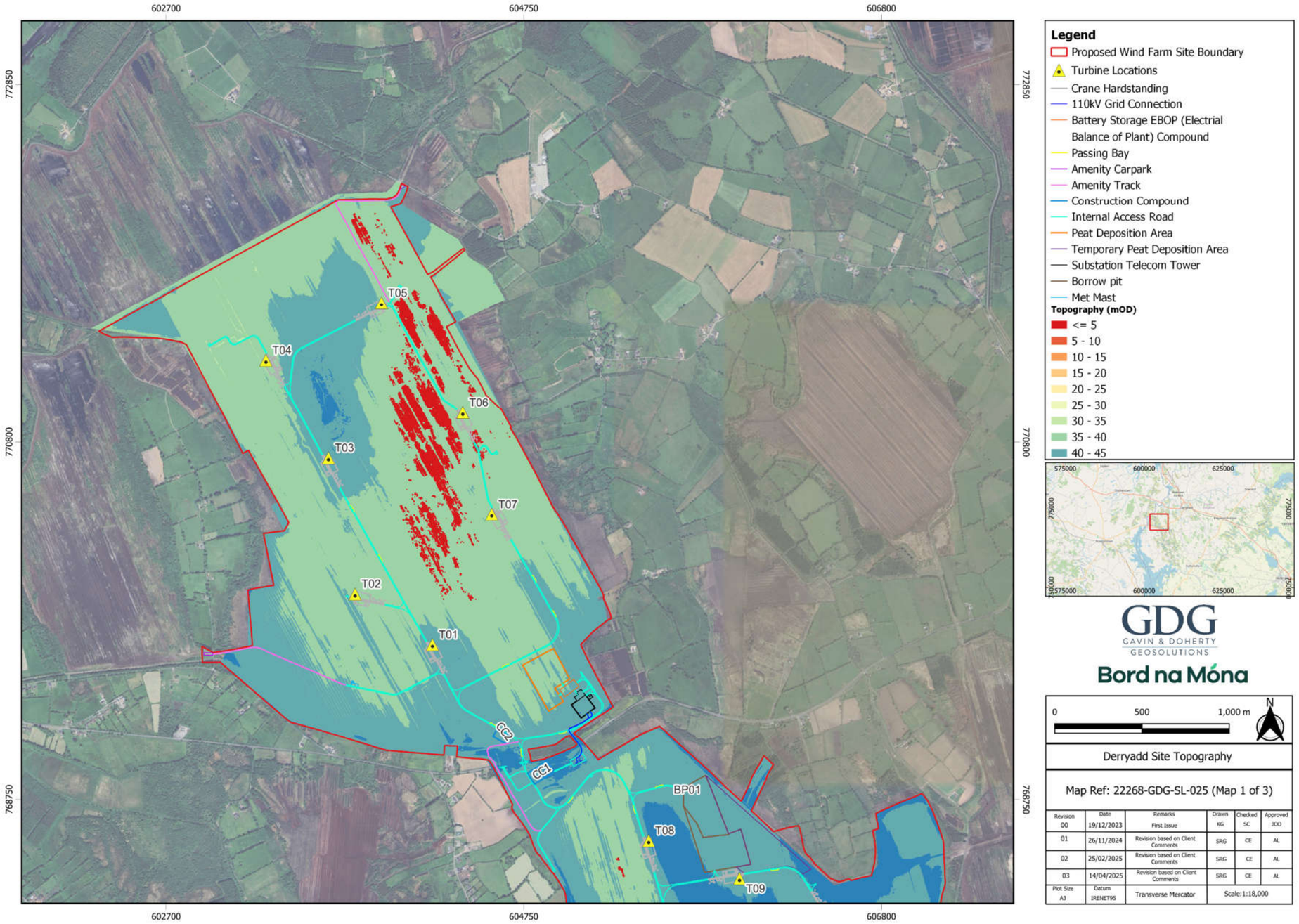


Figure E-1: Site Topography from LiDAR DEM provided by Tobin in 2024. Areas in red indicate areas of standing water.

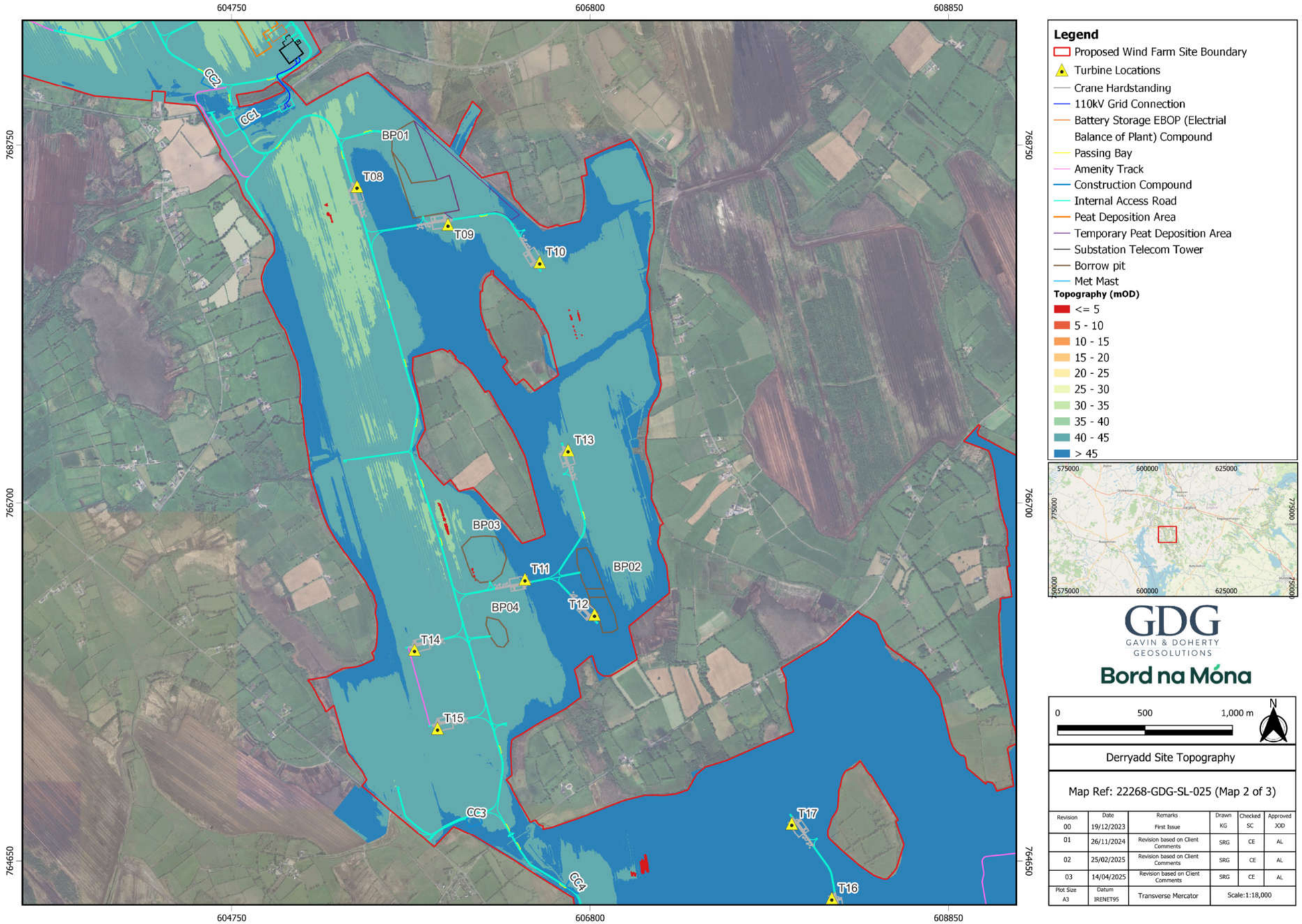


Figure E-2: Site Topography from LiDAR DEM provided by Tobin in 2024. Areas in red ('0') indicate areas of standing water.

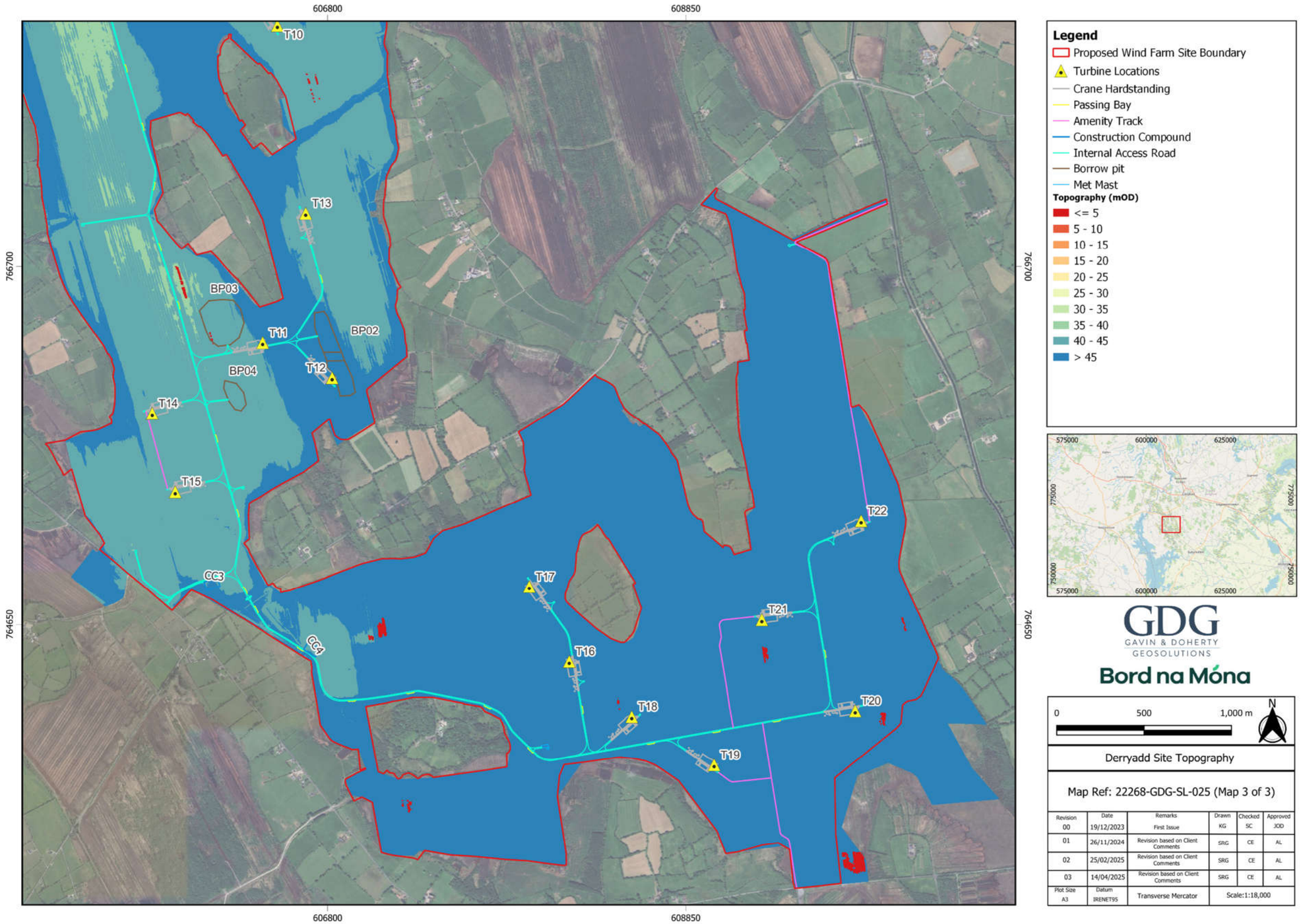


Figure E-3: Site Topography from LiDAR DEM provided by Tobin in 2024. Areas in red ('0') indicate areas of standing water.

Appendix F Slope Instability Mapping

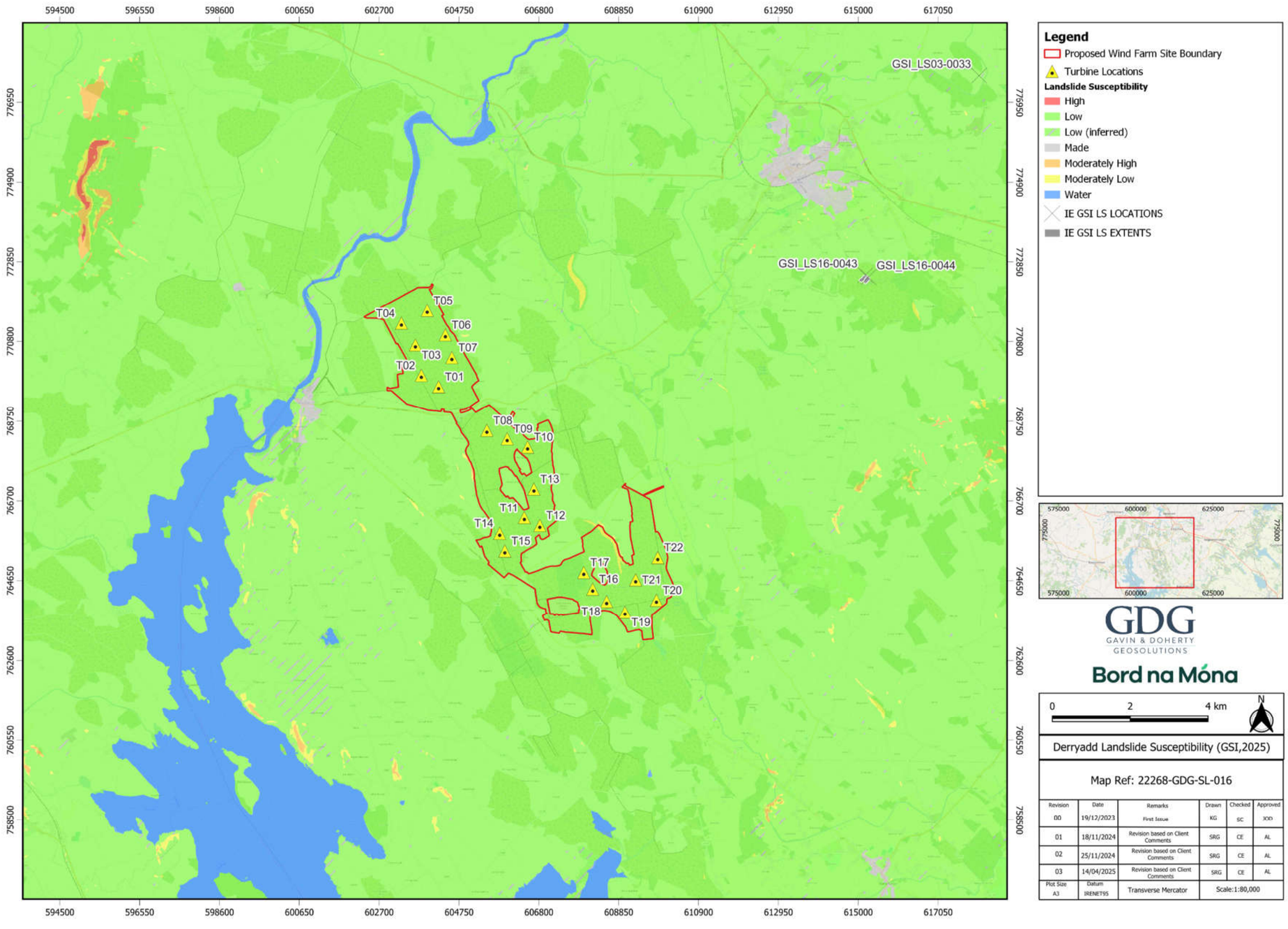


Figure F-1: Regional Landslide Susceptibility (GSI)

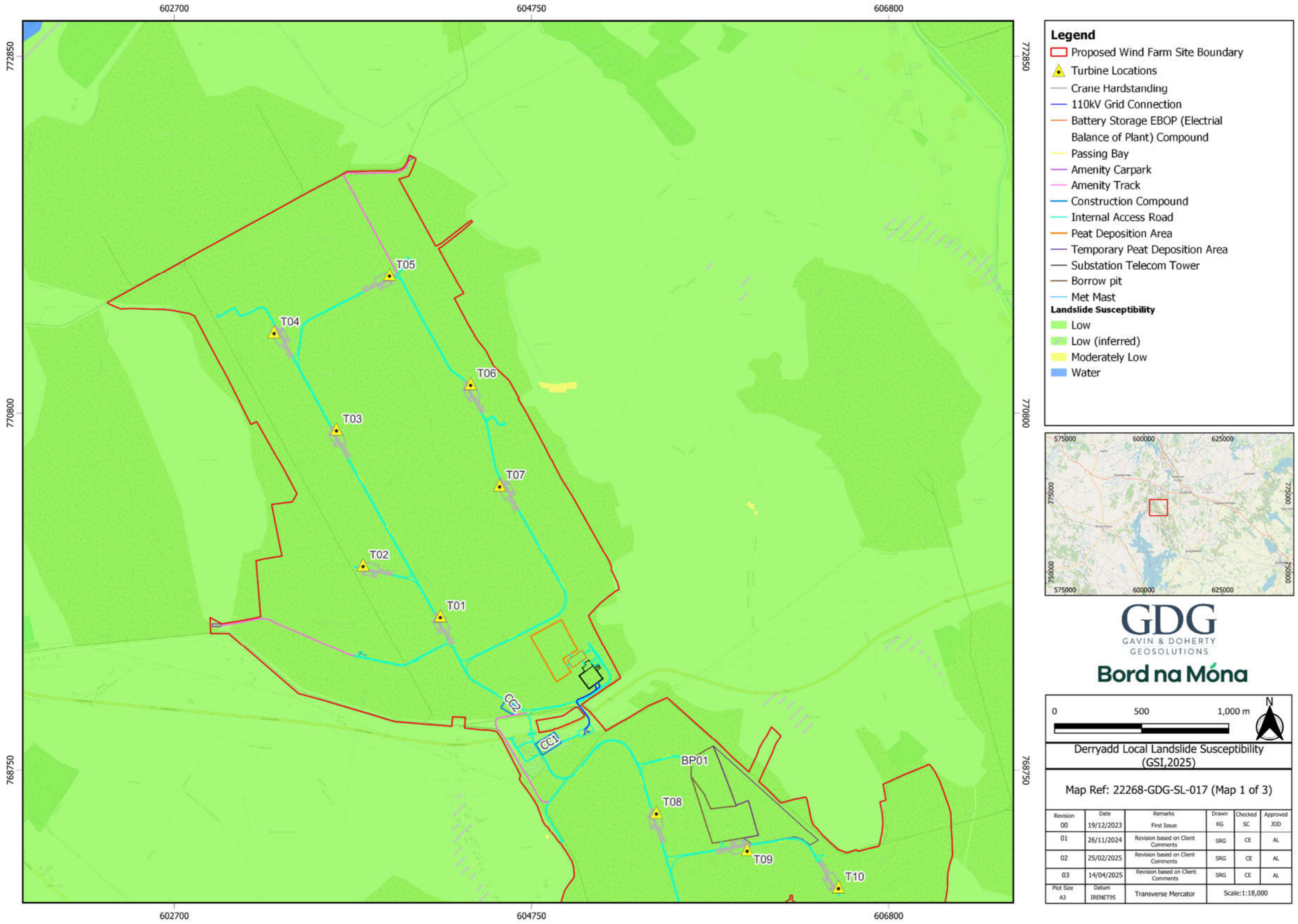


Figure F-2: Local Landslide Susceptibility (GSI)

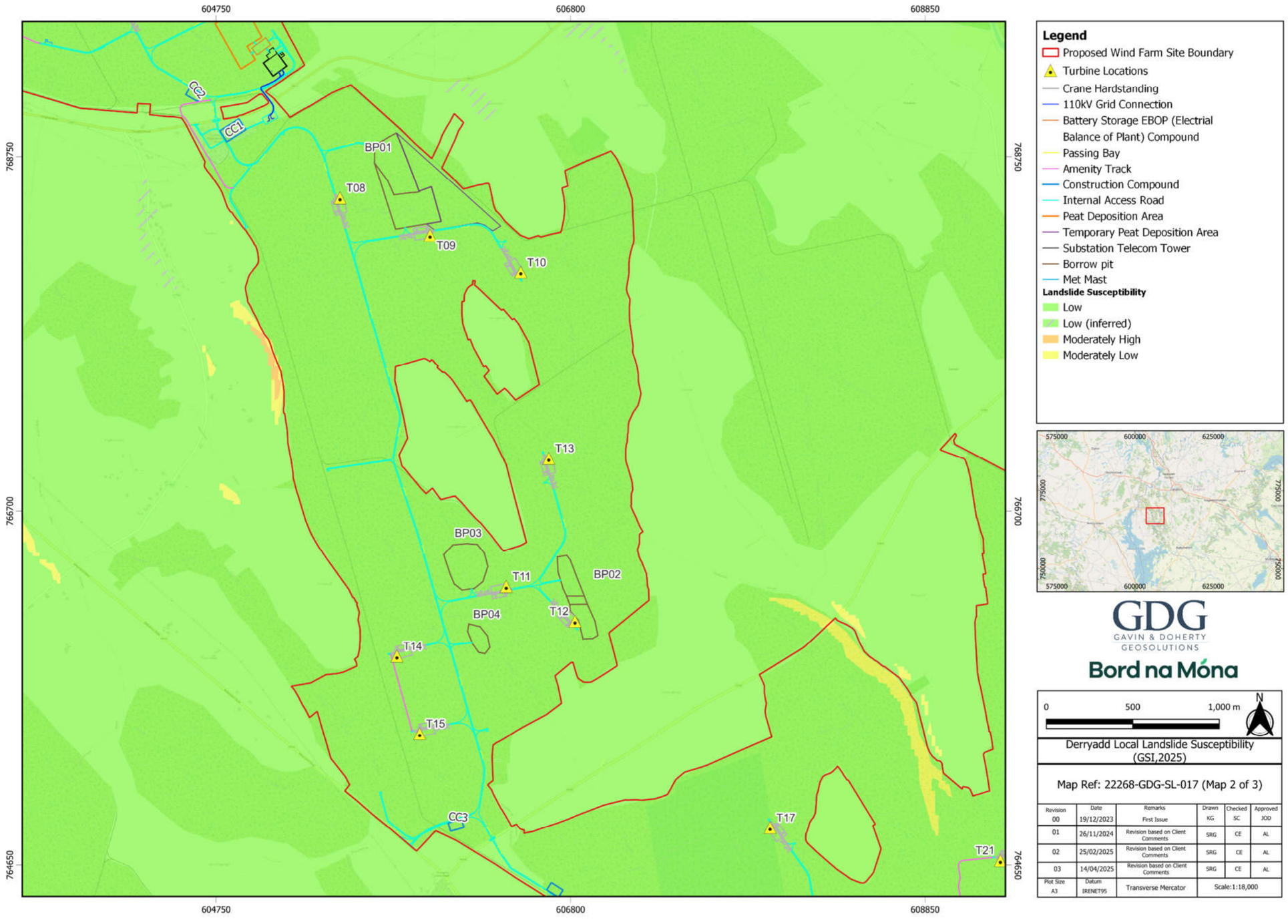


Figure F-3: Local Landslide Susceptibility (GSI)

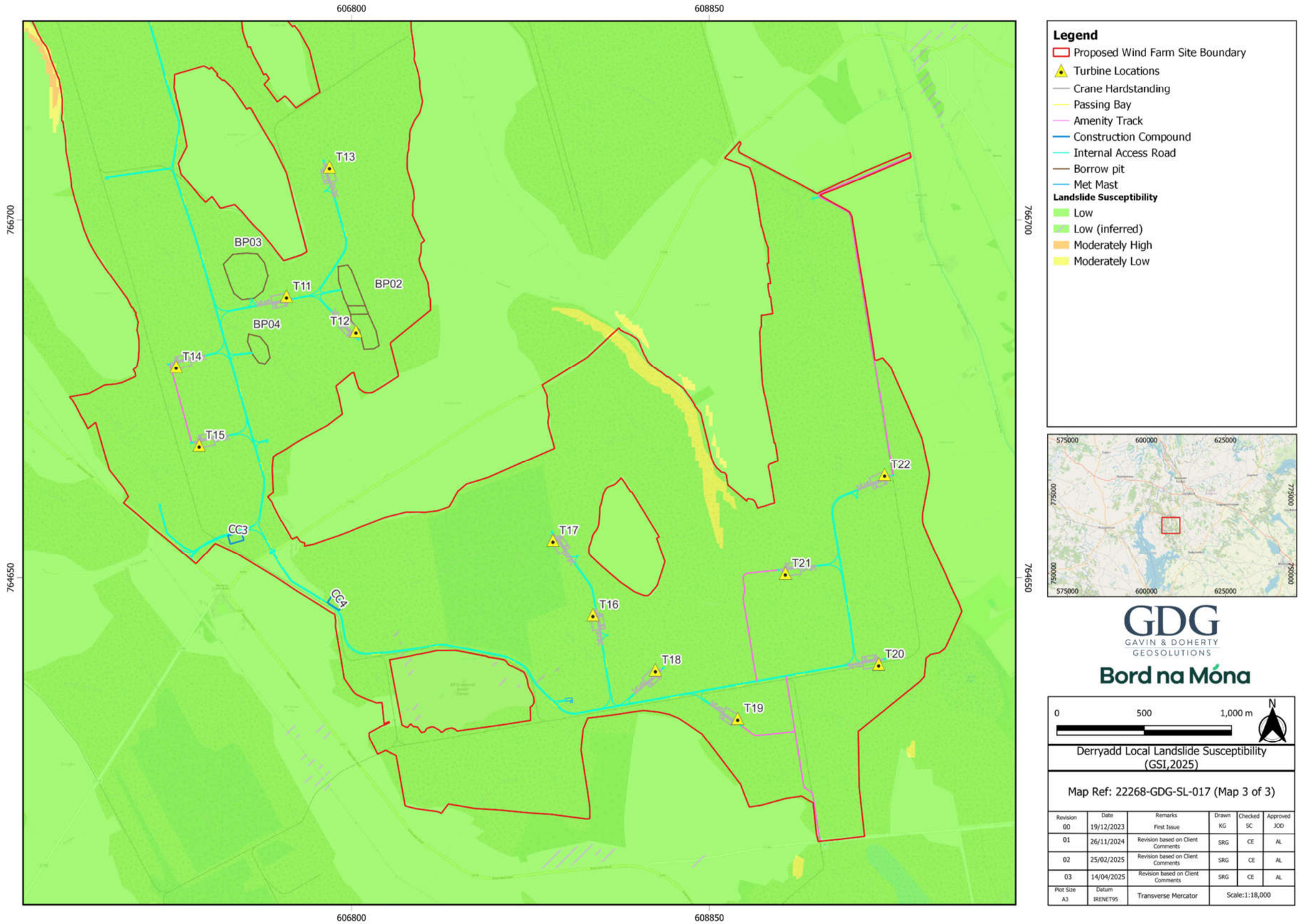


Figure F-4: Local Landslide Susceptibility (GSI)

Appendix G HYDROGEOLOGY

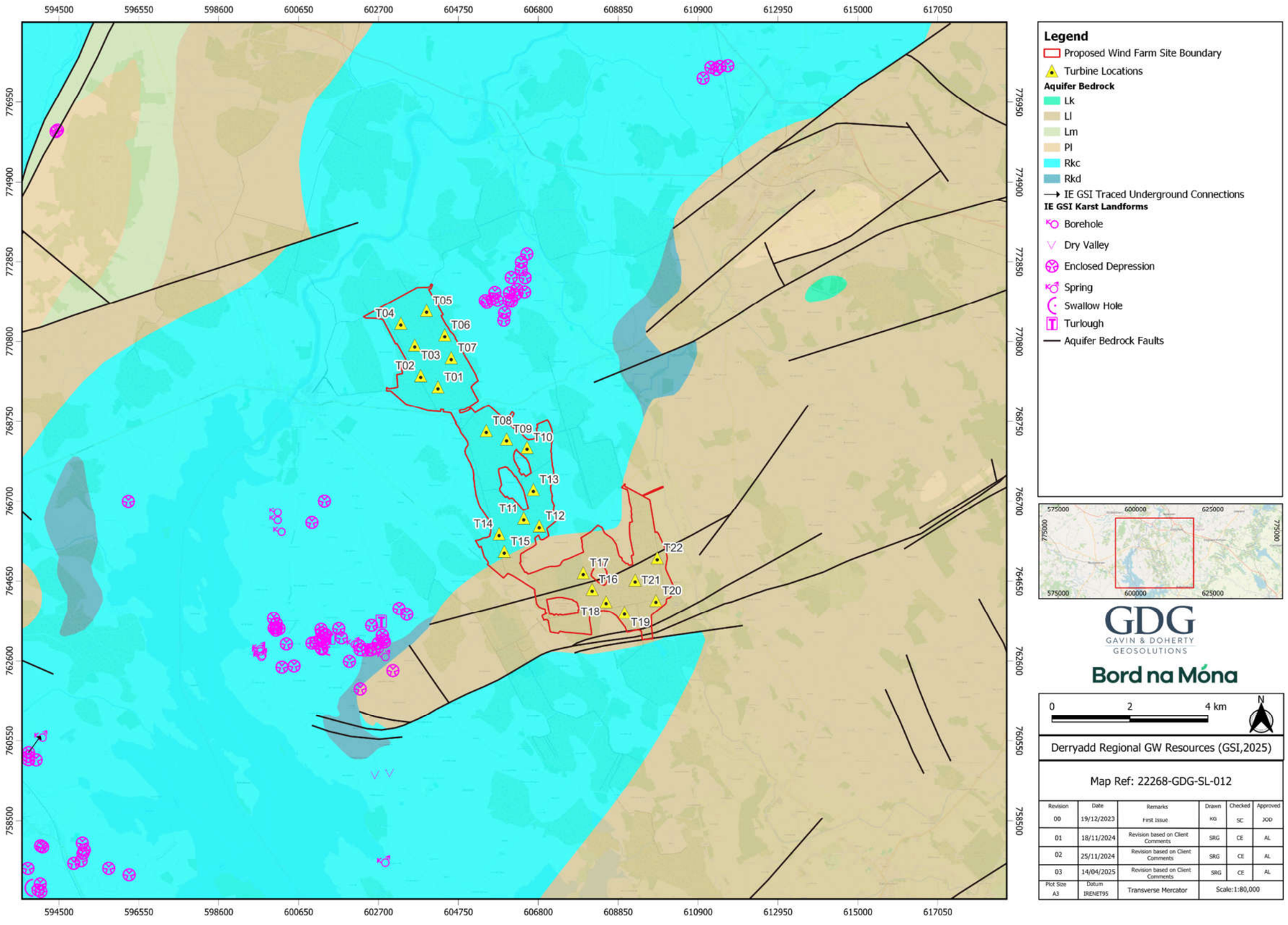


Figure G-1: Derryadd Regional Bedrock Aquifers and karst features.

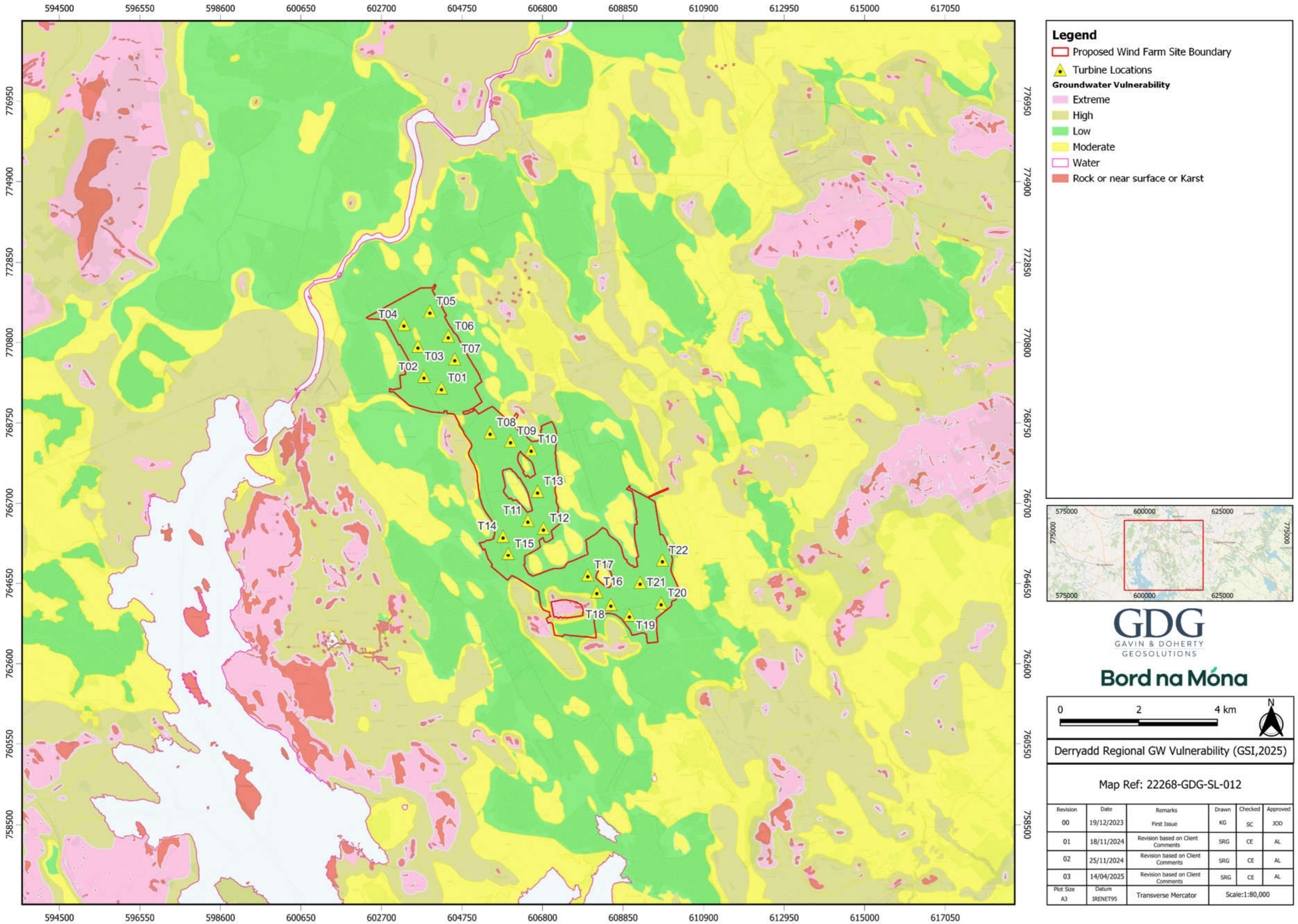


Figure G-2: Derryadd Regional Ground Water Vulnerability

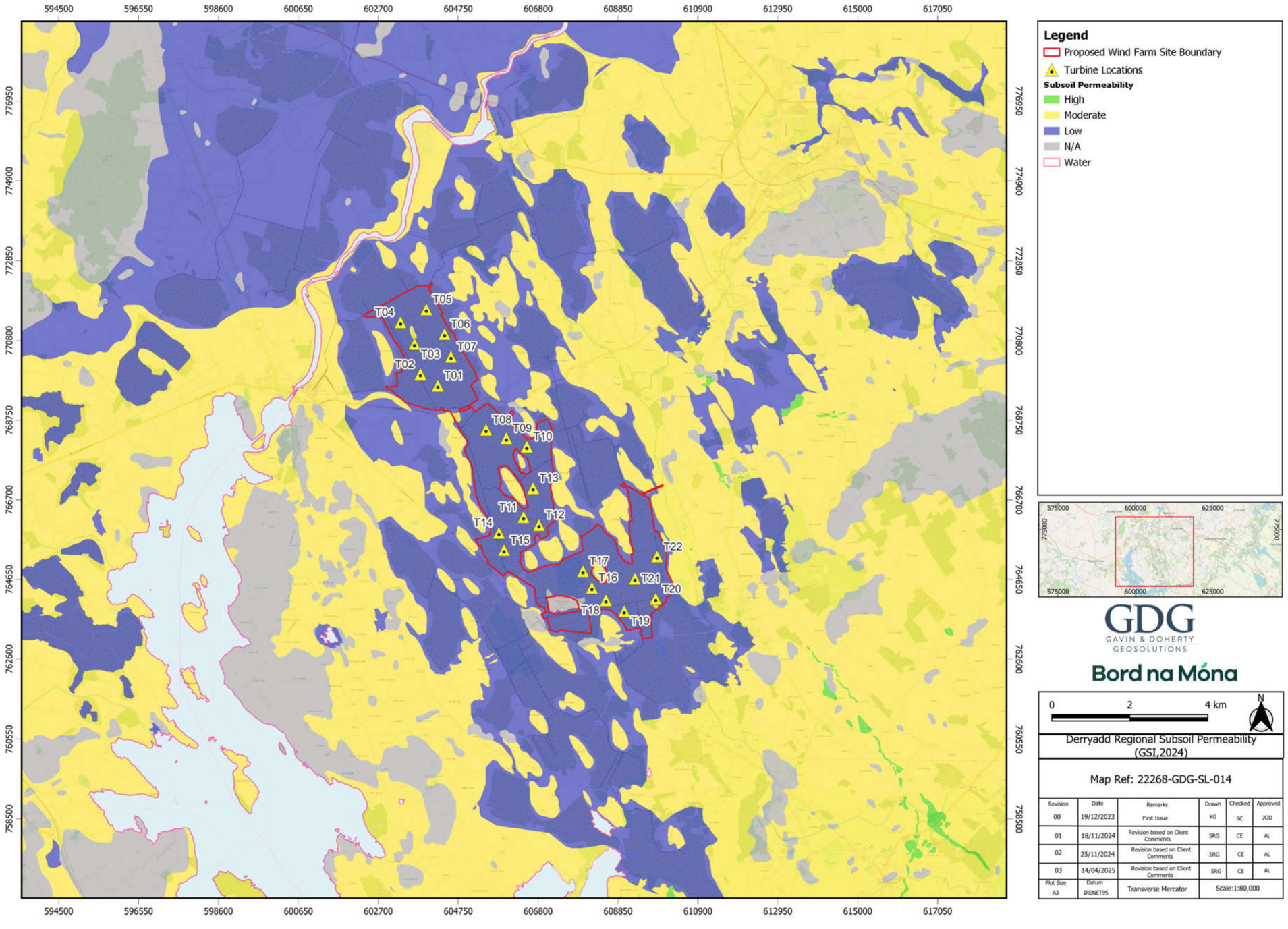


Figure G-3: Subsoil Permeability (GSI)

Appendix H Hydrology

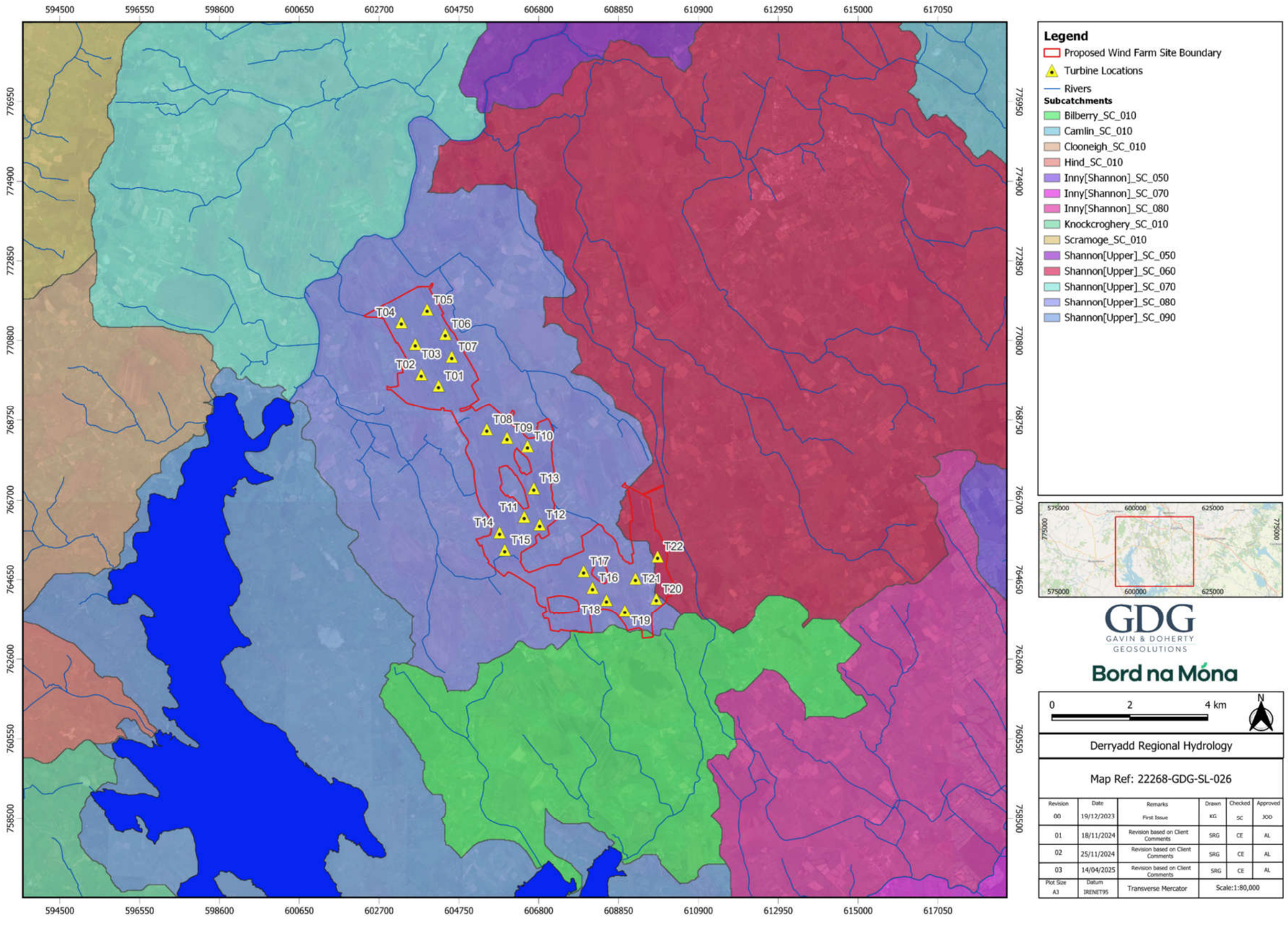


Figure H-1: Regional Hydrology (EPA)

Appendix I Land Cover and Land Use

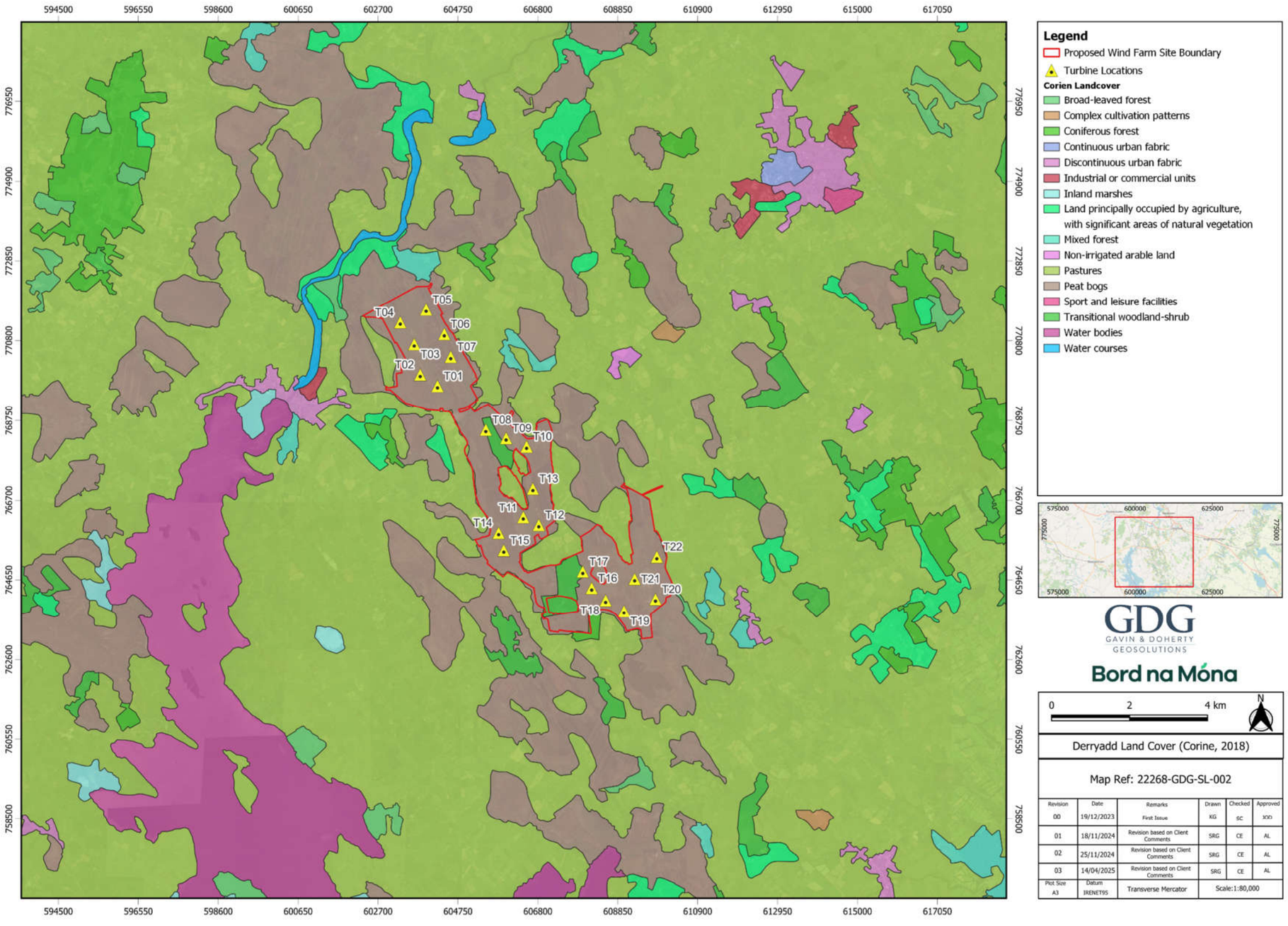


Figure I-1: Corine Land Cover (Corine, 2018)

Appendix J GEO-INVESTIGATIONS

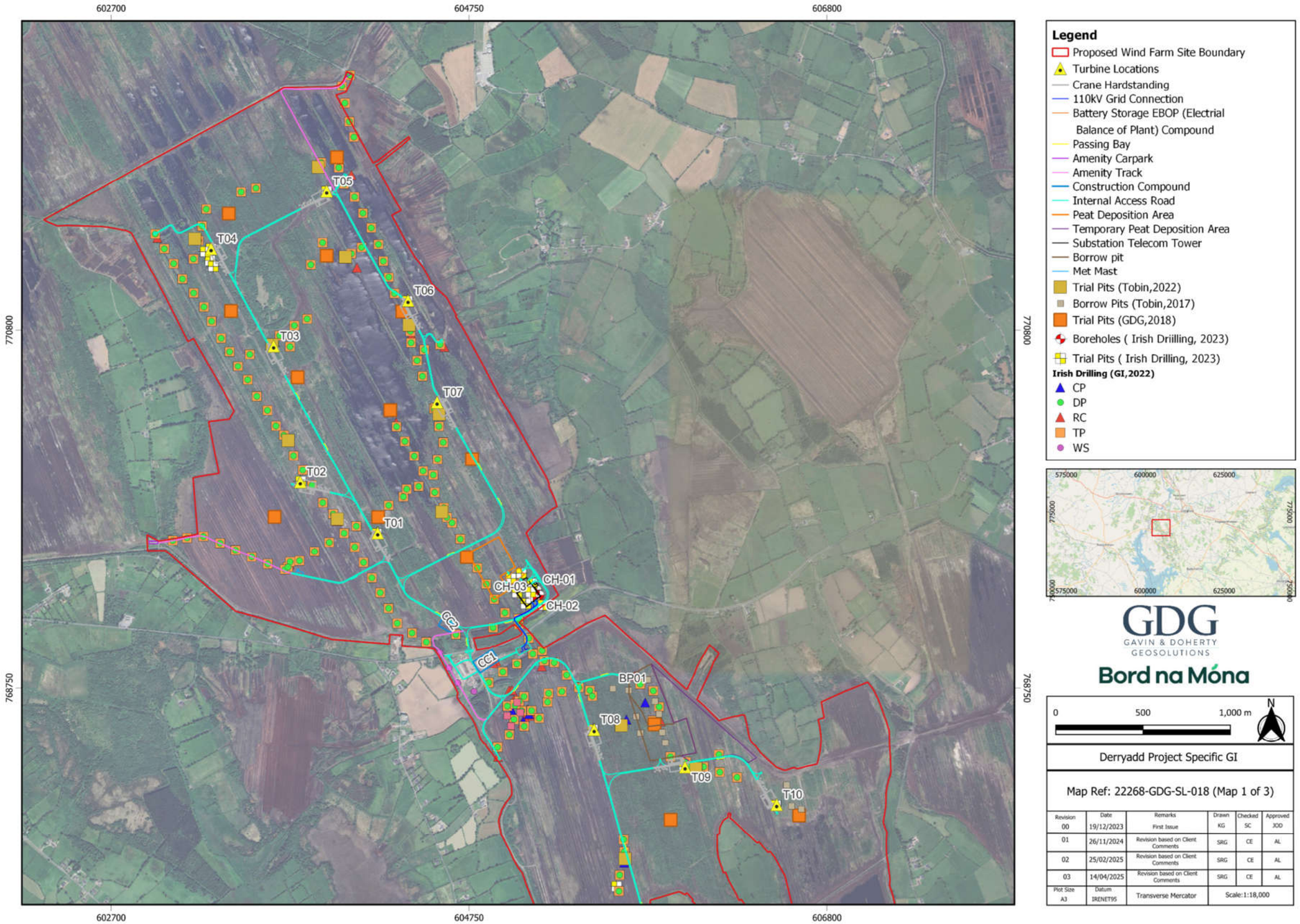


Figure J-1: Site Specific Ground Investigations

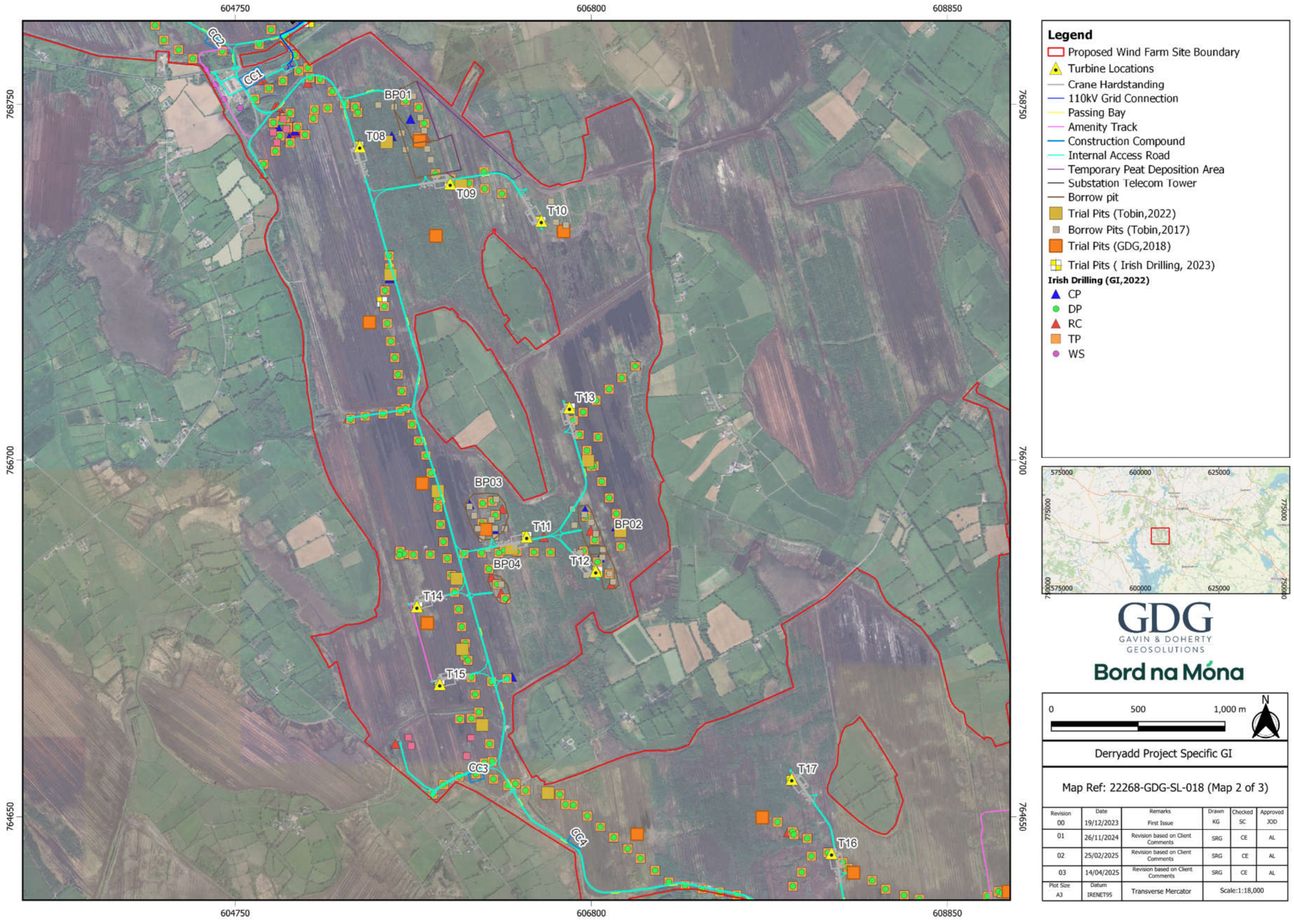


Figure J-2: Site Specific Ground Investigations

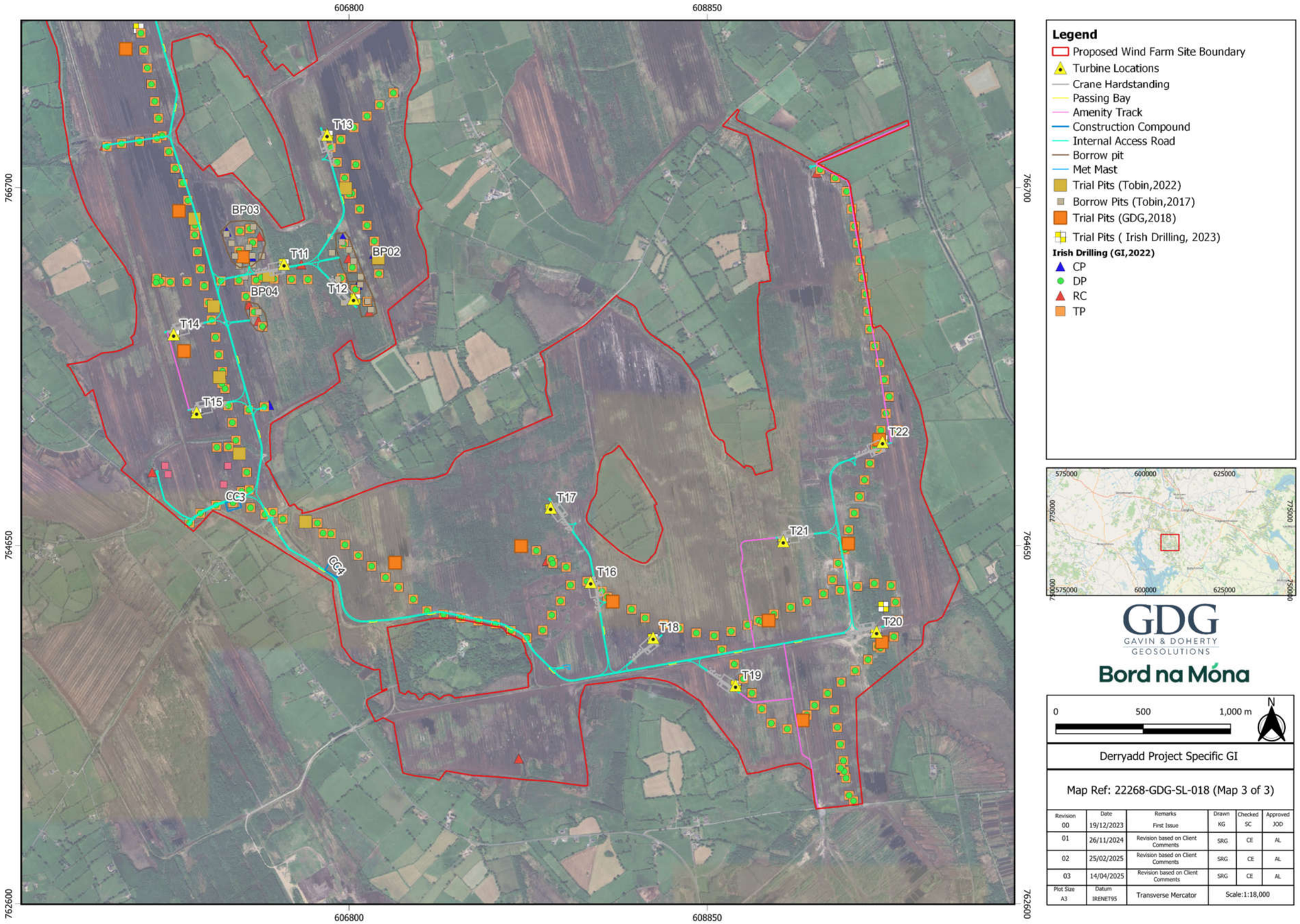


Figure J-3: Site Specific Ground Investigations

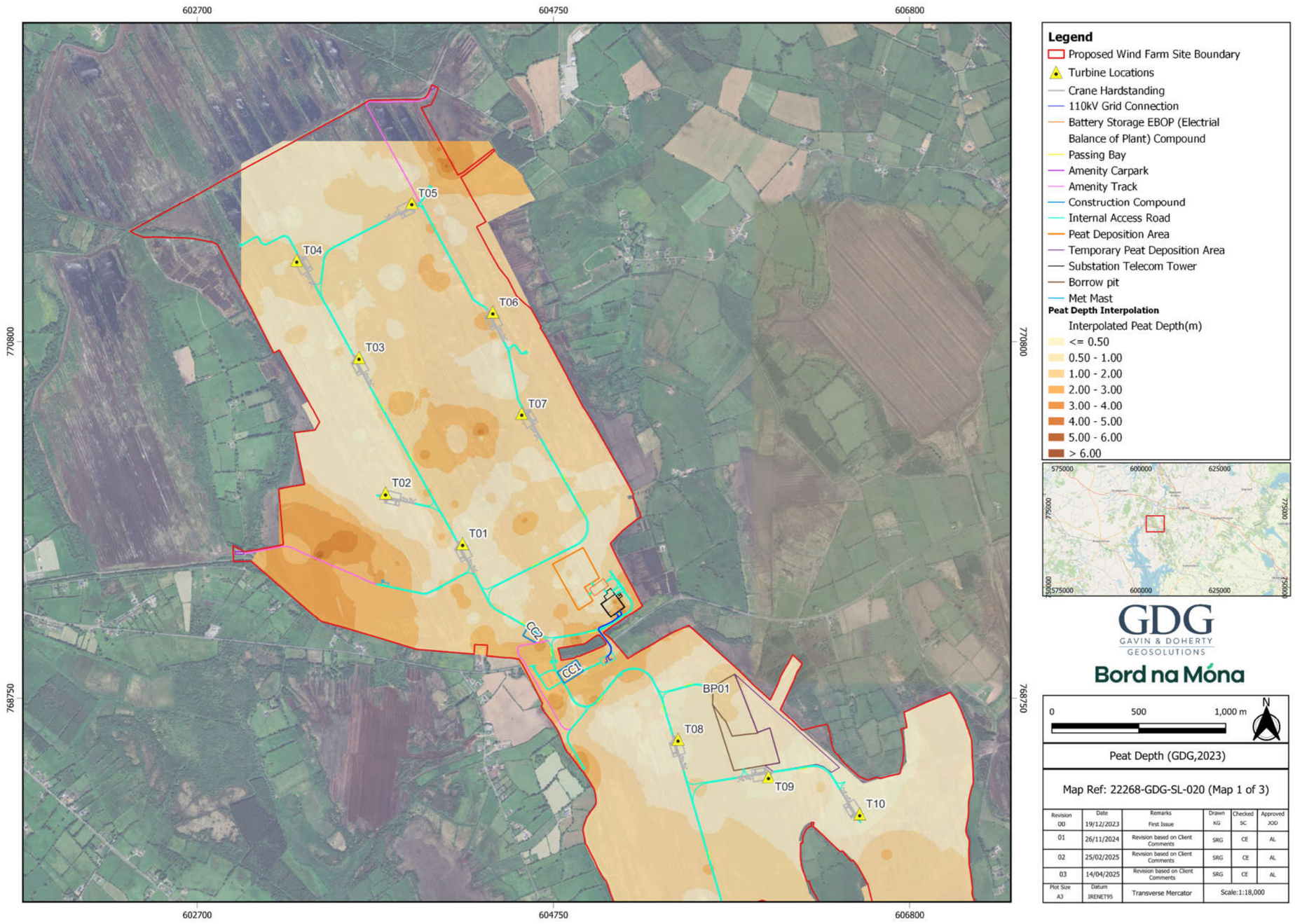


Figure J-4: Interpolated peat depth

Figure J-5: Interpolated peat depth

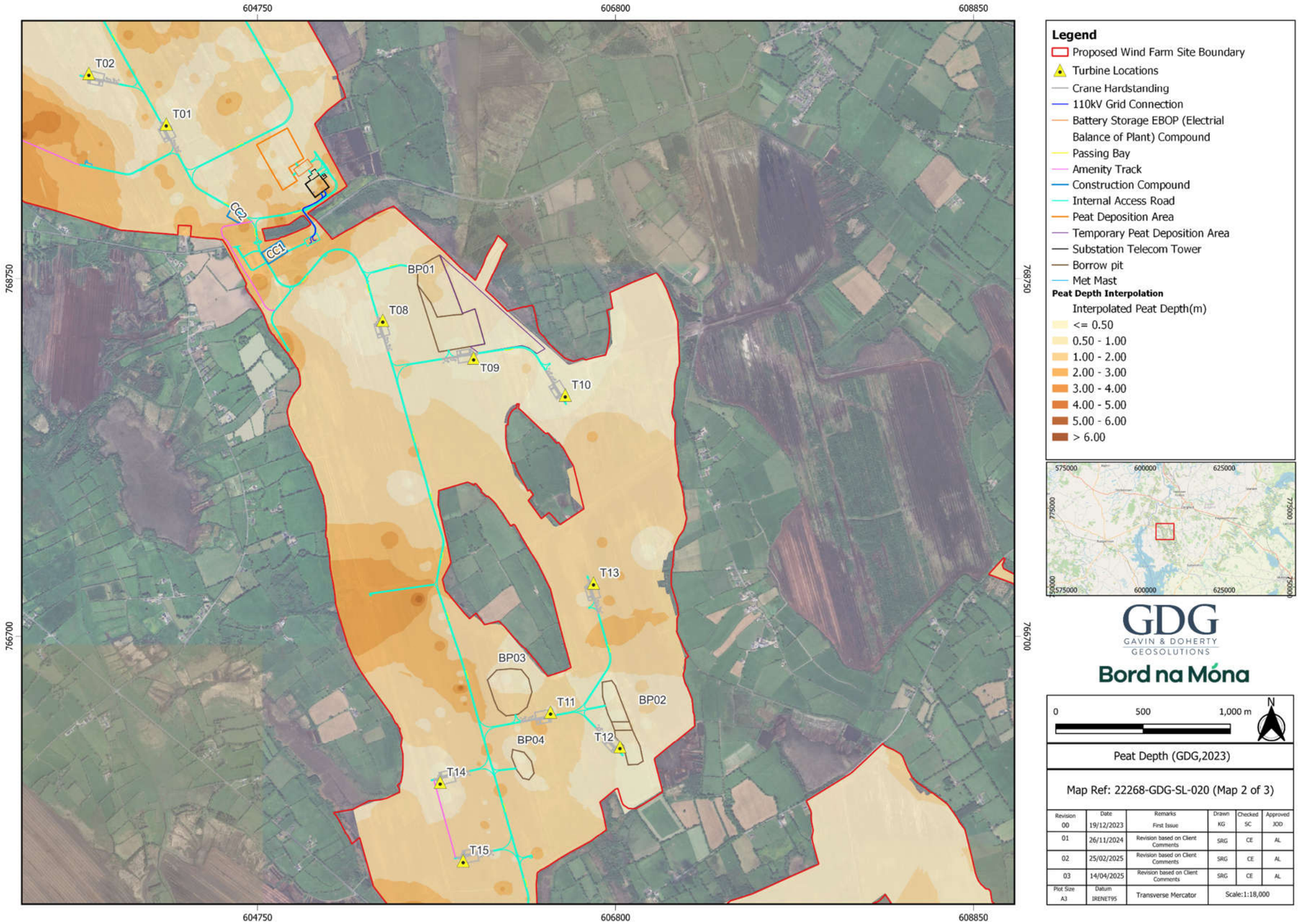


Figure J-6: Interpolated peat depth

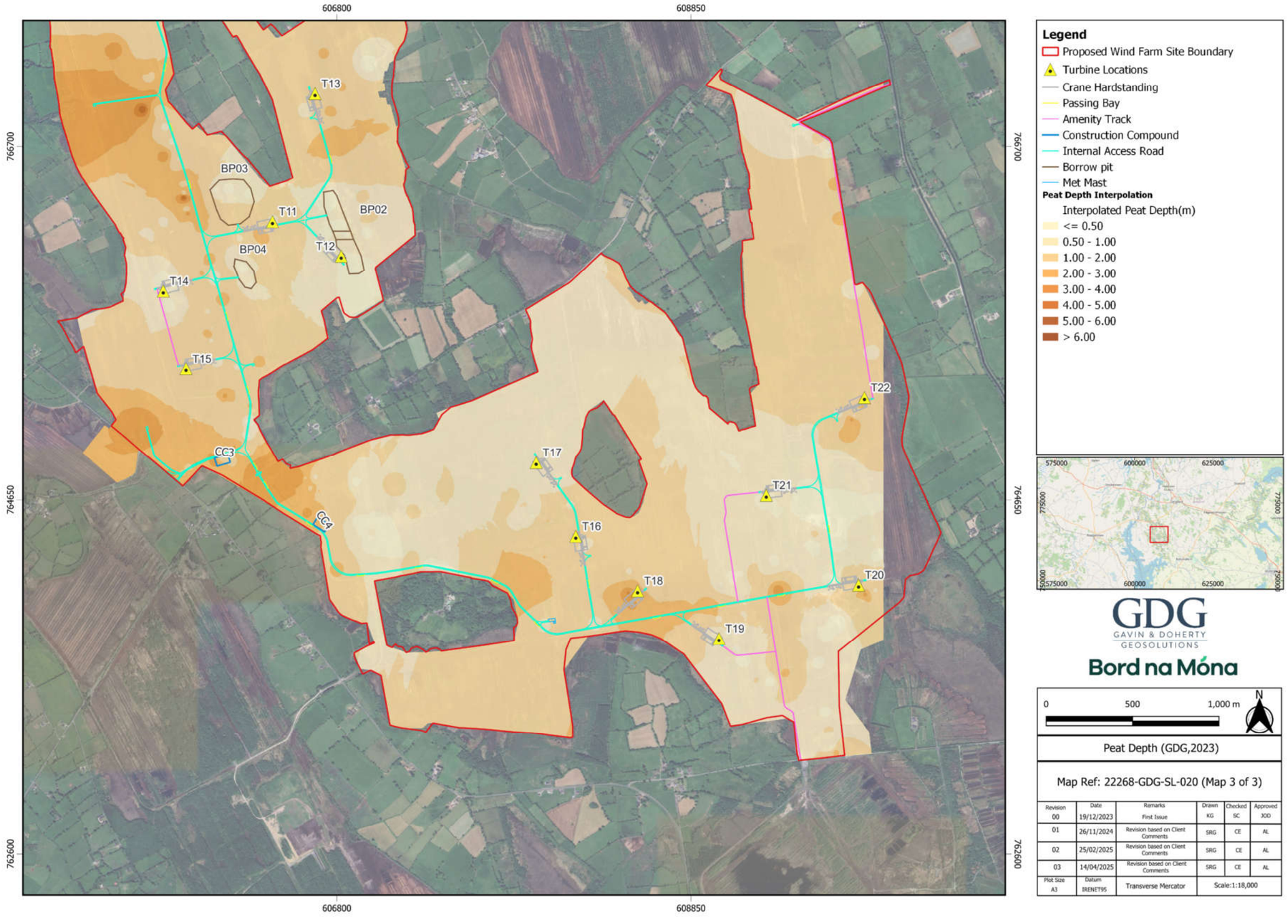


Figure J-7: Interpolated peat depth

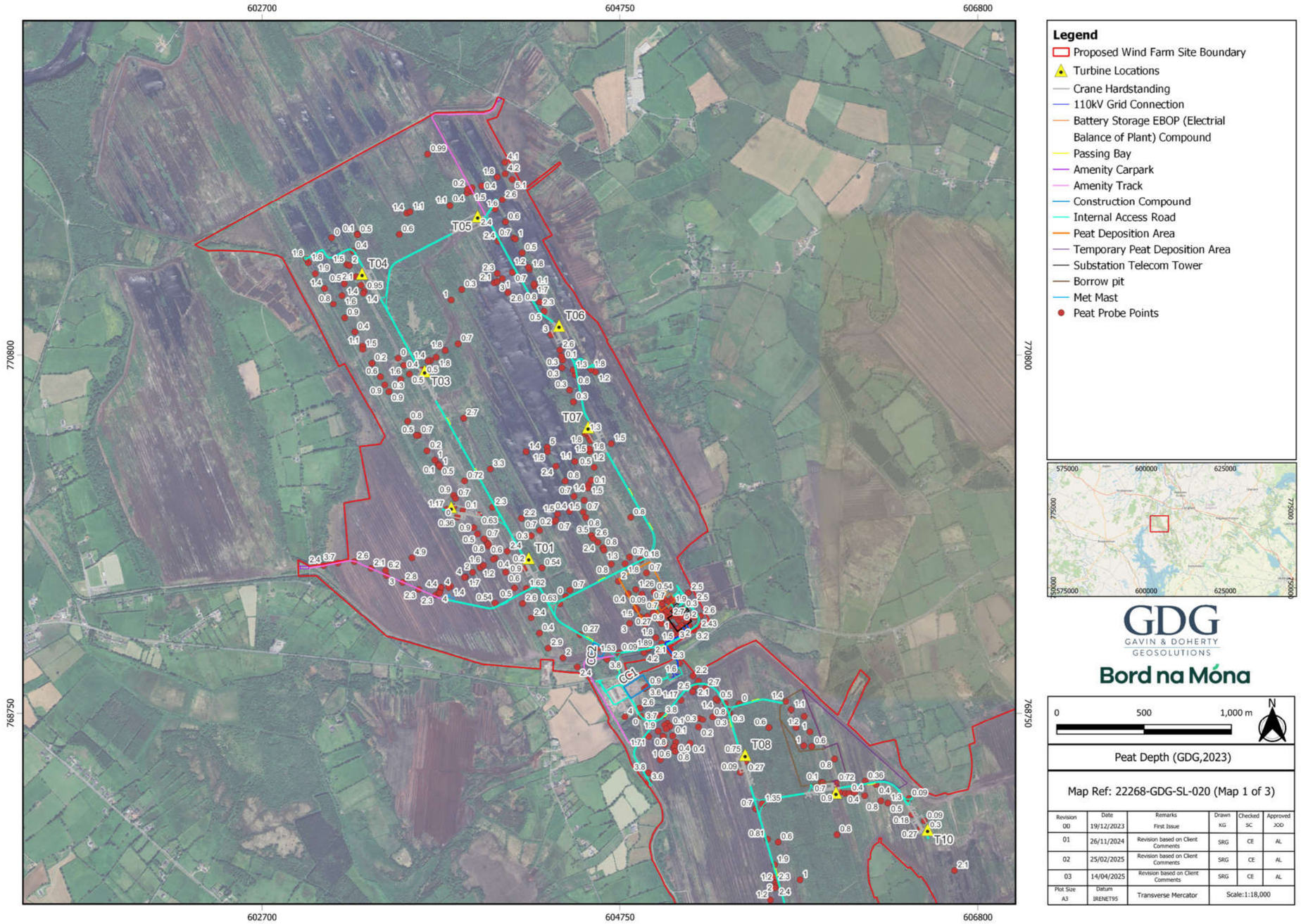


Figure J-8: Peat Probe Points and Peat Depth (m) Map (1 of 3)

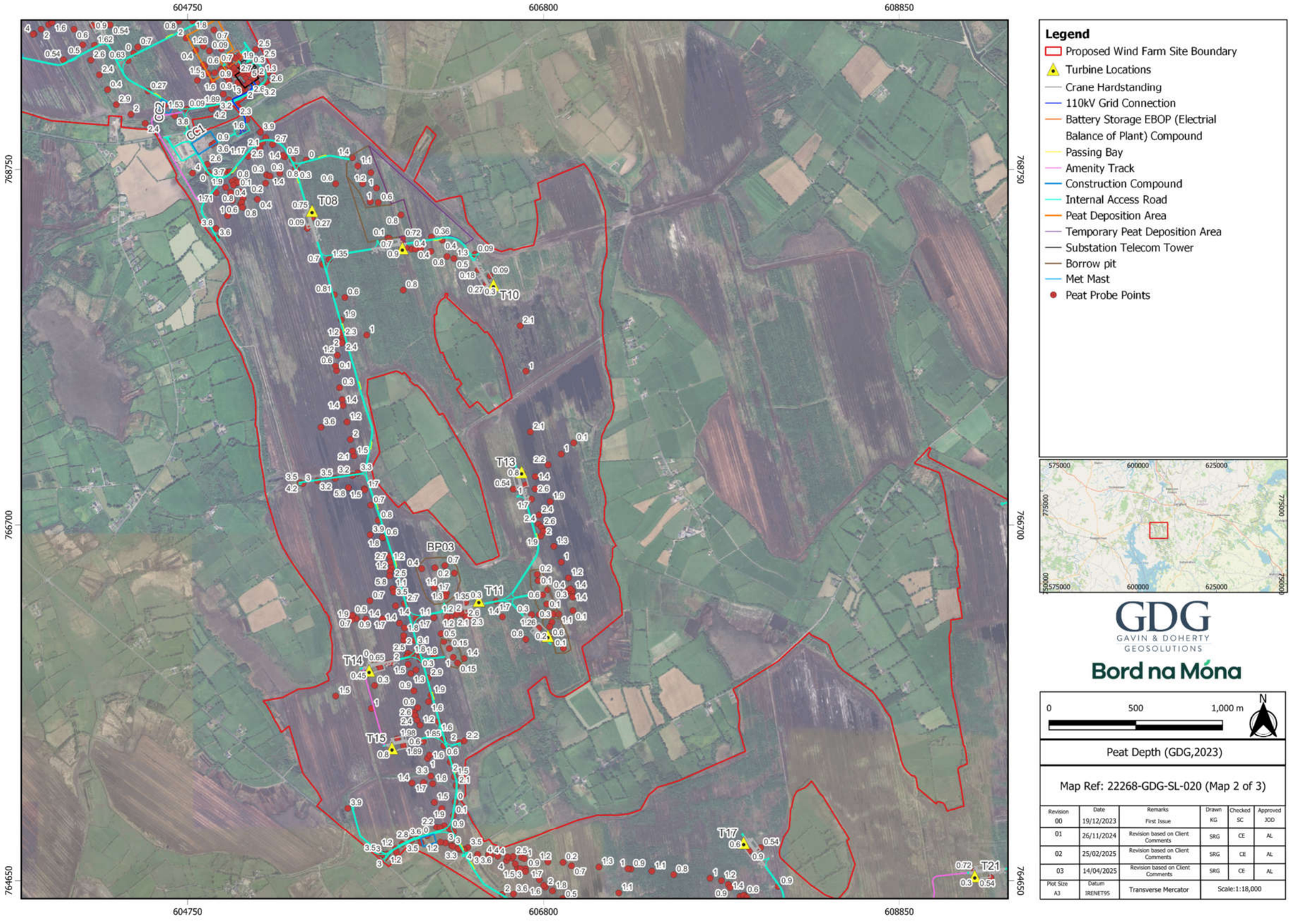


Figure J-9: Peat Probe Points and Peat Depth (m) Map (2 of 3)

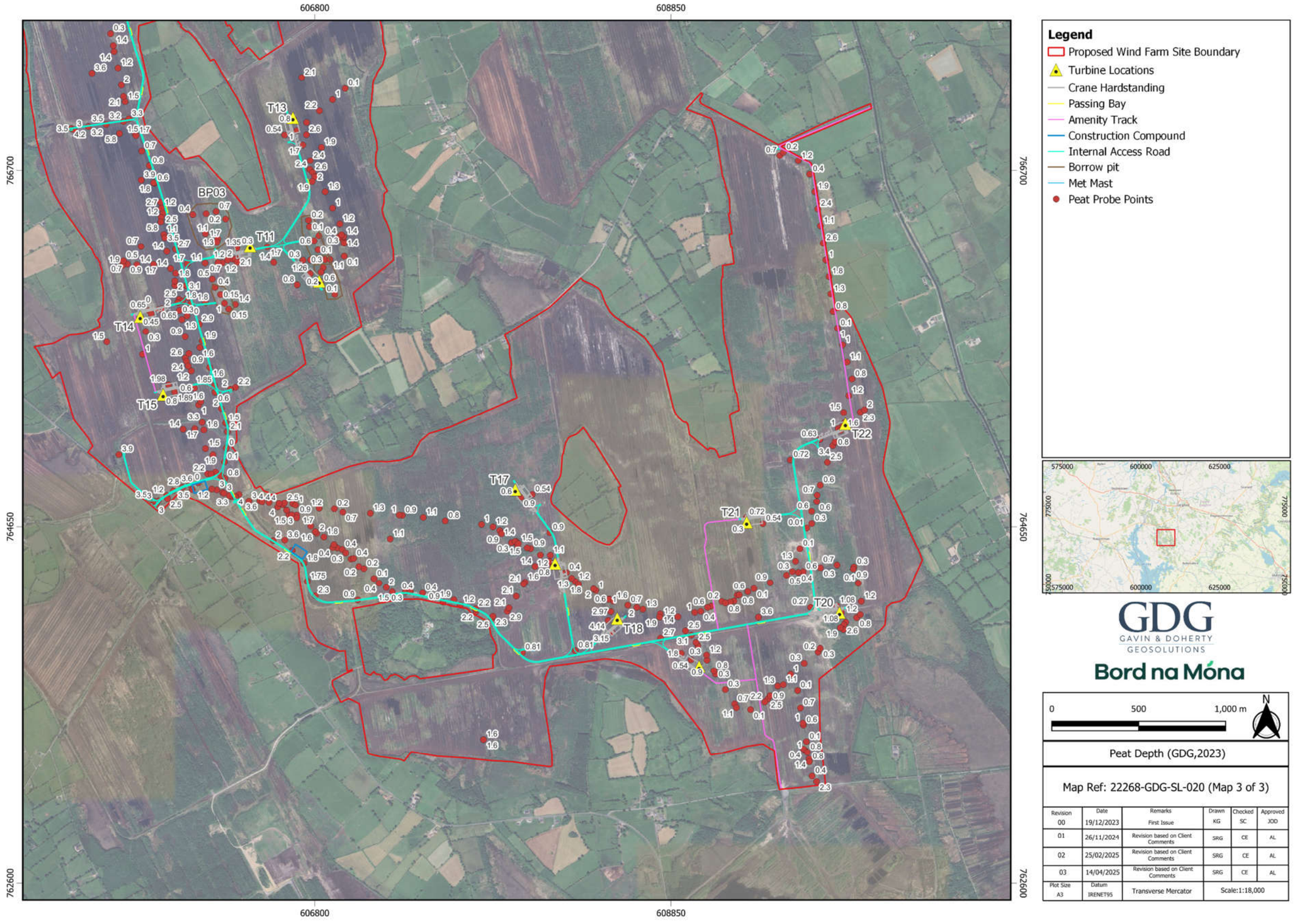


Figure J-10: Peat Probe Points and Peat Depth (m) Map (3 of 3)

Table J-1: Site reconnaissance of the turbine 1 site (T01)

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 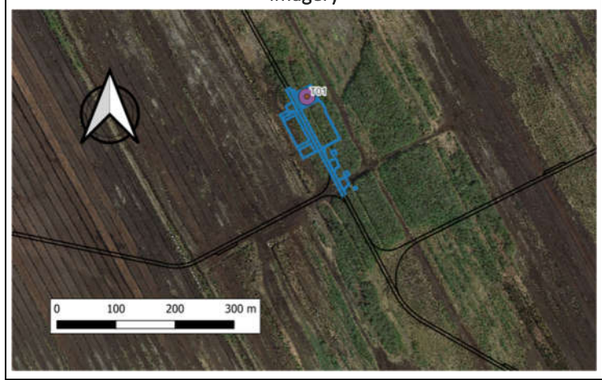
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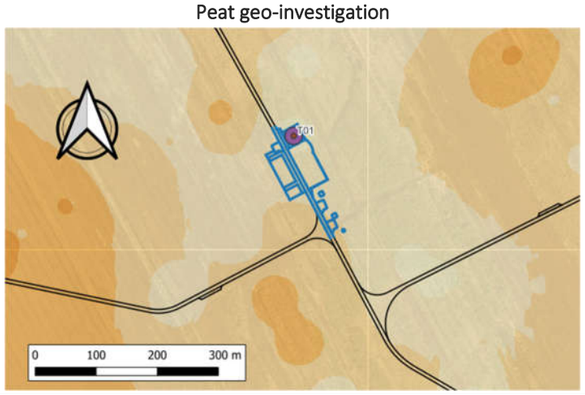
<td>Peat geo-investigation
 
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 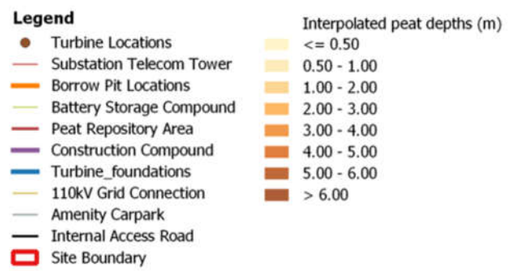
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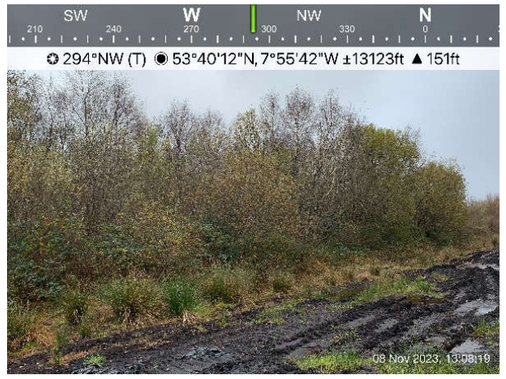
<td> 
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<td>Description

Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 8th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T01 is located on a raised peat bog. Topography is flat.

Peat: The peat depth at T01 is 0.26 m and slope angle of 5.04 degrees.

Instability evidences: No.</td>
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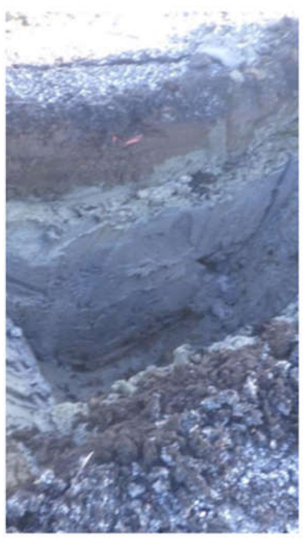
<td>  </td>
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Table J-2: Site reconnaissance of the turbine 2 site (T02)

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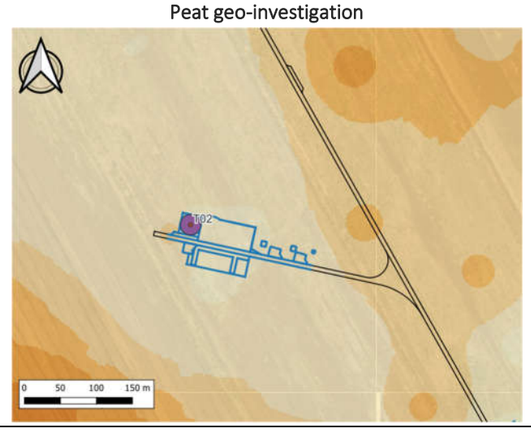
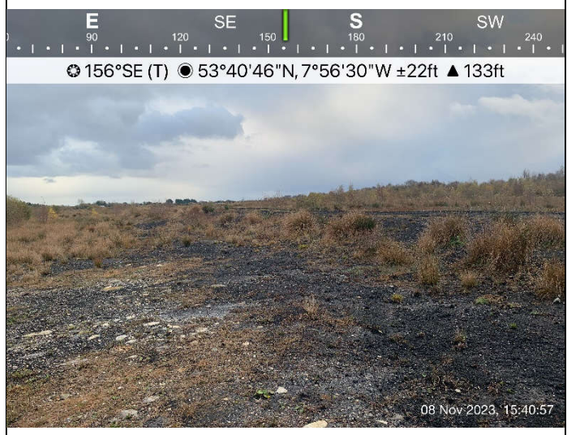
  </td>
<td>  </td>
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 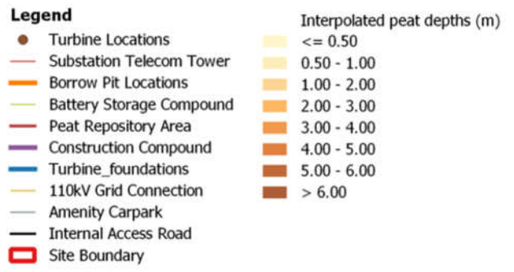 </td>
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 8th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T02 is located on a raised peat bog. Topography is flat with occasional vegetation.

Peat: The peat depth at T02 is 0.37 m and slope angle of 5.51 degrees.

Instability evidences: No.</td>
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Table J-3: Site reconnaissance of the turbine 3 site (T03)

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 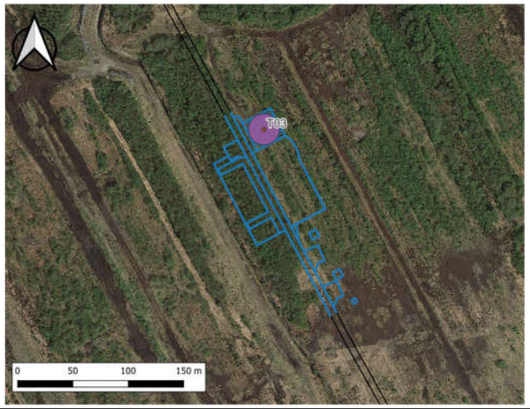
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 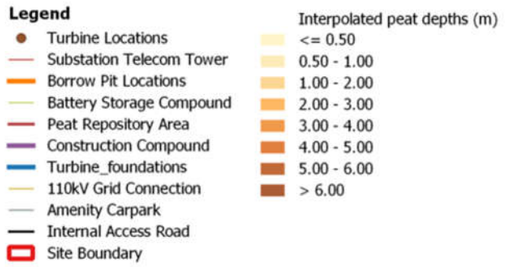
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 8th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T03 is located on a raised peat bog. Topography is relatively flat and there is an adjacent steep land drain. Glacial Till and Bedrock identified at base of nearby drains.

Peat: The peat depth at T03 is 0.53 m and slope angle of 4.90 degrees.

Instability evidences: No.</td>
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Table J-4: Site reconnaissance of the turbine 4 site (T04)

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 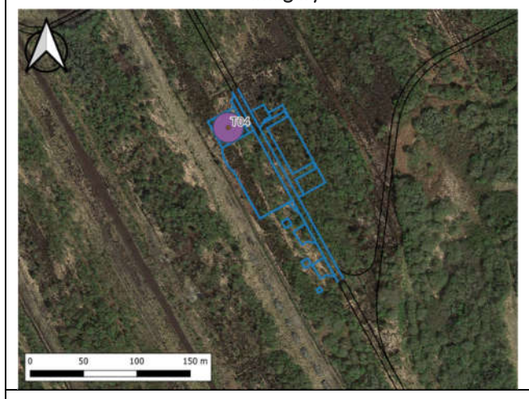
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 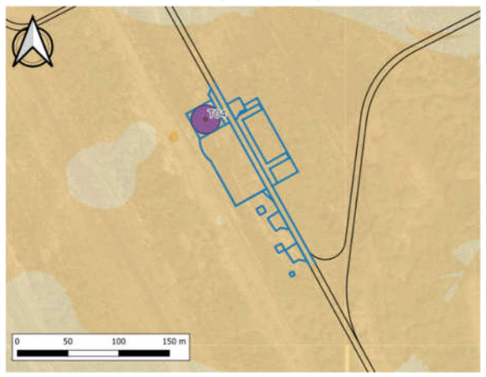
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 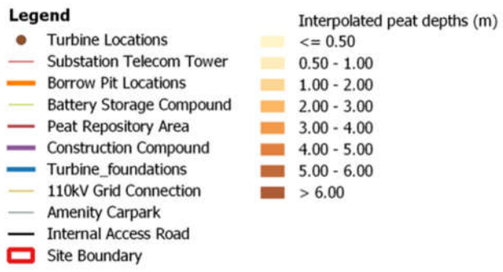
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 8th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T04 is located on a raised peat bog. Topography is relatively flat and there is an adjacent land drain.

Peat: The peat depth at T04 is 1.25 m and slope angle of 7.35 degrees.

Instability evidences: No.</td>
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Table J-5: Site reconnaissance of the turbine 5 site (T05)

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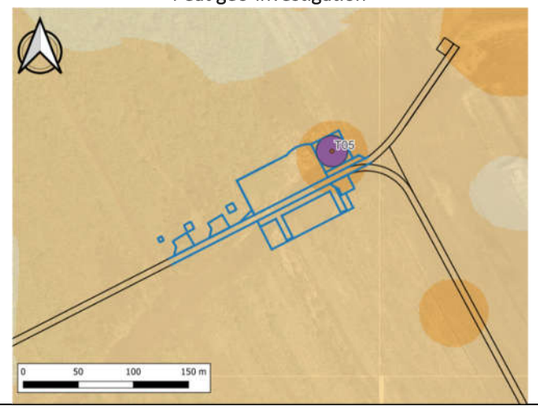
Peat geo-investigation



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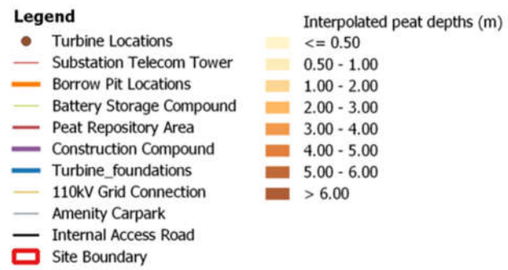

Description

Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 8th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T05 is located on a raised peat bog. Topography is relatively flat and vegetated. Area was inaccessible due to excessive surface flooding.

Peat: The peat depth at T05 is 2.35 m and slope angle of 6.30 degrees.

Instability evidences: No.

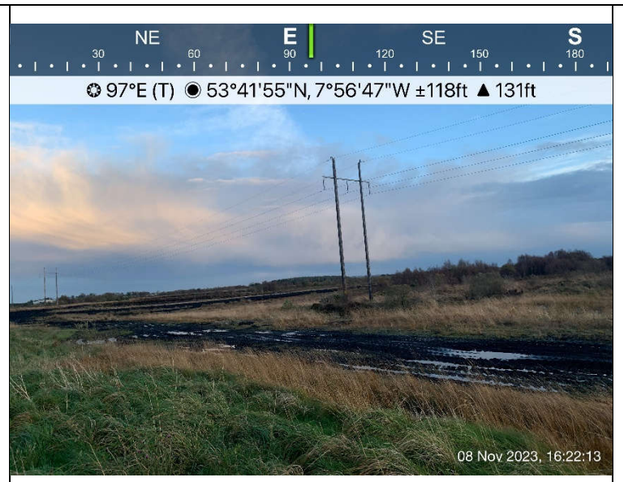

Table J-6: Site reconnaissance of the turbine 6 site (T06)

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 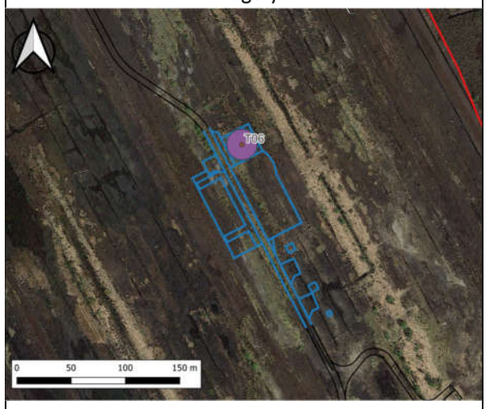
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 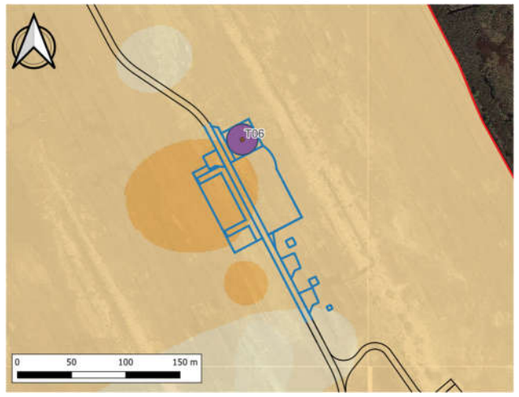
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 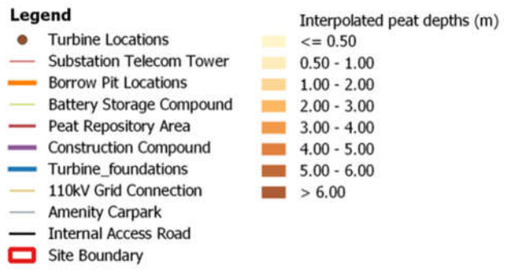
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<td>Description

Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 8th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T06 is located on a raised peat bog. Topography is relatively flat and the area was inaccessible in 2023 due to excessive surface flooding.

Peat: The peat depth at T06 is 1.86m and slope angle of 5.81 degrees.

Instability evidences: No.</td>
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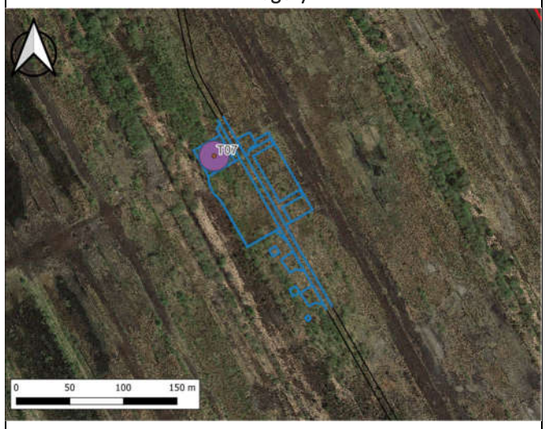
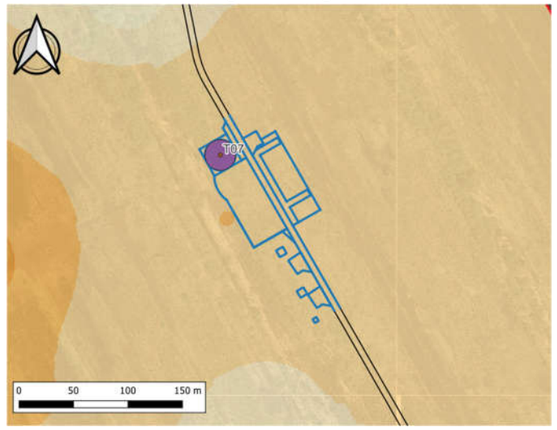
Table J-7: Site reconnaissance of the turbine 7 site (T07)

Imagery



Peat geo-investigation



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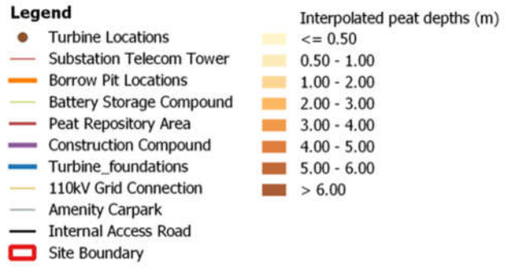
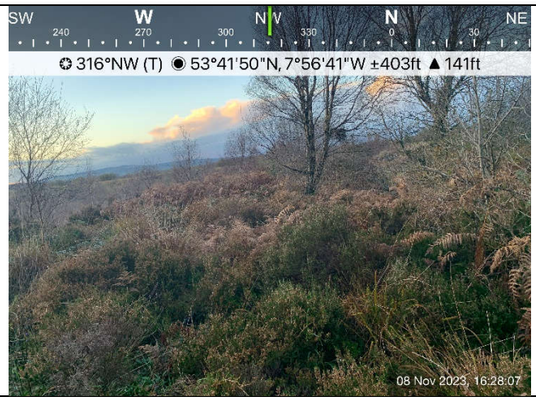




Description

Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 8th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T07 is located on a raised peat bog. Topography is relatively flat and vegetated and the area was inaccessible in 2023 due to excessive surface flooding.

Peat: The peat depth at T07 is 1.57m and slope angle of 6.48 degrees.

Instability evidences: No.

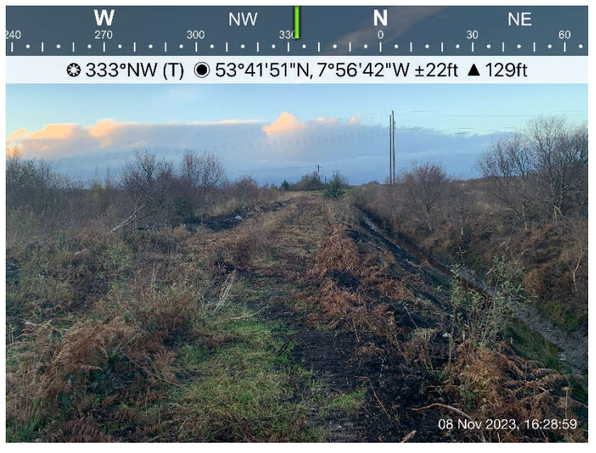
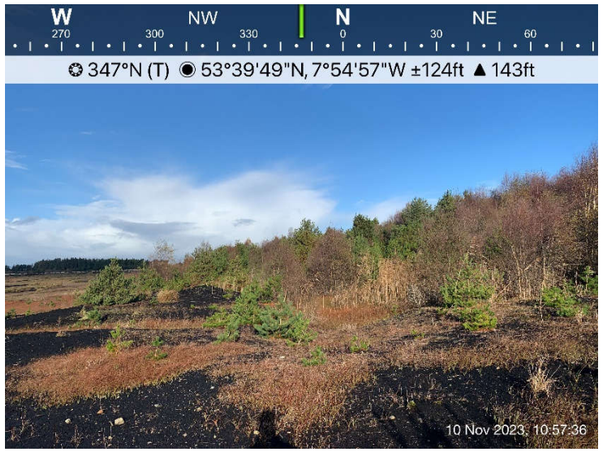


Table J-8: Site reconnaissance of the turbine 8 site (T08)

Imagery

Peat geo-investigation



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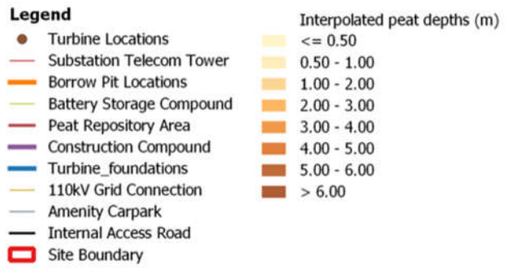

Description

Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 10th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T08 is located on a raised peat bog. Topography is relatively flat and vegetated.

Peat: The peat depth at T08 is 0.7m and slope angle of 7.17 degrees.

Instability evidences: No.

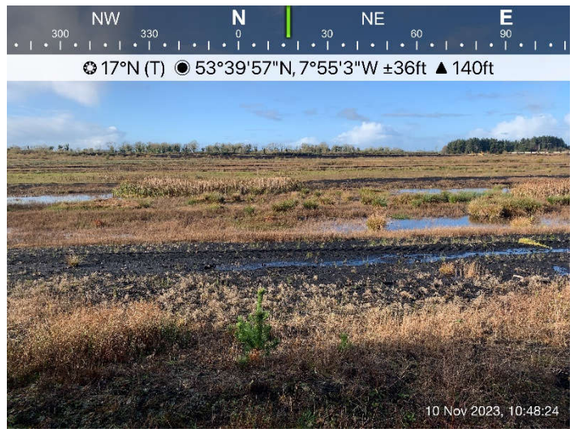

Table J-9: Site reconnaissance of the turbine 9 site (T09)

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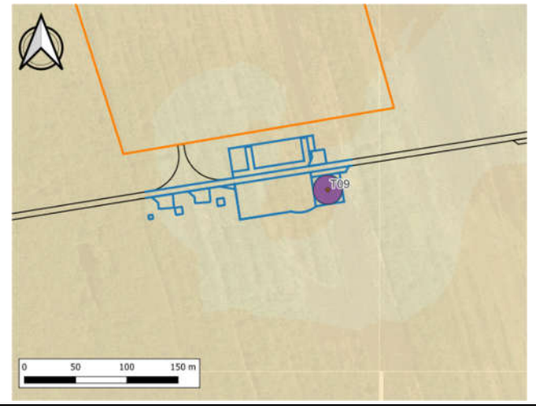
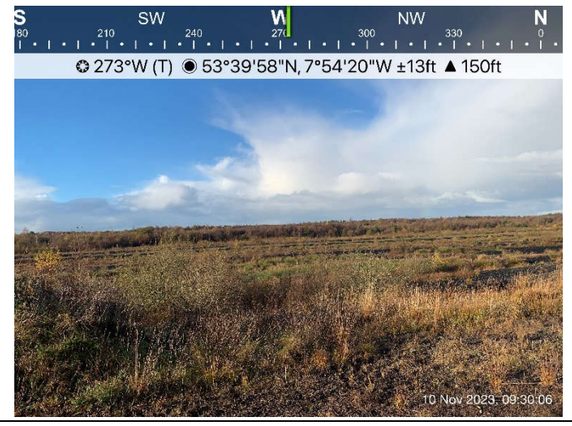
  </td>
<td>  </td>
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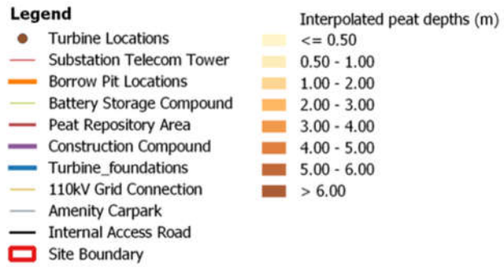
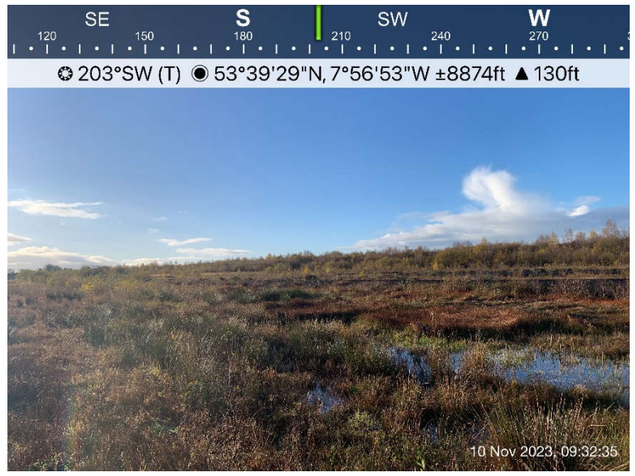
  </td>
<td>  </td>
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 10th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T09 is located on a raised peat bog. Topography is relatively flat and vegetated.

Peat: The peat depth at T09 is 0.68m and slope angle of 4.85 degrees.

Instability evidences: No.</td>
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Table J-10: Site reconnaissance of the turbine 10 site (T10)

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 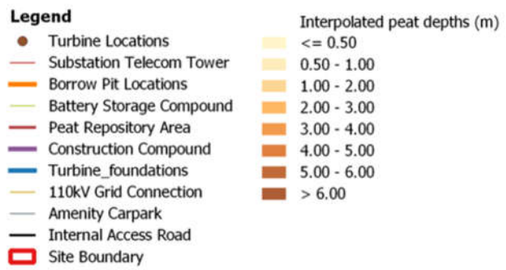 </td>
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 10th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T10 is located on a raised peat bog. Topography is relatively flat and vegetated. Water ponded in existing land drains.

Peat: The peat depth at T10 is 0.29m and slope angle of 5.89 degrees.

Instability evidences: No.</td>
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Table J-11: Site reconnaissance of the turbine 11 site (T11)

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 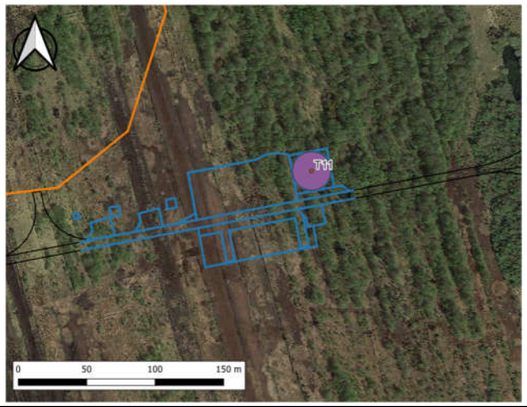 </td>
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 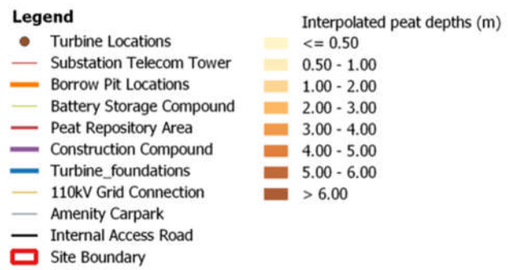 </td>
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T11 is located on a raised peat bog. Topography is relatively flat and vegetated. Linear existing land drains adjacent to proposed location.

Peat: The peat depth at T11 is 0.41m and slope angle of 3.66 degrees.

Instability evidences: No.</td>
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Table J-12: Site reconnaissance of the turbine 12 site (T12)

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 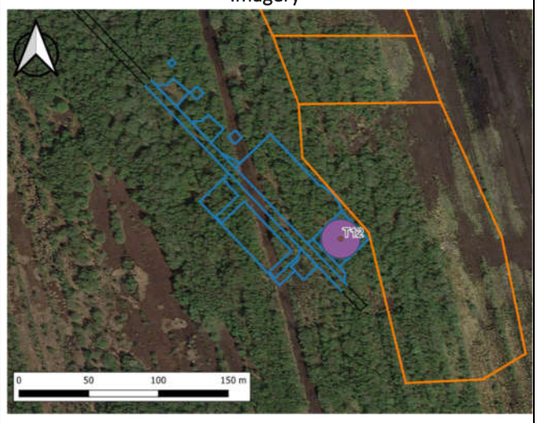
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 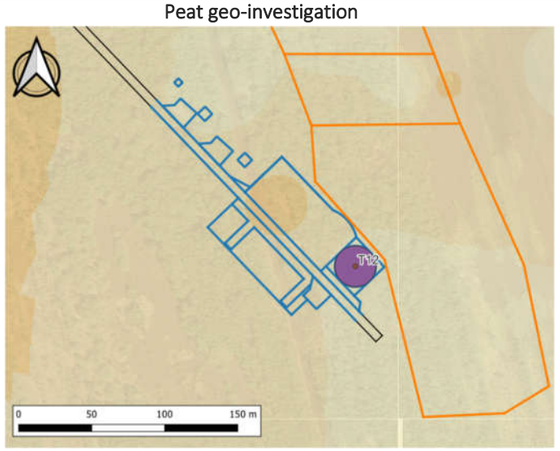
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 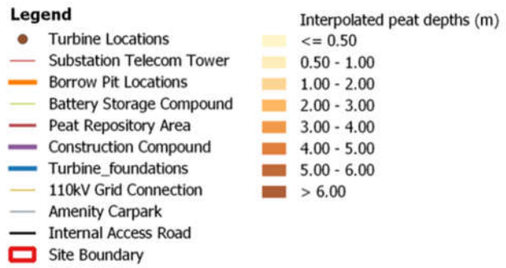
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<td>Description

Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T12 is located on a raised peat bog. Topography is relatively flat and vegetated. Localised ponding of surface water on top of peat.

Peat: The peat depth at T12 is 0.29m and slope angle of 5.95 degrees.

Instability evidences: No.</td>
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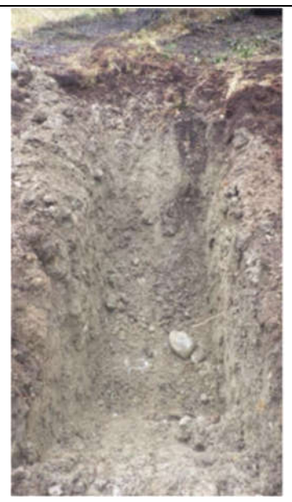
<td>  </td>
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Table J-13: Site reconnaissance of the turbine 13 site (T13)

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 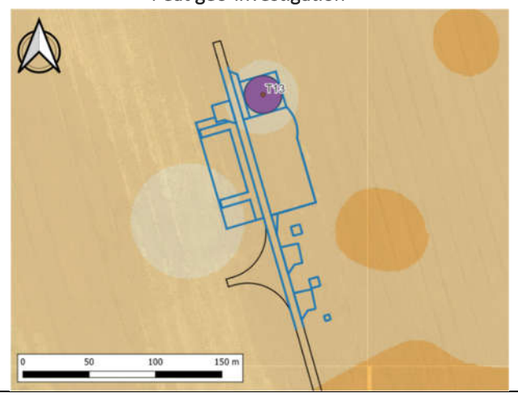
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 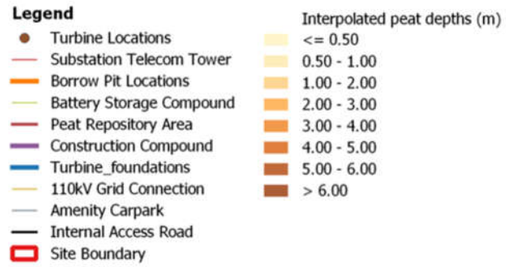
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T13 is located on a raised peat bog. Topography is relatively flat and vegetated. Significant amount of surface water present at this location where growth of rushes is observed.

Peat: The peat depth at T13 is 0.84m and slope angle of 3.94 degrees.

Instability evidences: No.</td>
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Table J-14: Site reconnaissance of the turbine 14 site (T14)

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 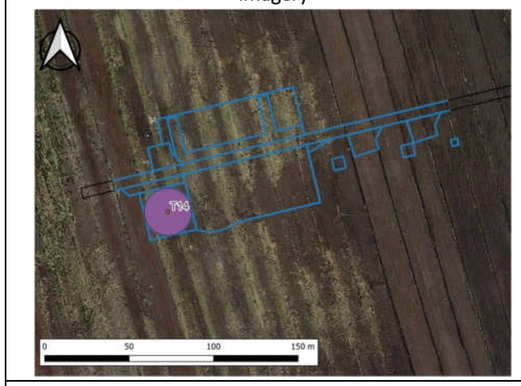 </td>
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 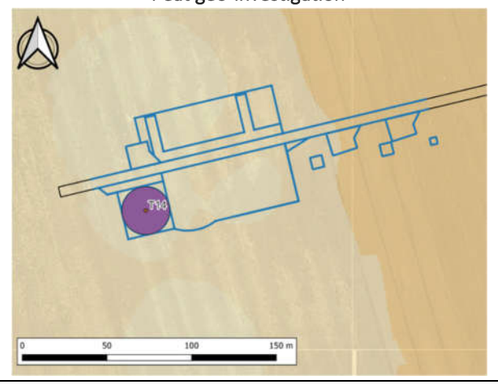 </td>
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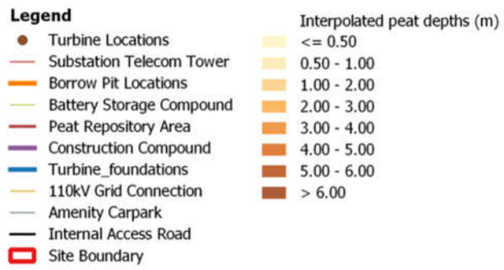
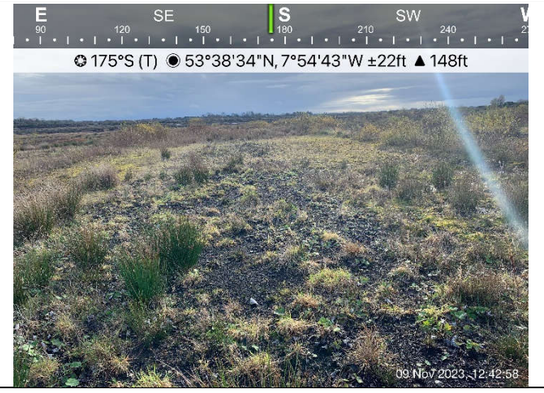
  </td>
<td>  </td>
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T14 is located on a raised peat bog. Topography is relatively flat and vegetated. Some surface water observed.

Peat: The peat depth at T14 is 0.46m and slope angle of 4.01 degrees.

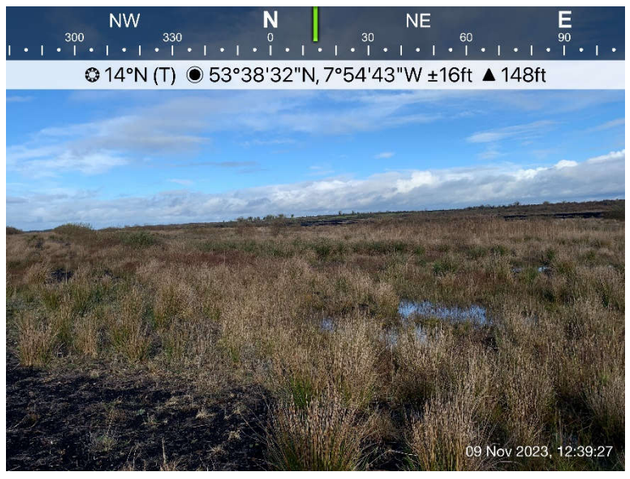
Instability evidences: No.</td>
<td>  </td>
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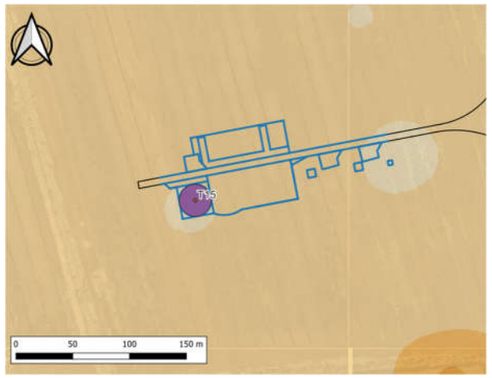
Table J-15: Site reconnaissance of the turbine 15 site (T15)

Imagery

Peat geo-investigation



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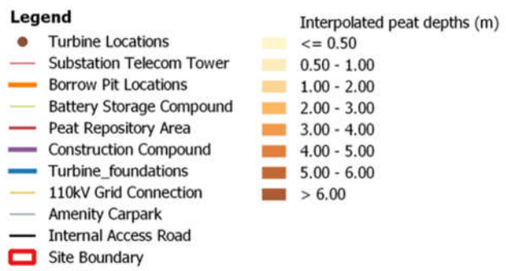

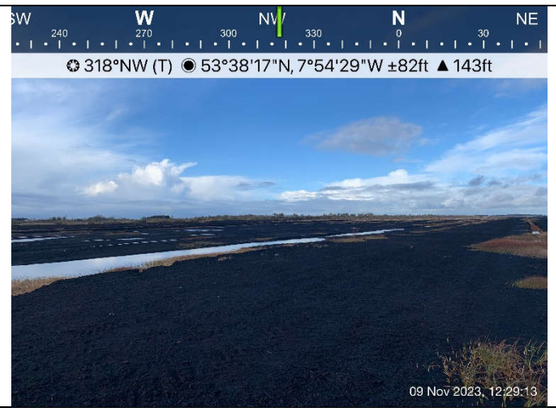

Description

Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T15 is located on a raised peat bog. Topography is relatively flat with sparse vegetation. Significant amount of surface water at this location.

Peat: The peat depth at T15 is 0.86m and slope angle of 2.56 degrees.

Instability evidences: No.

Table J-16: Site reconnaissance of the turbine 16 site (T16)

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<td>Imagery
 
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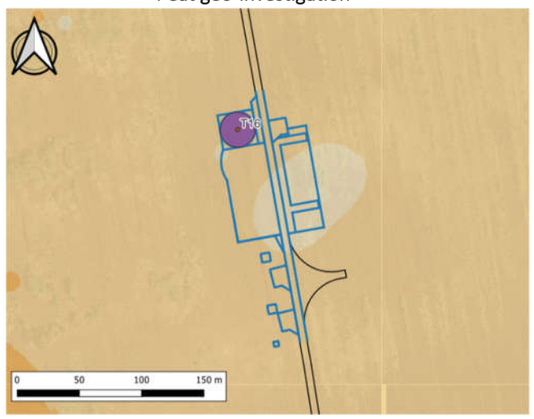
<td>Peat geo-investigation
 
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 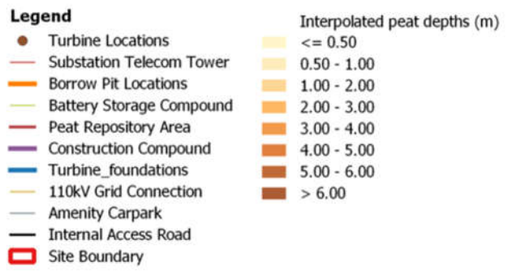
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<td>Description

Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T16 is located on a raised peat bog. Topography is relatively flat and vegetated. Some localised ponding of surface water.

Peat: The peat depth at T16 is 1.79m and slope angle of 5.21 degrees.

Instability evidences: No.</td>
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Table J-17: Site reconnaissance of the turbine 17 site (T17)

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 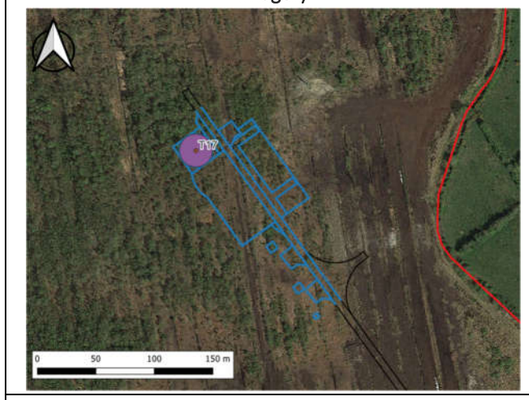
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<td>Peat geo-investigation
 
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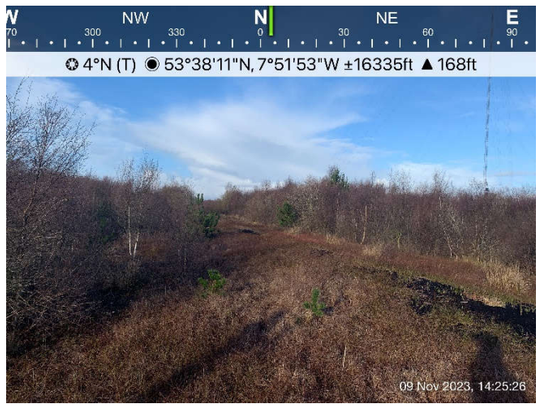
<td> 
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 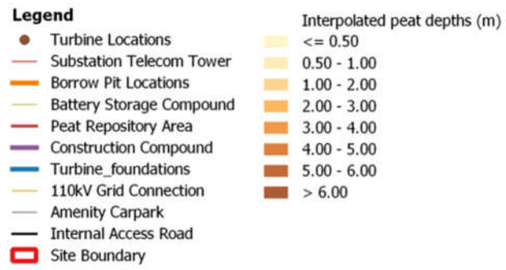
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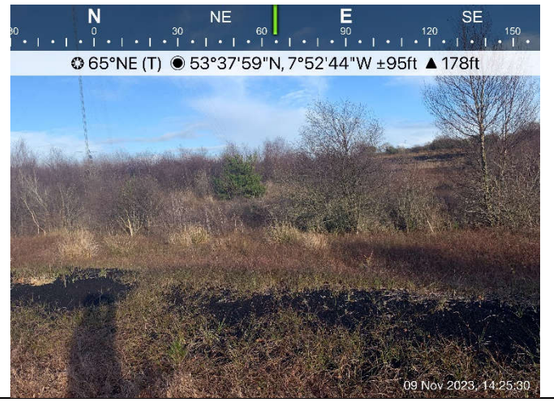
<td> 
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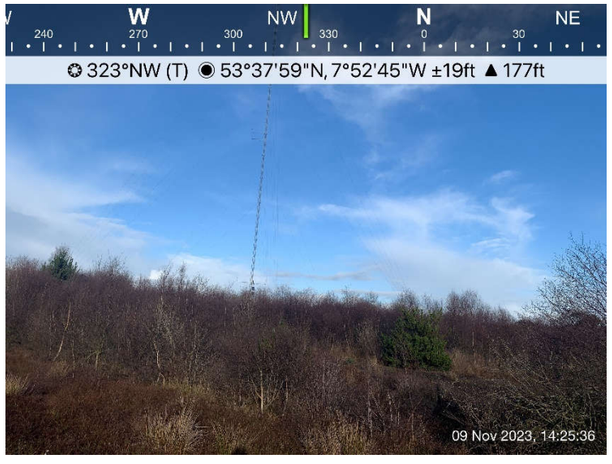
<td>Description

Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T17 is located on a raised peat bog. Topography is relatively flat and moderately vegetated.

Peat: The peat depth at T17 is 0.62m and slope angle of 4.57 degrees.

Instability evidences: No.</td>
<td> 
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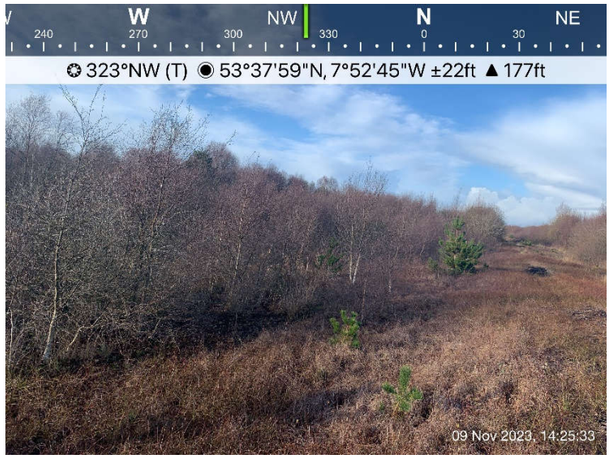
<td> 
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Table J-18: Site reconnaissance of the turbine 18 site (T18)

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 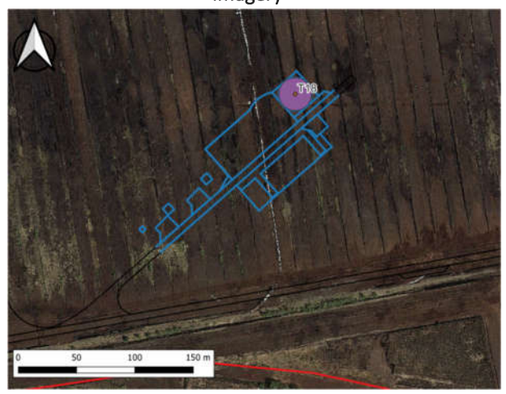
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 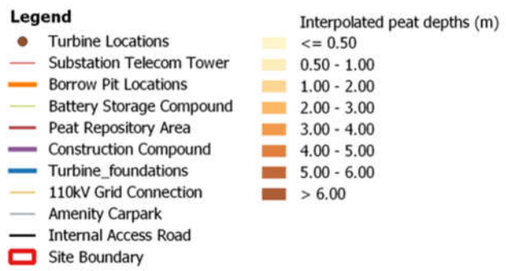
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<td>Description

Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T18 is located on a raised peat bog. Topography is relatively flat and sparsely vegetated. Significant amount of surface water observed in the area.

Peat: The peat depth at T18 is 2.63m and slope angle of 3.18 degrees.

Instability evidences: No.</td>
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Table J-19:Site reconnaissance of the turbine 19 site (T19)

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 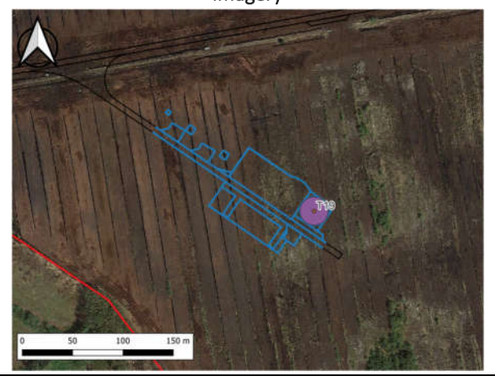
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 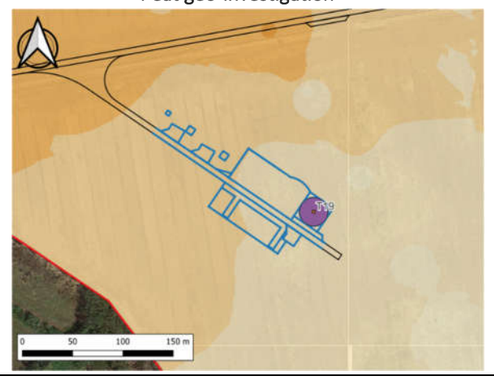
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 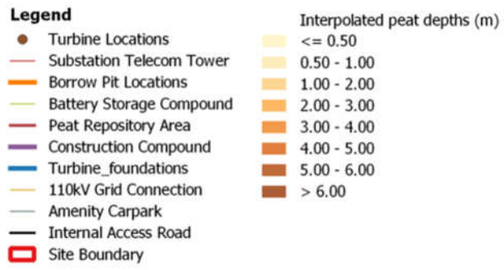
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T19 is located on a raised peat bog. Topography is relatively flat and sparsely vegetated. Ponded water within existing land drains and significant amount of surface water observed in the area.

Peat: The peat depth at T19 is 0.89m and slope angle of 2.65 degrees.

Instability evidences: No.</td>
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Table J-20: Site reconnaissance of the turbine 20 site (T20)

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 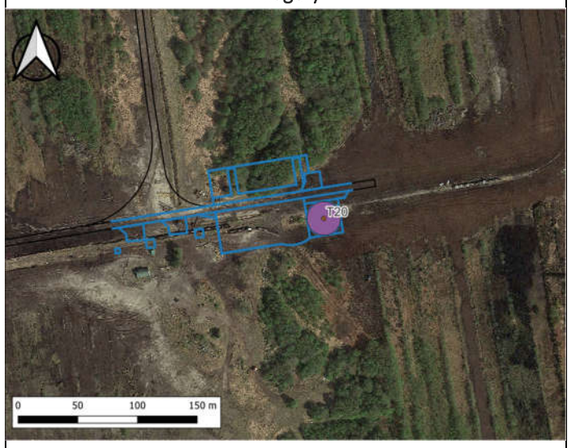
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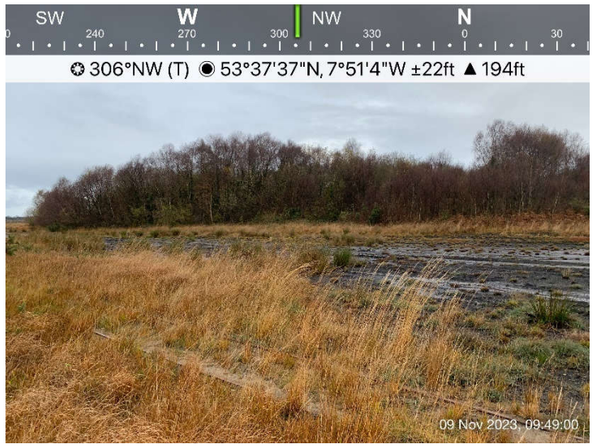
<td> 
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 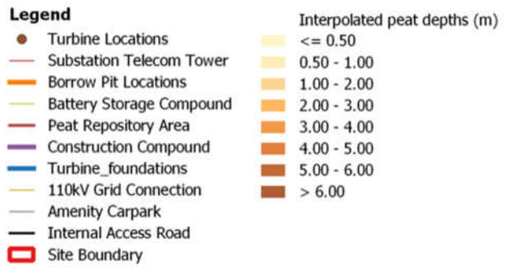
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T20 is located on a raised peat bog. Topography is relatively flat and modertaley vegetated. Ponded water within existing land drains and some surface water observed in the area.

Peat: The peat depth at T20 is 1.21m and slope angle of 6.48 degrees.

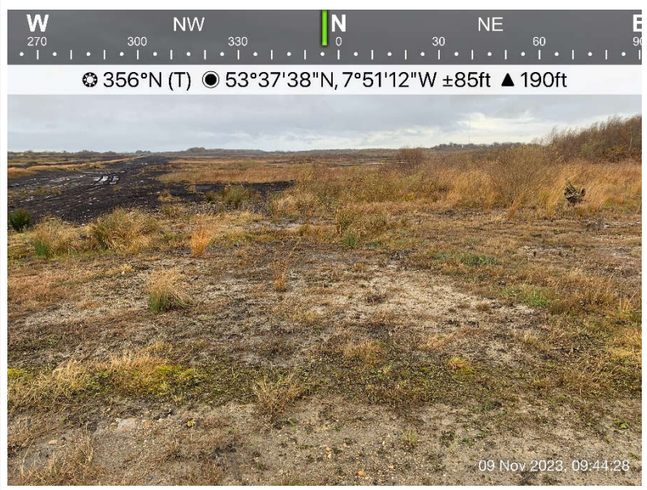
Instability evidences: No.</td>
<td> 
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Table J-21: Site reconnaissance of the turbine 21 site (T21)

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 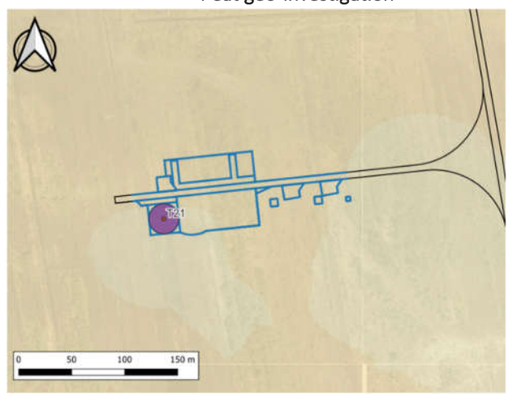
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 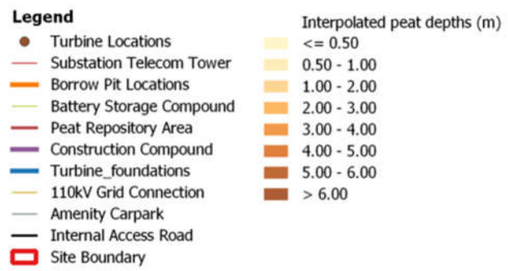
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T21 is located on a raised peat bog. Topography is relatively flat and moderately to heavily vegetated. Localised ponding of surface water.

Peat: The peat depth at T21 is 0.37m and slope angle of 5.03 degrees.

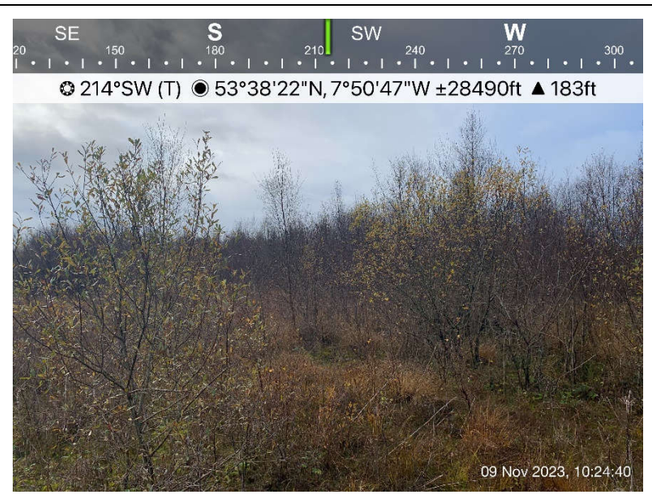
Instability evidences: No.</td>
<td> 
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Table J-22: Site reconnaissance of the turbine 22 site (T22)

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 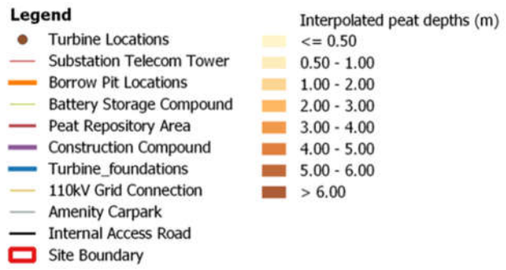
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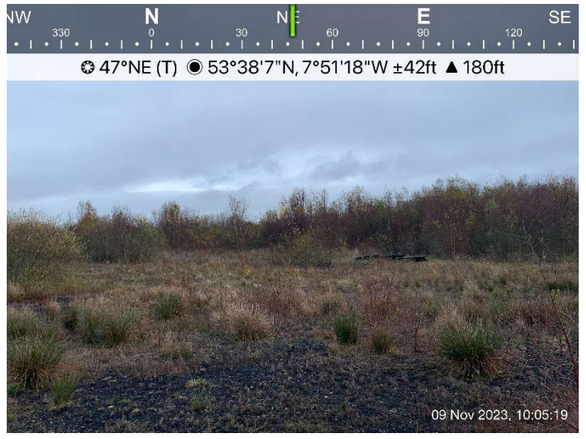
<td> 
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Date of the satellite images: March 2022. [Maxar/Esri].

Date of the ground-based pictures: 9th November 2023 [GDG] and February 2021 [Irish Drlling Ltd.]

Geomorphology: T22 is located on a raised peat bog. Topography is relatively flat with the exception of some mounds of peat cuttings adjacent to some land drains. Ponding of water within existing land drains.

Peat: The peat depth at T22 is 1.79m and slope angle of 5.03 degrees.

Instability evidences: No.</td>
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Appendix K Factor of Safety

Table K-1: Calculation of factor of safety for undrained conditions (with and without surcharge)

Proposed infrastructure	Slope	Cos Slope	Sin Slope	Undrained shear strength	Bulk unit weight of Peat	Peat depth	Factor of Safety	Surcharge	Factor of Safety with Surcharge	Slope
	(º)			Cu (kPa)	Y (kN/m^3)	(m)		(m)		Rad
T01	5.04	0.996	0.088	5	10	0.62	**9.28**	1	**3.54**	0.087905
T02	5.51	0.995	0.096	5	10	0.32	**16.56**	1	**3.98**	0.096175
T03	4.90	0.996	0.085	5	10	0.71	**8.24**	1	**3.43**	0.085535
T04	7.35	0.992	0.128	5	10	1.28	**3.09**	1	**1.73**	0.128203
T05	6.30	0.994	0.110	5	10	1.83	**2.50**	1	**1.62**	0.109958
T06	5.81	0.995	0.101	5	10	1.82	**2.72**	1	**1.76**	0.101371
T07	6.48	0.994	0.113	5	10	1.64	**2.73**	1	**1.69**	0.113108
T08	7.17	0.992	0.125	5	10	0.42	**9.65**	1	**2.85**	0.125148
T09	4.85	0.996	0.084	5	10	0.54	**10.92**	1	**3.85**	0.084597
T10	5.89	0.995	0.103	5	10	0.21	**23.37**	1	**4.05**	0.102776
T11	3.66	0.998	0.064	5	10	1.24	**6.31**	1	**3.50**	0.063856
T12	5.95	0.995	0.104	5	10	0.74	**6.54**	1	**2.78**	0.103794
T13	3.94	0.998	0.069	5	10	1.10	**6.63**	1	**3.47**	0.068831
T14	4.01	0.998	0.070	5	10	0.60	**11.99**	1	**4.49**	0.069951
T15	2.56	0.999	0.045	5	10	1.44	**7.79**	1	**4.59**	0.044737
T16	5.21	0.996	0.091	5	10	1.23	**4.49**	1	**2.48**	0.090897
T17	4.57	0.997	0.080	5	10	0.77	**8.20**	1	**3.56**	0.079732
T18	3.10	0.999	0.054	5	10	3.06	**3.03**	1	**2.28**	0.054042
T19	4.65	0.997	0.081	5	10	0.93	**6.65**	1	**3.20**	0.081164
T20	6.48	0.994	0.113	5	10	1.29	**3.46**	1	**1.95**	0.113132
T21	3.06	0.999	0.053	5	10	0.50	**18.92**	1	**6.27**	0.05338
T22	5.03	0.996	0.088	5	10	1.67	**3.42**	1	**2.14**	0.087742
Substation	8.85	0.988	0.154	5	10	1.7	**1.93**	1	**1.22**	0.154462
Battery Storage Compound	7.90	0.991	0.137	5	10	0.9	**4.08**	1	**1.93**	0.137881
Peat Deposition Area	4.90	0.996	0.085	5	10	0.7	**8.39**	1	**3.46**	0.085521
Temporary Peat Deposition Area	5.40	0.996	0.094	5	10	0.6	**8.89**	1	**3.34**	0.094248
Construction Compound 1	4.71	0.997	0.082	5	10	2.5	**2.43**	1	**1.74**	0.08218
Construction Compound 2	3.83	0.998	0.067	5	10	1.8	**4.16**	1	**2.68**	0.066811
Construction Compound 3	6.85	0.993	0.119	5	10	1.9	**2.17**	1	**1.43**	0.119558
Construction Compound 4	6.53	0.994	0.114	5	10	2.1	**2.15**	1	**1.45**	0.113894
Security Cabin 1	4.71	0.997	0.082	5	10	2.5	**2.43**	1	**1.74**	0.08218
Security Cabin 2	3.83	0.998	0.067	5	10	1.8	**4.16**	1	**2.68**	0.066811
Security Cabin 3	6.85	0.993	0.119	5	10	1.9	**2.17**	1	**1.43**	0.119558
Security Cabin 4	6.53	0.994	0.114	5	10	2.1	**2.15**	1	**1.45**	0.113894
BP01	5.53	0.995	0.096	5	10	0.82	**6.36**	1	**2.86**	0.096517
BP02	4.64	0.997	0.081	5	10	0.45	**13.78**	1	**4.28**	0.080983
BP03	5.19	0.996	0.090	5	10	0.91	**6.10**	1	**2.91**	0.090583
BP04	4.00	0.998	0.070	5	10	0.6	**11.98**	1	**4.49**	0.069813

Undrained conditions

$$F = \frac{c_u}{\gamma z \sin\alpha \cos\alpha}$$

Where,

F = Factor of Safety
c_u = Undrained strength
γ = Bulk unit weight of material
z = Depth to failure plane assumed as depth of peat
α = Slope angle

*green indicates FoS ≥ 1.3, yellow indicates 1 ≤ FoS <1.3

Table K-2: Calculation of factor of safety for drained conditions (with and without surcharge)

Proposed infrastructure	Drained shear strength	Bulk unit weight of Peat	Peat depth	Bulk unit weight of water	Height of water table above failure surface	Slope	Cos Slope	Cos^2 Slope	Sin Slope	ϕ'	Tan ϕ'	FoS	Surcharge (m)	FoS Surcharge
	Cu (kPa)	Y (kN/m^3)	(m)	Y (kN/m^3)	(m)	(º)								
T1	4	10	0.62	9.8	0.62	5.04	0.996	0.992	0.088	25	0.466	**7.53**	1	**6.14**
T2	4	10	0.32	9.8	0.32	5.51	0.995	0.991	0.096	25	0.466	**13.34**	1	**6.88**
T3	4	10	0.71	9.8	0.71	4.90	0.996	0.993	0.085	25	0.466	**6.70**	1	**5.96**
T4	4	10	1.28	9.8	1.28	7.35	0.992	0.984	0.128	25	0.466	**2.54**	1	**3.02**
T5	4	10	1.83	9.8	1.83	6.30	0.994	0.988	0.110	25	0.466	**2.08**	1	**2.84**
T6	4	10	1.82	9.8	1.82	5.81	0.995	0.990	0.101	25	0.466	**2.27**	1	**3.09**
T7	4	10	1.64	9.8	1.64	6.48	0.994	0.987	0.113	25	0.466	**2.26**	1	**2.96**
T8	4	10	0.42	9.8	0.42	7.17	0.992	0.984	0.125	25	0.466	**7.79**	1	**4.91**
T9	4	10	0.54	9.8	0.54	4.85	0.996	0.993	0.084	25	0.466	**8.84**	1	**6.68**
T10	4	10	0.21	9.8	0.21	5.89	0.995	0.989	0.103	25	0.466	**18.79**	1	**6.99**
T11	4	10	1.24	9.8	1.24	3.66	0.998	0.996	0.064	25	0.466	**5.20**	1	**6.13**
T12	4	10	0.74	9.8	0.74	5.95	0.995	0.989	0.104	25	0.466	**5.32**	1	**4.83**
T13	4	10	1.10	9.8	1.10	3.94	0.998	0.995	0.069	25	0.466	**5.44**	1	**6.07**
T14	4	10	0.60	9.8	0.60	4.01	0.998	0.995	0.070	25	0.466	**9.73**	1	**7.80**
T15	4	10	1.44	9.8	1.44	2.56	0.999	0.998	0.045	25	0.466	**6.44**	1	**8.08**
T16	4	10	1.23	9.8	1.23	5.21	0.996	0.992	0.091	25	0.466	**3.69**	1	**4.33**
T17	4	10	0.77	9.8	0.77	4.57	0.997	0.994	0.080	25	0.466	**6.68**	1	**6.20**
T18	4	10	3.06	9.8	3.06	3.10	0.999	0.997	0.054	25	0.466	**2.60**	1	**4.08**
T19	4	10	0.93	9.8	0.93	4.65	0.997	0.993	0.081	25	0.466	**5.43**	1	**5.59**
T20	4	10	1.29	9.8	1.29	6.48	0.994	0.987	0.113	25	0.466	**2.85**	1	**3.40**
T21	4	10	0.50	9.8	0.50	3.06	0.999	0.997	0.053	25	0.466	**15.31**	1	**10.91**
T22	4	10	1.67	9.8	1.67	5.03	0.996	0.992	0.088	25	0.466	**2.84**	1	**3.76**
Substation	4	10	1.7	9.8	1.70	8.85	0.988	0.976	0.154	25	0.466	**1.61**	1	**2.12**
Battery Storage Compound	4	10	0.9	9.8	0.90	7.90	0.991	0.981	0.137	25	0.466	**3.33**	1	**3.35**
Peat Deposition Area	4	10	0.7	9.8	0.70	4.90	0.996	0.993	0.085	25	0.466	**6.82**	1	**6.01**
Temporary Peat Deposition Area	4	10	0.6	9.8	0.60	5.40	0.996	0.991	0.094	25	0.466	**7.21**	1	**5.79**
Construction Compound 1	4	10	2.516398629	9.8	2.52	4.71	0.997	0.993	0.082	25	0.466	**2.06**	1	**3.08**
Construction Compound 2	4	10	1.803458228	9.8	1.80	3.83	0.998	0.996	0.067	25	0.466	**3.47**	1	**4.72**
Construction Compound 3	4	10	1.946663595	9.8	1.95	6.85	0.993	0.986	0.119	25	0.466	**1.81**	1	**2.51**
Construction Compound 4	4	10	2.0634811	9.8	2.06	6.53	0.994	0.987	0.114	25	0.466	**1.80**	1	**2.54**
Security Cabin 1	4	10	2.516398629	9.8	2.52	4.71	0.997	0.993	0.082	25	0.466	**2.06**	1	**3.08**
Security Cabin 2	4	10	1.803458228	9.8	1.80	3.83	0.998	0.996	0.067	25	0.466	**3.47**	1	**4.72**
Security Cabin 3	4	10	1.946663595	9.8	1.95	6.85	0.993	0.986	0.119	25	0.466	**1.81**	1	**2.51**
Security Cabin 4	4	10	2.0634811	9.8	2.06	6.53	0.994	0.987	0.114	25	0.466	**1.80**	1	**2.54**
BP01	4	10	0.82	9.8	0.82	5.53	0.995	0.991	0.096	25	0.466	**5.18**	1	**4.98**
BP02	4	10	0.45	9.8	0.45	4.64	0.997	0.993	0.081	25	0.466	**11.14**	1	**7.42**
BP03	4	10	0.91	9.8	0.91	5.19	0.996	0.992	0.090	25	0.466	**4.98**	1	**5.06**
BP04	4	10	0.6	9.8	0.60	4.00	0.998	0.995	0.070	25	0.466	**9.71**	1	**7.81**

Drained conditions

$$F = \frac{c' + (\gamma z - \gamma_w h_w)\cos^2\alpha \tan\phi'}{\gamma z \sin\alpha \cos\alpha}$$

Where,

F = Factor of Safety
c' = Effective cohesion
γ = Bulk unit weight of material
z = Depth to failure plane assumed as depth of peat
γ_w = Unit weight of water
h_w = Height of water table above failure plane
α = Slope angle
ϕ' = Effective friction angle

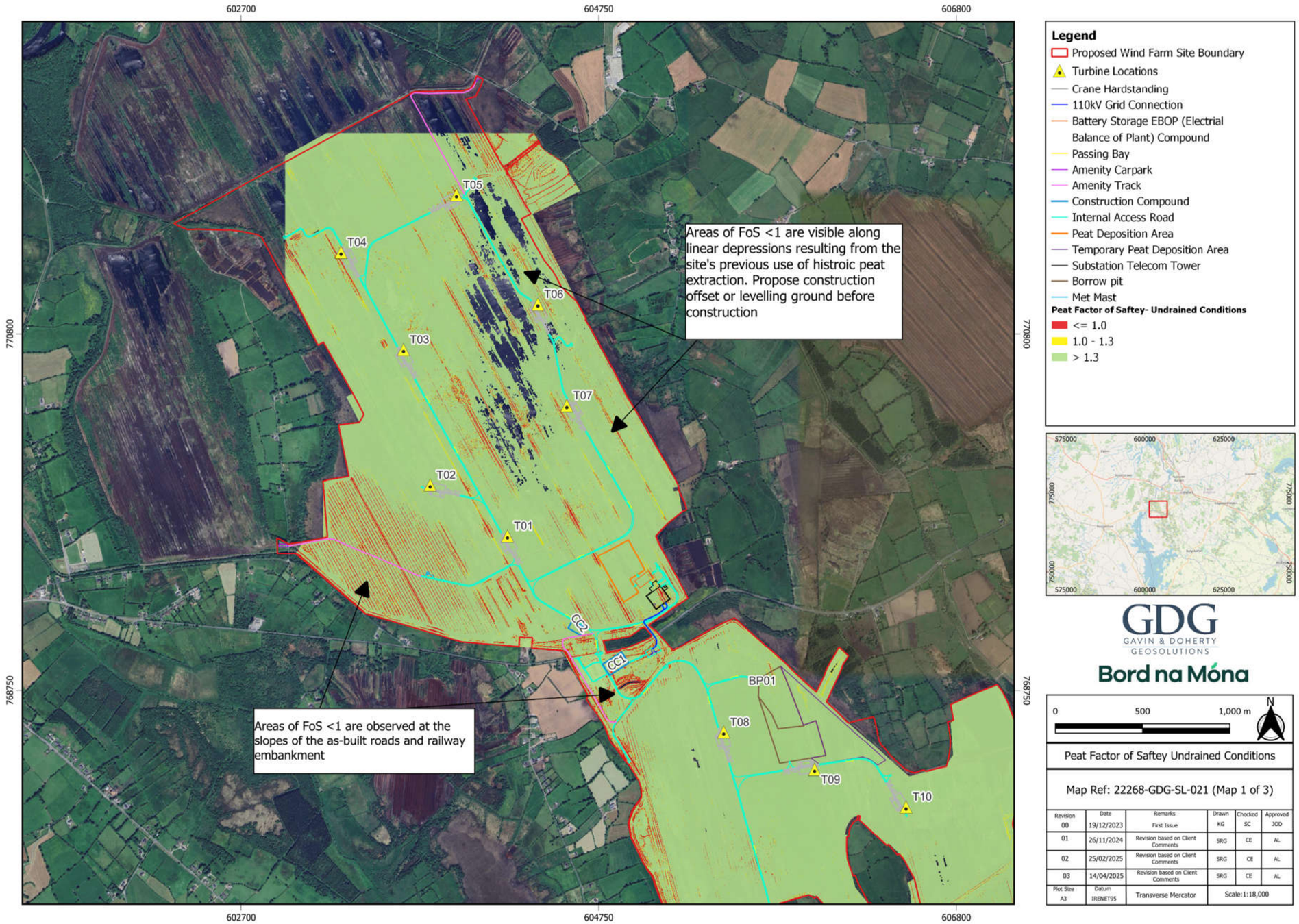

Figure K-1: FoS for Undrained Conditions (Map 1 of 3)

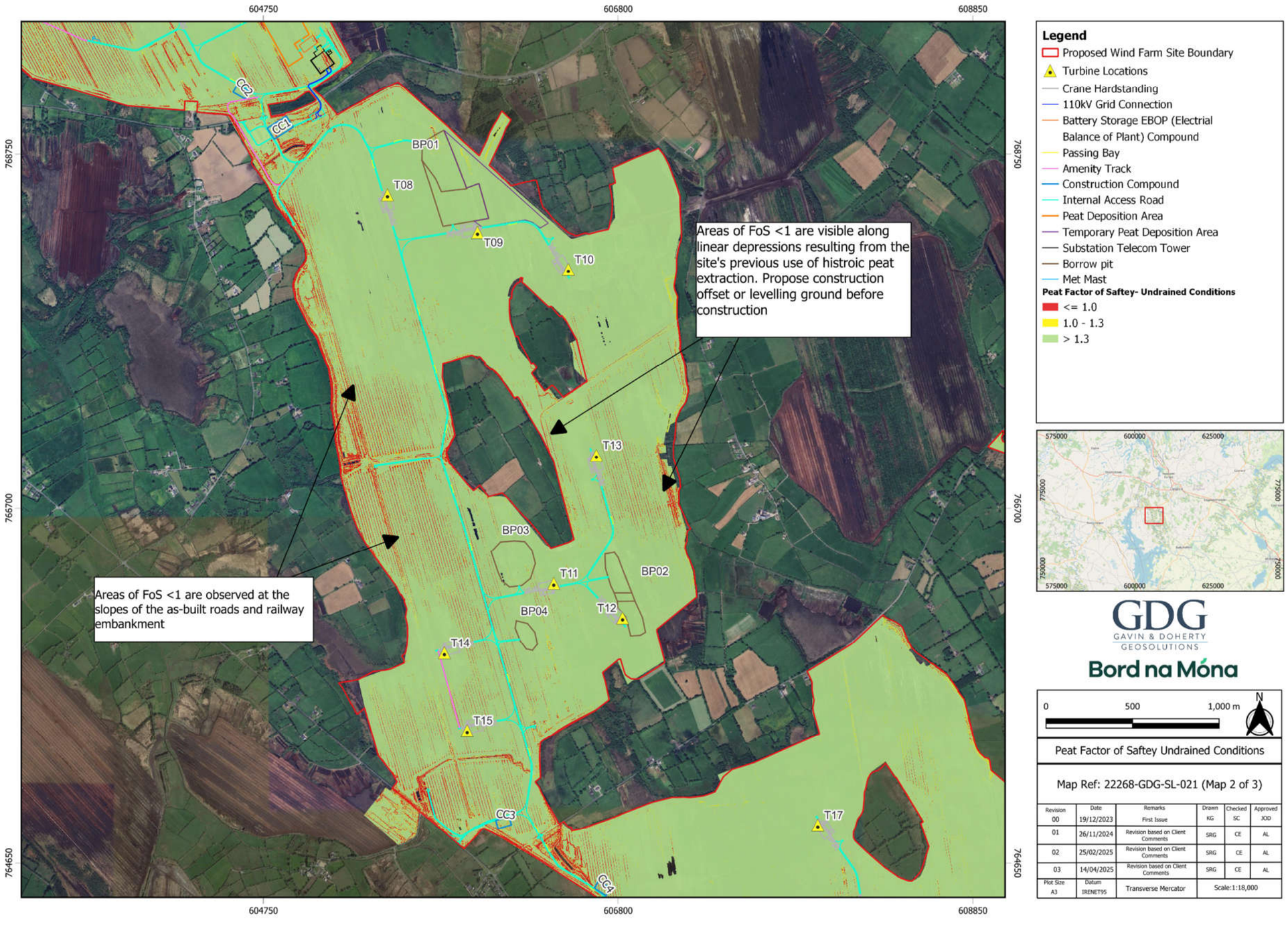

Figure K-2: FoS for Undrained Conditions (Map 2 of 3)

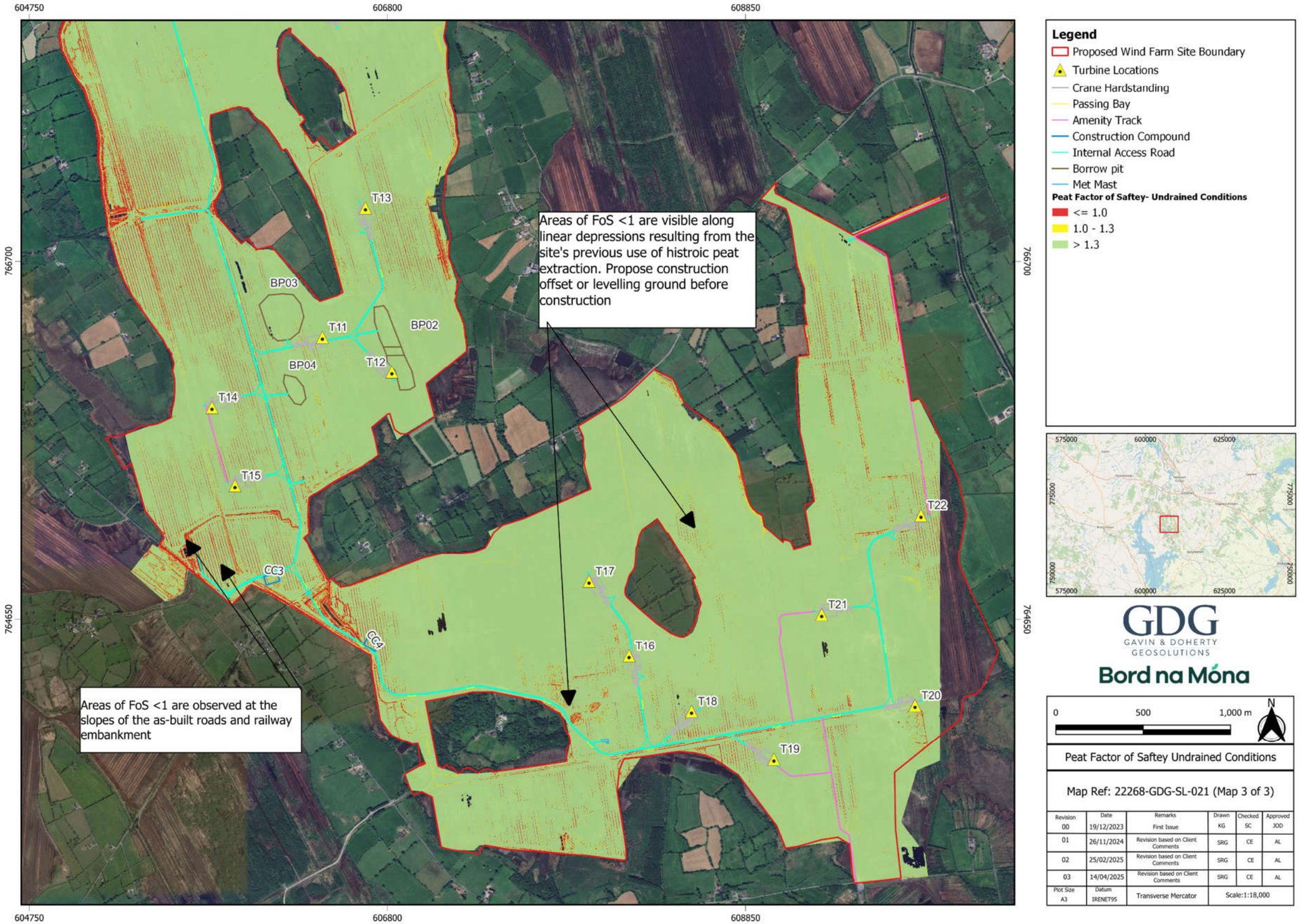

Figure K-3: FoS for Undrained Conditions (Map 3 of 3)

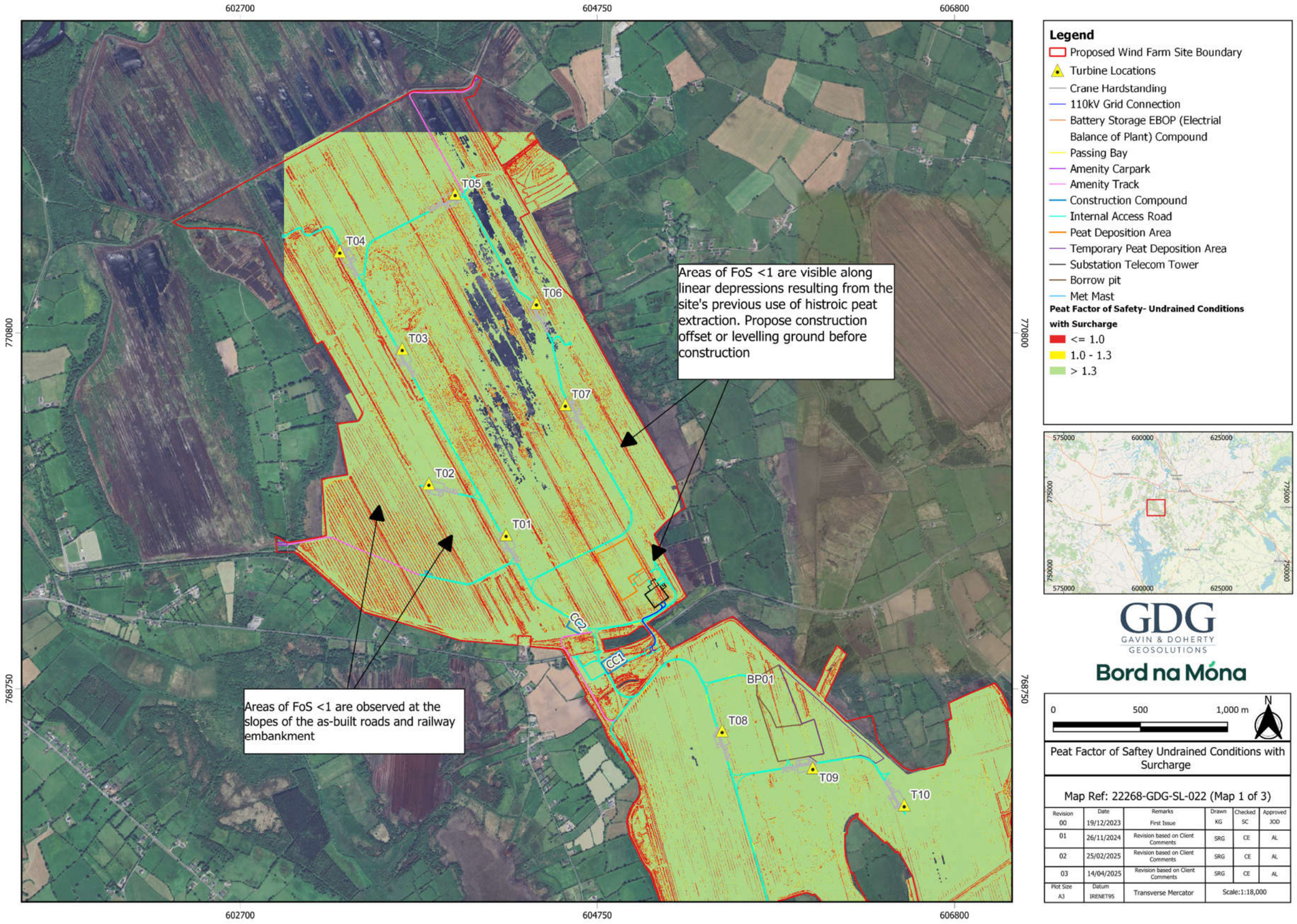

Figure K-4: FoS for Undrained Conditions with Surcharge (Map 1 of 3)

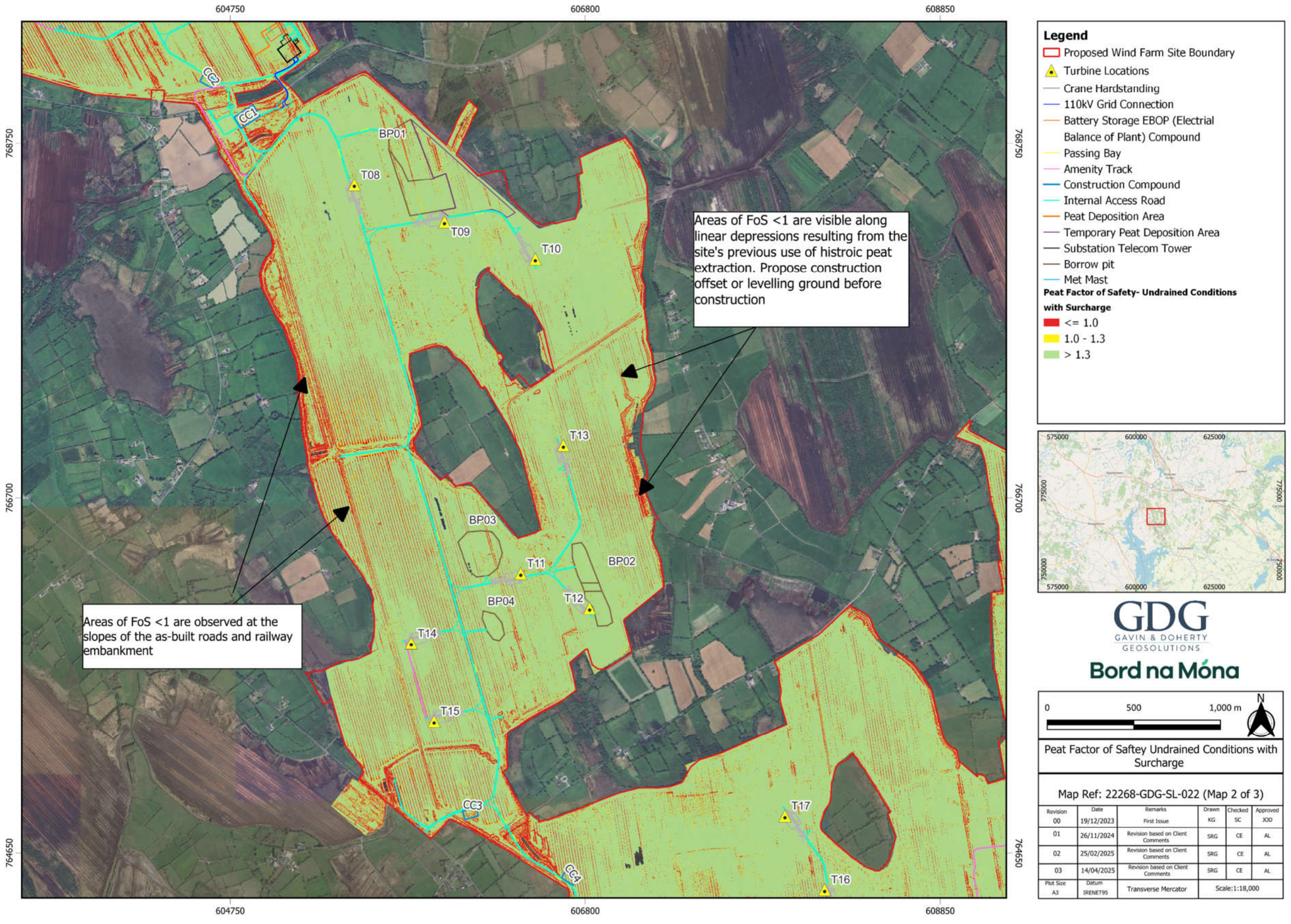

Figure K-5: FoS for Undrained Conditions with Surcharge (Map 2 of 3)

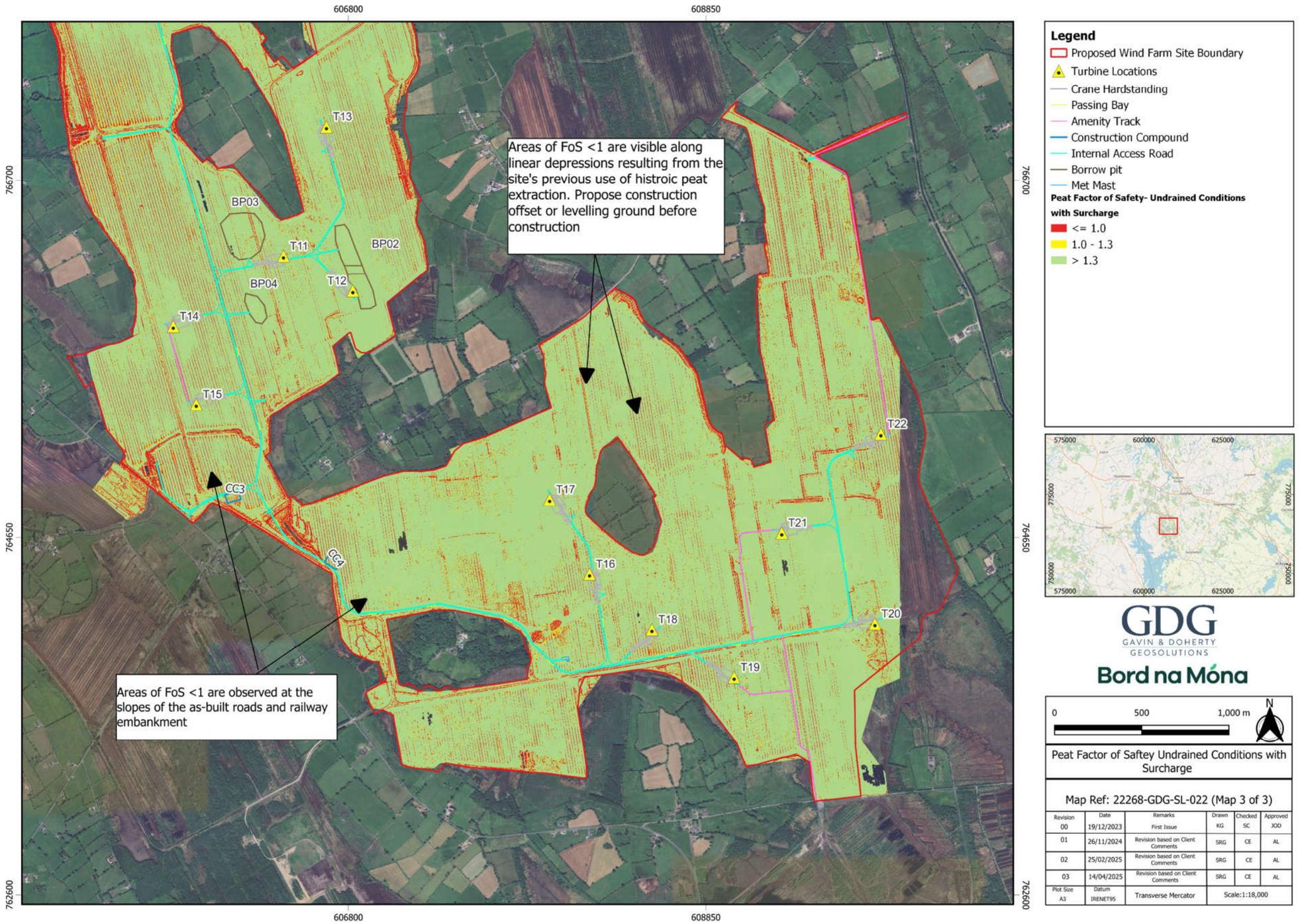

Figure K-6: FoS for Undrained Conditions with Surcharge (Map 3 of 3)

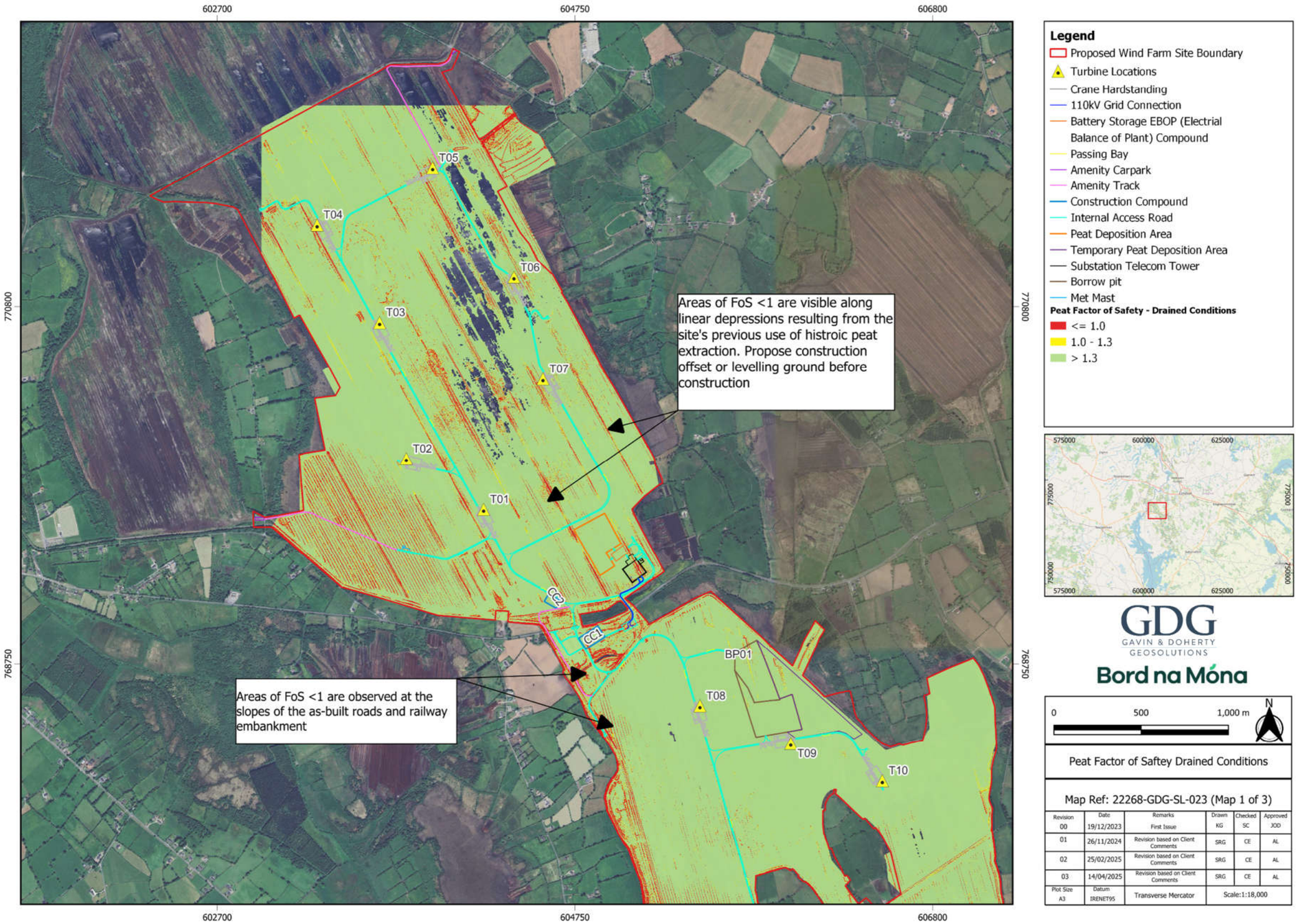

Figure K-7: FoS for Drained Conditions (Map 1 of 3)

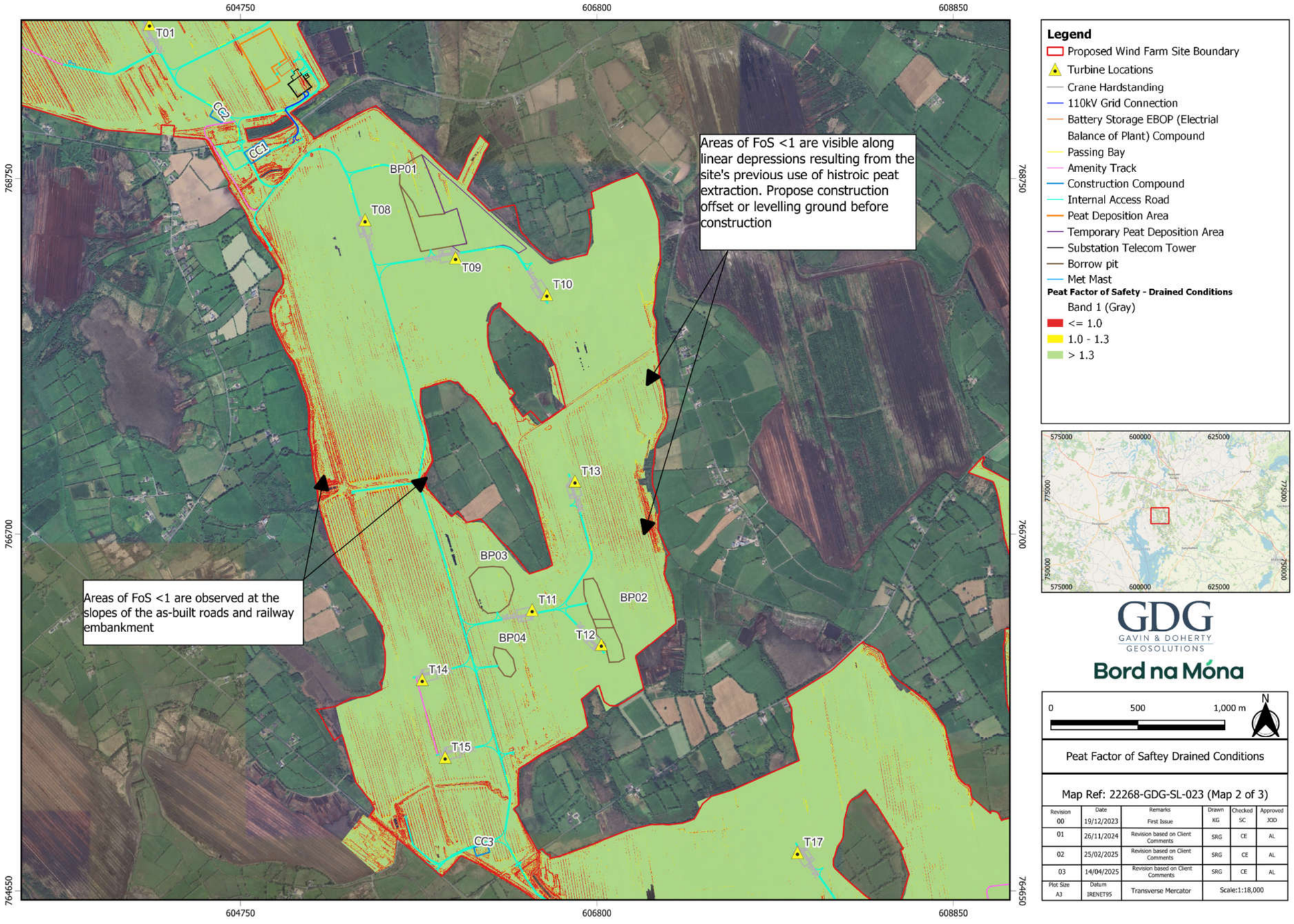

Figure K-8 : FoS for Drained Conditions (Map 2 of 3)

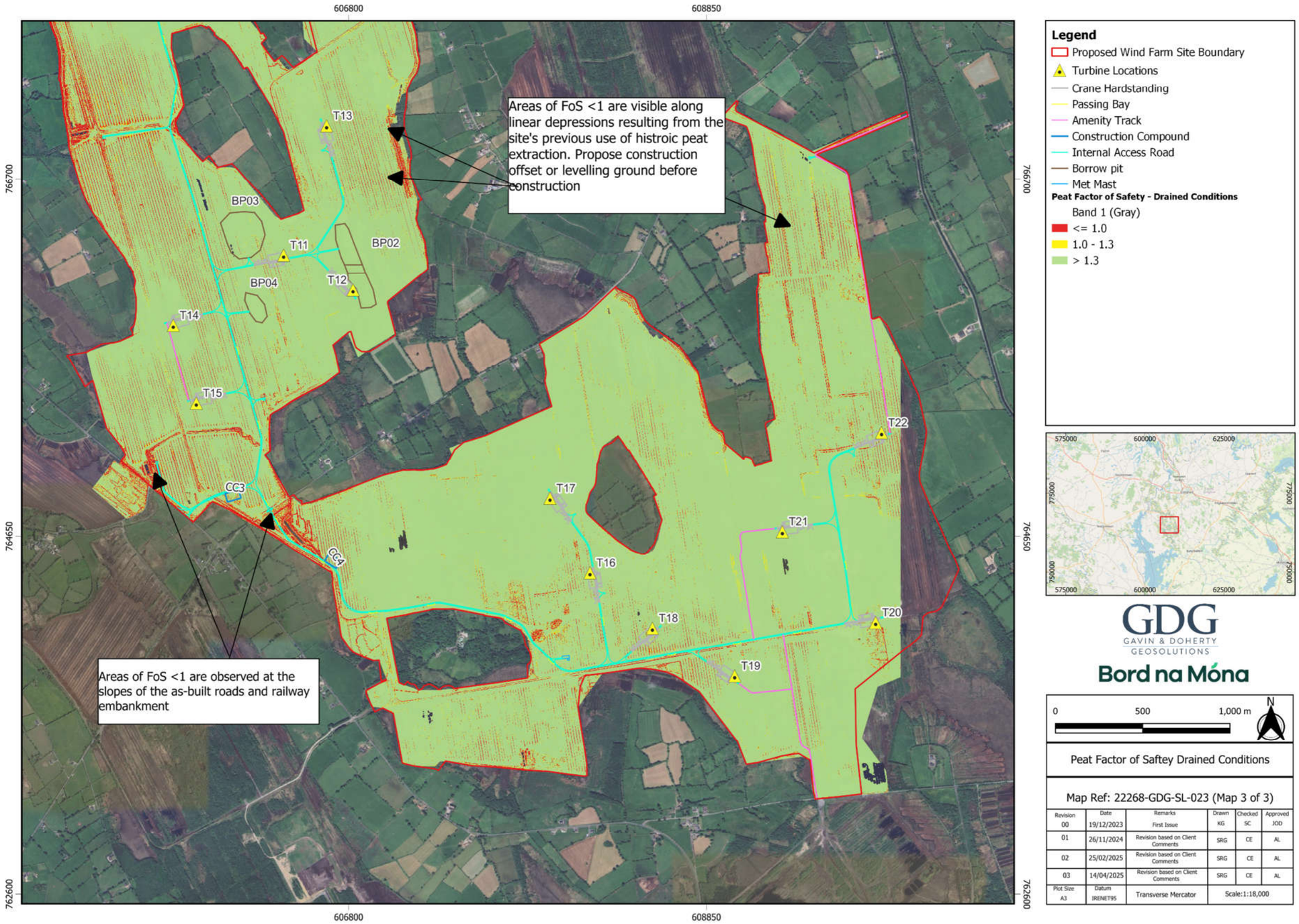

Figure K-9: FoS for Drained Conditions (Map 3 of 3)

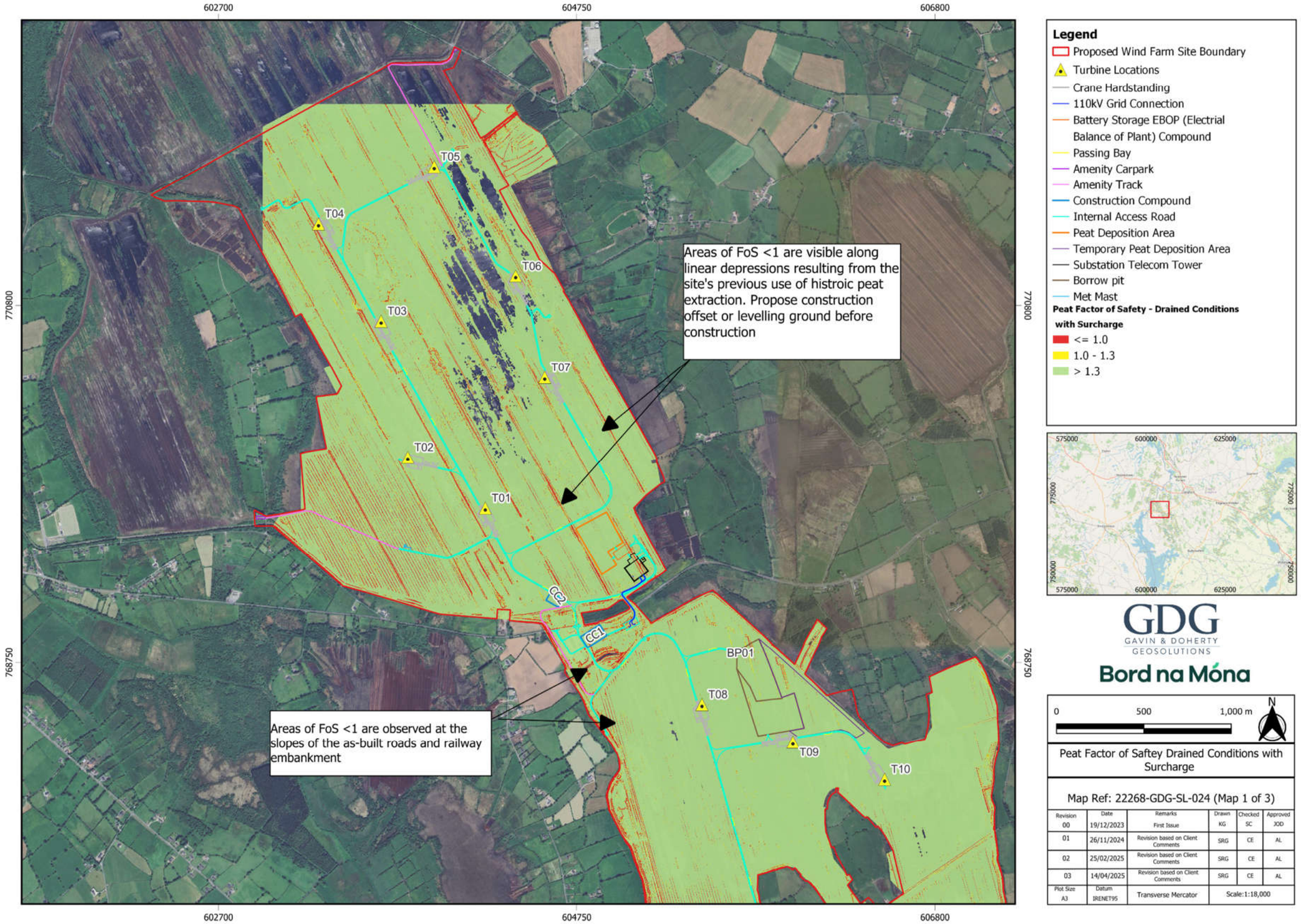

Figure K-10: FoS for Drained Conditions with Surcharge (Map 1 of 3)

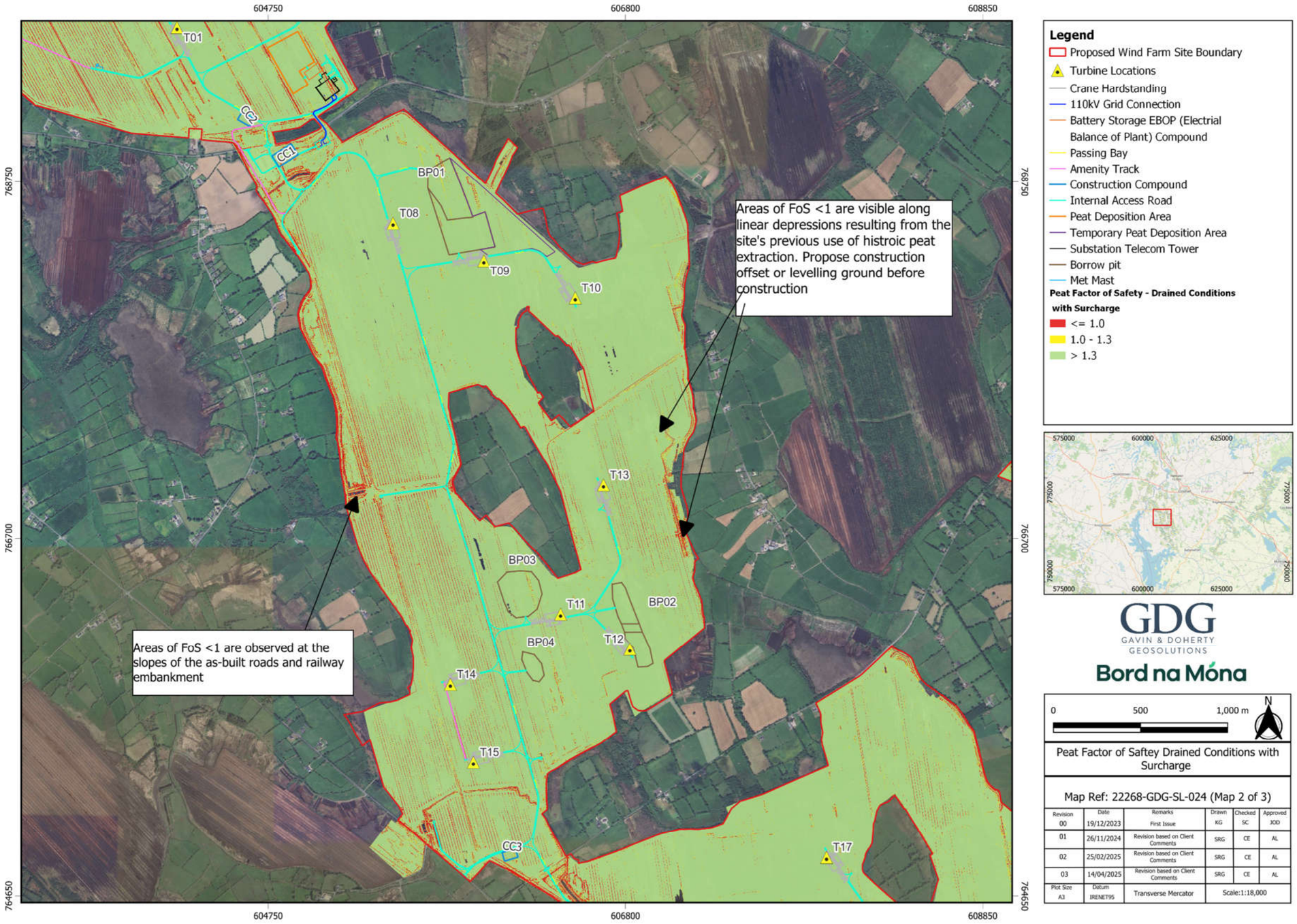

Figure K-11: FoS for Drained Conditions with Surcharge (Map 2 of 3)

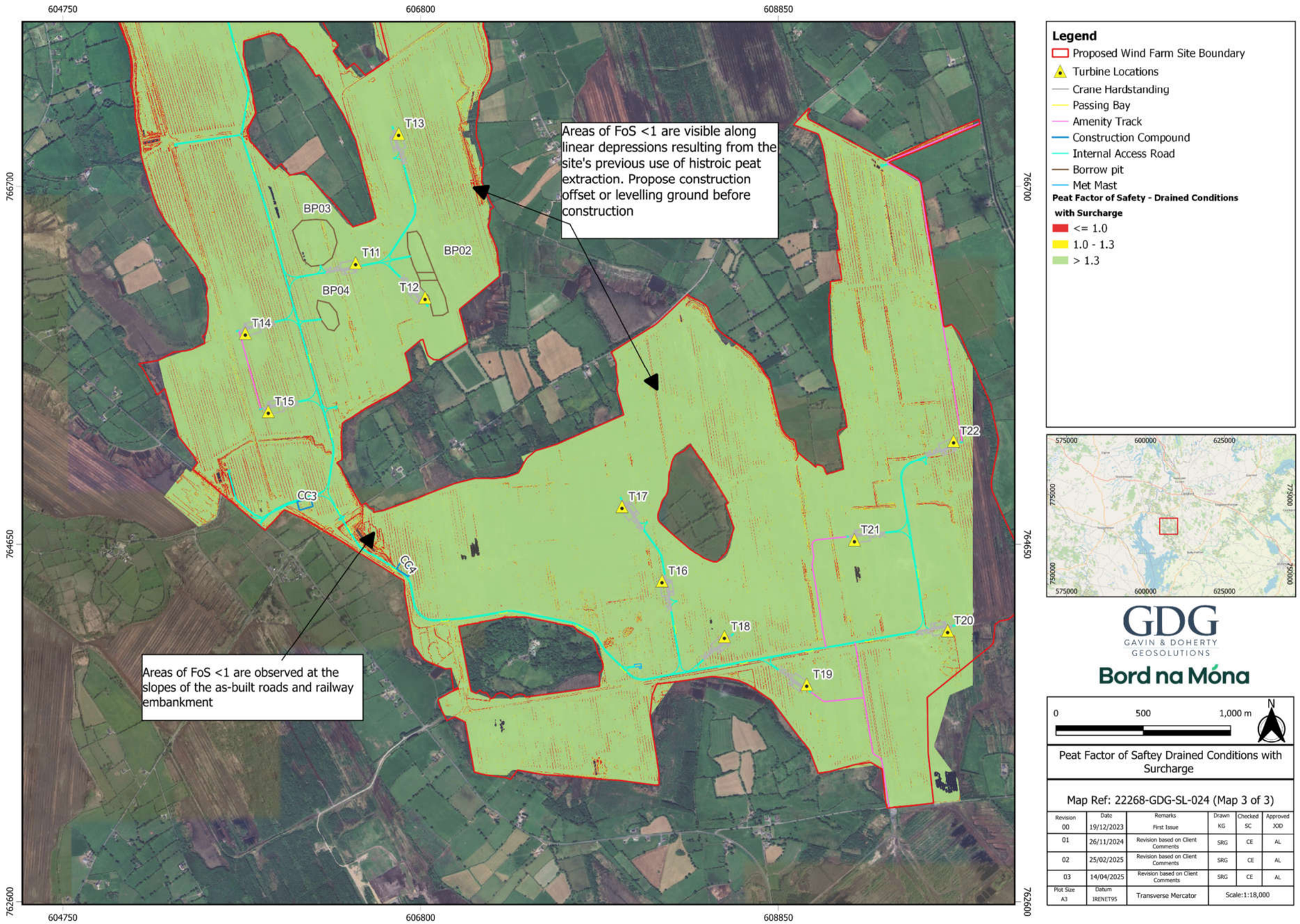

Figure K-12: FoS for Drained Conditions with Surcharge (Map 3 of 3)

Appendix L PEAT STABILITY RISK CALCULATION

Global Project Reach

Offices

Dublin (Head Office)
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Phone: +353 1 207 1000

Belfast
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Belfast, BT1 6JH

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21 Young Street
Edinburgh
Scotland, EH2 4HU

Rhode Island
Gavin & Doherty Geosolutions Inc.
225 Dyer St, 2nd Floor
Providence, RI 02903
USA

Bath
Gavin & Doherty Geosolutions (UK) Limited
The Guild High Street, Bath
Somerset
BA1 5EB

Cork
Gavin & Doherty Geosolutions
Unit 4E, Northpoint House,
North Point Business Park
Cork, T23 AT2P

London
Gavin & Doherty Geosolutions (UK) Limited
85 Great Portland Street, First Floor
London
W1W 7LT

Utrecht
Gavin & Doherty Geosolutions
WTC Utrecht, Stadsplateau 7
3521 AZ Utrecht
The Netherlands

Website: www.gdgeo.com
Email: info@gdgeo.com

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 01 (T01)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			9.0	3.5	7.5	3.5	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth ~0.26m slope angle of 5.04
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TP-AR16, IDL 2021 GI) : Very soft moist grey organic silty CLAY with many rootlets.
		Peat fibres across transition to subsoil	No				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	Trial Pit dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Localised				NA	Localised	Ponded in drains	Springs	1	1	1	Localised ponding of surface water adjacent to site
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Dry heather				NA	Dry heather	Grassland	Wetlands	1	1	1	
		Forestry (if applicable)	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	In very close proximity to historic peat extraction
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	27.5
Max. possible	99
Hazard $_{0\text{-}1}$	**0.28**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth ~0.26m slope angle of 5.04
Downslope hydrology features	Bowl / contained	NA	Bowl / contained	Minor undefined watercourse	Valley	1	1	1	Flat slopes and far from watercourses
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Relatively flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environments sensitive.
Public roads in potential peat flow path	Regional road	NA	Minor road	Local road	Regional road	3	1	3	N63 ~800m to the south
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Bord Na Mona Building ~900m to the south
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	N63 ~800m to the south

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	18
Max. possible	33
Consequences $_{0\text{-}1}$	**0.55**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time supervision during construction.
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating =	0.28	0.55	=	**0.15**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 02 (T02)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			16.6	4.0	13.3	4.0	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.37m. Slope angle: 5.51º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest (TP353): Stiff damp brownish grey slightly sandy silty very gravelly CLAY with medium cobble content and low boulder content.
		Peat fibres across transition to subsoil	No				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	Trial Pit dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Localised				NA	Localised	Ponded in drains	Springs	1	1	1	Localised ponding of surface water adjacent to site
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry (if applicable)	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	In very close proximity to historic peat extraction
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	26.5
Max. possible	99
Hazard $_{0-1}$	**0.27**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.37m. Slope angle: 5.51º.
Downslope hydrology features	Bowl / contained	NA	Bowl / contained	Minor undefined watercourse	Valley	1	1	1	Greater than 300m from watercourse.
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	Flat topography.
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environments sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Bord Na Mona Building ~1.5m to the south
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	15
Max. possible	33
Consequences $_{0-1}$	**0.45**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time supervision during construction.
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating =	0.27	0.45	=	**0.12**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 03 (T03)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value U	Value US	Value D	Value DS	0	1	2	3	Rating value	Weighting	Score	Comment
Factor of Safety			8.2	3.40	6.7	6.0	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.53 m. Slope angle: 4.9º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TP341) records: Very soft moist grey slightly gravelly SILT with low cobble content. Gravel is subangular to subrounded fine to coarse of limestone and sandstone.
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	Trial pit dry during excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Water ponded in existing land drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry (if applicable)	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	In very close proximity to historic peat extraction
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	29.5
Max. possible	96
Hazard $_{0\text{-}1}$	**0.31**

Consequence factors	Value	0	1	2	3	Rating value	Weighting	Score	Comment
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.53 m. Slope angle: 4.9º.
Downslope hydrology features	Minor undefined	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environments sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	NA	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	0	1	0	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	10
Max. possible	33
Consequences $_{0\text{-}1}$	**0.30**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time supervision during construction.
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating =	0.31	0.30	=	**0.09**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 04 (T04)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			3.10	1.70	2.50	3.00	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~01.25 m. Slope angle: 7.35º
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TP (TP331) records: Damp blush grey very sandy very silty GRAVEL with medium cobble content and low boulder content.
		Peat fibres across transition to subsoil	No				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	Trial pit dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	Wet peatland
		Forestry (if applicable)	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate
												Hazard $_{total}$	28.5	
												Max. possible	99	
												Hazard $_{0-1}$	**0.29**	

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	**Value**	**Rating criteria**				**Rating value**	**Weighting**	**Score**	**Comment**
		0	**1**	**2**	**3**				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~01.25 m. Slope angle: 7.35º
Downslope hydrology features	Minor undefined	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environments sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	NA	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	0	1	0	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access from N63
							Consequences $_{total}$	10	
							Max. possible	33	
							Consequences $_{0-1}$	**0.30**	

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		**Action required**
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time supervision during construction.
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating =	0.29	0.30	=	**0.09**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 05 (T05)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			2.5	1.6	2.1	1.8	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~ 1.85m. Slope angle: 6.3º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TP314) records: Soft damp grey organic silty CLAY withsome rootlets and plant materials underlain by very damp soft grey slightly sandy SILT.
		Peat fibres across transition to subsoil	No				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Extremely wet / Undiggable				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	3	2	6	TP unable to progress beyond 3.5mbgl due to ingress of water
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	Wet peatland
		Forestry (if applicable)	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Perpendicular				NA	Perpendicular	Oblique	Parallel	1	1	1	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate
												Hazard $_{total}$	34.5	
												Max. possible	99	
												Hazard $_{0-1}$	**0.35**	

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~ 1.85m. Slope angle: 6.3º.
Downslope hydrology features	Minor undefined	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	NA	NA	Horizontal	Intermediate	Steep	0	1	0	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environments sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Fair	NA	Good	Fair	Poor	2	1	2	Access very limited in this area in current state. Historic railway is overgrown and significant amount of surface flooding
							Consequences $_{total}$	16	
							Max. possible	33	
							Consequences $_{0-1}$	**0.48**	

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time supervision during construction.
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.35 * 0.48 = **0.17**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 06 (T06)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			2.7	1.80	2.30	3.10	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~1.8m. Slope angle: 5.8º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TP301) records: Very soft damp grey organic laminated SILT with some plant material
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	3	2	6	TP dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	200 - 300				NA	> 300	200 - 300	< 200	2	1	2	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	Wet peatland
		Forestry (if applicable)	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	34.5
Max. possible	99
Hazard $_{0-1}$	**0.35**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~1.8m. Slope angle: 5.8º.
Downslope hydrology features	Minor undefined	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environments sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Fair	NA	Good	Fair	Poor	2	1	2	Access very limited in this area in current state. Historic railway is overgrown and significant amount of surface flooding

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	17
Max. possible	33
Consequences $_{0-1}$	**0.52**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time supervision during construction.
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating =	0.35	0.52	=	**0.18**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 07 (T07)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			2.7	1.7	2.3	3.0	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~1.6m. Slope angle: 6.5º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TPT08) records: damp grey slightly silty fine to medium sand underlain by very soft moist grey slightly sandy silty CLAY. Sand is fine and TP295 records moist grey slightly clayey silty fine to medium SAND
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Extremely wet / Undiggable				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	3	2	6	TP295 failed to progess beyond 3.4mbgl due to ingress of water
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Springs				NA	Localised	Ponded in drains	Springs	3	1	3	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	Wet peatland
		Forestry (if applicable)	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	35.5
Max. possible	99
Hazard $_{0\text{-}1}$	**0.36**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~1.6m. Slope angle: 6.5º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environments sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Fair	NA	Good	Fair	Poor	2	1	2	Access very limited in this area in current state. Historic railway is overgrown and significant amount of surface flooding

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	17
Max. possible	33
Consequences $_{0\text{-}1}$	**0.52**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time supervision during construction.
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating =	0.36	0.52	=	**0.18**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 08 (T08)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			9.7	2.9	8	4.9	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: 0.5, Slope angle: 7.2
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TP (TP275) records:Firm damp light orangish greyish brown gravelly silty CLAY with low cobble content and low boulder content
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	2	2	4	Ingress of water at 0.7mbgl (TP275)
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	Wet peatland
		Forestry (if applicable)	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 32.5

Max. possible 99

Hazard $_{0\text{-}1}$ **0.33**

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: 0.5, Slope angle: 7.2
Downslope hydrology features	Minor undefined	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	NA	NA	Horizontal	Intermediate	Steep	0	1	0	
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Flat topography
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	Assumed downstream environments sensitive.
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$ 12

Max. possible 33

Consequences $_{0\text{-}1}$ **0.36**

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time supervision during construction.
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.33 0.36 = **0.12**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 09 (T09)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			10.9	4.9	9	6.7	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.5 m. Slope angle: 4.9º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TPT11) records: Soft brownish grey slightly sandy gravelly organic SILT with high cobble content and TP266 records soft moist grey slightly sandy slight gravlley silty organic CLAY with medium cobble content and some rootlets
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	2	2	4	Ingress of water at 1.6mbgl (TP266) and 1.9mbgl (TPT11)
	Topography	General curvature downslope	-				NA	-	Planar	Convex	1	1	1	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	Wet peatland
		Forestry (if applicable)	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 31.5

Max. possible 99

Hazard $_{0\text{-}1}$ **0.32**

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.5 m. Slope angle: 4.9º.
Downslope hydrology features	Minor undefined	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environments sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (LV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	2	1	2	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$ 12

Max. possible 33

Consequences $_{0\text{-}1}$ **0.36**

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time supervision during construction.
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.32 0.36 = **0.12**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 10 (T10)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			23.40	4.1	18.8	7	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.2m. Slope angle: 5.9º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TP270) records: Very soft moist grey organic SILT with some rootlets and some plant material
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	TP dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains perpendicular
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 29.5

Max. possible 99

Hazard $_{0-1}$ 0.30

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.2m. Slope angle: 5.9º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$ 13

Max. possible 33

Consequences $_{0-1}$ 0.39

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.30 0.39 = **0.12**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 11 (T11)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			6.30	3.5	5.2	6.1	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.41m. Slope angle: 3.66º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest trial pits (TP225 and 226) record: Soft moist bluish grey organic gravelly silty clay and soft moist light grey silty very gravelly clay witj medium cobble content
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	2	2	4	Ingress of water at 3.3mbgl in TP225
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Localised				NA	Localised	Ponded in drains	Springs	1	1	1	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	31.5
Max. possible	99
Hazard $_{0-1}$	**0.32**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.41m. Slope angle: 3.66º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	Local road	NA	Minor road	Local road	Regional road	2	1	2	R396 ~ 1.2km to the south
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Cloontagh National School ~ 1.2km to the sout
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	18
Max. possible	33
Consequences $_{0-1}$	**0.55**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating =		Hazard *	Consequences	
Risk rating =	0.32	0.55	=	**0.17**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 12 (T12)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			6.50	2.8	5.3	4.8	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.7m. Slope angle: 5.95º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TPS (TPBPE01, TPBPE02 and TP229) record: Moist grey very silty snad and gravel with medium cobble content and medium boulder content, damp light grey brown clayey silty subangular to rounded fine to coarse limestone gravel with high cobble content and medium boulder content and soft damp light orangish brown slightly gravelly sandy clay with medium cobble content and low boulder content
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	2	2	4	Ingress of water at 3.1mbgl (TPBPE01) and 2.7mbgl (TPBPE02)
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	Localised				NA	Localised	Ponded in drains	Springs	1	1	1	Localised surface water
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 28.5

Max. possible 99

Hazard $_{0-1}$ 0.29

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.7m. Slope angle:
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	Local road	NA	Minor road	Local road	Regional road	2	1	2	R398 ~900m to the south
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Cloontagh National School ~900m
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$ 18

Max. possible 33

Consequences $_{0-1}$ 0.55

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.29 0.55 = **0.16**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 13 (T13)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			6.6	3.5	5.5	6.1	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~1.1m. Slope angle: 3.95º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (tP240) records: Soft moist grey organic gravelly silty CLAY with medium cobble content and low boulder content
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	2	2	4	Ingress of water at 1mbgl
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	Wet peatland
		Forestry	Fair				NA	Good growth	Fair	Stunted growth	2	1.5	3	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate
											Hazard $_{total}$		32	
											Max. possible		99	
											Hazard $_{0-1}$		**0.32**	

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~1.1m. Slope angle: 3.95º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	
						Consequences $_{total}$		13	
						Max. possible		33	
						Consequences $_{0-1}$		**0.39**	

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.32 0.39 = **0.13**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 14 (T14)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			12.0	4.5	9.7	7.8	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.6m. Slope angle: 4º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TP216) records: very soft damp grey organic silty clay wth medium cobble content and medium boulder content underlain by moist light grey slightly sandy clayey silty subangular to rounded fine to coarse limestone gravel
		Peat fibres across transition to	No				NA	Yes	Partially	No	3	1	3	Not recorded inTPs
		Peat wetness	Extremely wet / Undiggable				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	3	2	6	Worst case scenario - TP216 ingress
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 35.5

Max. possible 102

Hazard $_{0-1}$ 0.35

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.6m. Slope angle: 4º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$ 13

Max. possible 33

Consequences $_{0-1}$ 0.39

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.35 0.39 = **0.14**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 15 (T15)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			7.80	4.6	6.6	8.1	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~1.4m. Slope angle: 2.6º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TP211) records: Very soft moist grey organic silty CLAY?PEAT with some plant material underlain by firm damp light gravelly silty clay with medium cobble content
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	TP dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	< 200				NA	> 300	200 - 300	< 200	3	1	3	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 34.5

Max. possible 99

Hazard $_{0-1}$ **0.35**

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~1.4m. Slope angle: 2.6º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	Local road	NA	Minor road	Local road	Regional road	2	1	2	R392 ~500m to the east
Overhead lines in potential peat flow path	Electricity (LV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	2	1	2	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$ 14

Max. possible 33

Consequences $_{0-1}$ **0.42**

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.35 0.42 = **0.15**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 16 (T16)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			4.50	2.5	3.7	4.3	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~1.2m. Slope angle: 5.2º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features)	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TP131) records: Moist brownish grey clayey gravelly subangular to subrounded sandstone and limestone boulders with high cobble content underlain by firm damp light grey very gravelly clay with medium cobble content and medium boulder content
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	3	2	6	Water ingress 1.2mbgl
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$	33.5
Max. possible	99
Hazard $_{0-1}$	**0.34**

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~1.2m. Slope angle: 5.2º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$	13
Max. possible	33
Consequences $_{0-1}$	**0.39**

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

	Hazard *	Consequences		
Risk rating =				
Risk rating =	0.34	0.39	=	**0.13**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 17 (T17)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			8.20	3.6	6.7	6.2	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.8m. Slope angle: 4.6º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Smooth rock				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	2	1	2	Nearest TP (130) records: very soft organic gravelly silty clay underlain by soft damp grey silty very gravelly clay with medium cobble content and low boulder content
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	2	2	4	Ingress of water at 1.4mbgl
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	Localised				NA	Localised	Ponded in drains	Springs	1	1	1	Significant amount of water
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	31.5
Max. possible	99
Hazard $_{0-1}$	**0.32**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.8m. Slope angle: 4.6º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	13
Max. possible	33
Consequences $_{0-1}$	**0.39**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.32 0.39 = **0.13**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 18 (T18)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			3.00	3.3	2.6	4.1	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~3.1m. Slope angle: 3.18º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TPS (TP135 and TP136) record: Firm damp ligh grey organic clayey silt underlain by stiff dark grey gravelly CLAY with medium cobble content and soft damp grey sandy gravelly silt with low cobble content
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	No infromation provided in logs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	TP dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Springs				NA	Localised	Ponded in drains	Springs	3	1	3	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 31.5

Max. possible 99

Hazard $_{0\text{-}1}$ **0.32**

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~3.1m. Slope angle: 3.18º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	Minor road	NA	Minor road	Local road	Regional road	1	1	1	Farm road ~400m south
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$ 17

Max. possible 33

Consequences $_{0\text{-}1}$ **0.52**

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.32 0.52 = **0.16**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 19 (T19)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			6.70	3.2	5.4	5.6	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.9m. Slope angle: 2.7º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TPs (TP170 and TP171) record: soft moist orangish grey organic silty very gravelly clay and organish grey cayey gravelly angular to subrounded limestone and snadstone boulders
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Extremely wet / Undiggable				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	0	2	0	TP170 and TP171 terminated due to sidewall collapse with water ingress at 1.6mbgl (TP170) and 2.7mbgl (TP171)
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Springs				NA	Localised	Ponded in drains	Springs	3	1	3	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 27.5

Max. possible 96

Hazard $_{0\text{-}1}$ **0.29**

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.9m. Slope angle: 2.7º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	Farm road ~600m to the west
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$ 13

Max. possible 33

Consequences $_{0\text{-}1}$ **0.39**

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.29 0.39 = **0.11**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 20 (T20)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			3.50	2	2.9	3.4	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~1.3m. Slope angle: 6.5º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TPs (TP152 and TP153) records: very soft moist light greenish grey organic gravelly clayey silt with low cobble content and low boulder content and very soft moist light grey organic gravelly silty clay with low cobble content and low boulder content
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	0	2	0	Ingress of water at 0.80mbgl in TP153
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	Localised				NA	Localised	Ponded in drains	Springs	1	1	1	Significant amount of water
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 28.5

Max. possible 96

Hazard $_{0-1}$ 0.30

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~1.3m. Slope angle: 6.5º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	farmhouse ~800m south
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$ 19

Max. possible 33

Consequences $_{0-1}$ 0.58

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.30 0.58 = **0.17**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 21 (T21)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			18.90	6.3	15.3	10.9	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.5. Slope angle: 5.03º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TP (T175) records: soft moist light grey gravelly silty clay with medium cobble content underlain by stiff light greyish brown silty very gravelly clay with high cobble content and medium boulder content
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	TP dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 29.5

Max. possible 96

Hazard $_{0-1}$ **0.31**

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.5. Slope angle: 5.03º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$ 13

Max. possible 33

Consequences $_{0-1}$ **0.39**

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.31 0.39 = **0.12**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Turbine 22 (TC22)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			3.40	2.1	2.8	3.8	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~1.7m. Slope angle: 5.03º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TPs (TPT24 and TP182) record: soft grey silty caly with high boulder content and fim grey silty gravelly very sandy clay with high cobble content and high boulder content
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	2	2	4	Water ingress at 1.0mbgl (TP182) and 2.5mbgl (TPT24)
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	Ponded in drains				NA	Localised	Ponded in drains	Springs	2	1	2	Significant amount of water ponded in drains
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	Wet peatland
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	NA				NA	Solid	-	Floating	0	1	0	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 31.5

Max. possible 96

Hazard $_{0-1}$ 0.33

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~1.7m. Slope angle:
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences $_{total}$ 16

Max. possible 33

Consequences $_{0-1}$ 0.48

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.33 0.48 = **0.16**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Substation**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			1.90	1.2	1.6	2.1	-	≥ 1.3	1.3 - 1.0	≤ 1.0	2	10	20	Peat depth: ~1.7m. Slope angle: 8.85º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TP282) records: Soft damp grey organic slightly gravelly sandy silt underlaine by firm damp grey silty very gravelly clay with medium cobble content
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	2	2	4	Ingress of water at 1.60mbgl
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water (water table level indicator)	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Dry heather				NA	Dry heather	Grassland	Wetlands	1	1	1	
		Forestry	NA				NA	Good growth	Fair	Stunted growth	0	1.5	0	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	36
Max. possible	99
Hazard $_{0\text{-}1}$	**0.36**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~1.7m. Slope angle: 8.85º.
Downslope hydrology features	NA	NA	Bowl / contained	Minor undefined watercourse	Valley	0	1	0	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	Regional road	NA	Minor road	Local road	Regional road	3	1	3	N63 ~150m to the south
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	17
Max. possible	33
Consequences $_{0\text{-}1}$	**0.52**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

	Hazard *	Consequences		
Risk rating =				
Risk rating =	0.36	0.52	=	**0.19**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Battery Storage Compound**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			4.10	1.9	3.3	3.4	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.9m. Slope angle: 7.9º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TP (TP283) records: moist grey silty sandy angular to subrounded fine to coarse limestone and quartz GRAVEl underlain by firm damp grey gravelly silty CLAY with medium cobble content and medium boulder content
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Extremely wet / Undiggable				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	3	2	6	Pit unstable with water ingress at 0.5mbgl and 2.1mbgl (TP283)
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	32.5
Max. possible	96
Hazard $_{0\text{-}1}$	**0.34**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.9m. Slope angle: 7.9º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	Regional road	NA	Minor road	Local road	Regional road	3	1	3	N63 ~ 300m to the south
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	16
Max. possible	33
Consequences $_{0\text{-}1}$	**0.48**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.34 * 0.48 = **0.16**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Peat Deposition Area**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			8.40	3.5	6.80	6	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.7m. Slope angle: 4.9º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TP (TP284_ records: Firm damp grey slightly sandy clayey SILT with low boulder content underlain by firm damp grey slightly sandy slight gravelly SILT with medium cobble content
		Peat fibres across transition to subsoil	No				NA	Yes	Partially	No	3	1	3	fibrous peat with decaying wood recorded in logs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	TP dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	29.5
Max. possible	99
Hazard $_{0\text{-}1}$	**0.30**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.7m. Slope angle:
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	Regional road	NA	Minor road	Local road	Regional road	3	1	3	N63 ~ 300m to the south
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	16
Max. possible	33
Consequences $_{0\text{-}1}$	**0.48**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

	Hazard *	Consequences		
Risk rating =				
Risk rating =	0.30	0.48	=	**0.14**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Temporary Peat Deposition Area**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			8.90	3.3	7.2	5.8	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.6m. Slope angle: 5.4º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TP (TP284_ records: Firm damp grey slightly sandy clayey SILT with low boulder content underlain by firm damp grey slightly sandy slight gravelly SILT with medium cobble content
		Peat fibres across transition to subsoil	No				NA	Yes	Partially	No	3	1	3	fibrous peat with decaying wood recorded in logs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	TP dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 29.5

Max. possible 99

Hazard $_{0\text{-}1}$ **0.30**

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.6m. Slope angle:
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	Regional road	NA	Minor road	Local road	Regional road	3	1	3	N63 ~ 350m to the north
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences $_{total}$ 16

Max. possible 33

Consequences $_{0\text{-}1}$ **0.48**

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.30 0.48 = **0.14**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Construction Compound 1**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			2.4	1.7	2.1	3.1	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~2.52m. Slope angle: 4.71º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TPAR04) records very soft moist grey organic laminated SILT with some plant material
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Extremely wet / Undiggable				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	3	2	6	TPAR03 notes water ingress at 0.6mbgl and 2.3mbgl with sidewall collapse
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$	30.5
Max. possible	96
Hazard $_{0\text{-}1}$	**0.32**

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~2.52m. Slope angle: 4.71º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Bor na Mona building to the west
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences $_{total}$	19
Max. possible	33
Consequences $_{0\text{-}1}$	**0.58**

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating =	Hazard *	Consequences		
Risk rating =	0.32	0.58	=	**0.18**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Construction Compound 2**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			4.2	2.7	3.5	4.7	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~1.8m. Slope angle: 3.8º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TPAR17) records Soft damp bluish grey slightly sandy clayey very gravelly SILT with low cobble content. Sand is fine. Gravel is subangular to subrounded fine to coarse of limestone. Cobbles are subrounded to rounded of limestone.
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	TPAR17notes pit dry
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Machine cut				NA	-	Cutaway / Turbary	Machine cut	3	1	3	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	30.5
Max. possible	96
Hazard $_{0\text{-}1}$	**0.32**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~1.8m. Slope angle: 3.8º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Bor na Mona building to the west
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	19
Max. possible	33
Consequences $_{0\text{-}1}$	**0.58**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.32 * 0.58 = **0.18**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Construction Compound 3**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			2.2	1.4	1.8	2.5	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~1.9m. Slope angle: 6.9º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TP (TP104) records Firm damp orangish grey gravelly silty CLAY
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	Tp dry
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Machine cut				NA	-	Cutaway / Turbary	Machine cut	3	1	3	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$ 25.5

Max. possible 96

Hazard $_{0\text{-}1}$ 0.27

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~1.9m. Slope angle: 6.9º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Bor na Mona building to the west
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$ 19

Max. possible 33

Consequences $_{0\text{-}1}$ 0.58

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.27 0.58 = **0.15**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Construction Compound 4**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			2.1	1.4	1.8	2.5	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~2m. Slope angle: 6.5º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TP111) records very soft moist grey organic silty CLAY with some plant material.
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Extremely wet / Undiggable				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	3	2	6	TP111 notes water ingress at 2.8mbgl with sidewall collapse
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Machine cut				NA	-	Cutaway / Turbary	Machine cut	3	1	3	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	32.5
Max. possible	96
Hazard $_{0\text{-}1}$	**0.34**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~2m. Slope angle: 6.5º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Bor na Mona building to the west
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	19
Max. possible	33
Consequences $_{0\text{-}1}$	**0.58**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

	Hazard *	Consequences		
Risk rating =				
Risk rating =	0.34	0.58	=	**0.19**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Security Cabin 1**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			2.4	1.7	2.1	3.1	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~2.52m. Slope angle: 4.71º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TPAR04) records very soft moist grey organic laminated SILT with some plant material
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Extremely wet / Undiggable				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	3	2	6	TPAR03 notes water ingress at 0.6mbgl and 2.3mbgl with sidewall collapse
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard $_{total}$ 32.5

Max. possible 96

Hazard $_{0\text{-}1}$ **0.34**

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~2.52m. Slope angle:
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Bor na Mona building to the west
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences $_{total}$ 16

Max. possible 33

Consequences $_{0\text{-}1}$ **0.48**

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.34 0.48 = **0.16**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Security Cabin 2**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			4.16	2.68	3.5	4.7	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~1.8m. Slope angle: 3.8º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TPAR17) records Soft damp bluish grey slightly sandy clayey very gravelly SILT with low cobble content. Sand is fine. Gravel is subangular to subrounded fine to coarse of limestone. Cobbles are subrounded to rounded of limestone.
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	TPAR17notes pit dry
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Machine cut				NA	-	Cutaway / Turbary	Machine cut	3	1	3	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$ 30.5

Max. possible 96

Hazard $_{0\text{-}1}$ 0.32

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~1.8m. Slope angle:
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Bor na Mona building to the west
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$ 16

Max. possible 33

Consequences $_{0\text{-}1}$ 0.48

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.32 0.48 = **0.15**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Construction Compound 3**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			2.2	1.4	1.8	2.5	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~1.9m. Slope angle: 6.9º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TP (TP104) records Firm damp orangish grey gravelly silty CLAY
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	TP Dry
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Machine cut				NA	-	Cutaway / Turbary	Machine cut	3	1	3	
		Peat cuts vs contour lines	Oblique				NA	Perpendicular	Oblique	Parallel	2	1	2	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	27.5
Max. possible	96
Hazard $_{0\text{-}1}$	**0.29**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~1.9m. Slope angle:
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Bor na Mona building to the west
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	16
Max. possible	33
Consequences $_{0\text{-}1}$	**0.48**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

	Hazard *	Consequences		
Risk rating =				
Risk rating =	0.29	0.48	=	**0.14**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Construction Compound 4**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			2.1	1.4	1.8	2.5	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~2m. Slope angle: 6.5º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TP (TP111) records very soft moist grey organic silty CLAY with some plant material.
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Extremely wet / Undiggable				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	3	2	6	TP111 notes water ingress at 2.8mbgl with sidewall collapse
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	NA				NA	Localised	Ponded in drains	Springs	0	1	0	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	NA				NA	Down slope	Varied / Oblique	Across slope	0	1	0	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Wetlands				NA	Dry heather	Grassland	Wetlands	3	1	3	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Machine cut				NA	-	Cutaway / Turbary	Machine cut	3	1	3	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	32.5
Max. possible	96
Hazard $_{0\text{-}1}$	**0.34**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow	Medium	NA	Small	Medium	Large	2	3	6	Peat depth: ~2m. Slope angle:
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	Dwelling	NA	Farm out-houses	-	Dwelling	3	1	3	Bor na Mona building to the west
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	Access via N63

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	19
Max. possible	33
Consequences $_{0\text{-}1}$	**0.58**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

	Hazard *	Consequences		
Risk rating =				
Risk rating =	0.34	0.58	=	**0.19**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Borrow Pit 1 (BP01)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			6.40	2.9	1.8	2.5	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.82m. Slope angle: 5.53º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TP s (TPBPA01, TPBPA02, TPBPA03, and TPBPA04) record soft moist slightly gravelly sandy clayey silt generally underlain by stiff damp grey slightly sandy gravelly silt with medium cobble content
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	2	2	4	Water ingress at TPBPA1, TPBPA2, and TPBPA04
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	Localised				NA	Localised	Ponded in drains	Springs	1	1	1	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	29.5
Max. possible	96
Hazard $_{0\text{-}1}$	**0.31**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.82m. Slope angle: 5.53º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	13
Max. possible	33
Consequences $_{0\text{-}1}$	**0.39**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.31 * 0.39 = **0.12**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Borrow Pit 2 (BP02)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			13.8	4.3	11.1	7.4	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.45m. Slope angle: 4.64º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TPs (TPBPD01, TPBPD02, TPBPE01 and TPBPE02) generally record firm damp slightly sandy slightly gravelly sily with medium cobble content
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Slowly squeezing				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	0	2	0	Water ingress at TPBPD01, TPBPD02, TPBPE01 and TPBPE02
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	Localised				NA	Localised	Ponded in drains	Springs	1	1	1	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$ 25.5

Max. possible 96

Hazard $_{0\text{-}1}$ 0.27

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.45m. Slope angle: 4.64º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$ 13

Max. possible 33

Consequences $_{0\text{-}1}$ 0.39

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating = Hazard * Consequences

Risk rating = 0.27 0.39 = **0.10**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Borrow Pit 3 (BP03)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			6.10	2.9	5.0	5.1	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.91m. Slope angle: 5.19º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Soft sensitive clay				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	3	1	3	Nearest TPs (TPBPB01, TPBPB02, TPBPB03 and TPBPB04) record very soft moist gravelly silty clay (TPBPB01) and soft moist dark grey slightyly sandy organic clayey very gravelly silt (TPBPB02) with better conditions found in TPBPB03 and TPBPB04 generally firm damp brownish grey slightly sandy silty grey very gravelly clay
		Peat fibres across transition to subsoil	NA				NA	Yes	Partially	No	0	1	0	Not recorded inTPs
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	1	2	2	TP dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	Localised				NA	Localised	Ponded in drains	Springs	1	1	1	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	29.5
Max. possible	96
Hazard $_{0\text{-}1}$	**0.31**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.91m. Slope angle: 5.19º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	13
Max. possible	33
Consequences $_{0\text{-}1}$	**0.39**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating =	Hazard *	Consequences		
Risk rating =	0.31	0.39	=	**0.12**

Peat Stability Risk Assessment (PSRA)

Derryadd Wind Farm

Location:	**Borrow Pit 4 (BP04)**
Conditions:	**Undrained (U), undrained surcharge (US), drained (D), drained surcharge (DS)**
Inspected on:	8th-10th November 2023
Inspected by:	BMc and MD
Completed by:	KG/CE
Date:	10/03/2025

Hazard factors			Value				Rating criteria				Rating value	Weighting	Score	Comment
			U	US	D	DS	0	1	2	3				
Factor of Safety			12.00	4.5	9.7	7.8	-	≥ 1.3	1.3 - 1.0	≤ 1.0	1	10	10	Peat depth: ~0.06m. Slope angle: 4.00º.
Secondary factors	Slide history	Distance to previous slides (km)	NA				NA	5 - 10	< 5	On site	0	2	0	No previous slides within 10km
		Evidence of peat movement (e.g. tension cracks, step features, compression features).	NA				NA	-	-	Yes	0	2	0	No evidence of peat movement.
	Subsoil conditions (visible in trial pits)	Subsoil type	Gravel / Firm glacial till				NA	Gravel / Firm glacial till	Smooth rock	Soft sensitive clay	1	1	1	Nearest TPs (TPBPC01 and TPBPC02) record soft damp slightly sandy gravelly silty clay to soft moist clayey very gravelly silt underlain by stiff grey very gravelly clay and soft damp slightly sandy gravelly silt to soft moist silty very gravelly clay underlain by stiff silty gravelly clay
		Peat fibres across transition to	NA				NA	Yes	Partially	No	0	1	0	No information avalable
		Peat wetness	Dry / Stands well				NA	Dry / Stands well	Slowly squeezing	Extremely wet / Undiggable	0	2	0	TPs dry on excavation
	Topography	General curvature downslope	NA				NA	-	Planar	Convex	0	1	0	Flat topography.
		Distance to the convexity break (only if previous factor is Convex)	NA				NA	> 100 m	50 - 100 m	< 50 m	0	1	0	Flat topography.
		Slope aspect (for high latitudes in northern hemisphere)	NA				NA	SW, S, SE	W, E	NW, N, NE	0	1	0	Flat topography.
	Hydrology	Distance from watercourse (m)	> 300				NA	> 300	200 - 300	< 200	1	1	1	Greater than 300m from watercourse.
		Surface moisture index (NDMI)	NA				NA	0 - 96	96 -135	135 - 174	0	1	0	Information unavailable
		Surface water	Localised				NA	Localised	Ponded in drains	Springs	1	1	1	
		Evidence of piping (subsurface flow)	NA				NA	-	-	Yes	0	1	0	No evidence of piping.
		Significant surface desiccation (previous summer was dry?)	NA				NA	-	-	Yes	0	1.5	0	No evidence of significant dessication.
		Existing drainage ditches	Varied / Oblique				NA	Down slope	Varied / Oblique	Across slope	2	1	2	Flat topography, but drains perpendicular to contours.
		Annual rainfall	< 1000 mm/yr				NA	< 1000 mm/yr	1000 - 1400 mm/yr	> 1400 mm/yr	1	1	1	
	Vegetation	Bush	Grassland				NA	Dry heather	Grassland	Wetlands	2	1	2	
		Forestry	Good growth				NA	Good growth	Fair	Stunted growth	1	1.5	1.5	
	Peat workings	Peat cuts presence	Cutaway / Turbary				NA	-	Cutaway / Turbary	Machine cut	2	1	2	
		Peat cuts vs contour lines	NA				NA	Perpendicular	Oblique	Parallel	0	1	0	Relatively flat topography
	Existing loads	Roads	Solid				NA	Solid	-	Floating	1	1	1	
	Time of year for construction		Late Summer, Autumn				NA	Spring	Winter, Early Summer	Late Summer, Autumn	3	1	3	Worst case estimate

Hazard	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Hazard $_{total}$	25.5
Max. possible	96
Hazard $_{0-1}$	**0.27**

Consequence factors	Value	Rating criteria				Rating value	Weighting	Score	Comment
		0	1	2	3				
Volume of potential peat flow (function of distance from nearest watercourse and peat depth in the area)	Small	NA	Small	Medium	Large	1	3	3	Peat depth: ~0.06m. Slope angle: 4.00º.
Downslope hydrology features	Minor undefined watercourse	NA	Bowl / contained	Minor undefined watercourse	Valley	2	1	2	
Proximity from defined valley (m)	> 500	NA	> 500	200 - 500	< 200	1	1	1	
Downhill slope angle	Horizontal	NA	Horizontal	Intermediate	Steep	1	1	1	Flat topography
Downstream aquatic environment	Sensitive	NA	Non-sensitive	Sensitive	Drinking water supply	2	1	2	Assumed downstream environment is sensitive.
Public roads in potential peat flow path	NA	NA	Minor road	Local road	Regional road	0	1	0	
Overhead lines in potential peat flow path	Electricity (MV, HV)	NA	Phone lines	Electricity (LV)	Electricity (MV, HV)	3	1	3	
Buildings in potential peat flow path	NA	NA	Farm out-houses	-	Dwelling	0	1	0	
Capability to respond (access and resources)	Good	NA	Good	Fair	Poor	1	1	1	

Consequences	
0.0 - 0.3	Negligible
0.3 - 0.5	Low
0.5 - 0.7	Medium
0.7 - 1.0	High

Consequences $_{total}$	13
Max. possible	33
Consequences $_{0-1}$	**0.39**

Risk rating

Risk		Action required
0.00 - 0.20	Negligible	Normal site investigation
0.20 - 0.40	Low	Targeted site investigation, design of specific mitigation measures. Part time supervision during construction.
0.40 - 0.60	Medium	Avoid construction in the area if possible. If unavoidable, detailed site investigation and design of specific mitigation measures. Full time
0.60 - 1.00	High	Avoid construction in this area.

Risk rating =	Hazard *	Consequences		
Risk rating =	0.27	0.39	=	**0.10**