APPENDIX 4-2

PEAT AND SPOIL MANAGEMENT PLAN

GDG
GAVIN & DOHERTY
GEOSOLUTIONS

Peat Management Plan for Repowering of the Existing Kilgarvan Wind Farm

MKO

Client	**MKO**
Document Ref.	22022-R-02-PMP-01
Project Title	Repowering of the Existing Kilgarvan Wind Farm
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DISCLAIMER

REVISION SUMMARY

Rev	Date	Section(s)	Detail of Change
01	11/01/2024	All	Updated following client comments

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EXECUTIVE SUMMARY

Gavin and Doherty Geosolutions Limited (GDG) was commissioned by MKO to undertake a Peat Management Plan (PMP) for the proposed Kilgarvan Wind Farm repowering project. Following planning guidelines compiled by the Department of the Environment, Heritage and Local Government (DoEHLG), where peat is present on a proposed wind farm development, a peat management plan is required.

This report provides details on the approximate predicted volumes of peat to be excavated during construction, the characteristics and types of peat to be excavated, construction methodologies to reduce the volumes of peat to be excavated, and the guidelines for how and where this excavated peat will be placed, reused and managed. This peat management plan will be further developed and implemented after the Proposed Development receives consent. Further details and specific plans will be determined during the detailed design phase, and once further confirmatory site investigations have been undertaken. These details will then be included in a detailed peat and spoil management plan as part of the detailed Construction Environment Management Plan (CEMP). The responsibility for implementing the PMP will lie with the Principal Contractor. Observations from site investigations indicate that a large proportion of the site consists of cut-over Raised Peat. Peat is found across the site, aside from small areas at the far eastern, southern, and western site boundaries. Peat thicknesses encountered during ground investigations vary from 0m to a maximum of 6.5m, often displaying sharp variation locally between bedrock outcrops. Bedrock outcrop and subcrop are prevalent throughout the site, with approximately 92% of locations indicating a peat thickness of less than 2m, 72% less than 1m, and 51% of probes identifying less than 0.5m of peat thickness.

The existing wind farm access tracks will need to be upgraded and new access roads will need to be constructed. The preliminary outline of road construction types and construction methodologies, along with methods for constructing turbine bases, hardstandings, and other infrastructure foundations, have been defined.

Preliminary volumes for the peat generated during construction are presented in this document, along with guidelines for handling and storing excavated peat and recommendations for good construction practices.

The peat management assessment findings indicate that all the peat material excavated can be placed safely on-site during construction.

1 INTRODUCTION

Gavin and Doherty Geosolutions Ltd. (GDG) was requested by MKO to prepare a Peat Management Plan (PMP) on behalf of Orsted, as part of an application for planning permission for the Proposed Repowering of the Existing Kilgarvan Wind Farm Co. Kerry, hereafter referred to as 'The Proposed Development'. The Proposed Development and peat depth plan is presented in Appendix A.

1.1 STATEMENT OF AUTHORITY

GDG is a specialist geotechnical and marine civil design consultancy, that provides innovative engineering solutions to a broad infrastructure problem. Established in 2010, GDG has since grown to more than 200 people. Our aim is to provide an innovative, cost-effective, and reliable service tailored to meet and exceed our clients' requirements. We strive to attain the highest possible standards and are consistently looking to pioneer and develop new technologies and techniques while ensuring that all relevant design codes and practices are met.

GDG brings together state-of-the-art research and direct industry experience and offers a bespoke engineering service, delivering the most progressive, reliable, and efficient designs across a wide variety of projects and technical areas, including offering forensic engineering and expert witness services to the Insurance and Legal sectors. Our clients include large civil engineering contractors, renewable energy developers, semi-state bodies, and engineering and environmental consulting firms.

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. The GDG team, made up of engineering geologists, geomorphologists, geotechnical engineers, and environmental scientists, has developed expertise in the design and construction of developments in peat areas.

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

- Paul Quigley. Paul is a Chartered Engineer with over 25 years of experience in geotechnical engineering and a UK Registered Engineering (RoGEP) Advisor. 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 is adept at designing creative solutions for difficult problems and has published numerous peer-reviewed technical papers. He has also acted as an independent expert for several 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.
- Alastair Lewis. Alastair is a Civil Engineer with over twenty-five years experience in civil and ground engineering. He oversees the delivery of multi-disciplinary development infrastructure projects, including brownfield development, ground engineering, earthworks platforming, mining remediation, SUDS, sewerage, flooding, bridges, wind farms, and roads.

As head of infrastructure, he developed engineering strategies in the property and energy sectors with particular reference to planning and environmental requirements. He has design experience in major earthworks and mine stabilisation schemes and extensive experience in the assessment of abandoned mine workings.

- Stephen Curtis. Stephen 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.
- Chris Engleman. Chris is a Geologist with a Masters in Geological Sciences from the University of Leeds. He has four years of industry experience within the onshore renewables sector and the field of geological mapping with a particular focus on Quaternary geology; predominantly working on projects for peat stability and management, ground investigation, rock and soil logging, GIS mapping and geotechnical design. Chris has worked on several renewable energy projects, particularly wind and solar, for over two years.
- Brian McCarthy. Brian is a Civil Engineer within the infrastructure team in GDG with two years of post-graduate experience. Brian holds a Masters degree in Civil, Structural and Environmental Engineering from University College Cork and is a member of the Institution of Engineers of Ireland. Brian has worked on various renewable energy and infrastructural projects in Ireland and the UK and has carried out peat probing on several projects throughout Ireland.

1.2 GUIDANCE DOCUMENTS

This PMP has been prepared with consideration of industry best practices relating to wind farm construction and peatlands. This best practices includes:

- Wind Energy Development Guidelines. Department of Housing, Planning and Local Government (2006);
- Draft Revised Wind Energy Development Guidelines. Department of Housing, Planning and Local Government (2019);
- Good practice during wind farm construction. A joint publication by Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland (2015);
- Scottish Government, Guidance on Developments on Peatland – Site Surveys (2017);
- Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste, Scottish Renewables and SEPA (2012); and
- Floating Roads on Peat, Scottish Natural Heritage (2011).

Many of the publications listed above have been developed by the Scottish Regulators and are considered to be best practice in Ireland and are therefore appropriate for reference within this PMP.

This PMP and compliance with it shall not relieve the developer of its obligations to undertake detailed ground investigations or geotechnical design before construction or any obligations relating to other aspects of the environment.

1.3 Proposed Development

The Proposed Development is located, approximately 5.5km northeast of the village of Kilgarvan Co. Kerry and approximately 6km west of Coolea, Co. Cork. It covers approximately 775 hectares in total. For a more detailed description of the Proposed Development location, please see Chapter 1, Section 1.1.2 of the EIAR.

A detailed map of the Proposed Development's administrative locations is provided in Figure A-1-1.

A full description of the Proposed Development is included in Chapter 4.

This report examines the peat and spoil management details at the site of the Proposed Development, located within the EIAR Site Boundary as defined in Chapter 4 of the EIAR. The "Proposed Development" or "the site" as referred to in this report is in reference to all land within the EIAR Site Boundary as defined in the EIAR.

1.4 Scope of Report

This report contains the following:

- A summary of proposed construction activities on-site;
- A review of peat conditions on-site;
- Preliminary road construction types;
    - Methodologies for the construction of each type of access road and road construction details;
- Preliminary methodologies for the excavation of turbine bases, hardstands and compounds,
- Summary of the on-site borrow pit location and typical detail drawings; and
- Guidelines for handling and storing of excavated peat;
- Recommendations for good construction practice.

The proposed access track widening areas were assessed as part of the stability report and were found to be of negligible risk due to the minimal peat depths identified during the peat probe campaign. For this reason, this report concentrates on the main Proposed Development area, which are composed of proposed turbines (their associated hardstands, foundations and crane pads), ,proposed new roads, and compound areas.

1.5 Summary of Construction Activities

For the construction phase, the activities that are considered likely to generate peat are as follows:

1. The upgrade and widening of existing founded access roads.
2. The construction of new excavated roads. We note that floating road construction does not require peat excavation.
3. Excavations for turbine bases, hardstands, construction compounds and borrow pit.

1.6 General Principles of Peat Management

The general purpose of the PMP is to outline the methodologies of peat excavation and reinstatement, outline the safety steps required for the safe placement and management of peat material, and minimise disruption to the peatland environment. The methods outlined in the report aim to:

- Reduce the exposure of bare or excavated peat material,
- Reduce the potential for release of sediment into watercourses or groundwater,
- Ensure that the Proposed Development does not adversely impact the landscape and environment,
- Ensure good site management practices are followed throughout the Proposed Development's construction, operation, and decommissioning phases.

Consideration needs to be given to the risks created by peat excavation, placement, and reinstatement, both temporary and permanent. These risks will be managed and mitigated through the methodologies outlined in this Peat Management Plan document and the associated Peat Stability Risk Assessment Report (Appendix 8-1).

Placement or any reinstatement of excavated peat material will be carried out in a fashion which ties in with the existing natural topography and facilitates the reduction of the visual impact on the structures of the Proposed Development. This can be done by landscaping the placed peat with shallow slopes, promoting natural vegetation growth, and allowing for controlled drainage from all structures.

All reinstatement works will be carried out with consideration to potential peat instability, having completed a diligent design and giving consideration to the findings of the associated Peat Stability Risk Assessment Report (GDG 22022-R-01-PSRA-01). Works will be carried out under the supervision of an appropriately experienced geotechnical engineer and ecological Clerk of Works (ECoW).

2 PEAT CONDITIONS AND STABILITY

2.1 SITE CONDITIONS

An assessment of the ground conditions encountered during the ground investigations, and reviewing the available existing mapping suggests that the Proposed Development site consists of a generally undulating topography of bedrock ridges separating localised pockets of moderate to deep peat material, often within confined depressions in the bedrock, as seen in Figure 2-1.

A peat slide event occurred at the site of the Existing Kilgarvan Wind Farm in 2012. A forensic report outlining the potential causes mitigation and remediation of this landslide event is outlined in a forensic report "*Geotechnical site assessment Report for Kilgarvan Windfarm*" by Applied Ground Engineering Consultants (AGEC Ltd) in October 2012. The findings of the AGEC 2012 report and the subsequent GDG inspection of the failure area are summarised in the Peat Stability Risk Assessment Report (Appendix 8-1).

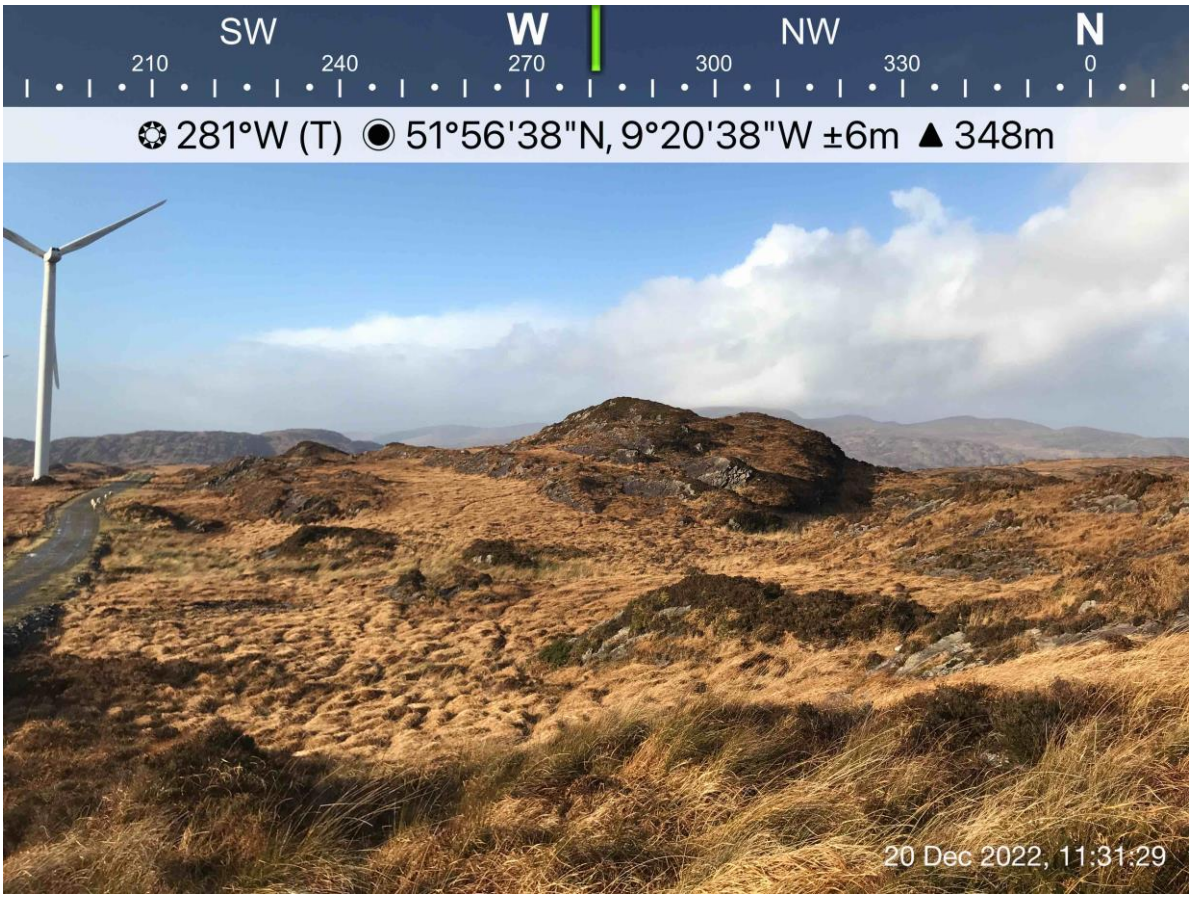


Figure 2-1: Photo showing the bedrock topography with localised areas of peat in the area of turbine 6.

2.2 PEAT CLASSIFICATION

The Scottish Government provides guidance as to the definition of peat in their Peat Survey Guidance document:

"*the Joint Nature Conservation Committee (JNCC) Report 445, Towards an Assessment of the State of UK Peatlands, definitions are used:*

- *Peaty (or organo-mineral) soil: a soil with a surface organic layer less than 0.5m deep;*
- *Peat: a soil with a surface organic layer greater than 0.5m deep which has an organic matter content of more than 60%;*
- *Deep peat: a peat soil with a surface organic layer greater than 1.0m deep*."

For the purposes of this report, peat is considered with respect to the two principal types:

- Acrotelm: This upper layer is comprised of poorly decomposed plant material and living vegetation. It is relatively dry with some tensile strength, affording it limited structural properties. For peat classification in this report, the Acrotelm layer will be considered to be inclusive of 'peaty soil'.
- Catotelm: This lower layer is formed by highly decomposed humified peat decaying at a rate of several orders of magnitude slower than the acrotelm. As this catotelm layer grows, the slow peat formation represents an important sink for atmospheric CO^2. The amorphous structural of this layer is particularly vulnerable to excavation and disturbance as it tends to disintegrate completely on excavation. For the classification of peat in this report the Catotelm layer will be considered to include 'peat' and 'deep peat' soils.

It is noted that data obtained through peat probing cannot be utilised in the classification of 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. It is considered that the sampling records from the intrusive investigation provide the most accurate representation of peat depths across the site. However, it is considered that the peat probing data generally compares well with the other intrusive data and so all data types, peat probe, trial pit and gouge core locations, have been used in the peat thickness assessment.

The interpolated peat thickness plan for the Proposed Development is shown in Figure 2-2, and is shown in greater detail Appendix A.1 Figure A-1 2 to Figure A-1-4.

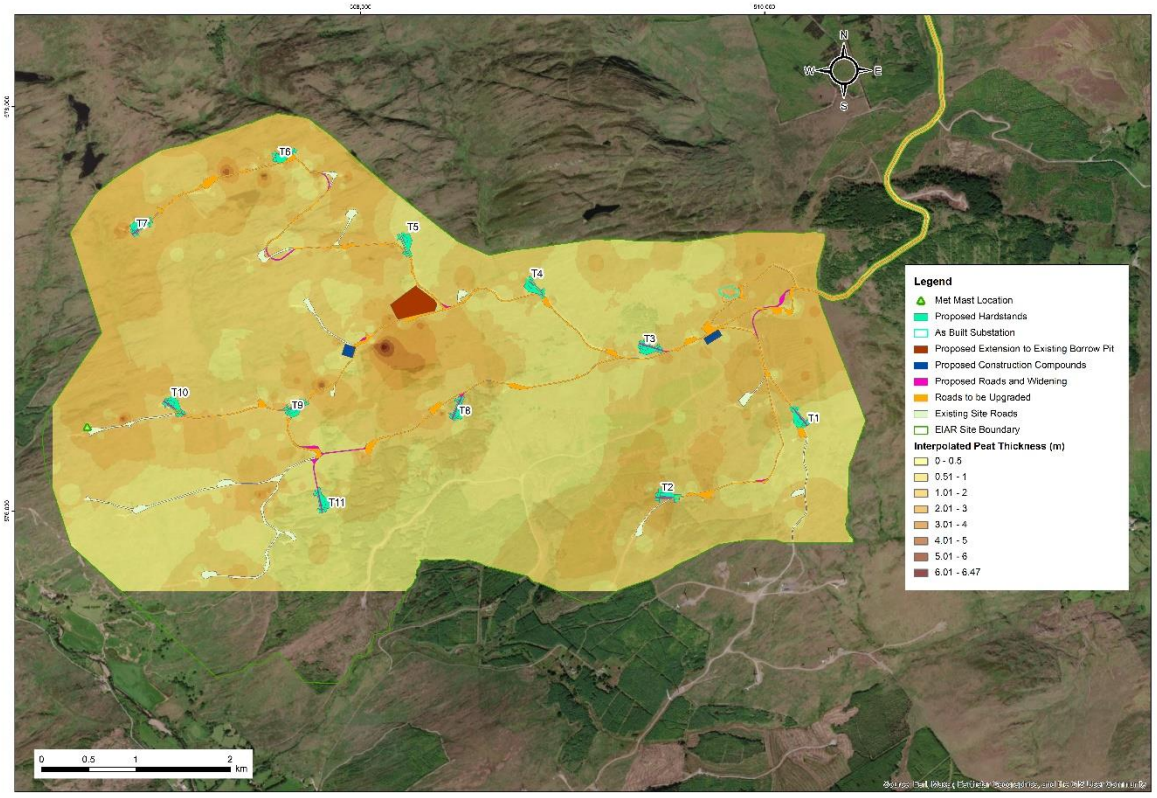


Figure 2-2: Interpolated peat depth plan of the main site area

2.3 GROUND INVESTIGATION AND ENCOUNTERED THICKNESSES

GDG visited the site on several occasions between March 2021 and October 2023 to conduct site walkovers, peat probing and to supervise ground investigation (GI) works being carried out by subcontractors.

The GI works carried out specifically for the Proposed Development was carried out between May 2022 and January 2023 and consisted of seven site visits:

1. GDG (May 2022): 125 peat probes and 15 shear vanes.
2. MKO (June 2022): 123 peat probes.
3. HES (July 2022): 54 Peat Probes.
4. GDG (August 2022): 57 peat probes, 39 shear vanes and 13 trial pits.
5. MKO (October 2022): 131 Peat probes,
6. GDG (December 2022): 30 peat probes
7. HES (January 2023): 10 peat probes

Previous to the GI carried out specifically for the Proposed Development, there were three separate existing GI projects received from the client related to the design and development of the Existing Kilgarvan Wind Farm:

1. Malone O'Regan McGuillicuddy (2005): 18 trial pits carried out at the Kilgarvan 1 wind farm site,

2. MWP (2007): 75 trial pits at the Inchicoosh site,
3. MWP (2008):47 gouge core samples and 27 peat probes at the Lettercannon site.

In summary, a total of 764 intrusive GI locations were used in the assessment of the site conditions.

The findings of these GIs are summarised in the GDG Peat stability Risk Assessment (PSRA) report, Ref.:22022-PRSA-001-00.

The GIs indicate that the ground conditions at the Proposed Development site comprise predominantly of areas of bedrock outcrop separating local areas of moderate to deep peat to 6.5m in thickness. Trial pit logs suggest that the peat material is sometimes underlain by a thin layer of granular or cohesive glacial material, weathered rock, or directly on sandstone or siltstone bedrock (Figure 2-3).

Peat thickness encountered by intrusive investigations across the site varies from 0m to a maximum of 6.5m, often displaying sharp variation locally between bedrock outcrops. The depths encountered are considered to be moderate to deep in places: with probes identifying peat thicknesses of up to 6.5m. The measurement of 6.5m thickness was recorded in a topographic low 150m south of the existing borrow pit, and is considered to represent a small, isolated pocket of deep peat.

Bedrock outcrop and subcrop is prevalent throughout the site with approximately 92% of locations indicate a peat thickness of less than 2m, 72% less than 1m, and 51% of probes identifying less than 0.5m of peat thickness. The frequency of different peat thicknesses are shown in Figure 2-4.

It is important to note that GI locations generally targeted areas of peat or suspected instability and locations may not have been recorded in areas of extensive bedrock outcrop, subcrop or areas of existing access road and hardstanding.

The characteristics and interpreted engineering parameters of the peat material across the Proposed Development site are summarised in PSRA Report (Appendix 8-1).

The composition of the peat is described in the trial pit locations using the Von Post classification system suggesting a large level of variation in the peat body across the site, with no typical trend or succession in the peat layering. The peat is predominantly described as fibrous to pseudo fibrous with varying conditions between firm, spongy and plastic. The degree of humification in the peat was examined in the sampling locations. This is a numerical rating outlining the level of decomposition in the peat ranging from H1 – no compositions to H10 – completed decomposed. The degree of humification identified at the location of the Proposed Development range between H2 and H8, generally increasing with depth with degree of humification in excess of H7 identified in areas where peat is in excess of 1m.

Figure 2-3: Photo of trial pit through peat and underlying weathered bedrock material at the proposed western temporary construction compound.

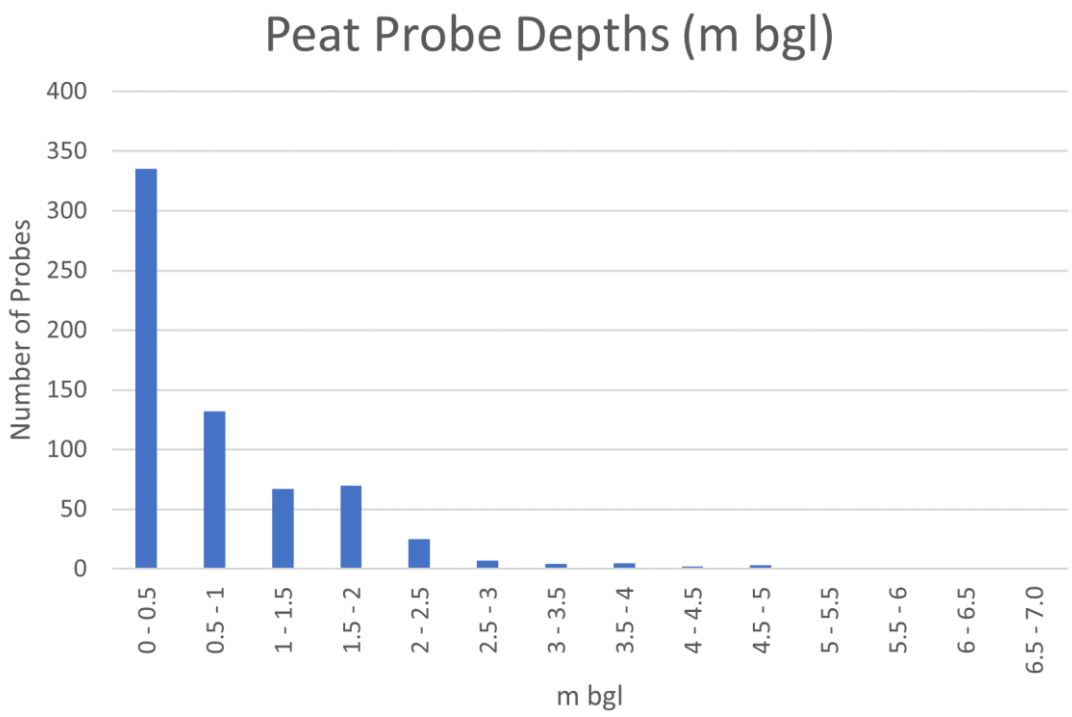


Figure 2-4: Histogram of peat thickness results across the site.

Considering the variation identified in the peat and the lack of a characteristic trend in the behavioural characteristics in the peat body, it is difficult to quantify the acrotelmic and catotelmic material of the peat body. An assumption of generic characteristics is considered appropriate in anticipating the suitability of the peat for the intended reuse purposes. Based on a review of the GI data, it is considered for that all material at a depth of 0.6m and shallower is acrotelm (inclusive of 'peaty soils'). Approximately 28% of locations indicate a peat thickness of greater than 1m, these would indicate the best indicator of where the above 'deep peat' classification may be present.

Several discrete, relatively deep pockets of wet and marshy peat were identified during the site walkovers. These areas are generally in topographical lows and flat areas, usually surrounded by bedrock outcrops. Due to the topographical confinement of these saturated peat areas, they are believed not to pose an instability risk (see PSRA ; GDG, 2023) but caution must be taken when excavating and transporting this peat as it will be easily disturbed and liquified. One single peat probe of 6.5m depth was recorded 80m from an existing track, roughly 150m south of the existing borrow pit. This area occupies a discrete, isolated pocket in a topographic low and is not proposed to form part of the development. As such, this area is not considered to present a risk.

An area of deep, saturated peat, known as 'quaking bog' was identified in the area south of proposed T6. 'Quaking bog' is defined as deep, saturated and floating peat which moves when walked on, it is easily disturbed and can pose an instability risk if disturbance is necessary. The Proposed Development should not enter the area of quaking bog. Disturbance of the quaking bog area should not be required in the Proposed Development and a safety buffer zone has been identified at the location as outlined in the PSRA (Appendix 8-1).

Adjacent to some of the existing access tracks at the Proposed Development site, there is evidence that peat has been side-cast during previous construction works. This side cast material is not extensive throughout all the access roads and is generally <1.5m in height. In these areas, the probe was often unable to penetrate to full depth which may be due to the abundance of float (loose rock) and dead fall trees and vegetation within the previously side-cast peat itself.

A detailed breakdown of the site observation at each turbine can be found in PSRA (Appendix 8-1).

2.4 PEAT STABILITY RISK ASSESSMENT

A Peat Stability Risk Assessment has been undertaken for the site (Appendix 8-1). Without the Proposed Development on site, i.e. no additional loading on the peat slopes, the site is considered to be stable. Modelling has shown localised zones within the EIAR Site Boundary that become less stable with a 10kPa surcharge, akin to a 1m thickness of peat on top of existing ground.

Areas of restricted stockpiling and construction have been identified as part of the PSRA (Appendix 8-1) and are presented in A.1.1.1(a)Appendix A.

The restriction areas consist of:

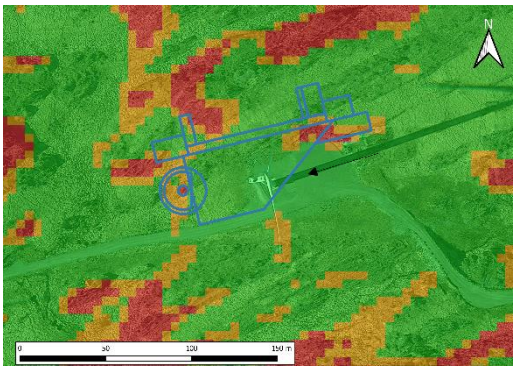
- Safety buffer areas – areas which **will be restricted for construction.** No development or construction activities will be carried out in these areas, including plant movements, peat or overburden excavation or reinstatement or placement of peat or any overburden materials.
- Peat stockpile restriction areas – areas that are **not restricted for construction but shall not be used for stockpiling of peat/side casting or any overburden materials**. The Proposed Development footprint may occur within these areas but peat placement and reinstatement are not permitted within these buffers. Any material excavated from within the peat restriction areas is required to be removed immediately and safely reinstatement with a designated area elsewhere.

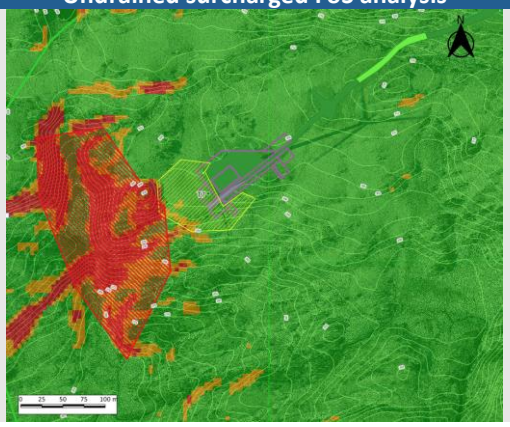
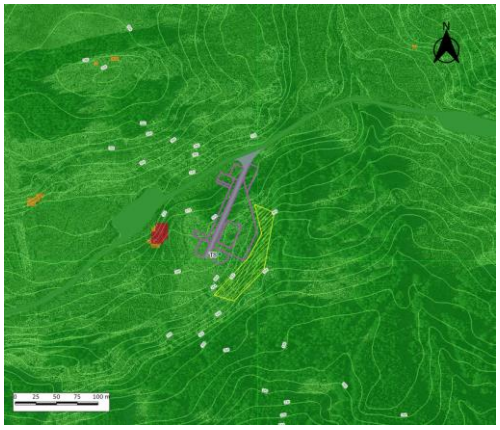
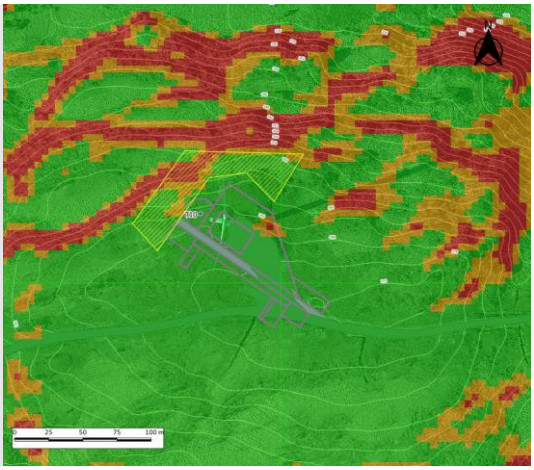
As outlined in the PSRA (Appendix 8-1) the development of the safety buffer areas is a semi-automated approach which combines the developed polygon areas of the Scottish Executive (2017) factor of safety (FoS) results, areas of risk identified during the site walkovers and potential risk areas identified from the examination of peat depths and site topography. Safety Buffer Areas are outlined in Appendix A.2. Areas included in the safety buffer area include:

- Areas of deep peat adjacent to steep slopes where there is a risk of propagated peat slide,
- The area of deep quaking bog adjacent T6, and
- The area surrounding the 2012 landslide event.

Peat stockpile restriction areas are locations where the Proposed Development site layout encounters an area where a stability risk has been encountered with the addition of a 1m surcharge only and is otherwise considered stable in its natural state. The risk at these locations can be examined by looking at the geometry of the local slope and the proposed construction methodology, and the hazards will be mitigated with restricted peat and spoil placement and the limiting of plant operations within the area. The stockpile restriction areas are outlined in Appendix A.2 Figure A-2-1 to Figure A-2-3, and some of the locations where key infrastructure encounter safety buffer zones are outlined in Table 2-1:

Table 2-1: Stockpile restriction areas at key infrastructure locations.

Location	Risk and mitigation	Undrained surcharged FoS analysis
T6	The area around the T6 turbine foundation is highly sensitive, indicating a factor of safety of <1 with the application of surcharge. The area of instability is indicated by locally thick peat coverage and steep slopes to the west of the existing hardstand area. The area west of the turbine is a locally deep area of thick peat, on top of bedrock. Due to the locally steep ground gradients and the potential for a propagating peat landslide downslope of this, the placement of peat material should be restricted at the western, downslope side of the T6 turbine and hardstand area.	

Location	Risk and mitigation	Undrained surcharged FoS analysis
T7	The area at the south end of the hardstand for T7 suggests a FoS <1.3 with the application of a surcharge. The lower FoS results here are caused by steep bedrock slopes, and a small area of local pocket of peat (1m in depth) in a topographical hollow close to the existing hardstand area. Due to the steep ground gradients and the potential for a propagating peat landslide downslope of this, the placement of peat material should be restricted at the southern, downslope side of the T7 turbine and hardstand area.	
T8	The area at the eastern section of the hardstand for T8 suggests a FoS <1 with the application of a surcharge. The low FoS results here are caused by a localised area of deep peat (~1.9m), and a locally steep slope, which a site walkover confirmed was largely bedrock at the surface. The peat in these areas will be excavated to a competent stratum for the construction of the hardstand platform. Due to the steep nature of the topography, the placement of peat material should be restricted at the eastern, downslope side of the T8 turbine and hardstand area.	
T10	The area at the northeastern edge of the hardstand for T10 suggests a FoS of <1with the application of surcharge. The low FoS results here are caused by local peat depths of ~1m, along with a locally steep bedrock slope. The hardstand area is predominantly located on the existing turbine hardstand and surrounding shallow bedrock. Due to the steep nature of the topography, the placement of peat material should be restricted at the northern slopes of the T10 turbine and hardstand area.	

3 HANDLING AND STORING EXCAVATED PEAT

Inappropriate placement of excavated peat and overburden, as well as uncontrolled loading of peat material, are considered among 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 site.

The following outlines guidelines for the careful handling and placement of peat at the Proposed Development site:

- Care shall be taken during peat excavation to ensure it is segregated from other soil types. Therefore, particular care will taken in the following instances:
- Review recorded peat depths.
- Peat shall be separated and placed by type, namely the acrotelmic and catotelmic layers.
    - Acrotelm (interpreted as the upper 0.5m of peat) is generally required for landscaping and shall be stripped and temporarily placed for re-use as required. Acrotelm stripping shall be undertaken before the main excavations.
    - Where possible, the acrotelm shall be placed with the vegetation part of the sod facing the right way up to encourage the growth of plants and vegetation.
    - All catotelm peat (peat below about 0.5 depth) shall be transported immediately on excavation to the borrow pit,
    - The careful handling and segregation of peat types will help to optimise the reuse of peat, aiding in the retention of structure and integrity of the excavated peat material.
- Depending on what vegetation is found on site, more fibrous material may be placed at steeper angles. Unconsolidated peat, generally comprising of catotelmic material, is often not suitable for general dressing and any unconsolidated peat excavated must only be used for reinstatement where such reuse poses no risk of polluting water courses and evidence can be provided that the required water table at the chosen location can be maintained. However, from a review of the ground investigation logs, which identify predominantly fibrous and pseudo-fibrous material, it is considered that the material excavated will be generally suitable to facilitate:
    - Borrow pit reinstatement
    - Placement in restricted thicknesses on track shoulders where topography permits.
    - Reinstatement at the existing hardstands which are proposed only for decommissioning, and not for replacement.
- Construction sequence planning shall minimise the time that peat is placed before reuse; however, some temporary peat placement may be required for spoil management and separation of spoil horizons before it can be placed in its reinstatement location. The principles on which the temporary placement of excavated peat will be based upon the general and particular placement and handling methodologies set out within this section. Temporary placement will be safe in so far as it protects the structure and integrity of the excavated peat subject to prevailing local conditions. Reinstatement of peat and peat turves

will be completed during the Construction Phase at the earliest practicable opportunity to avoid prolonged placement.

- Any temporary placement locations will be in suitably wet conditions or be irrigated to prevent the peat from desiccating and precautions will be taken to ensure that turves are not allowed to dry out before reinstatement. The condition of turves will be monitored throughout the duration of placement. Irrigation of peat turves will be agreed in advance with the Ecological Clerk of Works (ECoW). Should wetting of turves be required in order to prevent desiccation, mitigation will be adopted to prevent run-off or discharge to any adjacent watercourses.
- For the purposes of the Proposed Development, it is considered that the majority of peat will be placed during the reinstatement of the borrow pit,
- Plant movements and haul distances related to earthworks activity and peat excavation will be kept to a minimum,
- Temporary peat repositories will not be allowed to substantially erode or become dry.
- Any material stockpiles will be located at least 50m away from watercourses, including site ditches/sheughs, to reduce the potential for sediment to be transferred into the wider hydrological system.
- Where possible, excavation should be timed so as to avoid very wet weather, periods of extreme rainfall and/or following extended periods of prolonged rainfall.
- Temporary peat repository locations will be selected to limit re-handling as far as reasonably possible.
- Excavated peat will be placed as close as possible to the immediate area of excavation.
- The Contractor will consult the ECoW to agree on locations for material stockpiles and in order to avoid potential impacts on sensitive ecological receptors.
- The Contractor will consult the site Geotechnical Engineer and review and take into account the PSRA (Appendix 8-1) to avoid the risk of peat instability in peat excavations, peat stockpiling and all material stockpiling in areas underlain by peat.
- Run-off from the proposed borrow pit or any temporary repositories will be directed through the site drainage system which will include silt fences, settlement ponds and other drainage measures as appropriate. further details can be found in the Construction and Environmental Management Plan, Appendix 4-3.

The following particular recommendations/best practice guidelines for the placement of peat and spoil with respect to specific aspects of the Proposed Development site will be considered and taken into account during construction.

3.1 ACCESS ROADS, HARDSTANDS AND OTHER INFRASTRUCTURE

- Controlled quantities of peat and spoil will be side-cast adjacent to the existing site access roads, hardstands and other infrastructure only where it can be placed in a stable formation, i.e. where the topography and ground conditions allow, and outside of areas identified in Section 2.4.
- Side cast peat material will consist of the acrotelm (upper layer) only and be landscaped and shaped to aid in the reinstatement of the construction into the surrounding environment.

- Peat and spoil will only be placed to safe heights and slope angles, considering the topography and the ground conditions. This height will be no more than 1m, and the slopes shall be not greater than 1 (V): 3 or 4 (H) unless a site-specific assessment during detailed design indicates a greater height and angle is safe.
- The effect of drainage or water run-off will be considered when placing peat adjacent to proposed access roads. Placed material will not interfere with drainage, risk blocking of drainage systems or run-off into drainage systems.

3.2 BORROW PIT

- The proposed borrow pit location has been identified as a location for permanent placement of up to 3m of peat material.
- Where possible, the surface of the placed peat and spoil will be shaped to allow efficient run-off of surface water from borrow pit areas.
- Silting ponds may be required at the lower side/outfall location of the borrow pit.
- A layer of geogrid to strengthen the surface of the placed peat and spoil within the borrow pit may be required.
- Rock buttresses within the peat placement area may be required, subject to detailed design. The installation of rock buttresses would aid in the segregation of the reinstated peat material and allow for the separation of different types of peat and spoil material. The stone buttresses will help to divide the peat mass body reducing risk of disturbance and liquidation and will aid in drainage of the reinstated peat material.
- Infilling of the peat and spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance/rock buttress. The contractor excavating the rock will be required to develop the borrow pit in a way which will allow the excavated peat and spoil to be placed safely.
- The height of any required rock buttresses constructed will be greater than the height of the placed peat and spoil to help control any surface run-off. Buttresses up to 5m in height may be required.

3.3 EXISTING HARDSTANDS

- Existing hardstands which are not proposed for upgrade have been identified as locations for reinstatement of excavated peat, up to a thickness of up to 0.5m of material.
- Reinstated peat material will consist of the acrotelm (upper layer) only and it will be landscaped and shaped to aid in the reinstatement for the construction into the surrounding environment.
- The effect of drainage or water run off will be considered when reinstating hardstands. Placed peat material will not interfere with drainage, risk blocking of drainage systems or run-off into drainage systems.
- Where necessary, cell berms constructed from selected granular material may be required on the downslope side of existing hardstands. Cell berms will be subject to the findings of the detailed design assessment at the construction design phase.

4 ROAD CONSTRUCTION TYPES

As there is an extensive road network already in place at the site of the Proposed Development, some upgrades will be required to these existing site roads, with smaller sections of new road being constructed in order to facilitate the Proposed Development. The following factors are considered in the preliminary proposals for road construction types:

- Constructability;
- Serviceability requirements for construction and wind turbine delivery and maintenance vehicles;
- Peat depth;
- Horizontal longitudinal and cross fall gradient of the roads;
- Minimisation of excavation arisings, and
- The requirement to minimise disruption to peat hydrology.

The above key principles are used to determine the road type and will be finalised with regard to the prevailing ground conditions encountered during the detailed site investigation stages.

Floating roads minimise impacts on peat, particularly peat hydrology. As there is no excavation required, no peat arisings are generated. However, where the underlying peat has insufficient bearing capacity or due to topographic restrictions or stability concerns, a founded-type access road is deemed to be more suitable.

The preliminary road construction details proposed as part of the Proposed Development are summarised below in Table 4-1. The details of the road construction types are included in Appendix B.

Table 4-1: Road construction types

Construction method	Appendix B Detail reference	Construction type
Construction of new roads	A	Founded
	B	Floating
Upgrade of existing access roads	C	Founded
	D	Floated

The design criteria for the suitability of floated access roads used for the Proposed Development site is in line with the Scottish Executives Best Practice guidelines document. A section of proposed access track is considered suitable for floated construction when the following criteria are met:

- Maximum slope in any direction is less than 5%,
- Peat depths are greater than 1.5m,
- The resulting drained and undrained slope stability assessment factor of safety results are greater than 1.3, without and with a 10kPa surcharge.

The main restricting criteria for floating roads at the Proposed Development site is the peat depth and slope angle, as many of the deep areas of peat are in short spans of access roadways which can cause difficulties for the creation of adequate transition zones between founded and floated roads.

It is proposed that the majority of the proposed new roads will be a founded construction, as shown in Figure A-3-1 (Detail A in Appendix B) with some sections of floated road suggested where the gradient and stability analysis results allow. A detailed methodology is provided for upgrading the existing founded and floated access roads (Detail C and D in Appendix B) as reuse and widening of the existing roads will be carried out extensively at the site.

General construction methodologies are presented in the following sections. This methodology aims to minimise impacts on the stability of the peat. These proposed methodologies will be informed by detailed design following site investigation. The methodology is not intended to cover all aspects of construction, such as drainage and environmental considerations. Inspection and monitoring plans will be implemented during construction for each methodology to monitor peat stability.

4.1 Construction Methodology for New Roads

The general methodology to construct new founded roads (i.e. See Detail A of the road construction detail drawings presented in Appendix B) is presented below.

1. Excavation of the new access road to competent strata (see Section 1.2 for guidance on the correct handling and placement of the different peat layers).
    a. Drainage will be installed to divert surface and groundwater from the construction areas.
2. Placement of granular fill in layers following the designer's specification.
3. Access roads are to be finished with a granular running surface across the full width of the road.
    a. A layer of geogrid/geotextile may be required at the interface between the new access road and the competent strata following the designer's specification. A geogrid/ geotextile separator layer will improve the bearing capacity of the underlying material and prevent punching through of the overlying granular fill material

The general methodology to construct new floating roads (i.e. See Detail B of the road construction detail drawings presented in Appendix B) is presented below.

1. Placement of a geotextile or geogrid directly onto the peat surface following the designer's specification.
2. Placement of granular fill and reinforcing geogrids in layers following the designer's specification, with due regard to any settlement and deformation of peat anticipated at the access track.
    a. It may be necessary to stage the road construction to maintain peat stability – i.e. to reduce rate of placement of fill to allow the peat layers to consolidate and increase in strength.
    b. Drains will be installed within the road itself to divert surface and groundwater from upslope to downslope.

c. Stone delivered to the floating road construction shall be end-tipped onto the constructed floating road in a manner as to avoid excessive impact loading on the peat due to concentrated end-tipping. Direct tipping of stone onto the peat will not be carried out.
d. Stone will be spread and placed from the constructed floating road onto the peat surface using a bulldozer.

3. Access roads are to be finished with a granular running surface across the full width of the road.
    a. A layer of geogrid/geotextile may be required within the stone fill as specified by the detailed designer. An intermediate geogrid/ geotextile layer will improve the bearing capacity of the granular fill material, and aid to bind or interlock the granular fill material reducing displacement and settlement of the material under trafficking.

No excavations (e.g. drainage, peat cuttings) will be carried out within 5m distance of a completed floated access road edge, or at a distance determined following a site inspection.

The presence of excavations can destabilise the road. Temporary excavations, where required, should be excavated in short lengths and backfilled as soon as practicable.

Spoil materials will be side cast along the access road section to aid with the restoration of the peatland areas and embed the access roads into the surrounding environment where slope and ground conditions allow, limiting their ecological and environmental impact. Consideration needs to be given to the side cast of materials in areas of potential instability or additional mitigation requirements, as highlighted in the PSRA (Appendix 8-1). Where permissible, side cast materials will be placed to a maximum height of 1m and placement widths of a minimum of 2 to 3m unless site-specific detail designs allow larger volumes to be placed. Large stockpiles of materials will not be placed on or adjacent to floated access roads. This is to avoid bearing failure of the underlying peat.

Peat material side casting will not be carried out on areas of planar bedrock outcrop slab as this will create a slip surface and potential washout risk. Peat placement or side casting will be carried out only in areas where it is topographically contained and does not create a propagated landslide risk, as is laid out in the PSRA (Appendix 8-1).

Particular buffer areas, including construction buffers and peat stockpile restriction areas, have been highlighted in the PSRA (Appendix 8-1) for the Proposed Development and are presented in Appendix A.

4.2 Construction Methodology to Upgrade Existing Roads

The general methodology to upgrade existing founded roads (i.e. See Detail C of the road construction detail drawings presented in Appendix B) is presented below.

1. Excavation on one or both sides of the existing access road to competent strata.
2. Benching of existing road and placement of granular fill in layers, following the designer's specification.

3. Overlay of the existing access road with selected granular fill following the designer's specification.
    a. Where coarse granular fill has been used in the existing floated access road make-up, a layer of geogrid should be placed on top of the existing floated access road.
4. Access roads will be finished with a granular running surface across the full width of the road.
    a. A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer's specification.

The general methodology to upgrade existing floating roads (i.e. See Detail D of the road construction detail drawings presented in Appendix B) is presented below.

1. Placement of tree brash and/or a geotextile onto on one or both sides of the existing access road directly onto the peat surface, following the designer's specification.
2. Benching of existing road and placement of granular fill and reinforcing geogrids in layers following the designer's specification, with due regard to any settlement of peat anticipated for the widened area.
    a. It may be necessary to stage the widening to maintain peat stability – i.e. to reduce the rate of placement of fill to allow the peat layers to consolidate and increase in strength.
    b. It may be necessary to anchor the geogrids into the existing roads, which would require significant benching of existing roads. Placement of a geogrid anchor between the new and existing road will help to bind/ interlock the two granular fill bodies together and limit any differential displacement/ settlement which may occur due to loading/ trafficking.
3. Overlay of the existing access road with selected granular fill following the designer's specification.
    a. Where coarse granular fill has been used in the existing floated access road make-up, a layer of geogrid will be placed on top of the existing floated access road.
    b. The surface of the existing access road will be graded/levelled before the placement of any geogrid/geotextile, where necessary in order to prevent damaging the geogrid/geotextile.
4. Access roads will be finished with a layer of capping across the full width of the road.
    a. A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer's specification. An intermediate geogrid/ geotextile layer will improve the bearing capacity of the granular fill material, and aid to bind or interlock the new granular fill material with the existing access road.

Where there are cross slopes, any road widening works required will be carried out on the upslope side of the existing access road, where possible. Particular design details will be required at detailed design at the transitions between floating and founded roads to reduce differential settlements between the two construction types.

5 EXCAVATION OF TURBINE BASES, HARDSTANDINGS, AND INFRASTRUCTURE FOUNDATIONS

Assessment of the ground conditions encountered in the GIs would suggest that the proposed infrastructure locations consist primarily of bedrock outcrop, with localised pockets of moderate to deep peat material. The peat depths identified at the proposed turbine and hardstand areas are generally less than 2.5m, with bedrock outcrop or existing founded hardstands identified at many of the turbine locations. Where peat is present, the material encountered beneath it is generally a thin layer of stiff to very stiff cohesive or granular glacial till and/or sandstone or siltstone bedrock or weathered bedrock. Generally, for the construction of any structure or platform foundation, such as a turbine base, hardstand or substation, the removal of all soft material is required to a depth where a suitable bearing material is encountered.

Rock breaking will be required at several of the turbine and hardstanding locations to create the reduced foundation level and the levelling required for construction. The material excavated is required to be properly managed and stored and will be reused in other elements of the Proposed Development.

During the construction of the proposed turbines, peat will be permanently excavated to the substrate to accommodate the concrete turbine foundation, and for a small working area surrounding the foundation footprint. Breaking and excavation of bedrock will be required where it is encountered at shallow depths to achieve the reduced foundation level and level surface required by the design. Turbine bases with diameters of 27m are proposed, with detailed foundation designs dictated by the local ground conditions and the requirements of the turbine supplier. The plan area of the material to be removed will be dictated by the enabling temporary works design, allowable the excavation angle and the mean peat depths across each turbine location.

The design of the turbine base foundations is subject to further confirmatory ground investigation and the detailed designer's assessment.

Similarly, all turbine crane hardstands are required to be founded on a suitable bearing material, requiring the excavation of all peat and other soft ground materials where present. The platform will be constructed in the excavated area using a suitable specified engineered stone fill. The selected locations have been identified as they have a lower depth of peat materials, among other constraints. Following the placement of the platform, the excavated peat will be re-used to batter the platform edges and landscape the platform back into the existing topography. In some locations, excavation of the existing hardstand granular fill may be required to reach the desired level.

The mean peat depths collected from the GIs are used to calculate the estimated peat volumes at each structure foundation location. This is outlined further in Section 8.

6 BORROW PIT

An extension of the existing borrow pit is proposed as part of the Proposed Development as shown in Appendix A and C. A limited amount of peat excavation will be required as part of the extension of the borrow pit location as the areas surrounding the current existing peat have localised pockets of peat, varying in depth up to 3m. Excavation of this peat will either entirely remove the peat areas or excavate at suitable slopes as designed by the detail stage designers.

The existing borrow pit is excavated in a large area of bedrock outcrop. The bedrock is composed of the Gun Point Formation characterised by green-grey to purple, medium to fine-grained sandstones (locally pebbly), interbedded with green and red to purple siltstones and fine sandstones.

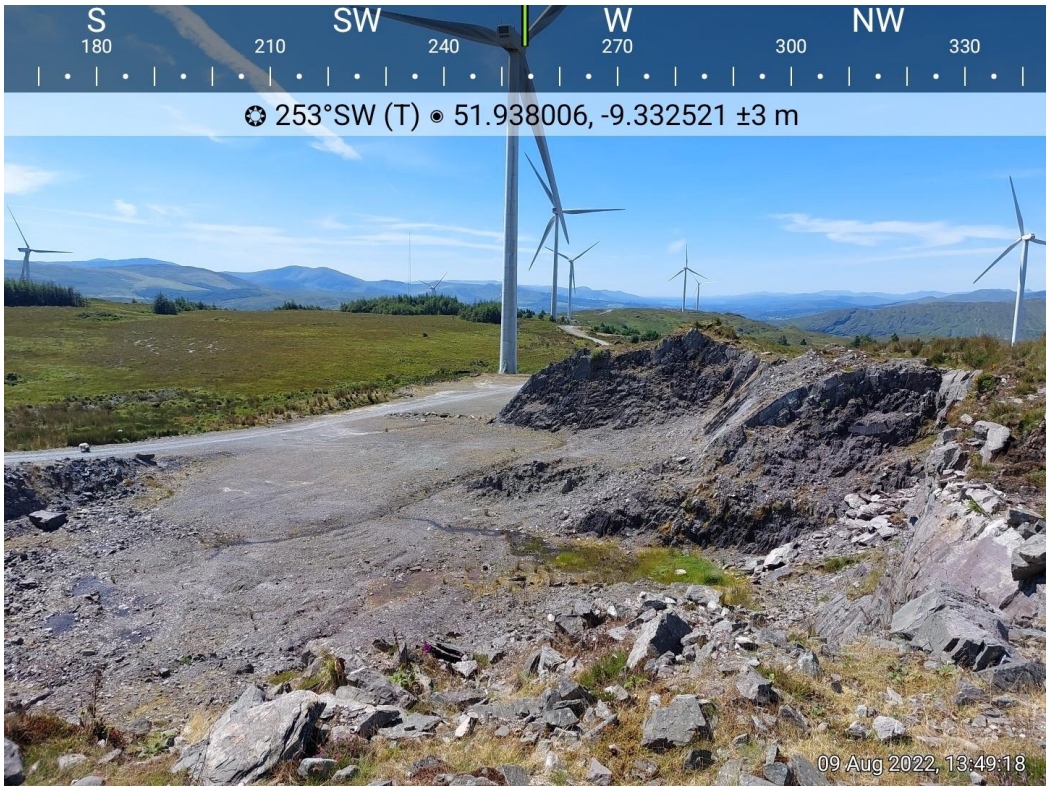


Figure 6-1: Photo of exiting borrow pit with Gun Point sandstone face.

The excavated rock from the borrow pit will be used in the construction of the infrastructure elements (turbine bases, roads, etc.) at the Proposed Development. An example excavation profile showing the profile through the propose borrow pit is shown in Appendix C. Where necessary, the project design engineer will determine the appropriate depth of excavation.

The existing borrow pit was used in the construction of the Existing Kilgarvan Wind Farm, for the construction of access roads and hardstands. A preliminary assessment of the proposed borrow pit rock material by face geological mapping suggests that it is suitable for producing engineered fill and could be excavated by breaking or blasting and processed to the detailed design engineered fill requirements. The suitability and processing of the bedrock material will be subject to further GI and

laboratory testing assessment at the detailed design stage to confirm the suitability and acceptability of the fill material for certain applications (e.g. Class 1C, 6N2 , UGM-A, etc).

Slopes within the excavated rock formed around the perimeter of the pit borrow pit will be formed at stable inclinations to suit local in-situ rock conditions. An interceptor drain will also be installed upslope of the borrow pit, where necessary. This drain will divert any surface water away from the borrow pit and, hence, prevent water from ponding and lodging on the re-instated borrow pit area.

Upon removal of the overburden and rock from the proposed borrow pit, it is proposed to reinstate the borrow pit using surplus excavated peat and spoil generated onsite during the construction of the Proposed Development. The contractor excavating the rock will be required to develop the borrow pit to allow the excavated peat and spoil to be placed safely. The final profile of the peat and spoil will vary across the base of the borrow pit. The volumes assessment carried out at the borrow pit suggests that the available stone fill capacity is in excess of the stone requirements at the site, allowing for contingency should any design changes be required following detail design. Only the stone volumes required for the Proposed Development will be extracted from the proposed borrow pit. The contractor will develop the borrow pit to ensure that peat placement capacity is maintained.

It may be necessary to construct cells/rock buttresses or leave upstands of intact bedrock within the proposed borrow pit to contain the reinstated peat and overburden. This will allow for the safe placement and grading of the materials using dumper trucks and excavators.

A geogrid or geotextile material may be used to aid in the strengthening of the upper surface of the deposited material within the proposed borrow pit and to aid in the promotion of growth and rehabilitation of the borrow pit area.

An indicative layout of the proposed borrow pit is presented in Appendix C.

7 SEQUENCING OF WORKS

Suitable consideration has been given to the sequencing of works for the feasibility of construction activities in a peat environment. Careful consideration has also been given to the availability of safe reinstatement areas for peat material volumes generated during excavation works. The construction stage contractor will outline this within their method statements for the construction stage activities. It is important to outline these activities at the planning stage to ensure the safe construction of the Proposed Development.

The key constraints that are being considered in terms of works sequencing:

1. Generation of peat volumes during the early stages of the Proposed Development where peat reinstatement availability is limited, such as:
    a. Generation of peat volumes at the new founded access tracks during the initial stages of the project,
    b. Stripping of peat from the surface of the proposed borrow pit,
    c. Excavation of peat during construction of hardstanding areas,
    d. Availability of reinstatement volumes at the proposed borrow pit location, as the full capacity of the proposed borrow pit will not be open in the initial stages of the construction phase.

These constraints have been considered during the development of the Proposed Development layout. The following solutions are presented:

- The existing access tracks will be used to facilitate access to the borrow pit area throughout any stage of the project construction. These tracks can be temporarily utilised for gaining access to borrow pit to generate stone to enable the reinstatement of generated peat right from the project commencement,
- A suitable contingency has been accounted for in the peat balance calculations outlined in Sections 8.1 and 8.2.
- Placement of peat alongside new and existing access tracks scheduled for upgrade will commence from the early stages of the project.
- Reinstatement of peat at existing hardstand locations is not proposed for replacement and construction of the proposed turbines until existing turbines are removed.

The sequencing and constructability assessment of the Proposed Development suggest that the project can and will be constructed safely. Should the Contractor have given careful consideration to the works methodology, at no point in the project timeline should there be an occurrence of peat volumes being generated with no available safe reinstatement space. The construction stage Contractor will be required to outline a proposed sequence of works and prove that they have given adequate consideration to the implications the sequence can have on the safe construction of the development.

8 PRELIMINARY PEAT VOLUMES

The ground investigation and design layout drawings have been reviewed to inform this section of the PMP. Peat volumes can be estimated based on the results of the intrusive investigations and the design of the Proposed Development.

Peat excavation will be required for the following elements of the Proposed Development:

1. Founded and upgraded access roads;
2. Turbine hardstands and foundations (including crane pads);
3. Temporary construction compounds, and
4. Borrow pit.

Peat excavated in association with the cable trenches will be replaced at its point of origin and, therefore, is not considered a volume loss. No further assessment of cable trench volumes will be undertaken.

A preliminary estimate of the approximate volumes of excavation and fill needed to construct the Proposed Development was carried out. This was produced using typical limits to road and hardstand gradients and using road and hardstanding thickness typical to the ground conditions of the Proposed Development.

8.1 PEAT EXCAVATION VOLUMES

The peat depths examined in the GI were reviewed at the infrastructural elements of the Proposed Development, such as each turbine, crane hardstand, borrow pit location, and access tracks. The average peat depths at each structure were incorporated into the model along with the turbine and hardstand layout, preliminary access roads alignment and other associated infrastructures to estimate the volume of peat proposed to be excavated.

A breakdown of the estimated peat excavation volumes is summarised in Table 8-1.

Table 8-1: Summary of preliminary excavation volumes

Infrastructure Item	Average Peat depth (m)	Excavated peat volume (m^3)
New Access Roads (founded)	-	13,510
Upgraded Access Road- including Road to be widened (founded)		
Turbine foundations and hardstands	0.5	40,520
Borrow Pit	0.3	3,040.0
Contractor compound (East)	0.3	1,590
Contractor compound (West)	0.3	1,420
Total		**60,080**

* The volume of peat material excavated has been estimated using the average peat depth calculated across the footprint of the structure to define the basal surface of the peat.

8.2 PEAT REINSTATEMENT VOLUMES

Peat generated during construction will be reused or reinstated across the Proposed Development site. Peat may be reused for landscaping on edges of constructed infrastructure (including road verges, around hardstand area and turbine foundations) and shall be placed as soon as reasonably practical after construction. This activity will form part of the landscaping restoration and tie-in with surrounding topography, reducing potential visual effects.

Several considerations have been made in the estimation of reinstatement volumes:

- A conservative reinstatement volume of $2m^3$ per linear metre (lin.m) of new access road ($1m^3$ placed on each side of the trackway) has been used. This can often be increased to up to $4m^3$ per lin.m following the detail design stage and the appropriate stability design considerations,
- A conservative reinstatement volume of $1m^3$ per lin.m on existing access road widenings, accounting for placement of $1m^3$ on one side only side of the proposed widening trackway,
- A conservative reinstatement volume of $1m^3$ per lin.m on existing access road upgrades, accounting for placement of $0.5m^3$ on each side of the roads to be upgraded,
- An estimated reinstatement capacity of $3m^3$ per external lin.m perimeter of hardstand areas such as the crane hardstands and temporary construction compounds,
- Peat material will be used to dress/ landscape around the turbine foundation footprint with an assumed thickness of 0.5m,
- Peat material will be used to reinstate around the existing hardstands which are not proposed to be replaced with new turbines, with an assumed thickness of 0.5m

Potential peat reuse/reinstatement volumes have been estimated and are also presented in Table 8-2.

Table 8-2: Summary of preliminary peat reinstatement volumes

Infrastructure Item	Reinstatement volume (m^3) Peat	Comments
New Access roads (founded)	2,000.0	Placement of arisings $2m^3$/lin.m alongside existing and new founded roads, where topography allows
New Access roads (floated)		
Upgraded Access roads including road to be widened – (founded)	15,840.0	Placement of arisings 1m3/lin.m alongside widened roads, where topography allows. Accounts for placement on one side only.
Upgraded Access roads – (floated)		
Turbine foundations and hardstands (11nr.)	5,320.0	Placement of arisings $3m^3$/lin.m of external hardstand perimeter, where topography allows
Compound (2nr)	1,170.0	Placement of arisings $3m^3$/lin.m of external compound perimeter, where topography allows
Existing hardstands for reinstatement (11nr.)	7,380.0	Assumes a conservative reinstatement estimate of 0.5m coverage of peat material across the turbine hardstand footprint.
Borrow pit	38,880.0*	*3m peat depth across the area of the borrow pit (with a reduction to account for installation within smaller buttress areas)
Total	**70,590.0**	

*Borrow pit excavation volume outlines the maximum volumes. In reality the volumes excavated from borrow pit will be a function of the engineering fill material required and detailed design

The volumes quoted in Table 8-2 reflect normal earthworks practice where volumes of cut and fill are evaluated on a 1m^3 cut to 1 m^3 filled basis. It is acknowledged that the phenomenon of bulking can occur where placed soils occupy a greater volume due to a reduction in density. It is considered that bulking will be offset to a considerable degree by the compaction of soils during placement and subsequent settlement to achieve the volumes outlined.

Placement and reinstatement of peat material are subject to stability requirements to be investigated by the detailed designer. At the construction stage, the peat stability risk assessment will be updated to include consideration of the peat stability and landslide risks by construction activities, which may not be outlined in this report, or changes or variations from the layout which may occur during the construction stage.

Thin layers of non-peat overburden, namely cohesive and granular glacial till material, were identified in trial pit locations. The excavated non-peat overburden material may be reused in fill aspects of the design (including reinstatement of borrow pit and similar) subject to the material specification and the suitability of the excavated material. Further investigation of the non-peat overburden material and its suitability for reuse will be required by the detail designer.

At this stage, no peat volume requirement has been identified for habitat restoration; however, should material be required, an increase in demand for peaty soil and acrotelmic peat is anticipated. In this event, the calculations presented herein should be revisited.

8.3 PEAT BALANCE

The volume balance of excavated and reinstated peat is outlined in Table 8-3. This table outlines the estimated volumes of peat excavation and the reinstatement volumes as outlined in Sections 8.1 and 8.2.

Table 8-3: Peat balance assessment.

ITEM	SUPPLY	DEMAND	BALANCE
	Peat Excavation Volume (m^3)	Reinstatement Capacity (m^3)	Surplus (+) or Deficit (-) (m^3)
New access roads - founded	13,510	17,840.0	-4,330.0
New access roads - floated			
Roads to be upgraded			
Turbine foundations and hardstands	40,520	5,320.0	35,200
Construction Compounds	3,010	1,170.0	1,840
Borrow Pit*	3,040.0	38,880.0	-35,840
Existing hardstands	0	7,380	-7,380
TOTAL	**60,080**	**70,590.0**	**-10,510.0**

*Borrow pit reinstatement volume is outlined in Table 8-2.

The summary of preliminary earthwork volumes indicates that the peat placement capacity of the Proposed Development site is greater than the volume of peat excavated for the various infrastructures.

8.4 SENSITIVITY ANALYSIS

Sensitivity analysis calculations outlined in Table 8-4 indicate the development's workable peat placement capacity. This analysis considers a worse-case construction sequence, utilising only 60% of the total borrow pit capacity in the final calculations. In this scenario, the peat demand decreases from 69,510m^3 to 60,420m^3.

Table 8-4: Peat volume sensitivity analysis

Borrow pit reinstatement condition	Associated Borrow pit reinstatement volume (m3)	Total adjusted achievable Reinstatement (m3)	Total peat balance Surplus (+) or Deficit (-) (m3)
60% of borrow pit max. volume	25,920	61,135	-1,074

The sensitivity analysis suggests that should peat excavation have been underestimated and increased by around 13,000m^3, the Proposed Development would still be accommodated. It should be emphasised that temporary placement of peat will be required during construction due to the volumes being handled and the availability of the borrow pit.

9 GUIDELINES FOR GOOD CONSTRUCTION PRACTICE

9.1 GENERAL

Inappropriate placement 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 Proposed Development site. It is required that the construction method statements for the project also take into account, but are not limited to, the guidance documents listed in Section 1 of this report and the recommendations and requirements outlined throughout this document.

The general requirements for the management of peat and spoil materials and the mitigation of peat instability at the site:

- A Project Geotechnical Engineer will be appointed to oversee peat excavation and management for the construction stage.
- Placement of peat material, including temporary repositories and side casting, will be carried out in the permitted areas only. No peat material shall be stored, side cast, or used for landscaping in the designated Peat Stockpile Restriction Areas.
- Temporary placement of excavated peat will be minimised, and peat shall be reinstated as soon as practical. Acrotelm (upper) peat material may be used as landscaping material where topography allows it, and the detail designer has assessed the stability risk.
- Uncontrolled placement of peat or loading of peat material will be avoided.
- Water flows within drainage systems will be controlled. Velocities of flows will be controlled using check damns within drainage systems, and the uncontrolled release of water onto slopes can create a landslide risk and will be avoided.
- All construction requiring cut and fill earthworks requires 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 risk assessment and method statement (RAMS) document, which considers the potential causes and mitigations of peat instabilities and landslides, is required and will be regularly communicated to all site staff. An observational approach by all site staff to the ground conditions and the risks will be promoted, and any changes in the ground or site conditions will be reported and the risk dynamically assessed.
- Regular briefing of all site staff (e.g. toolbox talks) will be held to provide feedback on construction and ground performance and to promote reporting any observed change in ground conditions.

9.2 MONITORING

Installing movement monitoring posts is recommended for areas where work is taking place on or adjacent to identified peat depths greater than 2m. Installation of monitoring posts in the area surrounding the 2012 landslide will be required and a robust monitoring schedule must be carried through out and follow the completion of the construction stage of the Proposed Development.

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

- Posts shall be 1 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 be 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 of this numbering system should be kept.

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. A record should be kept of all monitor post inspections with reference to date, time and any relative movement between posts, if any. Any movement identified in the posts shall be recorded with reference to the post numbering system.

The contactor 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 will identify any cracking or deformation on the peat surface, excessive settlement on structures, drain blockages or springs, etc.

9.3 CONTINGENCY MEASURES

The stability of the peat and overburden is considered to be safe for the construction activities proposed, and providing the peat and spoil be managed in line with the details of this document, the risk of a peat failure or landslide is negligible to very low. However, it is important to consider the actions which will 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's RAMS and include the methodologies for immediate and long-term response.

9.3.1 MOVEMENT OR INSTABILITY OBSERVED IN MONITORING AREAS

Where excessive movement has been observed in the installed monitoring outlined in Section 9.2 the following measures will be taken;

- All construction activities will be suspended in the area,
- The Contractor's Geotechnical Engineer shall carry out an assessment of the peat instability including drainage. The Contractor's Geotechnical Engineer will compile a report outlining the surveys undertaken, the potential cause of the instability, assessment of any increased risk caused by the instability, and the further measures required to manage this risk.
- An increased monitoring regime will be specified, including an increase in number of monitoring post lines, a decrease in monitoring post spacing and an increase in the frequency of monitoring post observations.

- Providing 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 be informed, and the design of further reinstatement works will occur, such as excavation of the disturbed material, installation of granular berms or similar.

9.3.2 EMERGENCY RESPONSE TO A LANDSLIDE EVENT

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

- All project members will be alerted immediately or as soon as it is safe to do so.
- All site works will be ceased, and all available resources will be used to manage and mitigate 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 on land or within these topographic valleys and watercourses will be constructed to minimise further runout of the disturbed peat or spoil material.

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 the topographic valley and/or watercourse. It is proposed that stone fill for the construction of check barrages can be sourced from the proposed borrow pit.

Potential check barrage locations are outlined in Figure A-4- 1 in Appendix A.4. The potential check barrage locations have been positioned in areas accessible from existing and proposed access roads within topographic valleys and watercourses, which could be a route for a propagating landslide towards the River Roughty and associated sensitive environments. 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 Contractor will include an assessment of potential check barrage locations and method for their construction within the emergency procedures in their associated RAMS documentation.

10 RISK REGISTER

Table 10-1: Risk register.

Ref.	Risk	Cause	Mitigation
1	Excavation of larger quantities of peat than expected	Increase in peat depth encountered	This report outlines the calculations carried out in the peat balance exercise. The report outlines the volumes of peat excavation required for the construction of the Proposed Development and the capacity for the development for peat placement or rehabilitation, concluding that the peat balance is satisfactory for the construction of the Proposed Development. The peat depths used are developed from the ground investigations carried out at the site including peat probes, trial pits and Russian cores. Peat material can vary largely locally and the risk of missing a local deep area of peat can exist at the site. An increased density of ground investigation was carried out in the areas of proposed infrastructure. However, some areas had limited or no access and so ground investigations are limited. A conservative estimate of peat volumes taking into account contingencies for larger volumes of cut/fill has been taken into account in the volumes presented in Section 8. Further GI will be required across the Proposed Development during the detailed design and construction stage to assess peat depths and strengths. This will be carried out by the detail designer and Contractors team. The design team will develop their own peat balance calculation to satisfy and de-risk the possibility of larger peat excavation volumes being encountered at these locations. Sensitivity analysis has been carried out, suggesting that there is sufficient capacity to place the peat generated during construction.
2	Inadequate storage space for excavated peat	Inadequate borrow pit and peat reinstatement volumes	The peat balance calculation has considered a conservative estimate of the peat reinstatement quantities, considering only $2m^3$ per lin.m on proposed new access tracks, 1 m^3 per lin.m on proposed upgraded access tracks and $3m^3$ per lin.m around the perimeter of the proposed hardstand areas, and the placement of 3m of peat across have the plan area of the proposed borrow pit area. Following detailed design it is likely that the reinstatement volumes will be able to be increased, targeting topographically confined areas for increased volume of side casting while still remaining in compliance with the requirements outlined in this Peat Management Plan document and industry best practices. The report outlines several contingency estimations for the peat volume and placement volume assessments.

Ref.	Risk	Cause	Mitigation
			It is assumed that a suitable construction methodology and project timeline can be developed by the construction stage contractor and design team effectively manage peat excavations and placement areas.
3	Peat slippage from side casting of peat material	Overloading of in-situ peat by sidecasting	The (PSRA) report (Appendix 8-1) examines the stability of the peat in several conditions including the inclusion of a 1m peat placement surcharge. This report outlines the methodologies to safely carry out the construction of the Proposed Development including the restriction for the placement of peat at some key infrastructure locations. The construction stage design and contractor team will need to construct the Proposed Development using these mitigation measures. Further confirmatory GI will be required across the full site including at the identified hazard areas during the detail and construction stage to assess peat depths and strengths. This will be carried out by the detailed designer and contractor's team. The design team shall develop their own testing criteria to satisfy and de-risk the possibility of instability and peat failure. The works will be undertaken by a competent contractor experienced in working in peat and soft ground conditions in upland areas and will have carried out the appropriate due diligence and assessment relating to peat stability and appropriate peat placement.

11 CONCLUSION

This PMP has been prepared to outline a peat management strategy to ensure the workable and sustainable management of peat during the construction of the Proposed Development.

This PMP indicates that the majority of material excavated will comprise peaty soil and acrotelmic peat with some excavations of catotelmic peat. The volumes of catotelmic peat generated will be fully utilised in the restoration of the borrow pit and are not considered to represent waste material.

For the purposes of the peat balance assessment completed herein, volumes of peaty soil have been included to facilitate an assessment of the superficial material required for restoration and infrastructure dressing at the Proposed Development.

The peat balance analysis in Section 8 outlines a conservative estimate of the volumes of peat excavation and reinstatement during the construction of the Proposed Development, and as such, it is concluded that all of the peat material excavated can be reused safely on-site during construction. Should any further refinement of the detailed infrastructure design be undertaken, the assessment completed herein will be revisited.

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Appendix A -Site Maps

A.1 Site Layout and Peat Thickness Plans

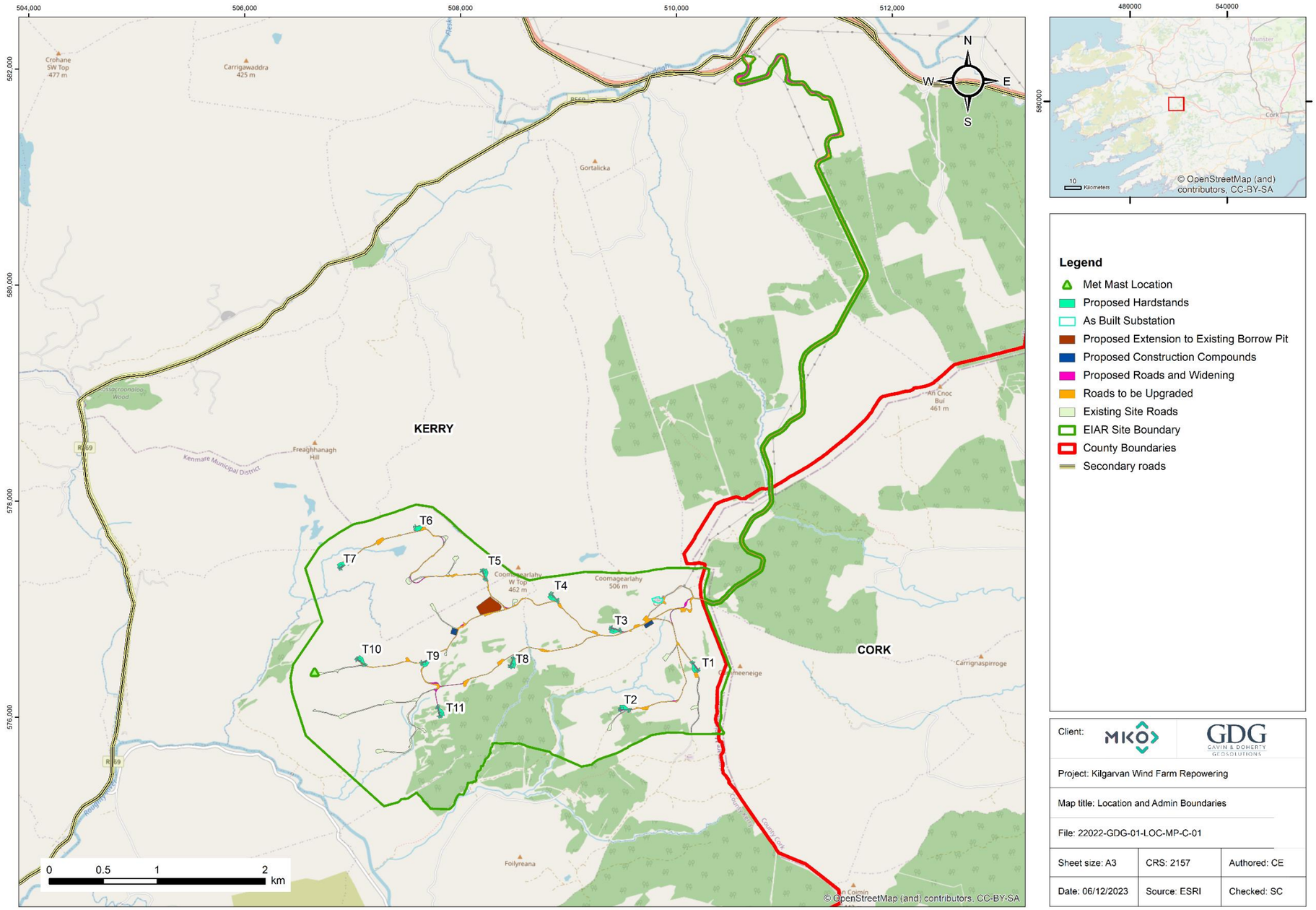
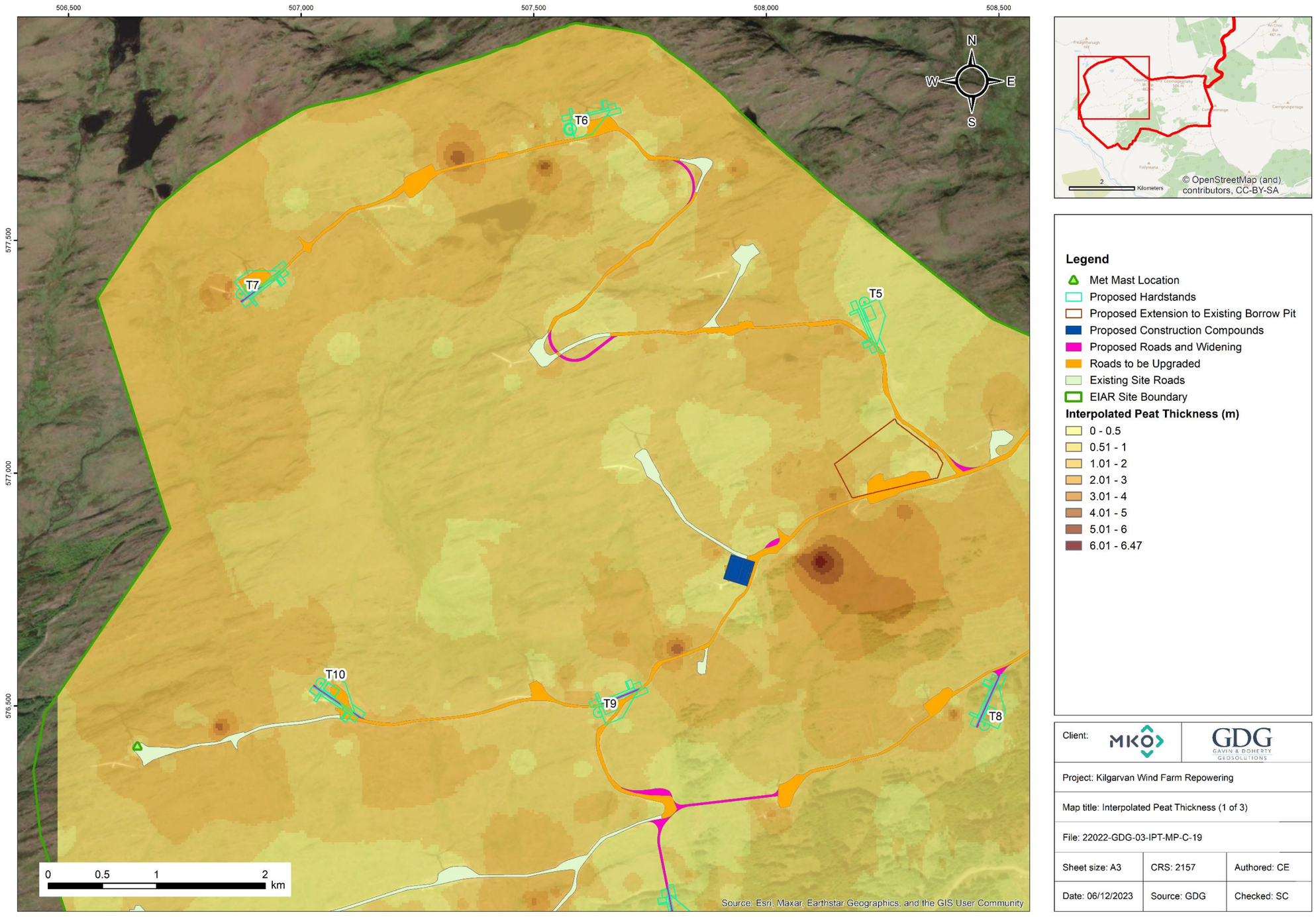


Figure A-1-1: Site Layout



Legend

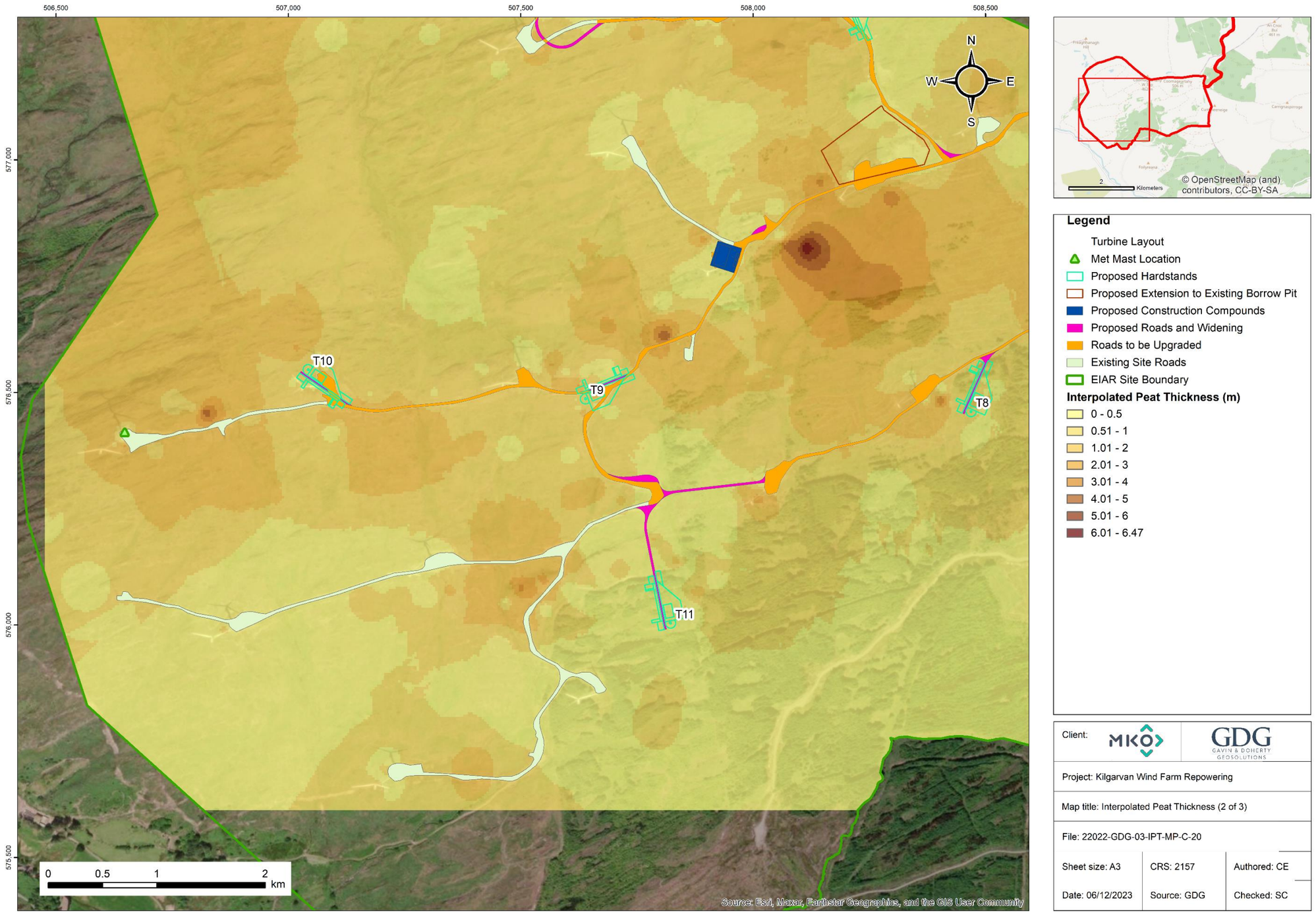
- Met Mast Location
- Proposed Hardstands
- Proposed Extension to Existing Borrow Pit
- Proposed Construction Compounds
- Proposed Roads and Widening
- Roads to be Upgraded
- Existing Site Roads
- EIAR Site Boundary

Interpolated Peat Thickness (m)

- 0 - 0.5
- 0.51 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- 5.01 - 6
- 6.01 - 6.47

Client: MKO	GDG GAVIN & DOHERTY GEOSOLUTIONS	
Project: Kilgarvan Wind Farm Repowering		
Map title: Interpolated Peat Thickness (1 of 3)		
File: 22022-GDG-03-IPT-MP-C-19		
Sheet size: A3	CRS: 2157	Authored: CE
Date: 06/12/2023	Source: GDG	Checked: SC

Figure A-1 2: Interpolated Peat Thickness (1 of 3).



Legend

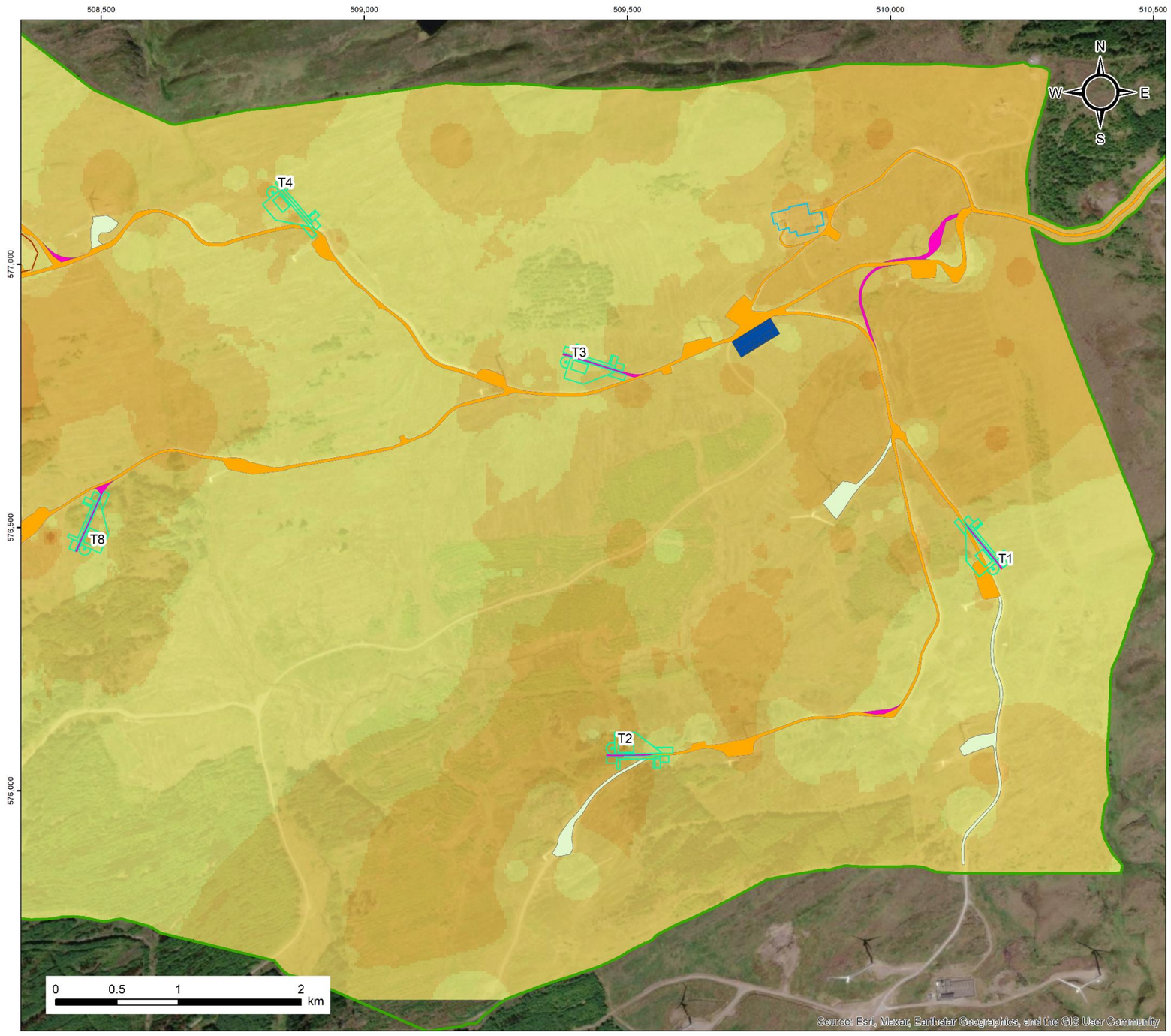
- Turbine Layout
- Met Mast Location
- Proposed Hardstands
- Proposed Extension to Existing Borrow Pit
- Proposed Construction Compounds
- Proposed Roads and Widening
- Roads to be Upgraded
- Existing Site Roads
- EIAR Site Boundary

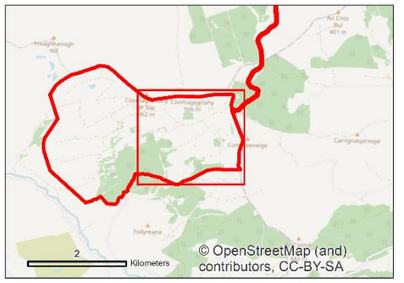
Interpolated Peat Thickness (m)

- 0 - 0.5
- 0.51 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- 5.01 - 6
- 6.01 - 6.47

Client: MKO / GDG GAVIN & DOHERTY GEOSOLUTIONS		
Project: Kilgarvan Wind Farm Repowering		
Map title: Interpolated Peat Thickness (2 of 3)		
File: 22022-GDG-03-IPT-MP-C-20		
Sheet size: A3	CRS: 2157	Authored: CE
Date: 06/12/2023	Source: GDG	Checked: SC

Figure A-1-3: Interpolated Peat Thickness (2 of t).





Legend

- Turbine Layout
- Proposed Hardstands
- As Built Substation
- Proposed Extension to Existing Borrow Pit
- Proposed Construction Compounds
- Proposed Roads and Widening
- Roads to be Upgraded
- Existing Site Roads
- EIAR Site Boundary

Interpolated Peat Thickness (m)

- 0 - 0.5
- 0.51 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4

Client: MKO / GDG GAVIN & DOHERTY GEOSOLUTIONS		
Project: Kilgarvan Wind Farm Repowering		
Map title: Interpolated Peat Thickness (3 of 3)		
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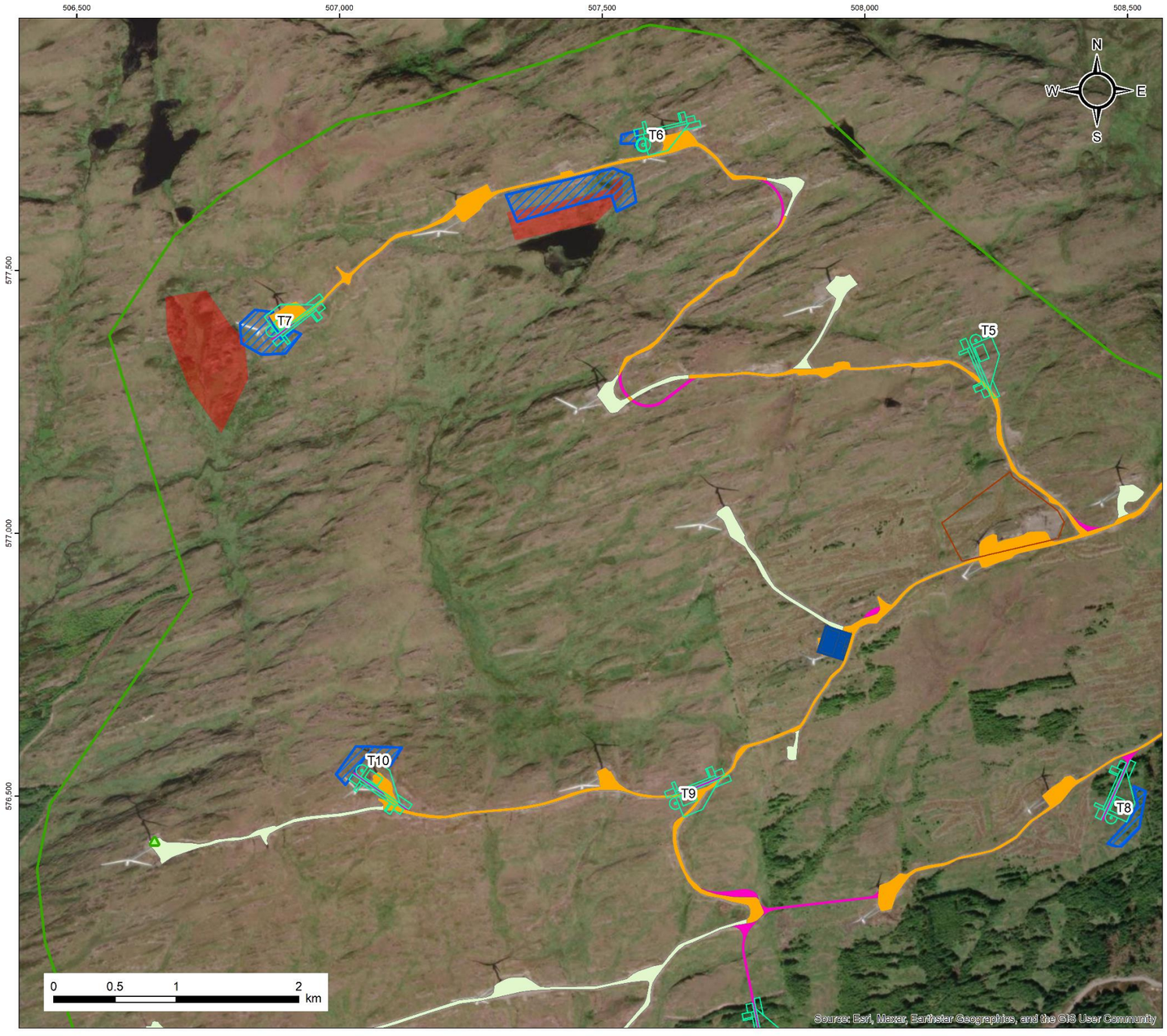
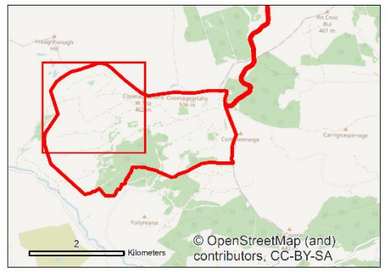
Figure A-1-4: Interpolated Peat Thickness (3 of 3).

A.2 Safety Buffer and Peat Stockpile Restriction Map





Legend

- Met Mast Location
- Proposed Hardstands
- Proposed Extension to Existing Borrow Pit
- Proposed Construction Compounds
- Proposed Roads and Widening
- Roads to be Upgraded
- Existing Site Roads
- EIAR Site Boundary
- Peat Stockpile Restriction Areas (GDG)
- Safety Buffer Zones (GDG)

Client: MKO / GDG GAVIN & DOHERTY GEOSOLUTIONS		
Project: Kilgarvan Wind Farm Repowering		
Map title: Safety Buffer Areas and Peat Stockpile Restriction Areas (1 of 3)		
File: 22022-GDG-03-SBA-MP-C-34		
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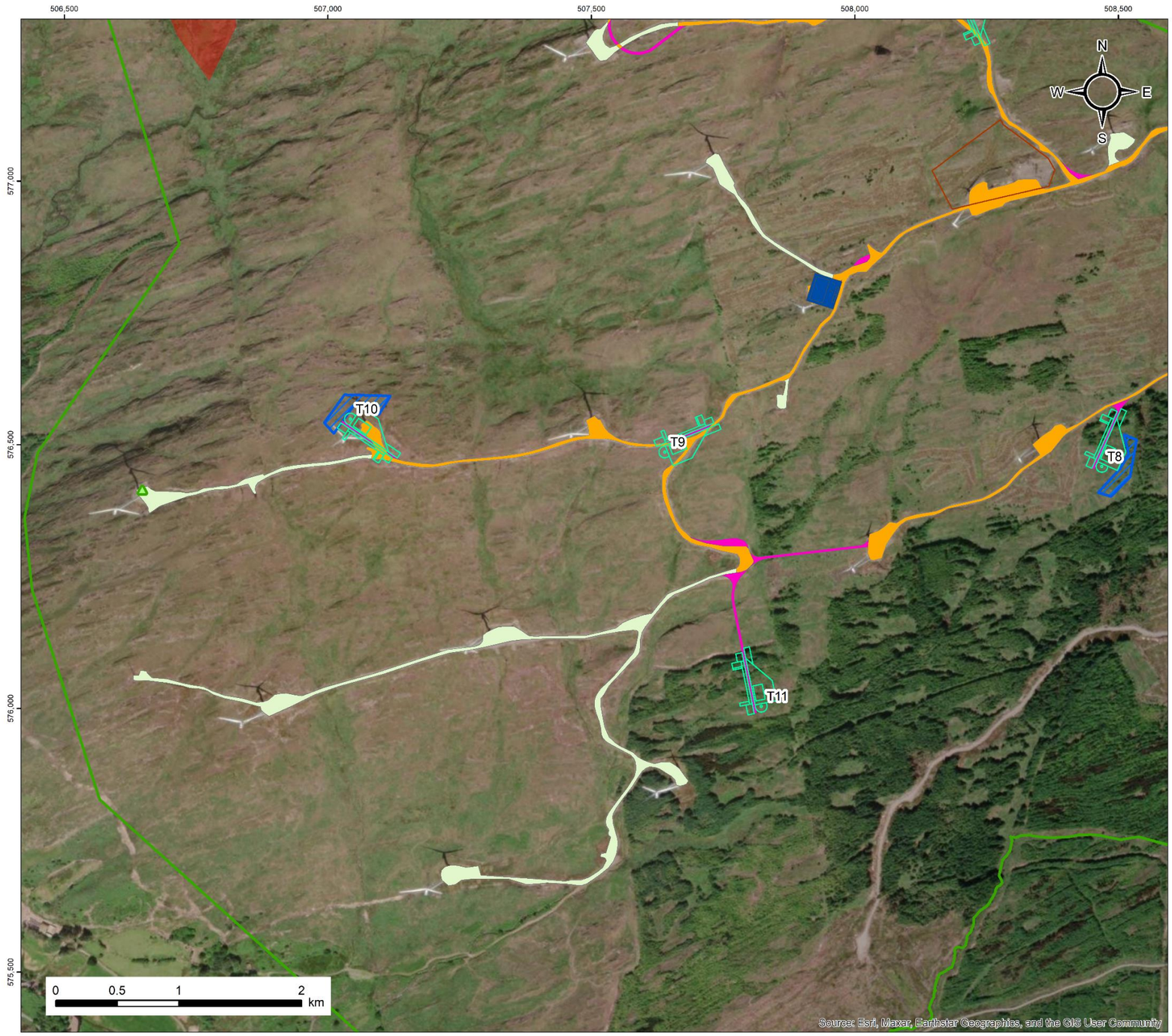
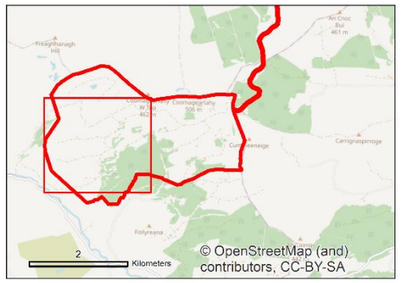
Date: 06/12/2023	Source: GDG	Checked: SC

Figure A-2-1: Safety buffers and peat stockpile restriction zones (1 of 3).





Legend

- Met Mast Location
- Proposed Hardstands
- Proposed Extension to Existing Borrow Pit
- Proposed Construction Compounds
- Proposed Roads and Widening
- Roads to be Upgraded
- Existing Site Roads
- EIAR Site Boundary
- Peat Stockpile Restriction Areas (GDG)
- Safety Buffer Zones (GDG)

Client: MKO	GDG GAVIN & DOHERTY GEOSOLUTIONS	
Project: Kilgarvan Wind Farm Repowering		
Map title: Safety Buffer Areas and Peat Stockpile Restriction Areas (2 of 3)		
File: 22022-GDG-03-SBA-MP-C-35		
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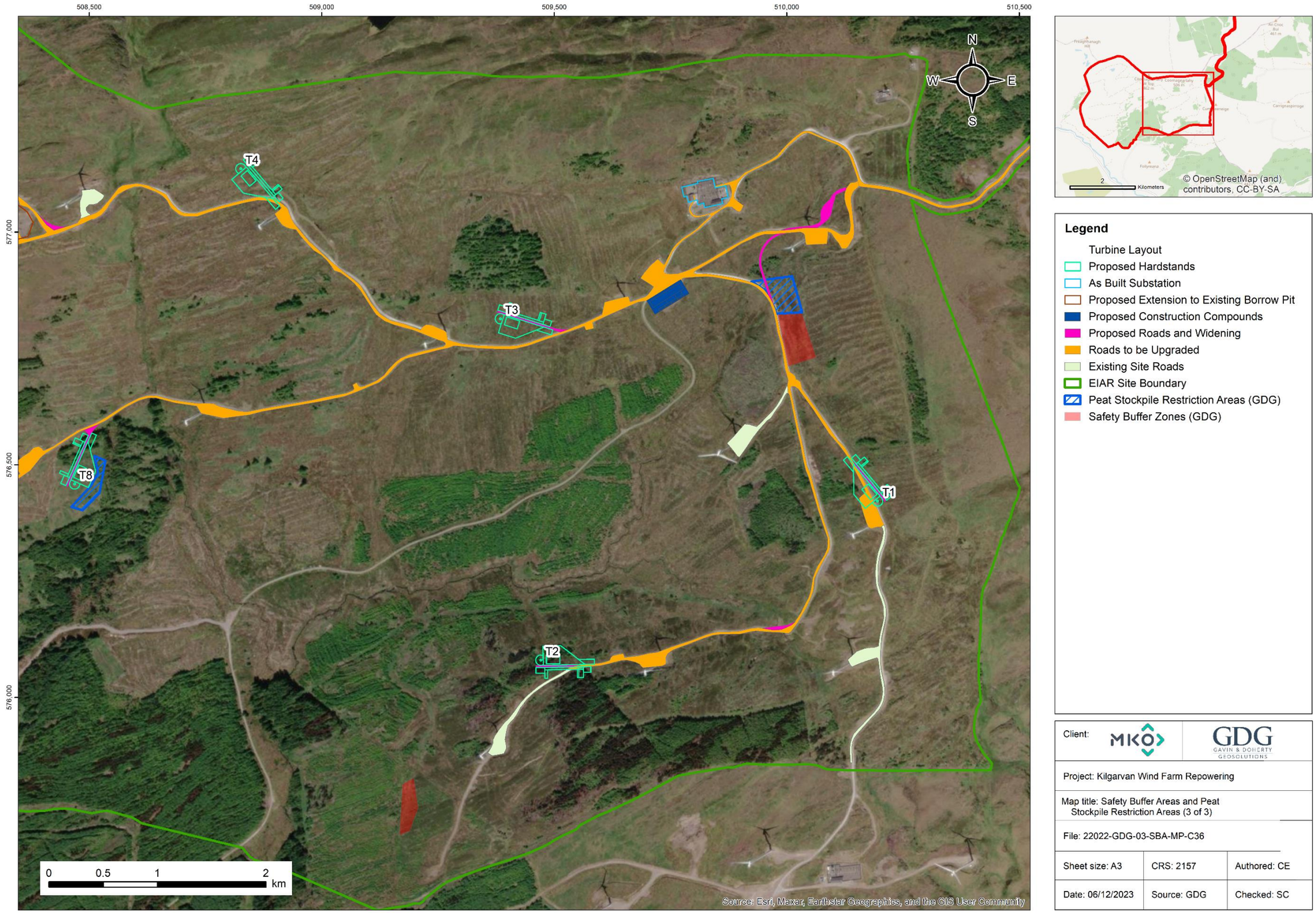
Date: 06/12/2023	Source: GDG	Checked: SC

Figure A-2-2: Safety buffers and peat stockpile restriction zones (2 of 3).



Legend

- Turbine Layout
- Proposed Hardstands
- As Built Substation
- Proposed Extension to Existing Borrow Pit
- Proposed Construction Compounds
- Proposed Roads and Widening
- Roads to be Upgraded
- Existing Site Roads
- EIAR Site Boundary
- Peat Stockpile Restriction Areas (GDG)
- Safety Buffer Zones (GDG)

Client: MKO / GDG		
Project: Kilgarvan Wind Farm Repowering		
Map title: Safety Buffer Areas and Peat Stockpile Restriction Areas (3 of 3)		
File: 22022-GDG-03-SBA-MP-C36		
Sheet size: A3	CRS: 2157	Authored: CE
Date: 06/12/2023	Source: GDG	Checked: SC

Figure A-2-3: Safety buffers and peat stockpile restriction zones (3 of 3).

A.3 Road Construction Types

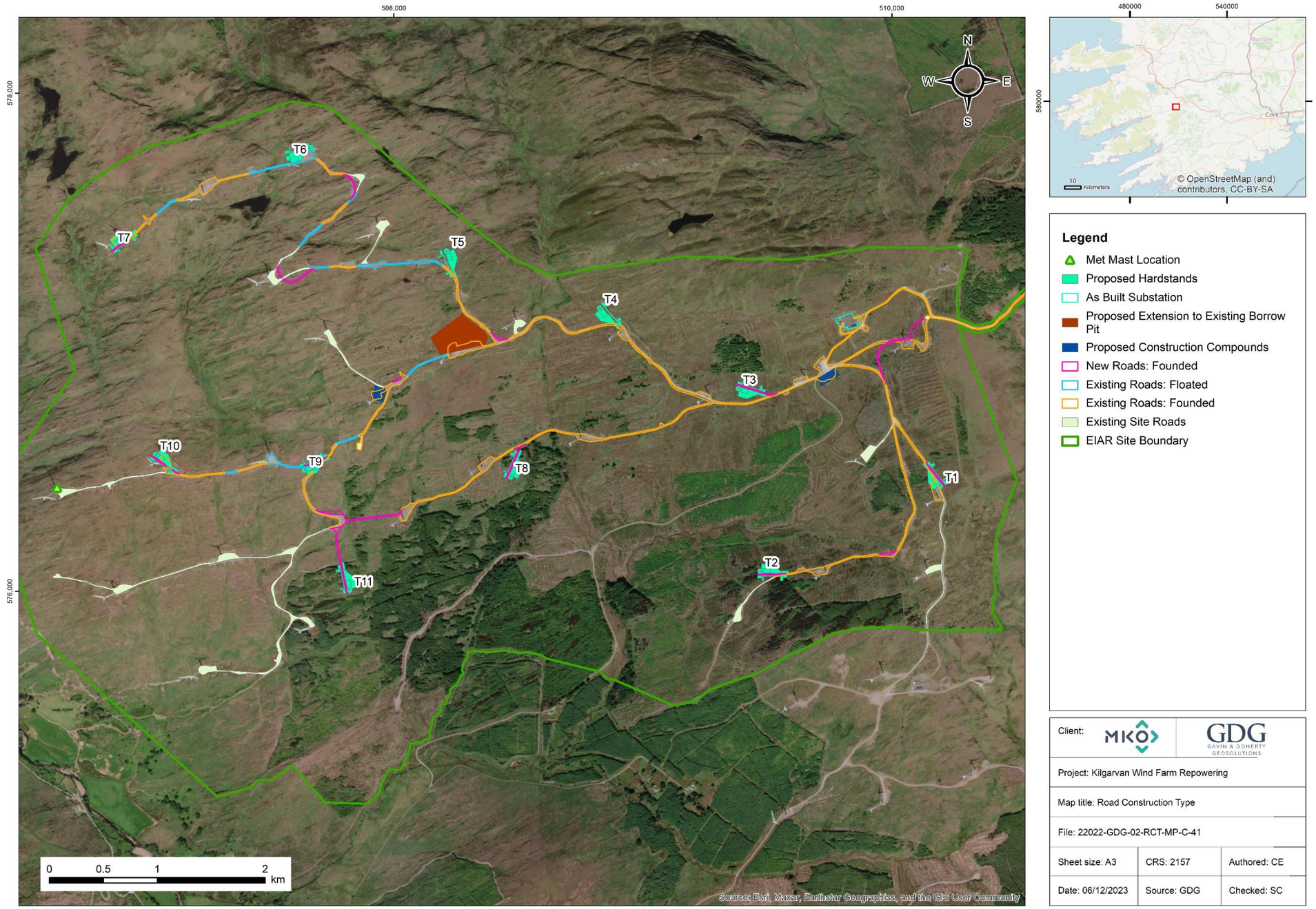
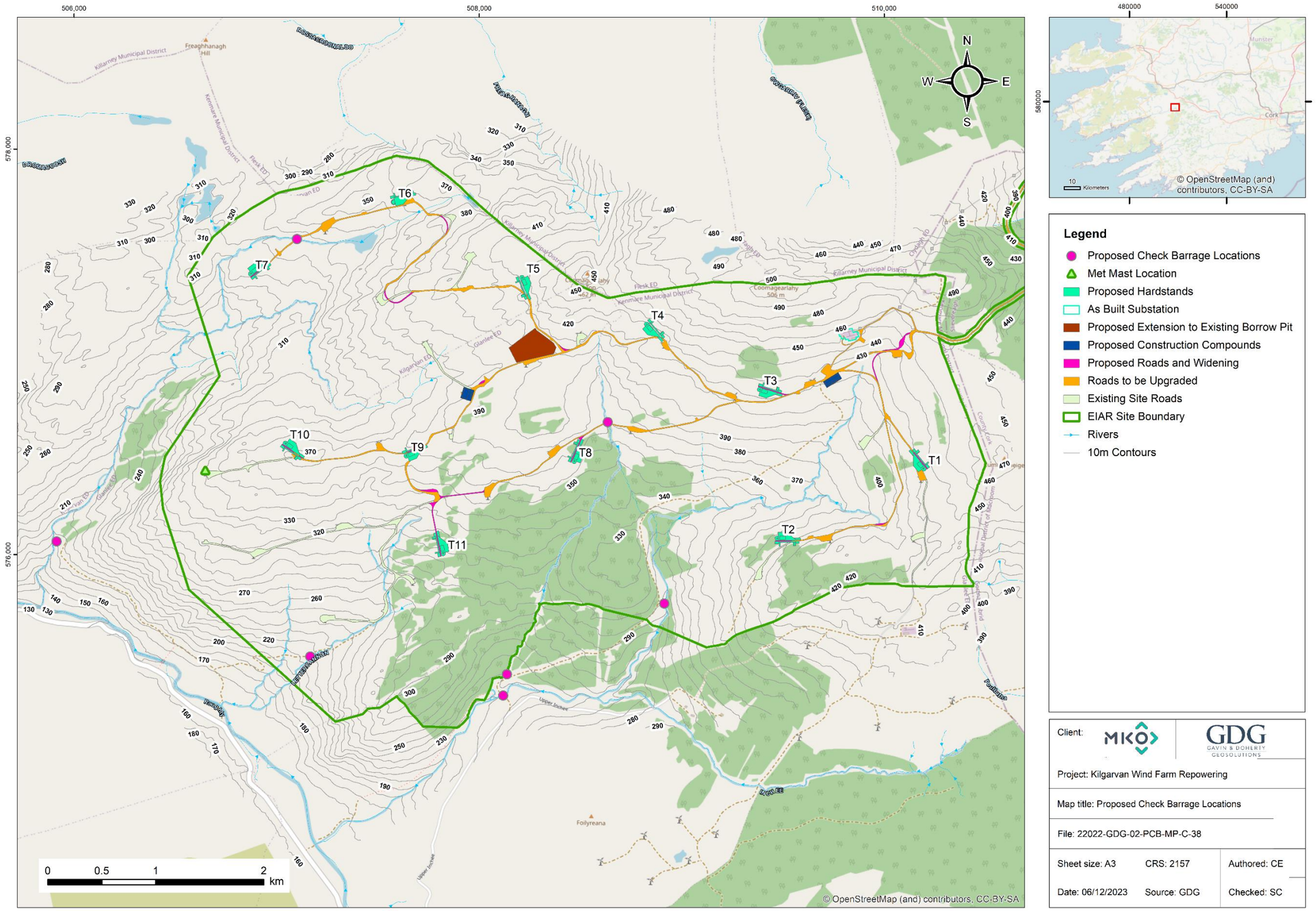


Figure A-3-1: Proposed road construction types.

A.4 PROPOSED CHECK BARRAGE LOCATIONS



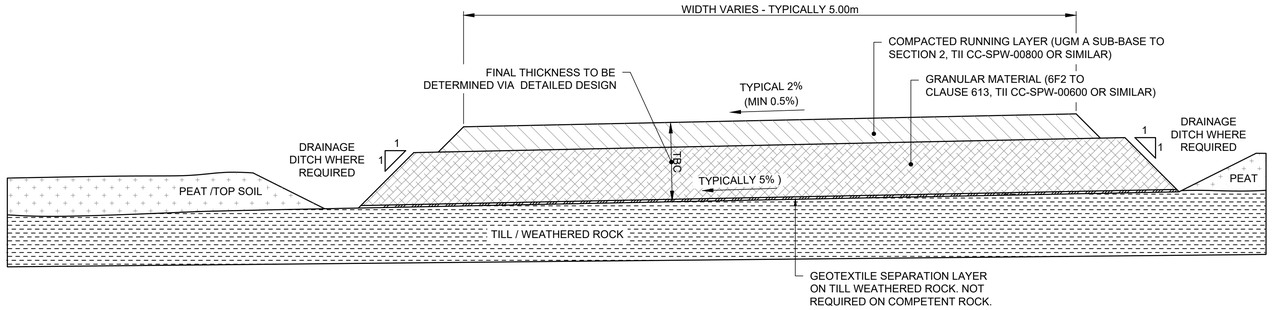
Legend

- Proposed Check Barrage Locations
- Met Mast Location
- Proposed Hardstands
- As Built Substation
- Proposed Extension to Existing Borrow Pit
- Proposed Construction Compounds
- Proposed Roads and Widening
- Roads to be Upgraded
- Existing Site Roads
- EIAR Site Boundary
- Rivers
- 10m Contours

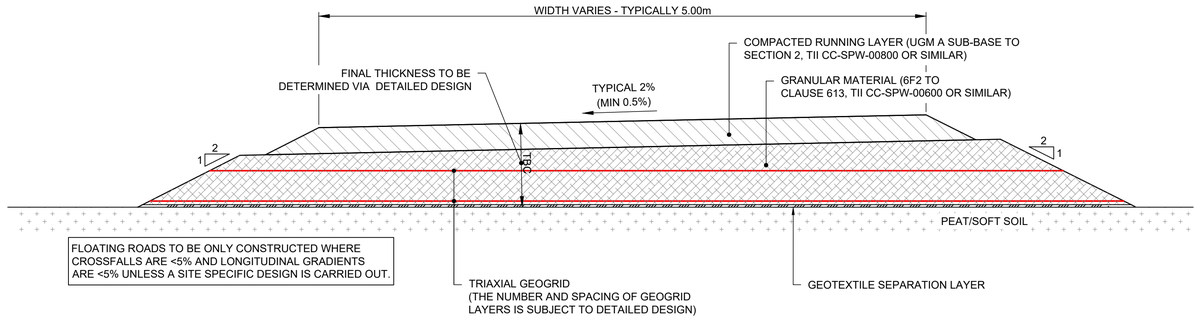
Client: MKO	GDG GAVIN & DOHERTY GEOSOLUTIONS	
Project: Kilgarvan Wind Farm Repowering		
Map title: Proposed Check Barrage Locations		
File: 22022-GDG-02-PCB-MP-C-38		
Sheet size: A3	CRS: 2157	Authored: CE
Date: 06/12/2023	Source: GDG	Checked: SC

Figure A-4- 1: Proposed Check barrage Locations.

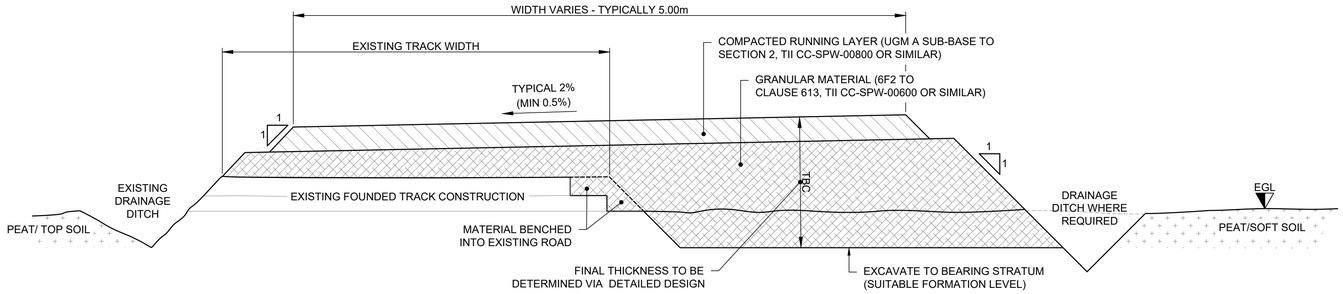
Appendix B ROAD CONSTRUCTION DETAILS



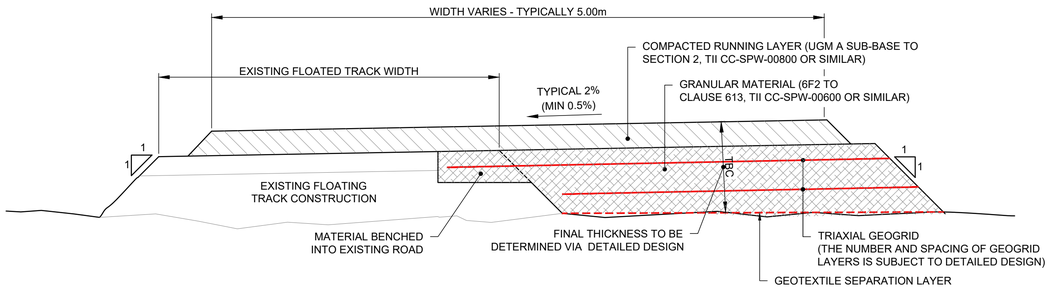
TYPICAL DETAIL A - SECTION THROUGH NEW FOUNDED ACCESS TRACK



TYPICAL DETAIL B - SECTION THROUGH NEW FLOATED ACCESS TRACK



TYPICAL DETAIL C - WIDENING OF EXISTING FOUNDED TRACK



TYPICAL DETAIL D - WIDENING OF EXISTING FLOATING TRACK

NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. DO NOT SCALE FROM THIS DRAWING.
3. THE STRENGTH OF THE SUBFORMATION SOILS TO BE ASSESSED BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION / PLACEMENT OF FILL.
4. DRAINAGE TO BE PROVIDED IN-LINE WITH DRAINAGE STRATEGY.
5. DRAWING REPRESENTS INDICATIVE DESIGN FOR PLANNING ONLY, **NOT FOR CONSTRUCTION**.

REV: FI -00	DATE: 12/01/22	DRAWN BY: R.R.	CHECKED BY: S.C
DESCRIPTION:	ISSUED FOR INFORMATION		

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ISSUED AS: FOR INFORMATION

CLIENT: MKO

PROJECT TITLE: KILGARVAN

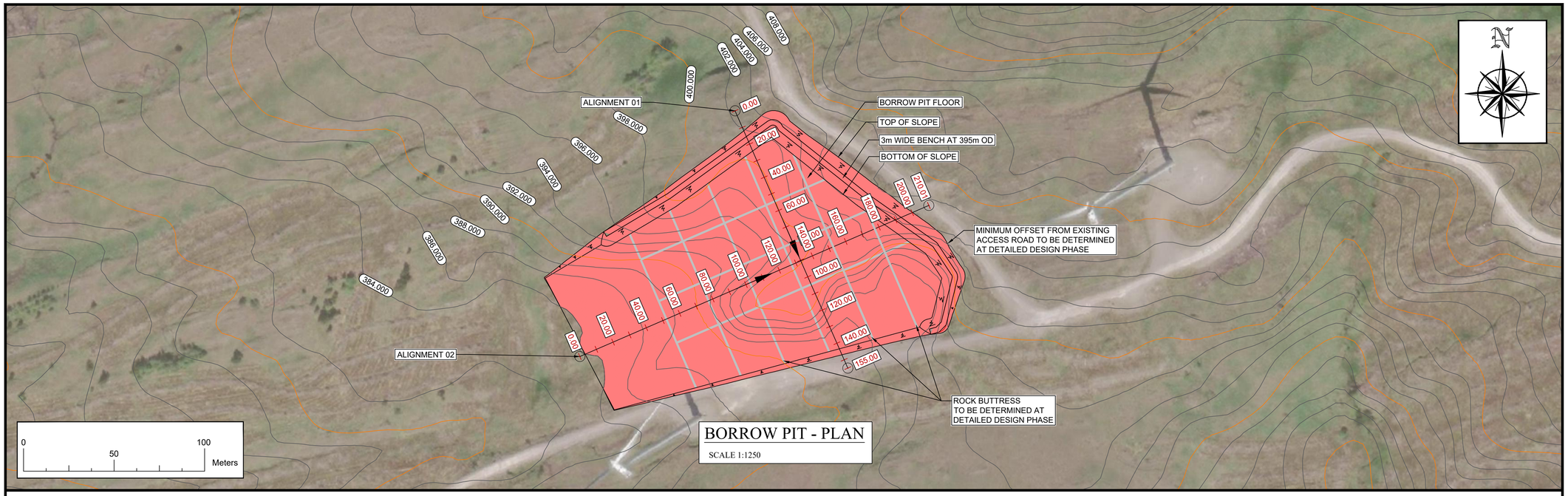
DRAWING No: 22022-GDG-ZZ-XX-DR-C-0010

Revision: -FI -00

DRAWING TITLE: CROSS SECTION THROUGH GENERAL ACCESS TRACK DETAILS

SCALE: 1:25	SHEET SIZE: A1	DATE: 12/01/2023
DRAWN BY: R.R.	CHECKED BY: S.C	APPROVED BY: P.Q.

Appendix C Borrow Pit Details

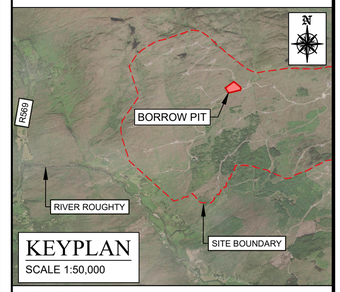


BORROW PIT - PLAN

SCALE 1:1250

NOTES:

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED
2. USE DIMENSIONS ON DRAWINGS (DO NOT SCALE FROM DRAWINGS).
3. EXISTING GROUND LEVEL ARE BASED ON DTM 5m BLUESKY 2018 CONTOURS 2m.
4. PLAN SHOWS BORROW PIT EXCAVATION ONLY.
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS DRAWINGS AND SPECIFICATIONS.
6. THE OUTLINE AND CROSS SECTIONS ARE INDICATIVE AND ARE SUBJECT TO DETAILED DESIGN AND SLOPE STABILITY ASSESSMENT.
7. ENGINEERED ROCK BUTTRESS MAY BE LEFT IN-SITU TO RESTRAIN CELLS OF PLACED PEAT AND OVERBURDEN.
8. EXCAVATION SHOULD BE OPTIMISED TO AVOID AREAS OF DEEPER PEAT.
9. IN-SITU ROCK SLOPE SHALL BE FORMED AT STABLE INCLINATIONS TO SUIT LOCAL ROCK CONDITIONS AND SUBJECT TO DETAILED DESIGN.
10. GEOGRID TO BE PLACED TO STRENGTHEN SURFACE OF PLACED PEAT & SPOIL, AS REQUIRED.
11. THE LOCATION OF THE ROCK BUTTRESSES SHOWN FOR THE BORROW AREAS ARE INDICATIVE ONLY AND SUBJECT TO DETILED DESIGN.
12. THE EXCAVATABILITY OF THE ROCK AND DEPTH TO TOP OF ROCK WITHIN THE BORROW PIT WILL NEED TO BE DETERMINED FROM FURTHER CONFIRMATORY GROUND INVESTIGATION.
13. REINSTATEMENT OF PEAT TO BE CARRIED OUT IN LINE WITH 22022-R-02-PMP-00 PEAT MANAGEMENT PLAN .
14. EXCAVATION TECHNIQUES TO BE CONFIRMED FOLLOWING GROUND INVESTIGATION.
15. GEOGRID REINFORCEMENT TO BE LAID NEAR SURFACE TO MAXIMISE STABILITY FOR SURFACE LAYER.
16. BORROW PIT ACCESS AND DRAINAGE PROVISIONS (UP SLOPE CUT OFF DRAINS ETC.) TO BE DETERMINED THROUGH DETAILED DESIGN.



KEYPLAN

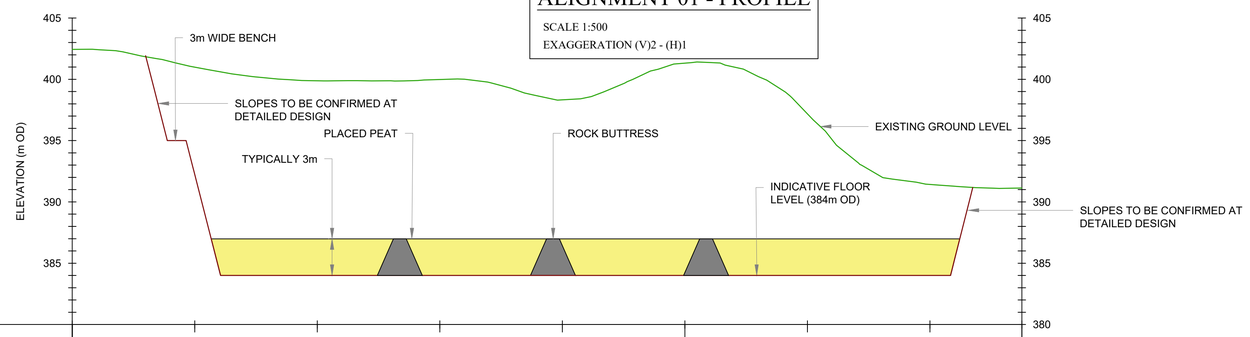
SCALE 1:50,000

LEGEND:

BORROW PIT CUT AREA
(ESTIMATED VOLUME = 207,379 m³)

ALIGNMENT 01 - PROFILE

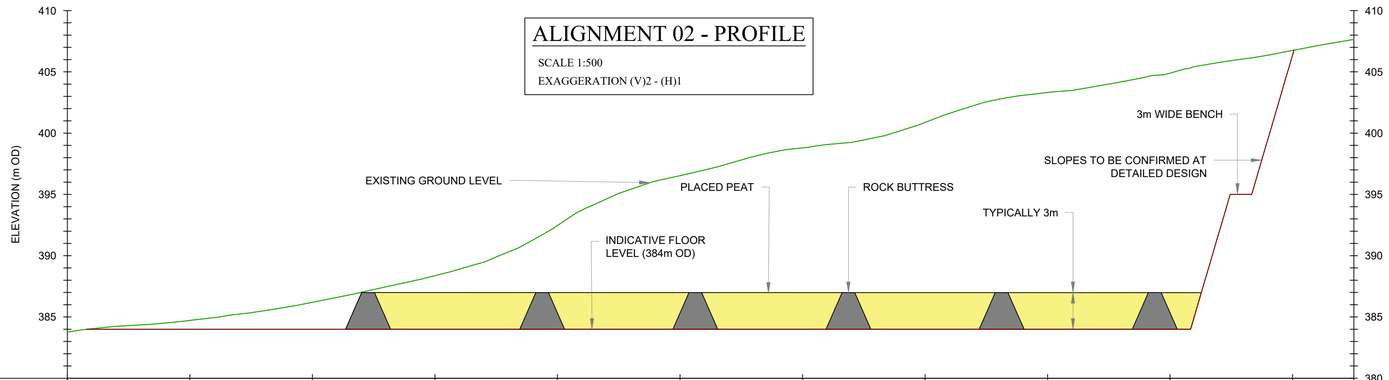
SCALE 1:500
EXAGGERATION (V)2 - (H)1



CHAINAGE (m)	0+00.00	0+20.00	0+40.00	0+60.00	0+80.00	1+00.00	1+20.00	1+40.00	1+55.00
EXISTING LEVELS (m OD)	402.437	400.986	399.881	399.985	398.322	401.318	397.182	391.424	391.134

ALIGNMENT 02 - PROFILE

SCALE 1:500
EXAGGERATION (V)2 - (H)1



CHAINAGE (m)	0+00.00	0+20.00	0+40.00	0+60.00	0+80.00	1+00.00	1+20.00	1+40.00	1+60.00	1+80.00	2+00.00	2+10.00
EXISTING LEVELS (m OD)	383.762	384.719	386.196	388.371	392.464	396.536	398.796	400.872	403.320	404.896	406.746	407.638

INDICATIVE DESIGN ONLY, ELEMENTS OF DESIGN MAY NEED TO BE REVISED OR FURTHER DEVELOPED. PLEASE CHECK WITH DESIGN ENGINEER INITIALED IN TITLEBLOCK PRIOR TO REFERRING TO INFORMATION WITHIN THIS DRAWING.

REV:	FI -01	DATE:	30/11/23	DRAWN BY:	E.F.C.	CHECKED BY:	C.E.
DESCRIPTION:	UPDATED BORROW PIT LEVELS AND SLOPES						
REV:	FI -00	DATE:	24/10/22	DRAWN BY:	J.F.G	CHECKED BY:	S.C.
DESCRIPTION:	ISSUED FOR INFORMATION						

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ISSUED AS: FOR INFORMATION

CLIENT: MKO

PROJECT TITLE: KILGARVAN WIND FARM REPOWERING

DRAWING No: 22022-GDG-ZZ-XX-DR-C-0001

Revision: -FI -01

DRAWING TITLE: BORROW PIT PLAN AND SECTIONS

SCALE:	SHOWN	SHEET SIZE:	A1	DATE:	24/10/2022
DRAWN BY:	J.F.G	CHECKED BY:	S.C.	APPROVED BY:	J.O'D

GLOBAL PROJECT REACH

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