APPENDIX 4-2

PEAT AND SPOIL MANAGEMENT PLAN

FEHILY TIMONEY

DESIGNING AND DELIVERING A SUSTAINABLE FUTURE

PEAT AND SOIL MANAGEMENT PLAN

Curraglass Wind Farm

Prepared for:
MKO

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PEAT AND SOIL MANAGEMENT PLAN - CURRAGLASS WIND FARM

REVISION CONTROL TABLE, CLIENT, KEYWORDS AND ABSTRACT

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Abstract: Fehily Timoney and Company (FT) were engaged by MKO Ltd. to compile a Peat and Spoil Management Plan (PSMP) for the proposed Curraglass Wind Farm. The purpose of this report is to provide a Peat and Spoil Management Plan for the construction phase of the Proposed Development. The report describes how peat and spoil which will be excavated from infrastructure locations such as turbine bases and roads will be handled and placed/reinstated onsite. The report also provides construction details for the types of roads which will be put in place at The Site and proposed peat and spoil placement/reinstatement areas which will be developed at The Site.

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1. INTRODUCTION

1.1 Fehily Timoney and Company

Fehily Timoney and Company (FT) is an Irish engineering, environmental science and planning consultancy with offices in Cork, Dublin and Carlow. The practice was established in 1990 and currently has c.100 members of staff, including engineers, scientists, planners and technical support staff. We deliver projects in Ireland and internationally in our core competency areas of Waste Management, Environment and Energy, Civils Infrastructure, Planning and GIS and Data Management.

This Report was written by Ian Higgins (FT Principal Geotechnical Engineer, MSc in Geotechnical Engineering). Ian is a Technical Director with Fehily Timoney and has over 25 years' experience in geotechnical engineering.

1.2 Project Description

Fehily Timoney and Company (FT) was engaged in October 2024 by MKO Ltd. to compile a Peat and Spoil Management Plan for the Proposed Curraglass Wind Farm (the 'Proposed Development').

The Proposed Development is located approximately 6.8km northeast of Kealkill and 3.8km southwest of the village of Ballingeary, Co. Cork.

The Site comprises predominantly forestry and includes access roads and hardstands associated with the Kealkill Wind Farm. The surrounding landscape to the south and north is rolling hillsides with land-use comprising forestry and blanket peatland.

1.3 Purpose

The purpose of this report is to provide a peat and spoil management plan with particular reference to peat stability for the construction phase of the Proposed Development. The report describes how peat and spoil which will be excavated from infrastructure locations such as turbine bases and roads will be handled and placed/reinstated onsite. The report also provides construction details for the types of roads which will be put in place at the Proposed Development and proposed peat and spoil placement/reinstatement areas which will be developed at the Proposed Development .

This peat and spoil management plan also includes a monitoring programme which will be implemented during the construction phase of the Proposed Development and a contingency plan should peat instability/failure occur during construction.

As for all construction projects, a detailed engineering construction design must be carried out by the appointed construction stage designer prior to any construction work commencing on site. This must take account of the consented project details and any conditions imposed by that consent. This must include a detailed peat stability assessment to account for any changes in the environment which may have occurred in the time leading up to the commencement of construction and a peat and spoil management plan to allow for the most appropriate geotechnical and environmental led solutions to be developed for the management of peat and spoil.

As work is carried out on site the contents of the peat and spoil management plan and peat stability monitoring programme will be implemented in full and updated (if required) in the Construction & Environmental Management Plan (CEMP) for the construction phase.

This peat and spoil management plan contains some drainage guidelines for construction works and for management of peat on site. It should be noted that the control of water quality and drainage measures for the Proposed Development site is outlined in detail in Chapter 9 of the Environmental Impact Assessment Report (EIAR).

1.4 Peat Instability Definition

Peat instability in this report is defined as a mass movement of a body of peat that would have a significant adverse impact on the surrounding environment. Peat instability excludes localised movement of peat that would occur below a floating access road (not proposed as part of this development), creep movement or localised erosion type events.

Adherence to the peat and spoil management plan should reasonably minimise the potential for all such peat movements. However, it is noted that due to the soft ground nature of the peat terrain it is not possible to completely avoid such localised peat movement as described above.

1.5 Relevant Guidance

The relevant guidance used and referred to throughout this report includes;

- Good Practice during Windfarm Construction (NatureScot, 2024);
- Guidance on Developments on Peatland: Site Surveys (Scottish Government, Scottish Natural Heritage and SEPA, 2017;
- Munro, R, 2004. Dealing with bearing capacity problems on low volume roads constructed on peat. Roadex II Northern Periphery;
- Scottish Natural Heritage/Forestry Commission Scotland, 2010. Floating Roads on Peat;
- Scottish Natural Heritage, 2015. Constructed Tracks in the Scottish Uplands. Scottish Natural Heritage.

2. CONSTRUCTION ACTIVITIES COVERED BY PEAT AND SPOIL MANAGEMENT PLAN

2.1 Construction Activities

For the construction phase of the Proposed Development the activities that will generate peat and spoil are as follows:

(1) Upgrade of existing access tracks (as excavate and replace tracks)
(2) Construction of new excavated roads through peat
(3) Excavation and placement of arisings
(4) Excavations in peat and overburden for borrow pits
(5) Excavations in peat for turbine bases, hardstands and other infrastructure foundations
(6) Excavations for underground cables

Peat and spoil management of the above construction activities are covered individually in this report.

2.2 Road Construction Types

To provide access within the Proposed Development and to connect the proposed turbines and associated infrastructure, existing tracks will need to be upgraded and new access roads will need to be constructed. The road construction preliminary design has taken into account the following key factors:

(1) Buildability considerations
(2) Maximising use of existing infrastructure
(3) Minimising excavation arisings
(4) Peat stability
(5) Serviceability requirements for construction and wind turbine delivery and maintenance vehicles
(6) Requirement to minimise disruption to peat hydrology

Whilst the above key factors are used to determine the road design the actual construction technique employed for a particular length of road will be determined by the prevailing ground conditions encountered along that length of road.

The general road construction techniques to be considered are given in Table 2-1.

This report describes the most suitable type of road construction for each section of access road based on the ground/site conditions recorded during the site walkovers. It should be noted that this report does not include a detailed design for the access roads for the Proposed Development. This report includes the most suitable type of road construction envisaged for each section of access road based on the ground/site conditions recorded during the site walkovers and intrusive site investigation works. Where floating roads are proposed in this report, a proposed methodology is presented, however a detailed design will be carried out prior to construction commencing on The Site. These measures are based on available guidance, including 'Constructed Tracks in the Scottish Uplands (Scottish Natural Heritage, 2nd Edition ,2015), Floating Roads on Peat (Scottish Natural Heritage/Forestry Commission Scotland, 2010) and 'Dealing with Bearing Capacity Problems on Low Volume Roads Constructed on Peat (ROADEX II, 2004).

Table 2.1: General Road Construction Techniques

Construction Method	Typical Site Conditions			Comment
	Construction Type	Typical Peat Depth (m)	Typical Slope Inclination (degs)	
Upgrade of existing founded access roads	Type A	< 1.0	Varies	Upgrade existing excavated access roads to the required width and finished with a layer of selected granular fill – Drawing P24-263-0600-0006.
Upgrade of existing floated access road	Type B	2.5 to 5.5m	Varies	Upgrade existing floated access road (200m length) to the required width and finished with a layer of selected granular fill – Drawing P24-263-0600-0007.
Construction of new excavated roads through peat	Type C	< 1.0m	Varies	New access road construction technique envisaged for various locations on site – Drawing P24-263-0600-0008.

Further details on access road construction types A to C are given in Sections 3 and 4 of the report.

3. UPGRADE OF EXISTING ACCESS ROADS – TYPE A AND B

Up to 2.6km of existing access track requiring upgrade is present across the Proposed Development. These existing access tracks have been in operation for a significant number of years. The existing access roads appear to have been constructed using a founded construction technique, with the exception of one area of floated construction on the main entrance road. Upgrade works will involve the widening of the existing access road, where required. The proposed locations for upgrade of the existing access roads on site are shown in Drawing P24-263-0600-0005 and details are shown in Drawing P24-263-0600-0006 and 0007.

3.1 Upgrading Existing Access Tracks Construction Methodology

This methodology includes procedures that will be included in the construction to minimise any adverse impact on peat stability. The methodology is not intended to cover all aspects of construction such as drainage and environmental considerations, which are discussed separately in Chapter 4 of the EIAR.

(1) Access road construction will be to the line and level requirements as per design/planning conditions.

(2) For upgrading of all existing access roads (Type A – Drawing P24-263-0600-0006) the following will apply:

  (a) Excavation of the access road will take place to a competent stratum beneath the peat, removing all peat and soft clay and backfilled with suitable granular fill.

  (b) Benching of the excavation will be required between the existing section of access road and the widened section of access road where the depth of excavation exceeds 500mm.

  (c) For a founded access road, the surface of the existing access road will be overlaid with up to 250mm of selected granular fill.

  (d) Access roads will be finished with a layer of capping across the full width of the road.

  (e) A layer of geogrid/geotextile may be required at the surface of the existing access road where the existing tracks shows signs of rutting, etc.

  (f) For excavations in peat, side slopes will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction, as appropriate. Where areas of weaker peat are encountered then slacker slopes will be required to ensure stability.

(3) For upgrading of existing access tracks constructed using a floated construction technique (Type B – Drawing P24-263-0600-0007) the following will apply:

  (a) Prior to commencing floating road construction movement monitoring posts will be installed in areas where the peat depth is greater than 2m.

  (b) Construction of road will be in accordance with appropriate design from the designer.

  (c) The surface of the existing access track should be graded/tidied up prior to the placement any geogrid/geotextile, where necessary (to prevent damaging the geogrid/geotextile).

  (d) Where granular fill has been used in the existing access track make-up, a layer of geogrid should be placed on top of the existing access track, extending to the full width of the proposed road.

  (e) The geogrid will be overlaid with up to 1000mm of selected granular fill on the widened sections of the access road at entrance to TCC (floating road alignment).

  (f) Additional geogrid and granular fill may be required in certain sections of the works, such as where excessive rutting is noted in the existing track (to be confirmed by the designer).

(g) Stone delivered to the floating road construction will be end-tipped onto the constructed floating road. Direct tipping of stone onto the peat will not be carried out.

(h) To avoid excessive impact loading on the peat due to concentrated end-tipping all stone delivered to the floating road will be tipped over at least a 10m length of constructed floating road.

(i) Following the detailed design of the floated access roads it may be deemed necessary to include pressure berms either side of the access road in some of the deeper peat areas. The inclusion of a 2 to 5m wide pressure berm (typically 0.5m in height) either side of the access road will reduce the likelihood of potential bearing failures beneath the access road.

(j) Following end-tipping suitable machinery will be employed to spread and place the tipped stone over the base geogrid along the line of the road.

(4) At transitions between upgraded floating and existing/upgraded excavated roads a length of about 10m shall have all peat excavated and replaced with suitable fill, with the geogrid extended into this fill. The surface of this fill shall be graded to accommodate wind turbine construction and delivery traffic.

(5) The finished road width will have a minimum running width of 5m.

(6) On side long sloping ground any road widening works required will be done on the upslope side of the existing access road.

(7) A final surface layer shall be placed over the existing access track, as per design requirements, to provide a road profile and graded to accommodate wind turbine construction and delivery traffic.

(8) The construction of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis (by the Site Manager/Ecological Clerk of Works/Project Geotechnical Engineer) during the works, particularly before/following trafficking by heavy vehicular loads.

4. CONSTRUCTION OF NEW EXCAVATED ROADS THROUGH PEAT – TYPE C

The excavation of peat and spoil and founding of access roads on competent stratum (below the peat) for new access roads will be carried out at various locations across the Proposed Development. The proposed locations for new excavated access roads are shown in Drawing P24-263-0600-005 and details are shown in Drawing P24-263-0600-008.

Excavate and replace type access roads are the conventional method for construction of access roads on peatland sites and the preferred construction technique for this site provided sufficient placement/reinstatement capacity is available on site for the excavated peat. This construction method will also be used to replace existing floating roads within The Site.

4.1 New Excavated Road Construction Methodology

This methodology includes procedures that will be adopted in the construction to minimise any adverse impact on peat stability. The methodology is not intended to cover all aspects of construction such as drainage and environmental considerations, which are discussed in Chapter 4 and 9 of the EIAR.

(1) Prior to commencing the construction of the excavated roads, movement monitoring posts will be installed in areas identified within the peat stability risk assessment (see Geotechnical & Peat Stability Assessment, FT, 2025) as requiring monitoring.

(2) Interceptor drains will be installed upslope of the access road alignment to divert any surface water away from the construction area.

(3) Excavation of roads will be to the line and level given in the design requirements. Excavation will take place to a competent stratum beneath the peat.

(4) Road construction will be carried out in sections of approximately 10m lengths i.e. no more than 10m of access road will be excavated without replacement with stone fill.

(5) Excavation of materials with respect to control of peat stability:

   (a) Acrotelm (to about 0.3 to 0.4m of peat) will be required for landscaping and will be stripped and temporarily stockpiled for re-use as required. Acrotelm stripping will be undertaken prior to main excavations.

   (b) Where possible, the acrotelm will be placed with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation.

   (c) All catotelm peat (peat below about 0.3 to 0.4m depth, where present) will be transported immediately on excavation to the designated peat and spoil management areas or the borrow pit.

(6) Once excavated, non-catotelm peat will be temporarily stored in localised areas adjacent to excavations for roads and hardstands before being placed into the permanent peat storage area within the borrow pit, at designated peat and spoil management areas or reused for landscaping purposes. All designated peat and spoil management areas will be inspected by the Project Geotechnical Engineer before material is stored in the area. No material is to be sidecast or stored on the in-situ peat on the downslope side of the access roads.

(7) Excavation side slopes in peat will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction, as appropriate. Should areas of weaker peat be encountered then slacker slopes will be required. Battering of the side slopes of the excavations will be carried out as the excavation progresses.

(8) End-tipping of stone onto the road during the construction/upgrading of the access road will be carefully monitored to ensure that excessive impact loading, which may adversely affect the adjacent peat, is limited.

(9) The excavated access road will be constructed with an average of 750mm of selected granular fill. Granular fill to be placed and compacted in layers in accordance with the TII Specification for Road Works.

(10) Access roads will be finished with a layer of capping across the full width of the road.

(11) A layer of geogrid/geotextile may be required at the surface of the competent stratum, where this stratum is cohesive in nature.

(12) Where slopes of greater than 5 degrees are encountered along with relatively deep peat (i.e. greater than 1.5m) and where it is proposed to construct the access road perpendicular to the slope contours it is best practice to start construction at the bottom of the slope and work towards the top, where possible. This method avoids any unnecessary loading to the adjacent peat and greatly reduces any risk of peat instability.

(13) Where the above is not possible, a specific Risk Assessment Method Statement (RAMS) from the contractor will be produced, detailing how the downslope works will be undertaken, including that all plant would operate from the already constructed section of track, with no loading of the peat on the downslope slope and limiting the length of ground to be stripped/excavated at any one time. Movement monitoring posts (as described in the Peat & Spoil Management Plan, Section 8.1) will also be installed downslope of the works area to allow for ongoing monitoring during the construction works.

(14) A final surface layer will be placed over the excavated road and graded to accommodate wind turbine construction and delivery traffic.

5. EXCAVATION AND STORAGE OF PEAT AND SPOIL

5.1 Excavation and Storage of Arisings Methodology

This methodology includes procedures that are to be included in the construction phase to minimise any adverse impact on peat stability. The methodology is not intended to cover all aspects of construction such as drainage and environmental considerations, described in Chapter 4 of the EIAR.

(1) All excavated peat and spoil will be either temporarily stockpiled locally at turbine hardstands or transported immediately on excavation to the borrow pit or designated peat and spoil management areas (see Drawing P24-263-0600-0005). No material is to be sidecast or stored on the in-situ peat on the downslope side of the access roads/hardstands. No material is to be sidecast or stored on either side of the floating section of access road.

(2) Further details on the construction and reinstatement of the borrow pit are given in Section 5.4.

(3) Further details on the placement of excavated material to designated peat and spoil management areas are given in Section 6.5.

(4) Some of the peat, in particular the acrotelm (upper layer of the peat), excavated during construction will be used for landscaping purposes.

5.2 Summary of Peat and Spoil Volumes on Site

A summary of the excavated peat and spoil volumes calculated for the Proposed Development is given in Table 5-1.

Table 5.1: Summary of Excavated Peat and Spoil Volumes on Site

Infrastructure Element [1]	Proposed Dimensions	Peat Volume (m^3) [2]	Spoil (non-peat) Volume (m^3) (3) and (4)	Comment
3 no. Turbines and Hardstands	27m diameter excavation footprint for turbine foundation with 50 x 30m hardstand area (T01) and 50 x 35m hardstand area (T03 and T03).	3,000	25,000	
Access Roads	Assumed 5m running surface with 6m wide development footprint.	4,000	16,500	
Temporary Construction Compound	Hardstanding area of 40 x 20m.	500	-	

Infrastructure Element [1]	Proposed Dimensions	Peat Volume (m^3) [2]	Spoil (non-peat) Volume (m^3) [3] and [4]	Comment
Met Mast	Hardstanding area of 20 x 15m.	150	1,000	
Borrow Pit	90 x 75m.	3,000	4,000	
	Total =	**10,650m^3**	**46,500m^3**	**Total = 57,150m^3 (peat and spoil volume) [4]**

Note (1) The location of the infrastructure elements on site are shown on Drawing P24-263-0600-0005.

Note (2) A factor of 10% (bulking factor of 10%) has been applied to the excavated peat and spoil volumes to allow for expected increase in volume upon excavation and to allow for a variation in ground conditions across The Site.

Note (3) A proportion of the excavated spoil from the roads and hardstands will comprise weathered and intact bedrock which will be suitable for reuse in the proposed works. An allowance of 7,000m^3 of reusable material has been included in the storage requirements calculation.

Note (4) It should be noted that the excavated rock volume from the borrow pit is not included in the total volume quoted above in Table 5-1. The excavated rock volume will be re-used on site as part of the construction works for the development and hence will not require reinstatement on site.

5.3 Summary of Peat and Spoil Placement/Reinstatement Areas on Site

A summary of the designated peat and spoil management areas at the Proposed Development are given in Table 5-2.

Table 5.2: Summary of Designated Peat and Spoil Management Areas on The Site

Location [1]	Peat and Spoil Volume (m^3)	Comment
Borrow Pit	45,000	See Drawing P24-263-0600-0009 for further details
Reuse of material from road, turbine and hardstand excavations	7,000	Estimate based on ground investigation information
Landscaping [2]	10,900	It is estimated that 1,000m^3 of peat will be required for landscaping purposes and 500m^3 of spoil as ballast backfill to turbines at each of the 3 no. turbine locations. A further 6,400m^3 of material will be used to landscape the existing hardstand areas associated with the existing wind farm infrastructure.
Total =	**62,900m^3**	

Note (1) The location of the proposed borrow pit at The Site is shown on Drawing P24-263-0600-0005.

Note (2) Some of the acrotelm (upper layer of the peat) excavated during construction will be used for landscaping purposes.

5.4 Summary of Stone Volume Requirements

Table 5.3 below summarises the stone volume requirement for the Proposed Development, excluding the final blinding layer which will come from an external source.

Table 5.3: Summary of Stone Volume Requirements

Infrastructure Element (1)	Typical Dimensions	Stone Volume (m^3) (2)	Comment
3 no. Turbines and Hardstands	27m diameter excavation footprint for turbine foundation with 50 x 30m (T01) and 50 x 35m (T02 and T03) finished hardstand surface.	14,000	Hardstanding area and foundation footprint. Allowance included for mini-crane pads and blade finger hardstands associated with the main hardstand, plus allowance for side slopes in areas of fill.
Access Roads (including cabling)	Assumed 5m running surface with 6m wide development footprint. Typical stone depth of 0.5m.	20,000	Allowance includes for widening on bends, at junctions, laybys, and tie-ins to hardstands.
Meteorological Mast	10 x 10m foundation footprint and 30 x 30m hardstanding area.	280	-
Temporary Construction Compounds	Hardstanding area of 40 x 20m.	1,400	
Borrow Pit	1 no. borrow pit.	1,500	Borrow pit perimeter berm
	Total =	**37,180m^3**	

Notes

Note (1) A contingency factor of 15% has been applied to the volumes to allow for expected bulking upon excavation and to allow for a variation in ground conditions across The Site.

Note (2) It should be noted that the volumes given in Table 5-3 are subject to confirmatory design.

5.5 Construction and Reinstatement of Borrow Pit

The location of the proposed borrow pit is shown on Drawing P24-263-0600-0009. The peat depth within the development footprint of the borrow pit is between 0.1 and 0.5m. The peat is underlain by a slightly clayey gravelly Sand, with weathered bedrock (siltstone) at between 0.5m and 1.0m bgl. The borrow pit location was selected based on the shallow depth to bedrock. Bedrock (siltstone) will be excavated and reused across The Site as granular fill for roads and hardstands.

Upon removal of the rock from within the borrow pit, it is proposed to reinstate the borrow pit using excavated peat and spoil. 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. 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. This is to allow for the safe placement and grading of the peat and spoil using dumper trucks and excavators. It should be noted that there are significant excavation works required in order to develop the borrow pit at the Proposed Development. Excavation works will be undertaken and supervised by an experienced contractor and the Project Geotechnical Engineer. The text below provides some design and construction guidelines for the borrow pit.

Drawing P24-263-0600-0009 show typical construction details for the borrow pit.

The borrow pit will be constructed as follows:

(1) Peat and overburden will be removed and temporarily stored in localised areas adjacent to the borrow pit locations before being placed into the permanent peat/spoil storage area within the borrow pit. Data from the available ground investigation undertaken to date indicates that the rock can be removed by breaking, however removal by blasting is also feasible.

(2) It is proposed to construct the borrow pit so that the base of the borrow pit is below the level of the adjacent section of access road. As excavation progresses into the back edge of the borrow pit, localised deepening of the borrow pit floors may be required depending on extraction operations.

(3) Slopes within the excavated rock formed around the perimeter of the borrow pit will be formed at stable inclinations to suit local in-situ rock conditions.

(4) The stability of the rock faces within the borrow pit will be inspected by the Project Geotechnical Engineer upon excavation to ensure stability during construction works and in the long term. This inspection will allow unfavourable rock conditions to be identified and suitable mitigation measures to be applied such as removal of loose rock, in line with best practice guidelines.

(5) Infilling of the peat and spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance/perimeter rock berm. The contractor excavating the rock will be required to develop the borrow pits in a way which will allow the excavated peat and spoil to be reinstated safely.

(6) In order to maximise the storage capacity, a perimeter berm will be required along the western and southern boundaries. The rock buttress will be constructed of rock fill from the borrow pit excavation, placed and compacted in layers. The founding stratum for the perimeter berm will be intact bedrock and will be inspected and approved by the Project Geotechnical Engineer.

(7) The height of the stone berm constructed will be greater than the height of the stored peat and spoil to prevent any surface run-off. The height of the stone berm will be a minimum of 0.5m above the height of the placed peat and spoil.

(8) The location of the rock berm shown on Drawing P24-263-0600-0009 for the borrow pit is indicative only and may change subject to local conditions encountered on site during construction and as a result of the confirmatory ground investigation. The rock berm will be wide enough (up to 4m) to allow construction traffic access for tipping and grading during the placement of the excavated peat and spoil. The permanent external side slopes of the rock berm will be constructed at 33 degrees (1V:1.5H).

(9) In order to prevent water retention occurring behind the berm, the berm will be constructed of coarse boulder fill with a high permeability. The berm will be constructed of well graded granular rock fill of about 100mm up to typically 500mm in size. In addition, drains will be placed through the buttresses to allow surface water to drain from the surface of the placed peat/spoil. These drains will be 150mm diameter flexible plastic drainage pipe or equivalent.

(10) The use of temporary access ramps and long reach excavators during the placement of the excavated peat and spoil will be required.

(11) The surface of the placed peat and spoil will be shaped following backfill using excavators to allow efficient run-off of surface water from the placed arisings towards the perimeter of the borrow pit. The surface of the placed spoil will have a maximum grade of 5°.

(12) An interceptor drain will also be installed around the perimeter of the borrow pit. This drain will divert any surface water away from the borrow pit and hence prevent water from ponding and lodging during construction and also when reinstated.

(13) Temporary control of groundwater within the borrow pit will be required and measures will be determined as part of the ground investigation programme. A temporary pump and suitable outfall location will be required during construction.

(14) A settlement pond will be constructed at the lower side/outfall location of the borrow pit and is shown on the drainage drawings.

(15) The acrotelm will be placed with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the peat and spoil within the borrow pit.

(16) Supervision by the Project Geotechnical Engineer is required for the development of the borrow pit.

(17) All the above-mentioned requirements will be implemented by the Contractor during construction.

5.6 Designated Peat and Spoil Management Areas.

The following commitments for the placement of peat and spoil across existing hardstand areas will be implemented during construction.

(1) Excavated peat and spoil will be placed/spread across the existing hardstand areas at 3 no. locations. These locations are shown in Drawing P24-264-0600-0005, with a detail shown on drawing P24-264-0600-0010.

(2) The peat and spoil placed within the areas shown on Drawing P24-264-0600-0005 will be restricted to a maximum height of 1.0m for peat, and 1.5m for spoil. Any weak/liquified peat (if any is encountered) will be placed within the proposed borrow pit and not stored within these areas.

(3) The surface of the placed peat and spoil will be shaped to allow efficient run-off of surface water. Shaping of the surface of the peat and spoil will be carried out as placement of peat within the designated peat and spoil management areas progress. This will reduce the likelihood of debris run-off and reduce the risk of instability of the placed peat.

(4) Finished/shaped side slopes in the placed peat will be not greater than 1 (v): 4 (h), and no greater than 1 (v):2 (h) in the placed spoil. This slope inclination will be reviewed during construction, as appropriate.

(5) The acrotelm will be placed on the finished surface with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the placed peat and spoil within the designated peat and spoil management areas.

(6) Supervision by the Project Geotechnical Engineer will be undertaken during the works.

(7) An interceptor drain will be installed upslope of the designated peat and spoil management areas to divert any surface water away from these areas. This will help ensure stability of the placed peat/spoil and reduce the likelihood of debris run-off.

(8) All the above mentioned general guidelines and requirements will be undertaken by the Contractor during construction.

5.7 Peatland Enhancement Area.

A heathland enhancement area is proposed to the east of T01. Details about the enhancement area are contained in the Biodiversity Management and Enhancement Plan (BMEP). Creation of the enhancement area will involve felling of the conifers within the area and the blocking of existing drains. Following this a layer of peat, 0.5m in thickness, will be placed across the enhancement area. No specific commitments in terms of peat stability are required for this area.

6. EXCAVATIONS IN PEAT FOR TURBINE BASES, HARDSTANDINGS AND INFRASTRUCTURE FOUNDATIONS

The turbine bases will be founded on competent founding strata (bedrock) which will require excavation through peat and any soft overburden.

Similarly, crane hardstandings, construction compound and met mast foundations are to be founded on competent mineral soil which will also require excavation through peat and spoil. Excavations for the borrow pits will also require the removal of peat and non-peat spoil overlying the rock.

6.1 Methodology

This methodology includes procedures that will be included in the construction to minimise any adverse impact on peat stability. The methodology is not intended to cover all aspects of construction such as drainage and environmental considerations, which are covered in Chapter 4 of the EIAR.

(1) With respect to placement of arisings from excavations the commitments given in Section 5 are to be followed.

(2) All excavations within peat will be adequately supported or peat slopes will be battered to a safe slope inclination typically of 1(v): 3(h). This slope inclination will be reviewed during construction, as appropriate. Where areas of weaker peat are encountered then slacker slopes will be required.

(3) Excavations will be kept reasonably free from water at all times. Water will be prevented from being impounded within excavations by either using drainage channels cut into the excavation face or by pumping.

(4) Where water is channelled or pumped from an excavation then this water will be fed into an established watercourse or drainage ditch following suitable treatment, as described in Chapter 9 of the EIAR.

7. GENERAL COMMITMENTS FOR GOOD CONSTRUCTION PRACTICE

To minimise the risk of construction activity causing potential peat instability the Construction Method Statements (CMS) for the Proposed Development will also implement, but not be limited to, the general measures below together with the specific measures.

(1) Uncontrolled concentrated water discharge onto peat slopes identified as being unsuitable for such discharge will be avoided. All water discharged from excavations during work will be piped over areas specifically assessed as being unsuitable and hence directly into suitable drainage lines.

(2) All excavations will be suitably supported to prevent collapse and development of tension cracks.

(3) Avoidance of placing fill and excavations in the vicinity of steeper peat slopes, that is at the crest or toe of the slope.

(4) Installation and regular monitoring of geotechnical instrumentation during construction in areas of possible poor ground, such as deeper peat deposits (see Section 8).

(5) Site reporting procedures will be implemented to ensure that working practices are suitable for the encountered ground conditions. Ground conditions to be assessed by suitably experienced geotechnical engineer.

(6) Regular briefing of all site staff (e.g. toolbox talks) to provide feedback on construction and ground performance and to promote reporting of any observed change in ground conditions.

(7) Routine inspection of the Proposed Development footprint and surrounding areas within the Site by the Contractor and Project Geotechnical Engineer will be undertaken and will include an assessment of ground stability conditions (e.g. cracking, excessive floating road settlement, disrupted surface, closed-up drains) and drainage conditions (e.g. blocked drains, absence of water in previously flowing drains, springs, etc).

8. INSTRUMENTATION

8.1 Movement Monitoring Posts

To monitor possible peat movements, it is proposed to install sighting posts upslope and downslope of the access roads at staggered intervals at locations where the peat depth is greater than 2.0m. At the Proposed Development site, this will be limited to a 200m long section of the main access road, where peat of up 5.5m depth has been recorded. Details of sighting posts are given below.

(1) A line of sighting posts will comprise:

   (a) A line of wooden stakes (typically 1 to 1.5m long) placed vertically into the peat to form a straight line.

   (b) The sighting line will comprise 6 no. posts at 5m centres that is a line some 25m long.

   (c) A string line will be attached to the first and last posts and all intervening posts will be adjusted so they are just touching the string line.

(2) Lines of sighting posts will be placed across the existing slope about 5m away from the area to be worked. The posts will be located along the road at 10m intervals in areas of deep peat (say greater than 2.0m). Where there are relatively steeper slopes or softer ground a sighting line will be placed down the slope, or at any location where monitoring is deemed necessary by the Designer or the Project Geotechnical Engineer.

(3) Each line of sighting posts will be uniquely referenced with each post in the line given a reference. The post reference will be marked on each post (e.g. reference 1-1, 1-2, 1-3, 1-4, 1-5, 1-6 for posts in line 1).

(4) The sighting lines will be monitored at the beginning of each working day, and during the day where considered appropriate (e.g. when working activity is concentrated at a specific location).

(5) Monitoring of the posts will comprise sighting along the line and recording any relative movement of posts from the string line.

(6) Where increased movements are recorded the frequency of monitoring will be increased.

(7) A monitoring record will be kept of the date, time and relative movement of each post, if any. This record will be updated and stored as a spreadsheet.

9. CONTINGENCY MEASURES

9.1 Excessive Movement

Where there is excessive movement or continuing peat movement recorded at a monitoring location or identified at any location within the Site but no apparent signs of distress to the peat (e.g. cracking, surface rippling) then the following will be carried out.

(1) All activities (if any) will cease within the affected area.

(2) Increased monitoring at the location will be carried out. The area will be monitored until such time as movements have ceased.

(3) Re-commencement of activities will only start following a cessation of movement and agreement with all parties (Contractor/Engineer/Designer).

9.2 Onset of Peat Slide

In the unlikely event where there is the onset or actual detachment of peat (e.g. cracking, surface rippling) then the following will be carried out.

(1) On alert of a peat slide incident, all activities (if any) in the area will cease and all available resources will be diverted to assist in the required mitigation procedures.

(2) Action will be taken to prevent a peat slide reaching any watercourse. This will take the form of the construction of check barrages on land. Due to the terrain and the inability to predict locations it may not be possible to implement any on-land prevention measures, in this case a watercourse check barrage will be implemented.

(3) All relevant authorities will be notified if a peat slide event occurs on site.

(4) For localised peat slides that do not represent a risk to a watercourse and have essentially come to rest the area will be stabilised initially by rock infill, if required. The failed area and surrounding area will then be assessed by the engineering staff and stabilisation procedures implemented. The area will be monitored, as appropriate, until such time as movements have ceased.

9.3 Check Barrages

Whilst it is not anticipated based on the analysis undertaken that a peat slide will occur on the Site, as a contingency a check barrage procedure is included below.

The check barrage procedure deals with preventing a peat slide from moving downstream within a watercourse.

The most effective method of preventing excessive peat slide debris from travelling downstream in a watercourse is the use of a check barrage. A check barrage comprises the placement of rock fill across a watercourse. The check barrage is a highly permeable construction that will allow the passage of water but will prevent peat debris from passing through. Rock fill will comprise well-graded coarse rock pieces from about 300mm up to typically 1000mm.

The rock fill for the check barrage will be sourced from the borrow pit on site.

The size of the barrage will vary depending on the scale of the peat debris to be contained and the geometry of the watercourse at the barrage location. In general, due to the low speed of a peat slide there is generally little impact force and most of the lateral load is due to fluid pressure on the upslope face of the barrage.

The check barrage will fill the entire channel width of the watercourse up to a height of 3 to 4m with a crest width of typically 2m and side slopes of about 45 degrees depending on the geometry of the barrage location.

The check barrage procedure is as follows:

(1) Access to the check barrage location will be along the existing access roads on the Site and/or along public roads, where possible. When it is necessary to form the barrage then rock fill will be placed across the watercourse to effectively block the passage of peat debris.

(2) Operatives employed to carry out the construction of the check barrage will be inducted by means of a briefing by on-site supervisors as to the proposed location of the check barrage.

(3) The check barrage provides containment for peat debris in the highly unlikely event of a major peat slide. Further remedial measures, should they be required, will be assessed by the Contractor and the Project Geotechnical Engineer, and carried out as soon as physically possible when the location and extent of the failure is established.

(4) Where a barrage was constructed as a precaution and no peat debris reached the watercourse then the barrage will be removed as soon as any measures to prevent further peat sliding is agreed with all parties (Contractor/Engineer/Designer).

10. CUT & FILL EARTHWORKS ASSESSMENT

FT carried out an assessment for the Proposed Development which quantifies the total volume of cut and fill earthworks required for the construction of the Proposed Development. The cut & fill assessment is graphically presented on Drawing P24-263-0600-0011.

The outputs from the cut & fill earthworks assessment includes the following:

- Plan drawings of the entire site showing an outline of cut & fill earthworks at all infrastructure elements (Drawing P24-263-0600-0011)
- Preliminary cut & fill earthwork volumes (see Table 10-1 of this report)

A summary of the basis for the cut & fill earthworks assessment is included in Appendix A of this report.

A summary of the cut & fill earthwork volumes is given in Table 10-1.

10.1 Commentary on Earthworks Volumes

It will be noted that the earthwork volumes given in Table 10-1 are estimates and subject to detailed design. This section of the report should be read in conjunction with Sections 5.2 and 5.3 of the report which summarises the peat and spoil volumes for site and the placement/reinstatement areas on Site.

In summary the following points are given,

1) The total volume of spoil (peat and non-peat superficial deposits) requiring placement/reinstatement is estimated at 50,150m^3. This material will be excavated and placed/reinstated to the borrow pit, with 4,500m^3 used for landscaping and ballast backfill around the turbines, and a further 6,400m^3 used as landscaping across the existing wind farm infrastructure on Site. It is estimated that a further 7,000m^3 of reusable material (bedrock) will also be excavated from the proposed road and hardstand locations.

2) The estimated quantity of available rock within the borrow pit is 30,000m^3. Conservative assumptions were made in estimating the quantity of rock available in the borrow pit.

3) Note a number of assumptions were made during the cut & fill assessment, see Appendix A. A bulking factor of 10% has been applied to the excavation volumes.

Table 10.1: Summary of Cut & Fill Earthworks Volumes

Infrastructure Element	Description	Total Earthwork Volume (1) & (2) – Peat	Earthwork Volume (3) – Estimated non-peat overburden material	Earthwork Volume (4) - Estimated rock volume only	Stone Volume Requirements	Comment
		Cut (m^3)	Cut (m^3) (3)	Cut (m^3)	(m^3)	
3 no. Turbines and Hardstands	27m diameter excavation footprint for turbine foundation with 55 x 35m hardstand area	3,000	19,000	6,000	14,000	
Access Roads	Proposed 5m running surface with 6m wide development footprint	4,000	15,500	1,000	20,000	
Various Infrastructure Locations	Includes 1 no. construction compounds and met mast	650	1,000	-	1,680	
Borrow Pits	1 no. Borrow Pit	3,000	4,000	30,000	1,500	Estimated potential rock volume from borrow pit is **30,000m^3**.
	Total =	**10,650**	**39,500**	**37,000**	**37,180**	

Notes

Note (1) The total earthwork volumes includes peat, non-peat superficial deposits and rock from the borrow pit.
Note (2) The earthwork volumes quoted for the non-peat material were calculated based on the total earthwork volume (peat & non-peat material) minus the peat volumes calculated and presented in Table 5-1 within Section 5.2 of this report.
Note (3) The in-situ rock volume from the borrow pits was estimated based on available ground investigation data to define rockhead level.
Note (4) It should be noted that the earthwork volumes given in Table 10-1 are subject to confirmatory design.

11. REFERENCES

Munro, R, 2004. Dealing with bearing capacity problems on low volume roads constructed on peat. Roadex II Northern Periphery.

Scottish Natural Heritage/Forestry Commission Scotland, 2010. Floating Roads on Peat.

Scottish Natural Heritage, 2015. Constructed Tracks in the Scottish Uplands. Scottish Natural Heritage.

Good Practice during Windfarm Construction (NatureScot, 2024).

Guidance on Developments on Peatland: Site Surveys (Scottish Government, Scottish Natural Heritage and SEPA, 2017.

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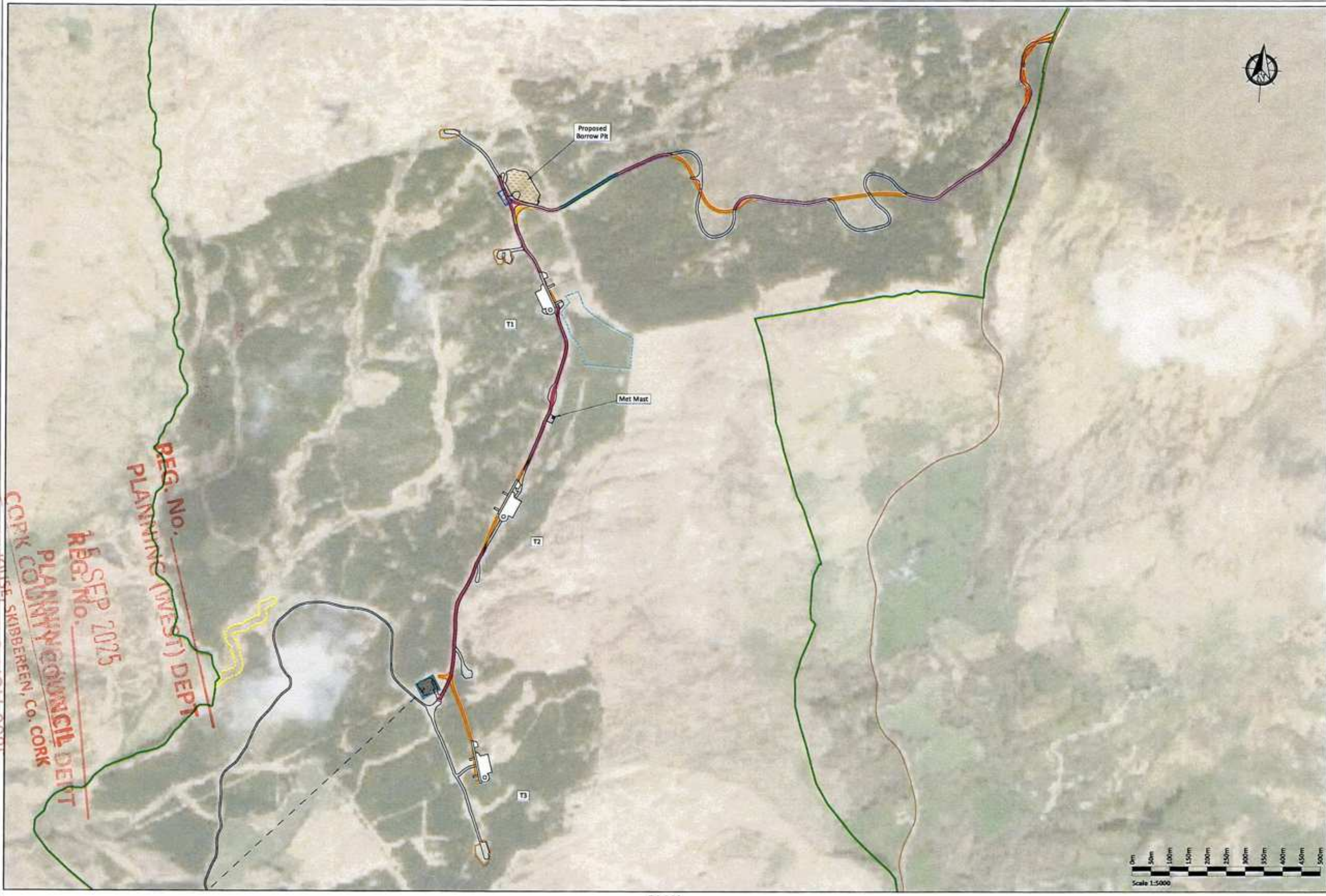
DRAWINGS

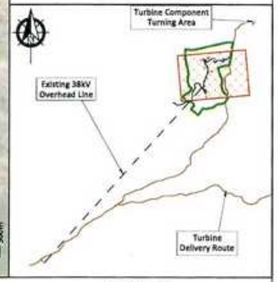


Legend:

- EIAR Study Boundary
- Proposed Turbine & Hardstanding
- Proposed New Road
- Existing Access Road to Upgrade
- Proposed Temporary Construction Compound
- Existing Onsite 38kV Substation
- Proposed Peat / Spoil Deposition Area
- Proposed Borrow Pit
- Existing 38kV Overhead Line
- Existing Ground Contour - Major
- Riparian Planting
- Peatland Enhancement

Road Type Legend:

- Type A - Upgrade of Existing Excavated Access Tracks
- Type B - Upgrade of Existing Floated Access Tracks
- Type C - New Excavate & Replace Access Road



PLAN
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KEYPLAN
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Rev.	Description	App By	Date
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P02	FOR INFORMATION	BDH	02.07.25
P03	FOR INFORMATION	BDH	23.07.25
P04	FOR INFORMATION	BDH	22.08.25
P05	FOR INFORMATION	BDH	27.08.25
P06	FOR INFORMATION	BDH	05.09.25

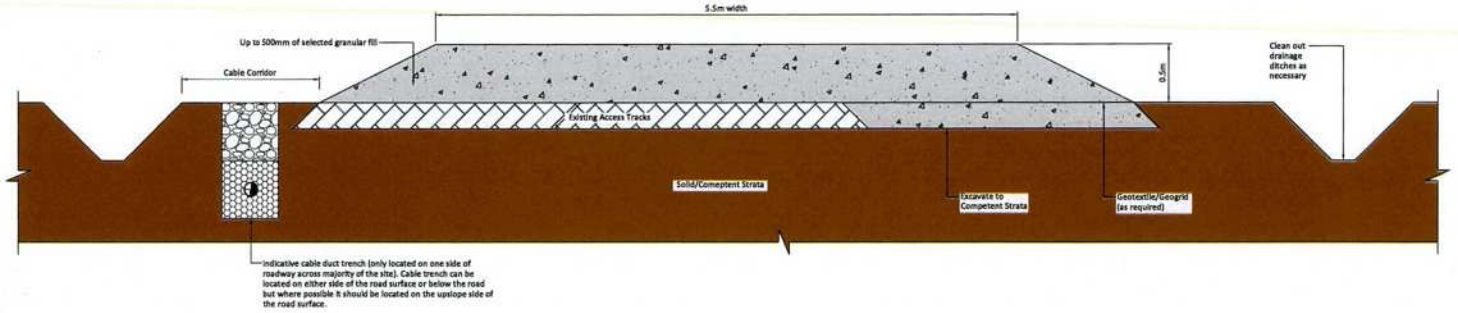
PROJECT: **CURRAGLASS WIND FARM**

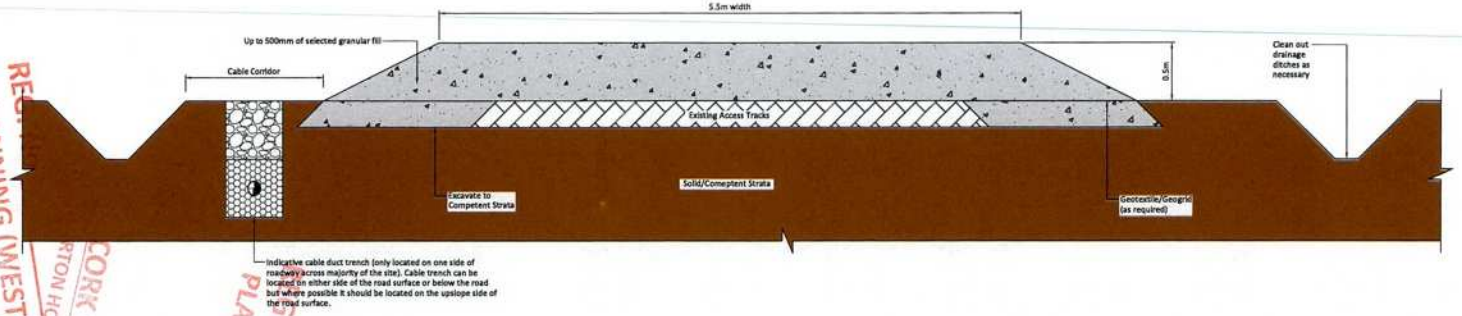
CLIENT: **MKO**

SHEET: **PLAN DRAWING OF WIND FARM WITH ROAD CONSTRUCTION TYPE**

Date	05.09.25	Project number	P24-263	Scale (@ A1) 1:5000
Drawn by	POR	Drawing Number	P24-263-0600-0005	Rev P06
Checked by	IH			

9 September 2025





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P03	FOR INFORMATION	BDH	23.07.25

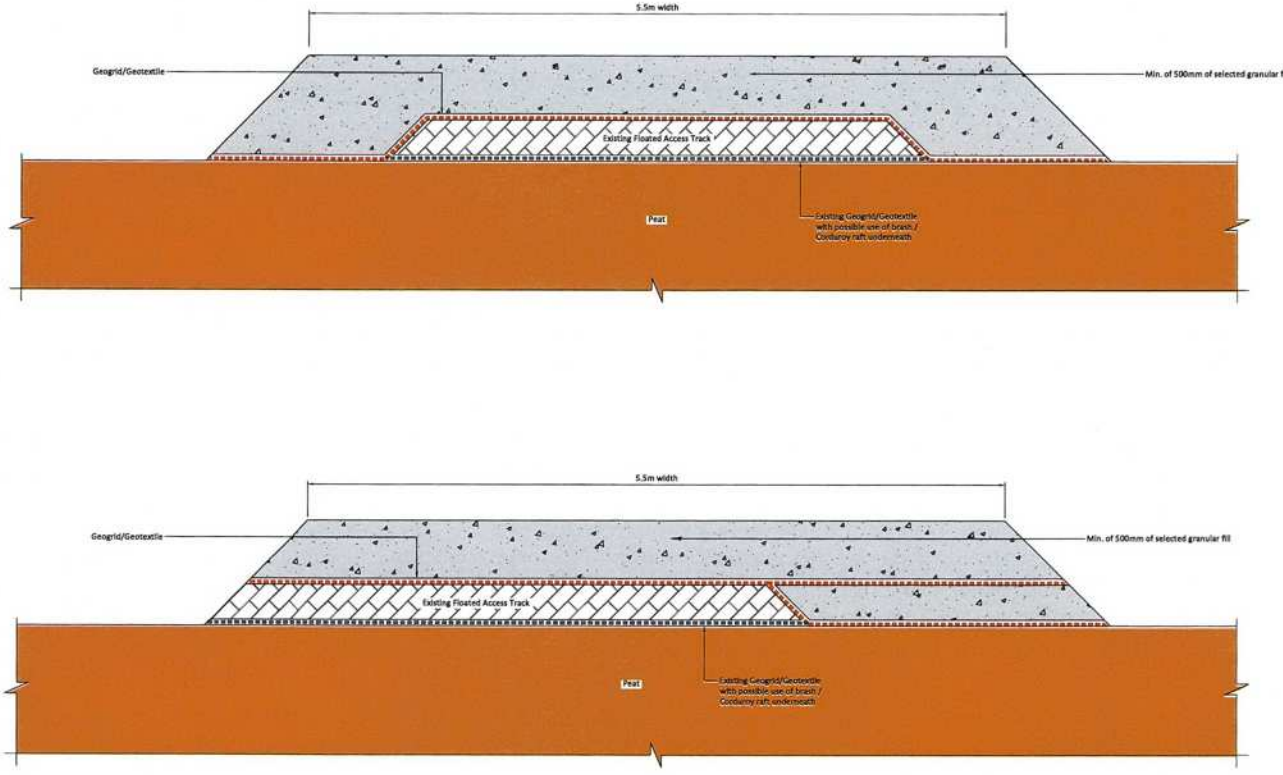
PROJECT: CURRAGLASS WIND FARM

CLIENT: MKO

SHEET: TYPE A – UPGRADE OF EXISTING FOUNDED ACCESS ROAD

Date: 23.07.25
Drawn by: POR
Checked by: BH
Project number: P24-263
Scale (@ A1): 1:20
Drawing Number: P24-263-0600-0006
Rev: P03

23 July 2025



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P03	FOR INFORMATION	BDH	23.07.25
P04	FOR INFORMATION	BDH	05.09.25

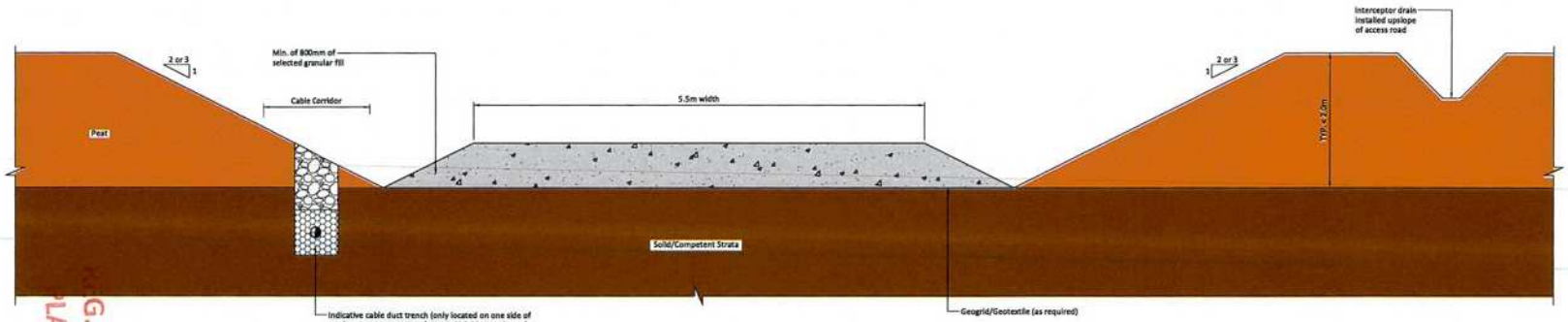
PROJECT: CURRAGLASS WIND FARM

CLIENT: MKO

SHEET: TYPE B – UPGRADE OF EXISTING FLOATING ACCESS ROAD

Date: 05.09.25
Drawn by: POR
Checked by: BH
Project number: P24-263
Scale (@ A1): 1:20
Drawing Number: P24-263-0600-0007
Rev: P04

5 September 2025



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P03	FOR INFORMATION	BDH	23.07.25

PROJECT: CURRAGLASS WIND FARM

CLIENT: MKO

SHEET: TYPE C – NEW EXCAVATE AND REPLACE ACCESS ROAD

Date: 23.07.25
Drawn by: POR
Checked by: BH
Project number: P24-263
Scale (@ A1): 1:25
Drawing Number: P24-263-0600-0008
Rev: P03

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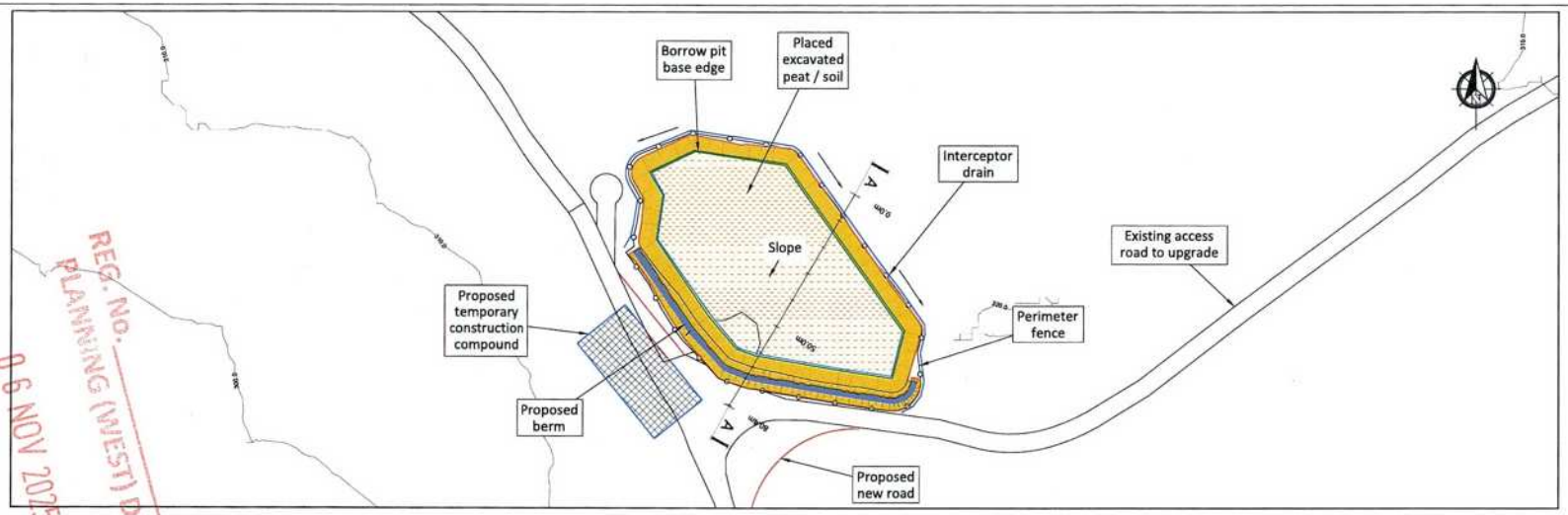
23 July 2025



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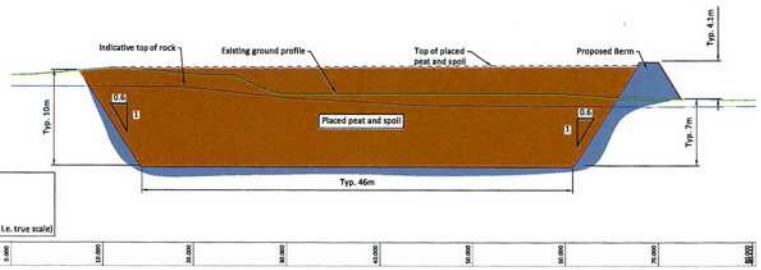


Borrow Pit Construction Notes:

(1) It is proposed to construct the borrow pit so that the base of the borrow pit is below the level of the adjacent section of access road.

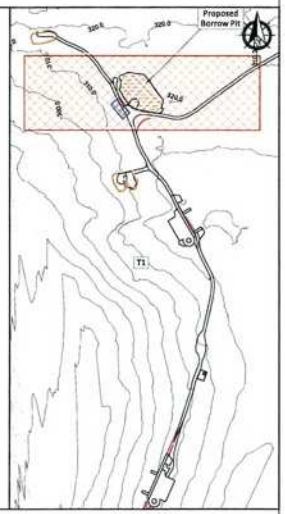
(2) Slopes within the excavated rock formed around the perimeter of the borrow pit will be formed at stable inclinations to suit local in-situ rock conditions.

(3) Infilling of the peat & spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance/rock buttress.

(4) The surface of the placed peat & spoil will be shaped to allow efficient run-off of surface water from the placed arising's.

(5) Control of groundwater within the borrow pit may be required and measures will be determined as part of the ground investigation programme.

(6) All the above-mentioned general guidelines and requirements will be confirmed by the designer prior to construction.



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P05	FOR INFORMATION	BDH	22.08.25
P06	FOR INFORMATION	BDH	27.08.25
P07	FOR INFORMATION	BDH	05.09.25

PROJECT: CURRAGLASS WIND FARM
CLIENT: MKO
SHEET: BORROW PIT DETAILS
Date: 05.09.25
Drawn by: POR
Checked by: BH
Project number: P24-263
Drawing Number: P24-263-0600-0009
Rev: P07
Scale (@ A1): As Shown

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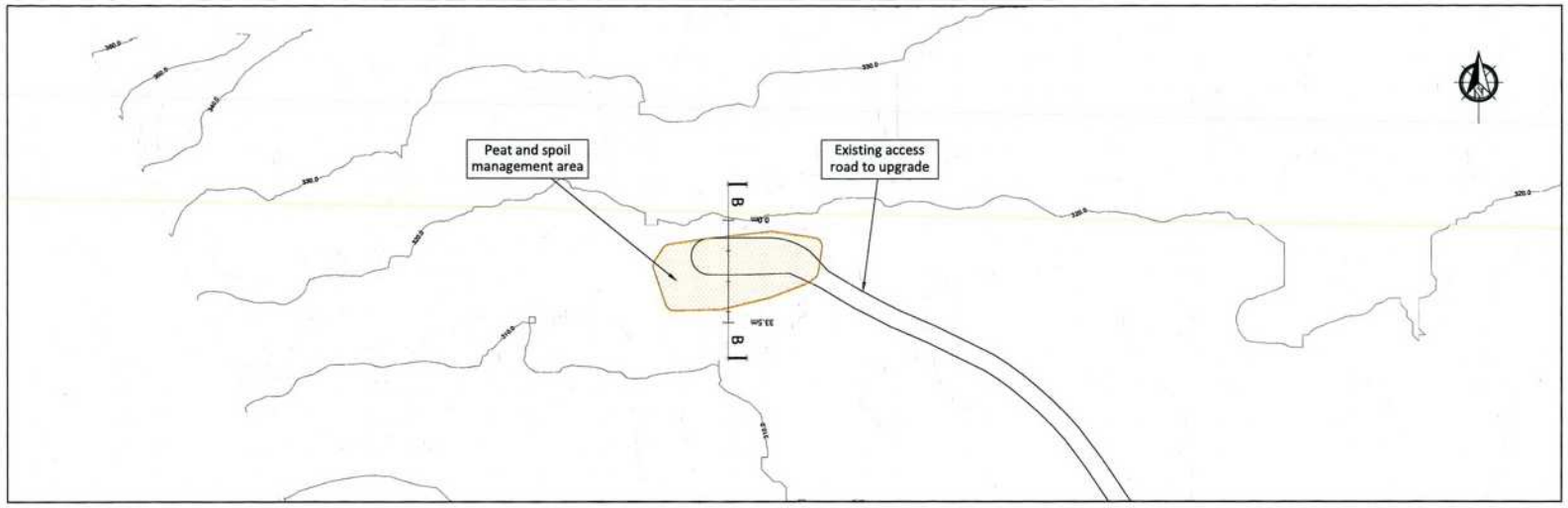
9 September 2025



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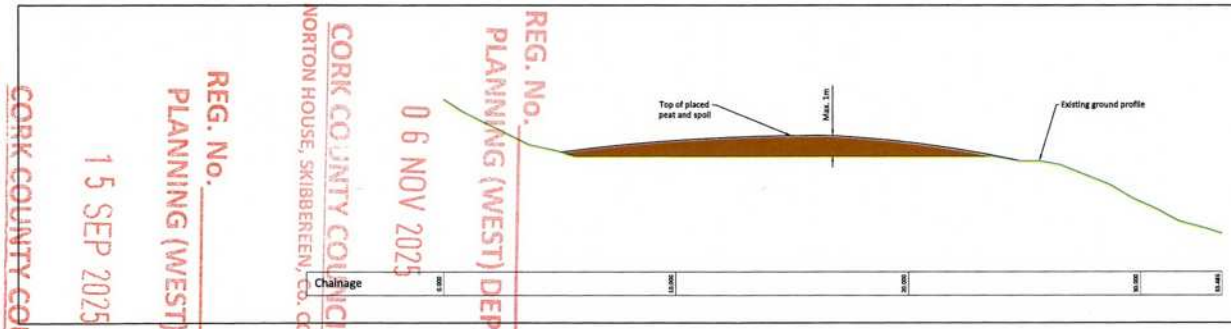
Legend:
- EIAR Study Boundary
- Proposed Turbine & Hardstanding
- Proposed New Road
- Existing Access Road to Upgrade
- Proposed Temporary Construction Compound
- Existing Onsite 38kV Substation
- Proposed Peat / Spoil Deposition Area
- Proposed Borrow Pit
- Existing 38kV Overhead Line
- Existing Ground Contour - Major
- Existing Ground Contour - Minor

Scale 1:750



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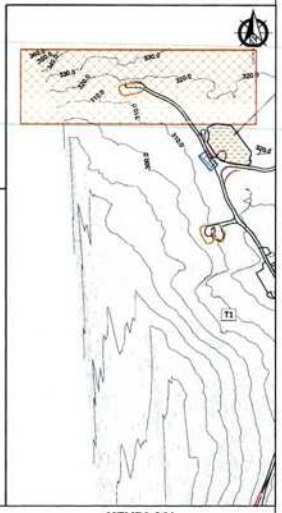

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P04	FOR INFORMATION	BDH	27.08.25
P05	FOR INFORMATION	BDH	05.09.25

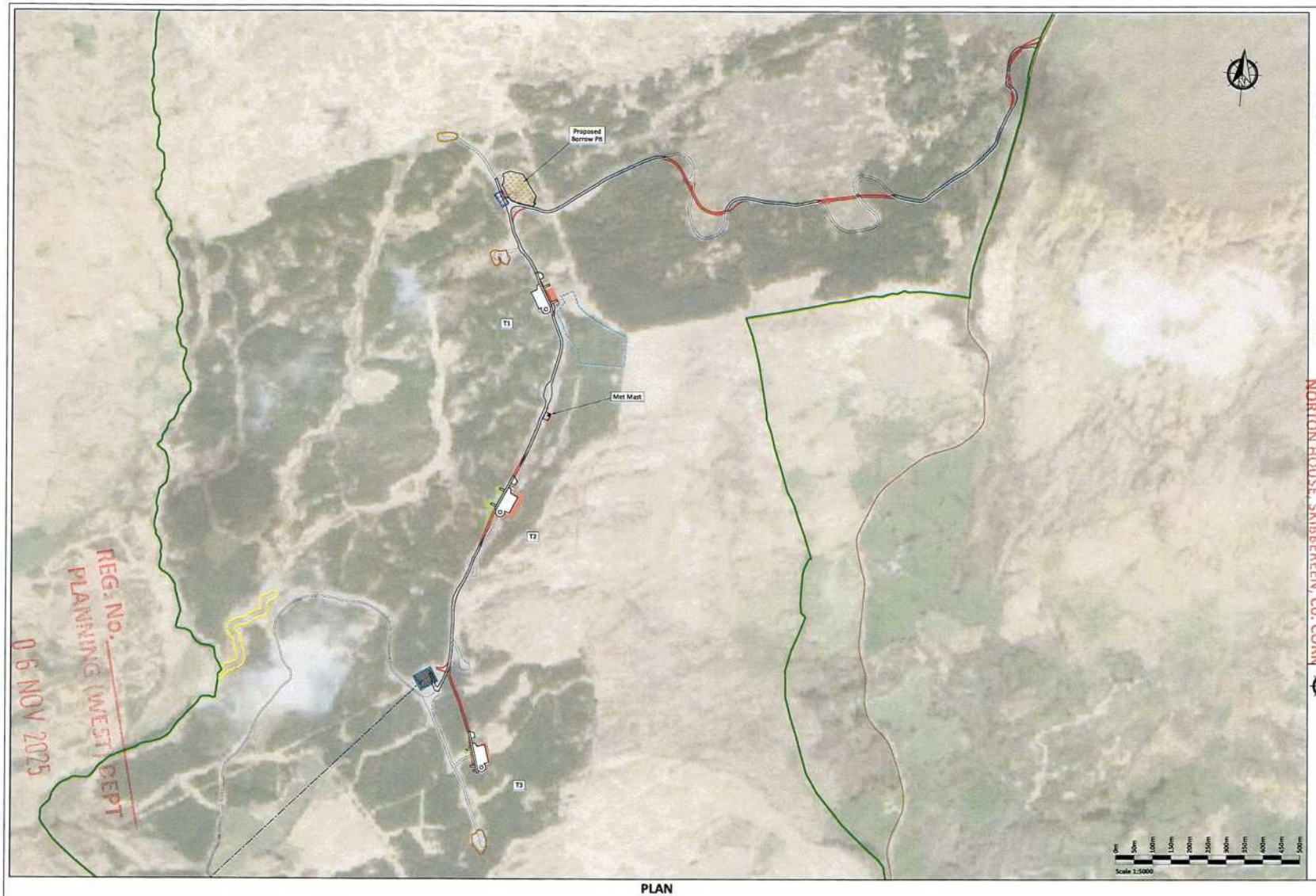
PROJECT: CURRAGLASS WIND FARM

CLIENT: MKO

SHEET: DESIGNATED PEAT AND SPOIL MANAGEMENT AREAS

Date: 05.09.25
Drawn by: POR
Checked by: BH
Project number: P24-263
Scale (@ A1): 1:750
Drawing Number: P24-263-0600-0010
Rev: P05

9 September 2025



Legend:

- EIAR Study Boundary
- Proposed Turbine & Hardstanding
- Proposed New Road
- Existing Access Road to Upgrade
- Proposed Temporary Construction Compound
- Existing Onshe 38kV Substation
- Proposed Peat / Spoil Deposition Area
- Proposed Borrow Pit
- Existing 38kV Overhead Line
- Riparian Planting
- Peatland Enhancement

Earthworks Legend:

- Area of Cutting
- Area of Fill

PLAN
Scale 1:5000

KEYPLAN
Scale 1:120000

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P03	FOR INFORMATION	BDH	27.08.25
P04	FOR INFORMATION	BDH	05.09.25

PROJECT: CURRAGLASS WIND FARM

CLIENT: MKO

SHEET: CUT FILL ACROSS THE SITE

Date: 05.09.25
Drawn by: POR
Checked by: BH
Project number: P24-263
Scale (@ A1): 1:5000
Drawing Number: P24-263-0600-0011
Rev: P04

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9 September 2025

FEHILY TIMONEY

DESIGNING AND DELIVERING
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APPENDIX A

Assumptions for Cut & Fill Earthworks Assessment

Assumptions for Cut/Fill Earthwork Assessment

Main Infrastructure Locations

Appendix A provides a summary of the main assumptions for the cut/fill earthworks assessment.

Table A1 provides a summary of the assumptions regarding the dig depths adopted for the cut/fill assessment for the main infrastructure elements at the proposed Curraglass Wind Farm.

The assumed excavation footprint for the turbine foundation is the turbine base diameter of 25m plus 1m working room all around the base i.e. 27m.

Table A1: Summary of the dig depths at the main infrastructure locations

Turbine	Easting	Northing	Average Peat Depth for Turbines (m)	Dig depth for Turbine Foundation (m) (1)	Average Peat Depth for Crane Hardstands (m)	Max Dig depth for Associated Crane Hardstand (m) (2)
T01	509077	563204	0.4	3.3	0.4	0.6
T02	509002	562644	0.1	2.6	0.1	0.3
T03	509016	561949	0.3	2.0	0.3	0.5
Infrastructure Element	**Easting**	**Northing**	**Average Peat Depth (m)**	**Max Dig depth for Infrastructure Element (m) (3) & (4)**		
Construction Compound	508928	563491	0.2	0.4		
Met Mast	509109	562918	0.3	1.3		

Notes

(1) Founding depths for the turbines was assumed to be the average peat depth + 1m to a competent strata. To be confirmed at detailed design stage following confirmatory ground investigation. A minimum dig depth of 3m is assumed for each turbine foundation. For the purpose of this assessment, it is assumed that all turbine foundations will be gravity type founded bases i.e. no piled foundations.

(2) Founding depths for the crane hardstands was assumed to be the average peat depth + 0.2m to a competent stratum. To be confirmed at detailed design stage following confirmatory ground investigation. In areas of steeper terrain (say greater than 10% gradient), for the crane hardstandings and for the purpose of this assessment, it was endeavoured to balance the earthworks for the footprint of the hardstands, where possible.

(3) For the construction compound the founding depth was assumed to be the average peat depth +0.2m to a competent stratum. To be confirmed at detailed design stage following confirmatory ground investigation. In areas of steeper terrain (say greater than 10% gradient), for the compounds and for the purpose of this assessment, it was endeavoured to balance the earthworks for the footprint of the platforms, where possible.

(4) For the met mast the founding depth was assumed to be the average peat depth +1.0m to a competent stratum. To be confirmed at detailed design stage following confirmatory ground investigation.

(5) Note the maximum dig depths stated in the Table above are indicative and for information purposes only and are subject to confirmation at detailed design stage following a confirmatory ground investigation.

Access Roads

The following assumptions for the cut/fill assessment are given in relation to the access roads.

- Typical gradient requirements from turbine suppliers were assumed for the cut & fill assessment i.e. gradients of 10 to 12%. A maximum gradient of 18% has been assumed for straight sections of access road on site.
- For the purpose of the assessment, it is assumed that the existing access tracks are 3.0m in width.
- There are 3 types of access tracks/roads proposed/present on site, which include:
    - Existing excavated and replace type access roads - some excavation works as a result of localised widening will be required. It is assumed that widening will typically take place on both sides of the road. In areas of side long ground/steeper terrain (say greater than 5% gradient), widening of existing tracks will take place on the upslope side of the road. Assumed dig depth to competent strata for both cases is 0.2m below the base of the peat.
    - Existing floating type access road – no excavation work is anticipated at this location.
    - New proposed excavate & replace type access roads – excavation work will be required. Assumed dig depth to competent strata was 0.2m below the base of the peat.

Borrow Pits

The cut/fill assessment for the borrow pits is based on the cross-section drawings (Drawings P24-263-0600-0009) included in this report. The borrow pit was sized to allow for the reinstatement of the excavated peat/spoil volume generated and to accommodate the estimated site-won stone fill requirements.

General Assumptions

A 1(v): 1(h) configuration for all excavation faces was assumed for the cut & fill earthworks assessment, except for excavations in rock at the borrow pit where a configuration of 1(v): 0.7(h) i.e. 60 degrees was assumed.

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