FEHILY TIMONEY
30 YEARS

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE & PLANNING

PEAT MANAGEMENT PLAN

BRACKLYN WIND FARM

Prepared for: **Bracklyn Wind Farm Ltd**

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Abstract: Fehily Timoney and Company (FT) were engaged by Bracklyn Wind Farm Ltd. to compile a Peat Management Plan (PMP) for Bracklyn wind farm. The purpose of this report is to provide a Peat Management Plan for the construction phase of the wind farm. The report describes how peat which will be excavated from infrastructure locations such as turbine bases and tracks and will be handled and placed/reinstated onsite. The report also provides details for 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.70 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.

1.2 Project Description

Fehily Timoney and Company (FT) was engaged in August 2020 by Bracklyn Wind Farm Ltd to compile a Peat Management Plan for the Bracklyn wind farm site.

The proposed Bracklyn wind farm is located approximately 5km south of Delvin, Co. Westmeath.

The Bracklyn Wind Farm site, which comprises agricultural land, forestry and a blanket peat area, extends to an area of approximately 2.75km^2. The site is located in the east of Co. Westmeath with the proposed grid connection in Co. Meath. The surrounding landscape comprises gently undulating topography with land-use comprising forestry, agricultural land and cutaway
peatland.

The development comprises of the following:

i. 9 no. wind turbines with an overall blade tip height of up to 185 metres and all associated hard-standing areas
ii. 1 no. permanent Meteorological Mast up to 104m in height
iii. Provision of new site access tracks and associated drainage
iv. Temporary construction compound
v. All associated underground electrical and communications cabling connecting the turbines to the proposed substation.
vi. All works associated with the connection of the proposed wind farm to the national electricity grid.
vii. All associated site development works

1.3 Purpose

The purpose of this report is to provide a peat management plan with particular reference to peat stability for the construction phase of the project.

This peat management plan also includes a monitoring programme which will be implemented during the construction phase of the wind farm and a contingency plan should peat instability/failure occur at the site.

As work is carried out on site the contents of the peat management plan and peat stability monitoring programme will be updated, as appropriate.

This peat 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 site is outlined in detail in the relevant chapter of 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 track, creep movement or localised erosion type events.

Adherence to the peat 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 localised peat movement.

2. CONSTRUCTION PACTIVITIES COVERED BY PEAT MANAGEMENT PLAN

2.1 Construction Activities

For the construction phase of the proposed development the activities that will generate peat are as follows:

(1) Upgrade of existing access tracks (excavate and replace tracks)

(2) Construction of new excavated tracks through peat

(3) Excavation and placement of arisings

(4) Excavations in peat for turbine bases, hardstands and other infrastructure foundations

(5) Excavations in peat for underground cables

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

2.2 Track Construction Types

To provide access within the site and to connect the wind turbines and associated infrastructure existing tracks will need to be upgraded and new access tracks will need to be constructed. The access track 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) Serviceability requirements for construction and wind turbine delivery and maintenance vehicles

(5) Requirement to minimise disruption to peat hydrology

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

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

It should be noted that this report does not include a detailed design for the access tracks on the Bracklyn Wind Farm site.

Table 2.1: General Track Construction Techniques

Construction Method	Typical Site Conditions		Comment
	Typical Peat Depth (m)	Typical Slope Inclination (degs)	
Upgrade of existing access tracks	<1.0	Varies	Upgrade existing excavated access tracks to the required width and finished with a layer of selected granular fill
	>2.0	Typically, <5	Upgrade existing floated access track to the required width and finished with a layer of geogrid and stone fill
Construction of new excavated access tracks through peat	<1.0	Varies	New access track construction technique envisaged for various locations on site
Construction of new floated access tracks through peat	>2.0	<5	New access track construction technique envisaged for various locations on site

3. GENERAL CONSTRUCTION GUIDELINES FOR ACCESS TRACKS

The following general construction guidelines are given for the access tracks on site.

(1) Where an open ditch is present alongside an existing/proposed floating access track, the ditch may need to be filled prior to upgrading/constructing the access track. The ditch shall be filled with suitable drainage stone. As applicable, a perforated pipe shall be laid into a ditch prior to filling so as to maintain water flow within the ditch.

(2) Where existing drainage crosses the track then it will be necessary to ensure that this drainage is not affected by settlement of the upgraded access track. Cross drains comprising flexible perforated pipes within a permeable stone fill surround will be used to maintain the existing drainage.

(3) No excavations (e.g. drainage, peat cuttings) shall be carried out within 5m distance of a completed floated access track edge, or at a distance determined following site inspection. The presence of excavations can destabilise the access track. Temporary excavations should be excavated in short lengths and backfilled as soon as practicable.

(4) No stockpiling of materials shall take place on or adjacent to floated access tracks so as to avoid bearing failure of the underlying peat.

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

(6) Due to the nature of floating access track construction it will be necessary to monitor the settlement/movement of the access track. Survey points will be located along the track at 10m intervals in areas of deep peat (greater than 2m). These survey points shall be surveyed on a weekly basis, possibly more frequently when construction activities are ongoing in the area.

(7) It is recommended that the construction and upgrading of access tracks in areas of deep peat (greater than 2m) is inspected on a routine basis during the works, particularly before/following trafficking by heavy vehicular loads.

(8) Settlement of a floated access track (if constructed) is expected and will likely be in the order of several 100mm in the deeper peat areas; as such it may be necessary to re-level the access track at convenient intervals during the works. The magnitude and extent of settlement is likely to be greater in areas of deeper peat with the rate of settlement reducing over time. Prior to completion of the works it is recommended that measures are taken to re-level the access track, as necessary.

4. EXCAVATION AND STORAGE OF PEAT

4.1 Excavation and Storage of Arisings Methodology

This methodology includes procedures that are to 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.

(1) All excavated peat shall be transported immediately on excavation to the peat deposition area (see Figure 4-2) or to designated peat areas adjacent to turbines.

(2) Further details on the placement of excavated material to designated peat deposition areas are given in Section 4.4.

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

4.2 Summary of Peat Volumes on Site

A summary of the estimated excavated peat volumes calculated for the Bracklyn Wind Farm site are given in Table 4-1.

Table 4.1: Summary of Excvated Peat Volumes on Site

Infrastructure Element [(1)]	Typical Dimensions	Peat Volume (m^3)	Comment
9 no. Turbines and Hardstands	22m diameter excavation footprint for turbine foundation with 55 x 35m hardstand area.	10,592	Hardstanding area and foundation footprint
Access Tracks	Assumed 5m running surface with 6m wide development footprint.	4,798	
Meteorological Mast	10 x 10m foundation footprint and 30 x 30m hardstanding area.	0	
Site Cabling	Trench width of 0.5m and depth of 0.275m.	230	
Substation and Ancillaries	Hardstanding area of 125 x 100m.	4,782	
Offsite Road Works/Grid Connection Works	Varies	12,212	
	Total	**32,614m^3**	
	Total (inc. bulking)	**39,137m^3**	

Note A factor of 20% has been allowed (bulking factor of 15% and contingency factor of 5% has been applied to the excavated peat volume to allow for expected increase in volume upon excavation and to allow for variation in ground conditions across the site.

4.3 Summary of Peat Placement/Reinstatement Areas on Site

A summary of the peat placement/reinstatement areas at the Bracklyn wind farm site are given in Table 4-2.

Table 4.2: Summary of Peat Placement/Reinstatement Areas on Site

Location (1)	Peat Volume (m^3)	Comment
Peat placement in Deposition Area	10,971	
Landscaping/ Reinstatement (1)	28,167	It is estimated that approximately 1,000m^3 of peat will be used for landscaping purposes at the 9 no. turbine locations. Additional material may be placed to a depth of 1m in areas clear felled around turbines T5, T6, T7, T10 and T11. See spoil management plan for breakdown.
Total =	**39,138m^3**	

Note (1) Some of the acrotelm (upper layer of the peat) excavated during construction will be used for landscaping purposes.

4.4 Designated Deposition Areas

Two locations have been identified as repository areas and are shown on the site layout plans. The smaller area will be a peat repository area, and the larger repository will hold overburden spoil. Both repository areas have a perimeter buttress which will contain and ensure the placed peat and spoil remains stable in the long-term. Prior to the placement of any excavated peat and spoil, the permanent buttresses shall be constructed around the perimeter of the repository areas.

The following recommendations/best practice guidelines for the placement of peat within the deposition area will be considered and taken into account during construction.

(1) The potential deposition area locations identified are alongside the proposed access tracks in the south of the site where the topography is typically flat.

(2) The placement of excavated peat and spoil is to be avoided without first establishing the adequacy of the ground to support the load. As there is no peat present in the two areas, this is not considered to be an issue.

(3) All buttresses required within the repository areas will be founded on mineral soil or bedrock i.e. competent strata. The founding stratum for each buttress will be inspected and approved by a geotechnical engineer or competent person.

(4) The height of the buttresses constructed will be greater than the height of the stored peat and spoil to prevent any surface run-off. The height of the buttresses will be a minimum of 0.5m above the height of the placed peat and spoil to prevent any potential for saturated peat to flow out of the repository area.

(5) The side slopes of the stone buttresses shall be constructed at 45 degrees. The stone buttresses will be widened to allow construction traffic access for tipping purposes during the placement of the excavated peat and spoil.

(6) An interceptor drain will also be installed upslope of the repository areas. The drain will divert any surface water away from the repository area and hence prevent water from ponding in the area.

(7) The placement of the excavated material will commence at the downslope edge of the repository area against the stone buttress and placement will then continue upslope.

(8) Where practical, it should be ensured that the surface of the placed peat and spoil is shaped to allow efficient run-off of surface water. Where possible, shaping of the surface of the peat and spoil should be carried out as placement of peat and spoil within the placement area progresses. This will reduce the likelihood of debris run-off and ensure stability of the placed peat and spoil.

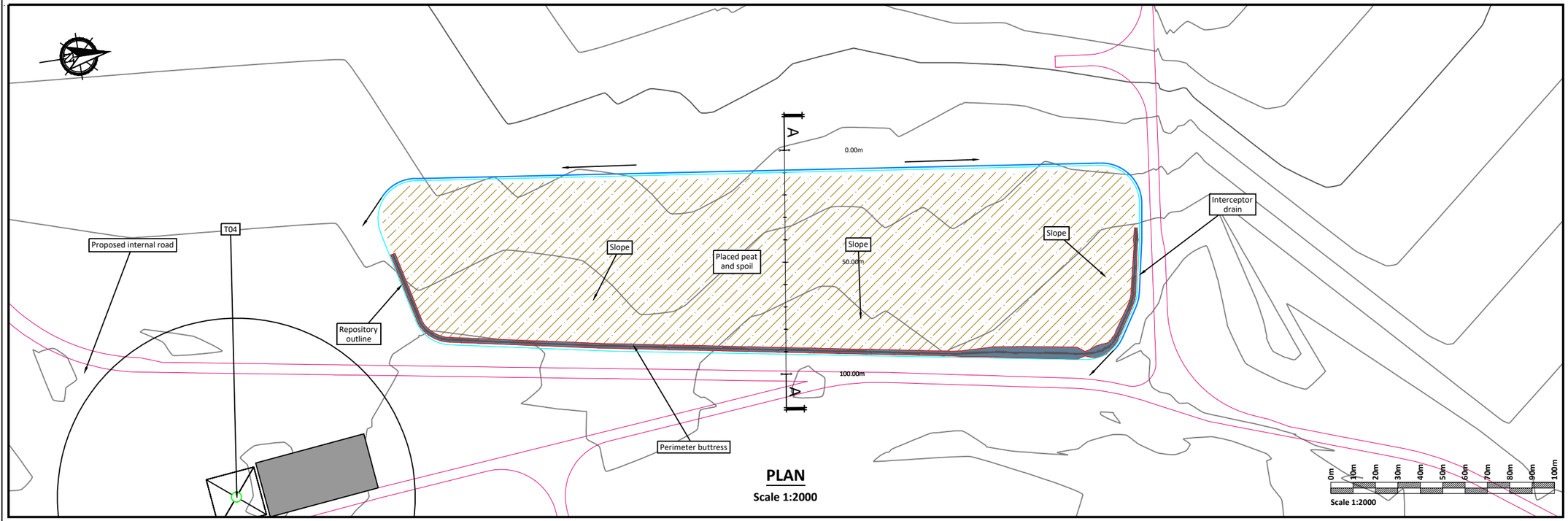
(9) Finished/shaped side slopes in the placed peat and spoil shall be not greater than 1 (v): 2 or 3 (h). This slope inclination will be reviewed during construction, as appropriate. Where areas of weaker peat and spoil are encountered then slacker slopes will be required.

(10) Where possible, the acrotelm shall 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 placed peat and spoil within the placement areas.

(11) Movement monitoring instrumentation may be required adjacent to the access track where peat has been placed. The locations where monitoring is required will be identified by the designer on site.

(12) Supervision by a geotechnical engineer or appropriately competent person is recommended for the works.

(13) All the above mentioned general guidelines and requirements should be confirmed by the designer prior to construction.



PLAN

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Construction Notes Deposition Areas:

(1) Prior to the placement of any excavated peat and spoil, permanent buttresses shall be constructed around the perimeter of the deposition areas. The presence of perimeter buttresses will help prevent the flow of any saturated peat which may occur at the surface of the placed peat over the life time of the deposition and will also allow some drainage of the placed peat and spoil within the deposition areas.

(2) All buttresses required within the deposition areas should be founded on competent strata. The founding stratum for each buttress should be inspected and approved by a competent person.

(3) In order to prevent water retention occurring behind the buttresses, the buttresses should be constructed of coarse boulder fill with a high permeability. The buttresses should be constructed of well graded granular rock fill of about 100mm up to typically 500mm in size.

(4) As an alternative, buttresses may be constructed from cohesive fill, however drainage will have to be provided to prevent the build-up of water pressures behind the buttresses.

(5) The height of the buttresses constructed should be greater than the height of the stored peat and spoil to prevent any surface run-off.

(6) The side slopes of the buttresses should be constructed at typically 45 degrees. The buttresses may be widened to allow construction traffic access for tipping purposes during the placement of the excavated peat and spoil.

(7) An interceptor drain should also be installed upslope of the deposition areas.

(8) A silting pond will be required at the lower side of the deposition areas.

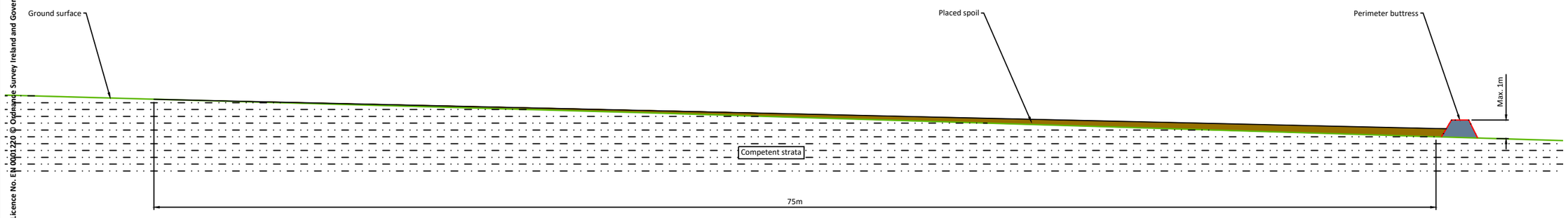
(9) The placement of the excavated spoil should commence at the downslope edge of the deposition area against the buttress and placement should then continue upslope.

(10) It is important that the surface of the stored spoil be shaped to allow efficient run-off of water from the stored spoil.

(11) Supervision by a geotechnical engineer or appropriately competent person is recommended for the construction of the deposition area.

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

(13) Further guidelines on the construction of the deposition area are included within Section 7.5 of the Peat & Spoil Management Plan.



SECTION A - A

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Date - 30.06.21

FIGURE 4.1 - SPOIL DEPOSITION AREA 1 - PLAN & CROSS SECTION DETAILS

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Checked - IH

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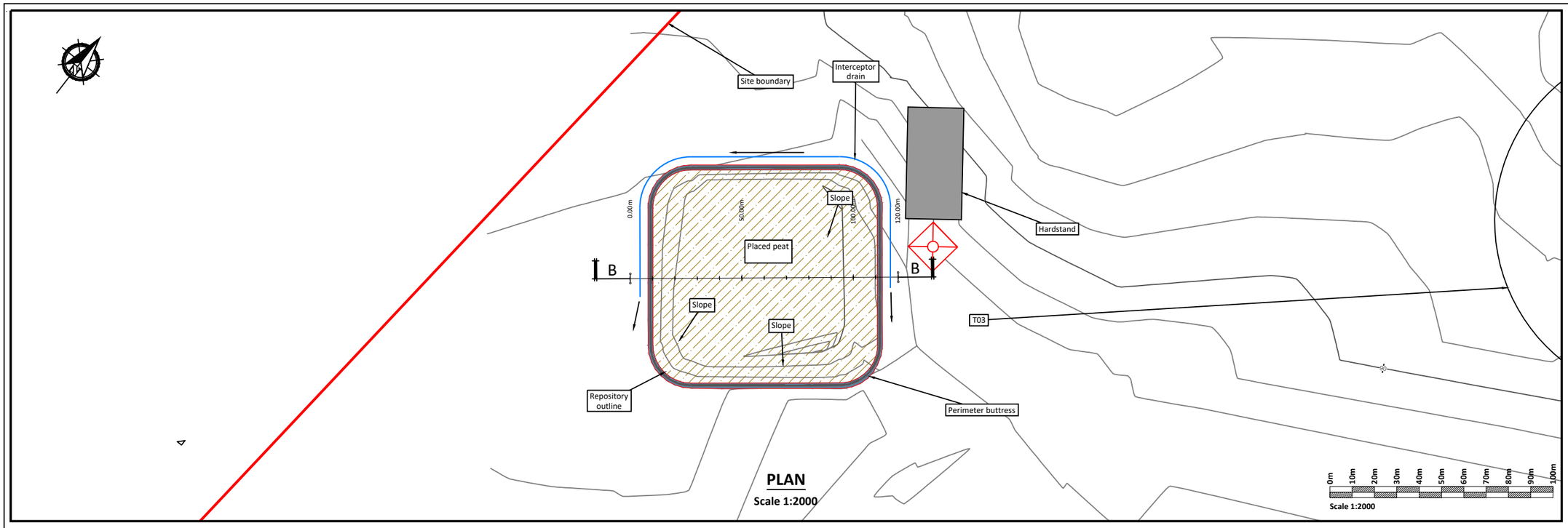

PLAN

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Construction Notes Deposition Areas:

(1) Prior to the placement of any excavated peat and spoil, permanent buttresses shall be constructed around the perimeter of the deposition areas. The presence of perimeter buttresses will help prevent the flow of any saturated peat which may occur at the surface of the placed peat over the life time of the deposition and will also allow some drainage of the placed peat and spoil within the deposition areas.

(2) All buttresses required within the deposition areas should be founded on competent strata. The founding stratum for each buttress should be inspected and approved by a competent person.

(3) In order to prevent water retention occurring behind the buttresses, the buttresses should be constructed of coarse boulder fill with a high permeability. The buttresses should be constructed of well graded granular rock fill of about 100mm up to typically 500mm in size.

(4) As an alternative, buttresses may be constructed from cohesive fill, however drainage will have to be provided to prevent the build-up of water pressures behind the buttresses.

(5) The height of the buttresses constructed should be greater than the height of the stored peat and spoil to prevent any surface run-off.

(6) The side slopes of the buttresses should be constructed at typically 45 degrees. The buttresses may be widened to allow construction traffic access for tipping purposes during the placement of the excavated peat and spoil.

(7) An interceptor drain should also be installed upslope of the deposition areas.

(8) A silting pond will be required at the lower side of the deposition areas.

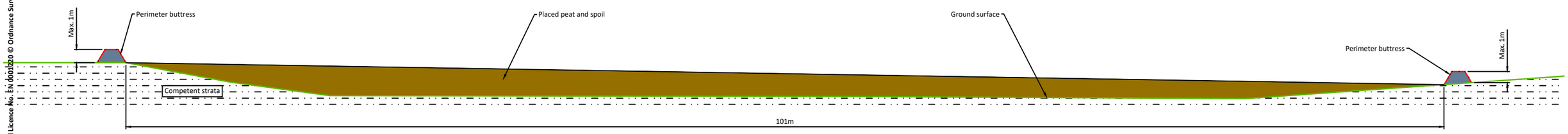
(9) The placement of the excavated spoil should commence at the downslope edge of the deposition area against the buttress and placement should then continue upslope.

(10) It is important that the surface of the stored spoil be shaped to allow efficient run-off of water from the stored spoil.

(11) Supervision by a geotechnical engineer or appropriately competent person is recommended for the construction of the deposition area.

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

(13) Further guidelines on the construction of the deposition area are included within Section 7.5 of the Peat & Spoil Management Plan.



SECTION B - B

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Scale (@ A3) 1:2000

Date - 08.06.21

FIGURE 4.2 - PEAT / SPOIL DEPOSITION AREA 2 - PLAN & CROSS SECTION DETAILS

Drawn - POR

Checked - IH

Rev - B

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Tuesday 8 June 2021

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

The works require that turbine bases are to be founded on competent founding strata which will require excavation through peat and spoil. Some turbine bases may require a piled solution following confirmatory ground investigations by the Contractor prior to the commencement of the development.

Similarly, crane hardstandings, construction compound, substation platforms and met mast foundations are to be founded on competent mineral soil and/or rock which will also require excavation through peat and spoil.

5.1 Methodology

This methodology includes procedures that are to 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.

(1) With respect to placement of arisings from excavations the guidelines given in Section 4 are to be followed.

(2) All excavations within peat are to be adequately supported or peat slopes are to 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 shall be kept reasonably free from water at all times. Water should 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 is to be fed into an established watercourse or drainage ditch following suitable treatment.

6. EXCAVATIONS FOR UNDERGROUND CABLES

A connection between the Bracklyn Wind Farm and the national electricity grid will be necessary to export electricity. It is proposed that the Bracklyn Wind Farm will connect to the national grid via the 2 no. 110kV 'End Masts' located in Coolronan townland to the southeast of the proposed wind farm development. The proposed grid connection is 6.3km in length and will pass through agricultural fields and along the public road corridor.

The proposed grid connection construction methodology, including proposals for water crossings on the underground cabling routes is described in the EIAR.

It is proposed to excavate the trenches for the underground cable at a uniform level in peat or other overburden material. The trenches will be 600mm wide and 1315mm deep.

The cable trench route is envisaged to encounter peat and till derived from Limestone.

6.1 Methodology

This methodology includes procedures that are to 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.

(1) With respect to placement of arisings from excavations the guidelines given in Section 4 are to be followed.

(2) It is proposed to excavate the trenches for the underground cable at a uniform depth in peat or other overburden material.

(3) All excavations within peat are to be adequately supported or peat slopes are to 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.

(4) Similarly, all excavations within non-peat overburden for the cable trench are to be adequately supported or battered to a safe slope inclination typically of 1 (v): 1.5 or 2 (h). This slope inclination will be reviewed during construction, as appropriate.

(5) Excavations shall be kept reasonably free from water at all times.

(6) Any material excavated from the cable trench which is deemed suitable for reinstatement of the trench will be used for this purpose i.e. stockpiled locally to the works and reused for backfilling.

(7) Any material not deemed suitable for the reinstatement of the cable trench will be landscaped locally to the trench, where possible.

7. GENERAL RECOMMENDATIONS FOR GOOD CONSTRUCTION PRACTICE

To minimise the risk of construction activity causing potential peat instability it is recommended that the Construction Method Statements (CMS) for the project will also take into account, but not be limited, to the general recommendations below together with the specific recommendations above.

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

(2) Avoidance of unstable excavations. All excavations shall 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, as appropriate, during construction in areas of possible poor ground, such as deeper peat deposits (see Section 8).

(5) Site reporting procedures 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 wind farm site by Contractor to include an assessment of ground stability conditions (e.g. cracking, excessive floating access track 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 track at staggered intervals at locations where the peat depth is greater than 2m. Additional monitoring locations may be required at infrastructure locations with deeper peat deposits. Details of sighting posts are given below.

(1) A line of sighting posts shall 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 shall comprise 6 no. posts at 5m centres that is a line some 25m long.

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

(2) Lines of sighting posts shall be placed across the existing slope about 5m away from the area to be worked. It is recommended that the posts are located along the track at 10m intervals in areas of deep peat (say greater than 2m). Where there are relatively steeper slopes or softer ground a sighting line shall be placed down the slope, or at any location where monitoring would be deemed useful.

(3) Each line of sighting posts shall be uniquely referenced with each post in the line given a reference. The post reference shall 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 shall 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 shall 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 shall be increased.

(7) A monitoring record shall be kept of the date, time and relative movement of each post, if any. This record shall 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 shall be carried out.

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

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

(3) Re-commencement of activities shall only start following a cessation of movement and agreement with all parties.

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 shall be carried out.

(1) On alert of a peat slide incident, all activities (if any) in the area should 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 should 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 from the analysis undertaken that a peat slide will occur on 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 should comprise well-graded coarse rock pieces from about 300mm up to typically 1000mm.

The rock fill for the check barrage could be sourced from locally won granular fill material 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.

Typically, the check barrage should 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 shall be along the existing access tracks on the wind farm 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 would need to 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 should be removed as soon as any measures to prevent further peat sliding is agreed with all parties.

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