



**LOCHLUICHART WIND FARM EXTENSION II**

**SUPPLEMENTARY INFORMATION**

**APPENDIX 13.B**

**OUTLINE PEAT MANAGEMENT PLAN  
VERSION 2**

**AUGUST 2019**





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## 1 INTRODUCTION

### 1.1 Preparation of the Peat Management Plan

This outline Peat Management Plan (oPMP) for Lochluichart Wind Farm Extension II (the Proposed Development) has been prepared initially to inform the Highland Council (THC) and statutory consultees of the estimated peat excavation and re-use potential, proposed peat and soils management methodologies to be employed during construction.

This oPMP has been prepared to respond to the consultees responses received to the 2018 EIA Report, and has been amended to address comments and ensure that the Development constitutes construction project that complies with good practice in accordance with Scottish Renewables (SR) and Scottish Environment Protection Agency (SEPA) guidance.

The purpose of the oPMP is to:

- Define the materials that will be excavated as a result of the Development, focusing specifically on the excavation of peat;
- Report on detailed investigations into peat depths within the Development Site;
- Detail proposals for the management of excavated peat and other soils;
- Consider the potential impact of the Development on Ground Water Dependent Ecosystems (GWDTEs);
- Determine volumes of excavated arisings, the cut/fill balance of the Development and proposals for re-use or reinstatement using excavated materials; and
- Detail management techniques for handling, storing and depositing peat for reinstatement.

The oPMP has been produced in accordance with SR and the SEPA Guidance on Peat Excavations and Management<sup>1</sup>. This oPMP is intended to be a document that will evolve during the different phases of the project and as such will be subject to continued review to address:

- Requirements to discharge future Planning Conditions;
- Detailed ground investigations and design development;
- Unforeseen conditions encountered during construction;
- Changes in best practice during the life of the wind farm; and
- Changes resulting from the construction methods used by the contractor(s).

Table 1 provides a tracker of the updates to the oPMP and should be updated following every amendment.

Whilst this oPMP provides a base standard for good practice, where avoidance or further minimisation of risks to the environment can be demonstrated through use of alternative methods or improvements to current practices, the Contractor will implement these wherever possible and will correspond with SEPA and Highland Council.

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<sup>1</sup> SR and SEPA (2012) Guidance on the Assessment of Peat volumes, Re-use of Excavated Peat and the Minimisation of Waste [Online] Available at: [http://www.scottishrenewables.com/media/uploads/publications/a4\\_developments\\_on\\_peatland.pdf](http://www.scottishrenewables.com/media/uploads/publications/a4_developments_on_peatland.pdf) (Accessed 30/07/19)

**Table 1: oPMP Version Tracker**

Version	Purpose	Amendment
Version 1	Submission for Planning	Assesses 9 turbine scheme and associated infrastructure.
Version 2	Submission for Supplementary Information (SI)	Addresses reduction in turbine numbers (no. 5) and associated new access tracks.

## 1.2 The Site

The Development is located between Loch Glascarnoch and Lochluichart approximately 18 km north-west of Dingwall, close to the intersection between the A835(T) and A832. The Development will comprise of 5 turbines and the 'Site Layout Plan' is detailed in Figure 1 within Appendix 1 of this oPMP.

Published geological mapping of superficial soils indicates the site to be underlain by peat in the central and southern areas. Till deposits typically comprising gravel, sand and silt were shown across the majority of the Site. In the northern section of the Site area, occasional peat deposits were shown.

Published bedrock geology mapping indicates the site to be underlain by Caradoc aged rocks comprising Vaich Pelite Formation - Semipelite, Garnet and pockets of Glascarnoch Psammite Formation – Psammite in the western area of the Site. A geological fault was recorded to the east of the Site orientated south-west to north-east, next to Loch Luichart. No other faults were noted.

## 1.3 Consultation

Version 1 of the oPMP was included within the 2018 EIA Report, which formed part of the planning application for the Development and was submitted to THC and its consultees, including SEPA and Scottish Natural Heritage (SNH).

As detailed in Table 1, this version of the oPMP updates Version 1 of the oPMP responds to the scoping opinion and consultees responses to the planning application for the Development. Consultation responses in relation to peat are included in Chapter 13 of the SI.



## **2 OBJECTIVES**

### **2.1 Introduction**

#### **2.1.1 Background**

This oPMP has been prepared to respond to the consultees responses received to the 2018 EIA Report, and has been amended to address comments and ensure that the Development constitutes construction project that complies with good practice in accordance with SR and SEPA guidance.

Detailed peat survey work and completion of assessments such as Peat Slide Risk Assessment (PSRA) and Borrow Pit Assessment (BPA) for the 2018 EIA Report allows a consistent approach to the management of peat across the Site can be achieved. The PSRA assessment has been updated following the Revised Development and is included as Appendix 13.C of the SI.

The overall objective of the design of the Development has been to minimise the excavation of peat where possible, and achieve as close as practicable an overall material balance within the Site. This is considered to give the best opportunity to achieve reinstatement or restoration in accordance with good practice, and remove the need for waste management controls.

This objective is achieved through:

- Ensuring the characteristics of the Site are understood through extensive peat probing and assessing the sites topography;
- Understand the extents of the site layout and how excavations will take place; and
- Modelling the peat depth profile based on probing and digital terrain model in 3D.

#### **2.1.2 Approach to Minimising Peat Excavation**

The following steps have been taken during the outline design stage of the Development to minimise the impact on peat:

- The development of an access track design which avoids deeper peat where practicable;
- The design and orientation of turbines and crane hardstandings considers local topographical and peat constraints; and
- Consideration of borrow pit locations in an area of shallow peat cover.

At detailed design and construction stage these steps will be further supplemented by taking the following measures to minimise disturbance:

- Maximisation of batter angles in cuttings;
- Consideration of floating tracks; and
- The use of appropriate construction plant to avoid unnecessary disturbance of the ground surface.

The fundamental principle upon which this oPMP is based is that achieving a successful materials strategy is contingent on gaining a thorough understanding of the Site through investigation and developing a design that achieves the materials management objectives. For the Proposed Development, this principle is achieved by undertaking significant peat investigation works prior to preparing this oPMP.

## **2.2 Aims and Objectives**

### **2.2.1 *Need for a Peat Management Plan***

This oPMP is prepared to demonstrate to the planning authority, SEPA and other consultees that the construction of the Development will progress in a manner that is planned, is in accordance with good practice and achieves the aim of being environmentally sustainable.

The oPMP is therefore prepared in accordance with the SR and SEPA guidance. It defines:

- How the Development has been structured and designed so far as practicably possible to reduce the volumes of peat excavated;
- How volumes of peat excavated during the course of the works have been considered in the design; and
- How excavated peat will be managed.

### **2.2.2 *Objectives of the outline Peat Management Plan***

The main objectives of the oPMP is to outline how any peat expected to be excavated will be managed and re-used during the construction of the Development.

This is achieved through responding of the following objectives:

- Providing a description of peat conditions on site and how this was determined;
- Estimation of peat volumes to be excavated and re-used;
- Classification of excavated material;
- Consideration of the use of appropriate peat(s);
- Describing how excavated peat will be handled to ensure suitability for re-use;
- Determining if temporary storage of peat will be required during construction and how this will be done to ensure suitability for re-use; and
- Considering the potential volume of peat which may not be suitable for re-use and any requirement for a Waste Management Plan for the Development.

The response to these objectives is provided in the following sections.

### **3 PEAT MANAGEMENT**

#### **3.1.1 General Peat Classification**

Acrotelmic peat is the upper layer of peat consisting of living and partially decayed material with a higher hydraulic conductivity and a variable water table. These deposits are generally found to exist in the upper 0.5 m of peat deposits and is typically suitable for re-instatement because it contains viable plant life to assist in the regeneration of peatland vegetation and carbon sequestration.

Catotelmic peat is variable in characteristics, with decomposition of fibres generally increasing with depth. Water content can be highly variable and affects the structural strength of the material. Suitability for re-use generally depends on fibre and water content. The upper catotelm is commonly deemed as being appropriate for re-use in restoration due to its relatively high fibre content.

Generally excavated semi fibrous catotelmic peat from the Site will have sufficient structural strength to be able to be used in the lower layers of verge restoration as it will not be 'fluid'.

The catotelmic peat would be capped with a surface layer of actrotelm to re-establish the peat vegetation. If any fluid like wet catotelmic peat is encountered then it would be placed in more appropriate locations such as low-lying section of the borrow pits or concave deposition areas.

The following assumptions have been made in classifying peat excavated during the construction work:

- Where the total peat depth was found to be less than 0.5 m, this peat material is assumed to be 100% acrotelmic;
- Where the total peat depth is between 0.5 m and 1.0 m, the upper acrotelmic peat is at least 0.5 m deep; and
- Where the total peat depth as found to be greater than 1.0 m, acrotelmic peat is assumed to account for at least 30% of total depth but generally applying minimum of 0.5 m thick.

Existing topography and permitted track gradients drive the design of the infrastructure with due consideration given to potential construction risk and effects on environmentally sensitive receptors including deep peat, watercourse buffers and any GWDTEs. Further micro-siting post-consent would take place in such a way as to avoid where possible the excavation of deep peat.

### **3.2 Investigations**

The existing peat depths across the Site have been determined through a phased survey approach undertaken during 2018 EIA. The survey was initiated to inform the EIA and site design work while supporting the PSRA. The survey comprised a total of 902 probes.

Peat depths ranged from 0 to 3.75 m thickness across the Site and were shown as localised or isolated zones within the north-eastern area of the Site. This was consistent with the British Geological Survey mapping.

Initial peat depth surveys were undertaken in April and August 2017 comprising 100 m grid coverage across the Site, where accessible. This rationale of probing is in accordance with the Phase 1 approach as detailed in the Scottish Government guidance for investigating peat.

Further peat depth surveys (Phase 2) were undertaken in June 2018. The probe positions for this visit were focussed on the proposed turbine, access tracks and other

key infrastructure. Peat depths were measured along the proposed access tracks at 50 m centres with offsets of 25 m on either side of the centre line, with 10 m grid spacing at turbines east of the existing wind farm spine road where deeper peat had previously been recorded, and 10 m cross-hair at turbines west of the spine road.

As the remaining turbine and infrastructure locations of the Revised Development have not changed, the 2017 and 2018 peat probing investigations provided suitable coverage of the Revised Development.

The peat depths are illustrated in Figure 2 'Recorded Peat Depths' within Appendix 1 of this document.

### 3.3 Summary of Peat Depths

Throughout the peat surveys to date, a total of 902 probes were progressed. Over 80% of these recorded no peat or peat less than 1.0 m. Thick peat (where the depth was greater than >1.0 m) was recorded at 17% of locations.

The maximum peat depth recorded was 3.75 m in the eastern area of the Site in a topographically low-lying area between Meallan Caoruinn and Socach Allt Giubhais. Generally, peat depths did not exceed 0.5 m, which is anticipated with steep topography and in rocky outcrop areas.

Peat varied between 1.0 m to 2.0 m depth west of Meallan Caoruinn in the vicinity of Caochan Ban and Allt na Beinne Leithe Bige watercourses. This area was noted to be occupied by hummocky ground and there was evidence of localised 'peat creep' and local surface drainage features were abundant. The distribution of peat deposits along the proposed tracks and infrastructure are shown on Figure 3 'Interpolated Peat Depths' included in Appendix 1.

Details of peat depths at turbine locations specifically are illustrated on Figure 3a which illustrates that with exception of T4, which recorded peat depths up to 2.5m, turbines were located within areas of peat less than 1.0m. Where peat is consistently over 1.0 m thick and existing ground levels permit, the use of floating roads should be adopted (as indicated in Figure 4 'Areas of Possible Floating Roads' within Appendix 1). Prior to commencing works on site, the Contractor as part of any floating road design will undertake further ground investigation to establish peat characteristics and surcharging strategies.

#### 3.3.1 Excavation Calculation

An estimate of excavated peat volumes against access track lengths, turbines and crane hardstandings in line with the Revised Development site layout design has been undertaken. This was completed by assessing the 2D layout against the 3D interpolated peat data. Detailed earthworks volumes were not available for the project at this stage and assumptions in this regard have been made.

Volumes of excavation and an estimate on the excavated material compositions, be this non-peat superficial soils, peat or other materials is included in Table 2 using the anticipated construction activities that will generate excavated soils.

**Table 2: Peat Excavation Volumes Based on Construction Activity**

Development Component	Estimated Volume of Excavated Peat (m <sup>3</sup> )	Estimated Volume of Acrotelmic Peat (m <sup>3</sup> )	Estimated Volume of Catotelmic Peat (m <sup>3</sup> )
General earthworks associated with widening/ upgrade of existing tracks, new access tracks, crane Pads and turbine bases	17,150	10,508	6,642
Borrow pit	7,500	2,500	5,000
Construction compound/Substation	2,500	2,500	0
<b>SUB-TOTAL</b>	<b>27,150</b>	<b>15,508</b>	<b>11,642</b>
Estimate of peat left in-situ through floating track areas	5,625	1,825	3,750
<b>TOTAL</b>	<b>21,525</b>	<b>13,683</b>	<b>7,892</b>

A detailed assessment of excavated volumes by location within the Site is provided in Appendix 2 of this oPMP.

### 3.3.2 Peat Re-use Requirements

The principles of re-instating peat and peat soils should be adhered to for all elements of the infrastructure, comprising the below:

- Peat and peaty soils will be reinstated on track and infrastructure verges with turves placed on the upper horizons encouraging re-vegetation;
- All peat, soil and turves excavated from beneath infrastructure (excluding any floating track section) will be re-instated in the vicinity of its original location;
- Any wet catotelmic peat will be placed at the bottom of any restoration profile, followed by semi fibrous catotelmic peat and then acrotelmic should be placed on top; and
- Restoration activities will be overseen by the Ecological Clerk of Works (ECoW) to ensure methods are properly adhered to.

Table 3 shows the opportunities for re-use of peat with the Site including the demand for acrotelm and catotelm peat. Table 4 summarises the total peat balance estimated during construction of the Revised Development.

**Table 3: Peat Re-use Volumes Based on Construction Activity**

Development Area	Total Demand Estimate (m <sup>3</sup> )	Acrotelm Demand (m <sup>3</sup> )	Catotelm Demand (m <sup>3</sup> )	Estimated Reinstatement Thickness (max) where gradient permits (m)	Assumptions
General earthworks associated with widening/ upgrade of existing tracks, new access tracks, crane pads, turbine bases and full reinstatement at blade laydown areas.	11,119	6,469	4,650	0.5	Dressing off and reinstatement of 5 turbines bases, on verge and trackside earthworks assuming verge widths of between 3.0 m and 5.0 m based on topography. Assumed reinstatement up to 0.50 m thick.
Borrow Pits	7,950	4,671	3,279	0.5	Assumption made that peat reinstatement thicknesses will reflect the peat excavated prior to borrow pit workings, i.e up to 0.5 m at borrow pits 1 and 2.
Construction Compounds/ Substation	2,500	2,500	0	0.5	Full reinstatement of compound and dressing off of side slopes at sub-station compound.
<b>Total</b>	<b>21,569</b>	<b>13,640</b>	<b>7,929</b>		

Table 3 is presented as a summary of the assessment of peat reinstatement volumes. A detailed assessment is provided in Appendix 2 of this oPMP.

The following assumptions have been made in assessing peat re-use:

- New access track sections assume verges and earthworks on both sides of track with widths of between 3.0 m and 5.0 m approximately based on topography. As the access track edges will have graded slopes, peat depths will vary across the profile to tie into existing ground levels but are generally assumed not to exceed 0.5 m thick;
- Verges along the access tracks could consist of up to 0.5 m thick peat. Where possible catotelmic peat will be reinstated along verges in flatter areas;
- No peat will be placed on access track verges where the local topography is steep and/or a watercourse is in close proximity;
- Peat will be laid only to a thickness that maintains hydrological conditions to avoid drying out. Peat will not be used as a thin layer or on steeper non-peat slopes. Low

verges and landscaping will be formed to permit surface water to drain off the access tracks;

- Catotelmic soils will only be used if it is suitable for purpose; and
- Borrow pit reinstatement assumes a maximum peat depth thickness of that which existed prior to borrow pits works, but anticipated not to exceed 0.5 m. This will include the re-use of acrotelmic peat soils and turves.

Indicative areas of peat reinstatement at key infrastructure are shown in Figure 5 included in Appendix 1 of this oPMP. Excavated peat will be temporarily placed adjacent to where it is excavated. However, where this is not possible, temporary peat storage areas are shown on Figure 6a, b and c, included in Appendix 1. These are areas of previous disturbance, out with 50 m buffer of watercourses and where topography permits.

**Table 4: Peat Balance Calculations**

Peat Description	Total Peat Demand Estimate for Reinstatement (m <sup>3</sup> )	Total Peat Supply from Excavation (m <sup>3</sup> )	Surplus (+) or Deficit (-) (m <sup>3</sup> )
Acrotelm	13,640	13,633	-7
Catotelm	7,929	7,892	-38
<b>Total</b>	<b>21,569</b>	<b>21,525</b>	<b>-44</b>

Table 4 demonstrates that there will be a deficit of peat of 44 m<sup>3</sup>. These volumes should be considered in the context of the total excavated peat during construction. It is likely that balance would be achieved once total excavated peat is established by the appointed Contractor and reinstatement depths are adjusted accordingly.

### 3.3.3 Handling and Storage of Peat

It will be necessary for the Contractor to prescribe methods and timing involved in excavating, handling and storing peat for use in reinstatement. The contractor will be responsible for appointing a chartered geotechnical engineer who will monitor any potential stability risks. Construction methods will be based on the following principles:

- The surface layer of peat (acrotelm) and vegetation will be stripped separately from the catotelmic peat. This will typically be an excavation depth of up to 0.5 m;
- Acrotelmic material will be stored separately from catotelmic material;
- Careful handling is essential to retain any existing structure and integrity of the excavated materials and thereby maximise the potential for excavated material to be re-used;
- Less humified catotelmic peat which maintains its structure upon excavation should be kept separate from any highly humified amorphous or wet catotelmic peat;
- Acrotelmic material will be replaced as intact as possible once construction progresses / as it is complete;
- To minimise handling and transportation of peat, acrotelmic and catotelmic will be replaced, as far as is reasonably practicable, in the locality from which it was removed. Acrotelmic material is to be placed on the surface of reinstatement areas;
- Temporary storage of peat will be minimised, with restoration occurring in parallel with other works;
- Suitable areas should be sited in locations with lower ecological value, low stability risk and at a suitable distance from water courses;
- Reinstatement will, in all instances, be undertaken at the earliest opportunity to minimise storage of turves and other materials;
- Managing the construction work as much as possible to avoid periods when peat materials are likely to be wetter i.e. high rainfall events;

- Temporary storage and replacement of any peat excavated from the borrow pit should occur adjacent to and within the source pit; and
- Transport of peat on site from excavation to temporary storage and restoration site should be minimised.

Indicative temporary peat storage areas are illustrated on Figures 6a to 6c.

#### **3.3.4 *Waste Management Plan Requirements***

Based on the calculations carried out, the total peat volumes excavated will be fully incorporated in to the re-instatement works, therefore is unlikely to require a waste management licence.



## **4 CONCLUSIONS**

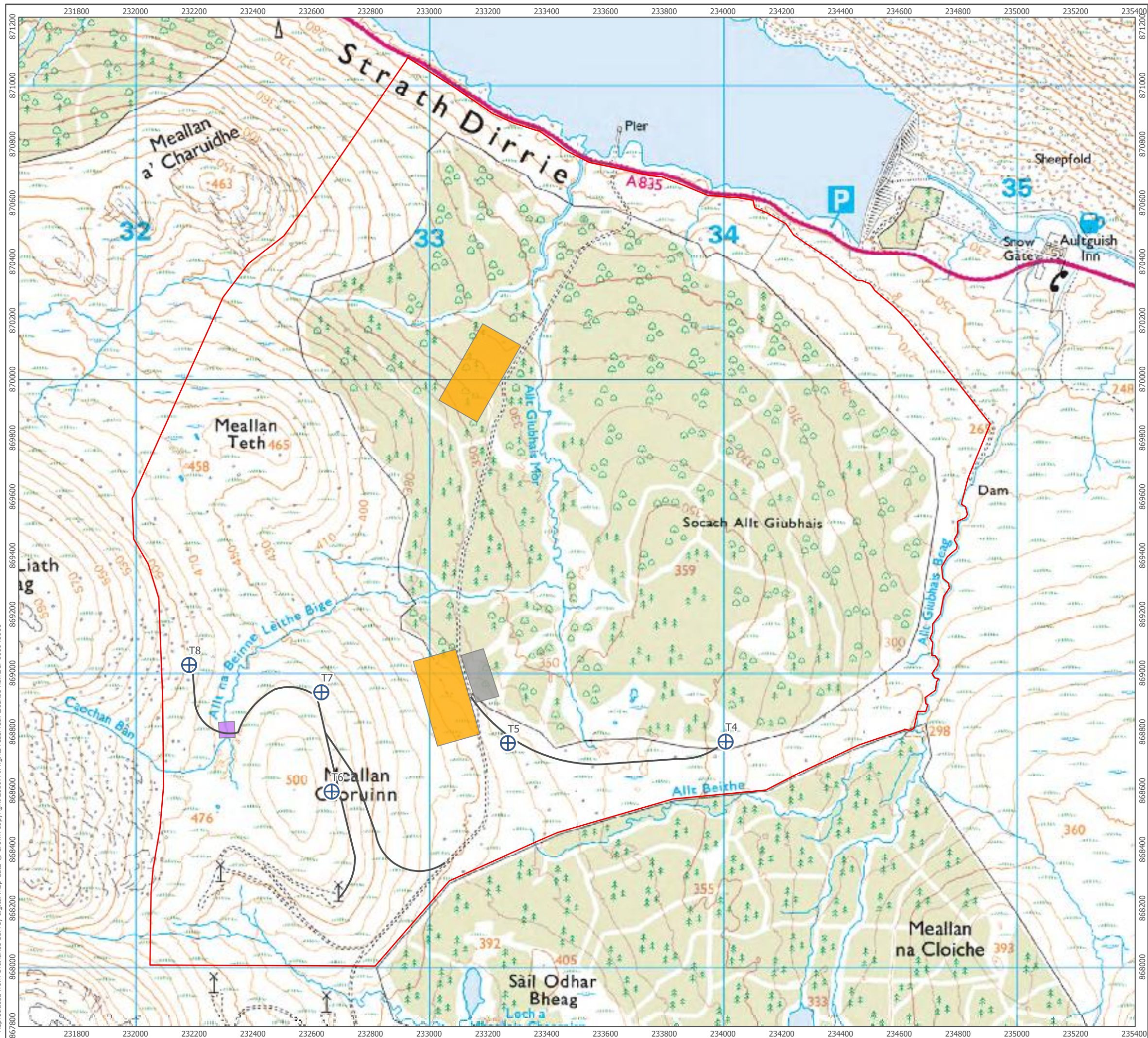
The following conclusions are drawn regarding the management of peat and excavated materials within the Site:

- As a result of the peat excavation and re-use estimates, it is demonstrated that all excavated peat can be suitably re-used on site;
- The re-use calculations include the assumption of using floating track construction methods as identified in Figure 4 'Assumed Floating Track Areas';
- Excavated peat will be used for the reinstatement of access track verges, cut and fill embankment slopes, reinstatement of turbine hardstandings, reinstatement of borrow pits and compound areas;
- The estimates of excavated peat provided in this report are likely to be higher than actually occur, as micro-siting during construction will allow for the avoidance of localised pockets of deeper peat;
- Sufficient methods have been defined to ensure that peat can be sensitively handled and stored on-site to allow for effective re-use; and
- No waste licence is required for the construction work.

## APPENDIX 1 - DRAWINGS



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P:\Projects\Engineering\Previous System\Engineering EIA\2414 Lochluichart Extension II.aprx\2414-REP-033 Fig1 Site Layout Plan

INFINERGY

ARCUS

- Site Boundary
- Proposed Turbine Location
- Indicative Access Track
- Borrow Pit
- Substation/ Control Building/ Construction Compound
- Watercourse Bridge

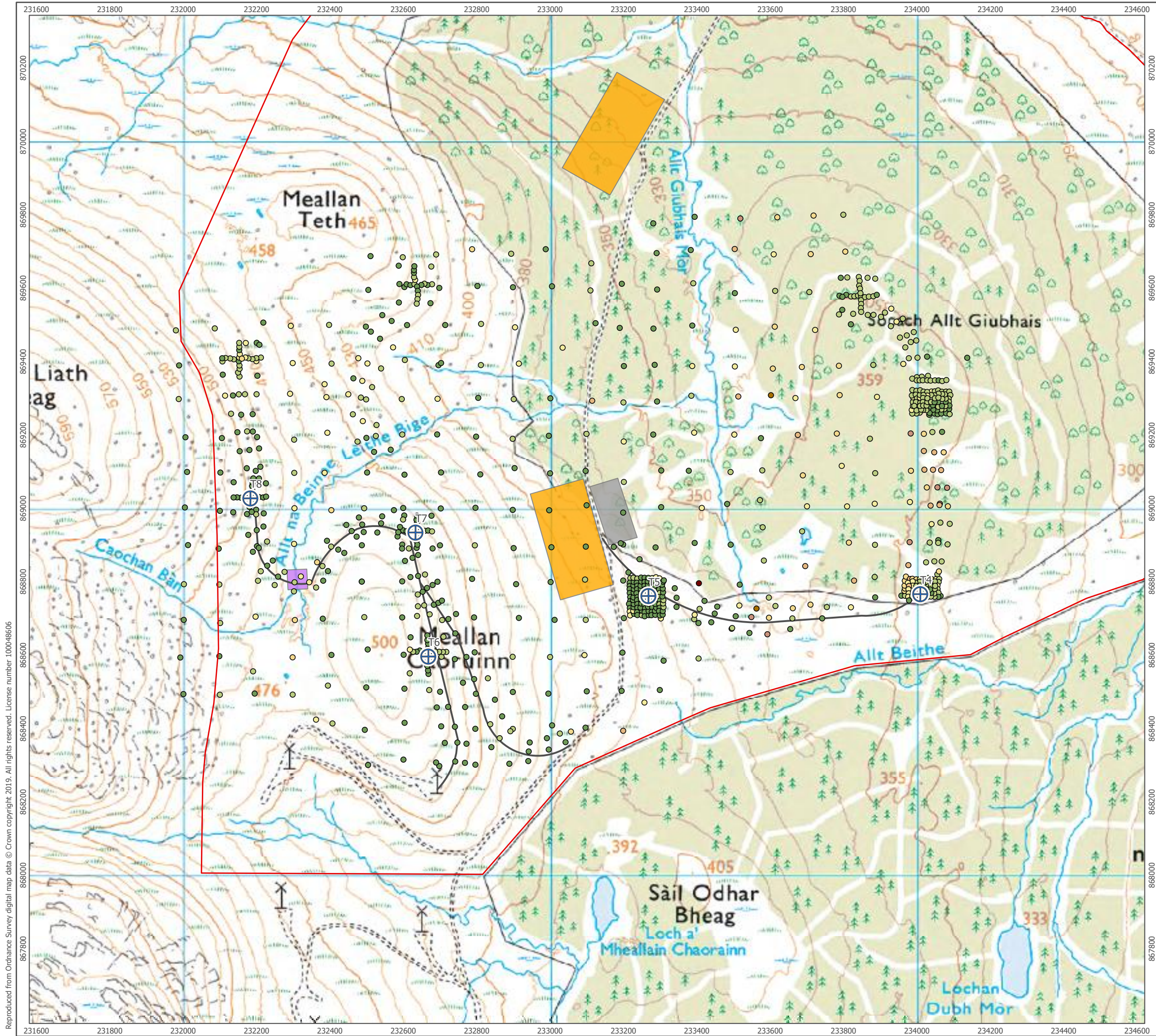
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0 0.25 0.5 km  
NORTH

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Checked By: DB	Date: 01/08/2019

Site Layout Plan  
Figure 1

Lochluichart Extension II  
Peat Management Plan





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- Site Boundary
- Proposed Turbine Location
- Indicative Access Track
- Borrow Pit
- Substation/ Control Building/ Construction Compound
- Watercourse Bridge

- Peat Depth (m)
- 0 - 0.50
  - 0.51 - 1.00
  - 1.01 - 1.50
  - 1.51 - 2.00
  - 2.01 - 2.50
  - 2.51 - 3.00
  - 3.01 - 3.50
  - 3.51 - 4.00

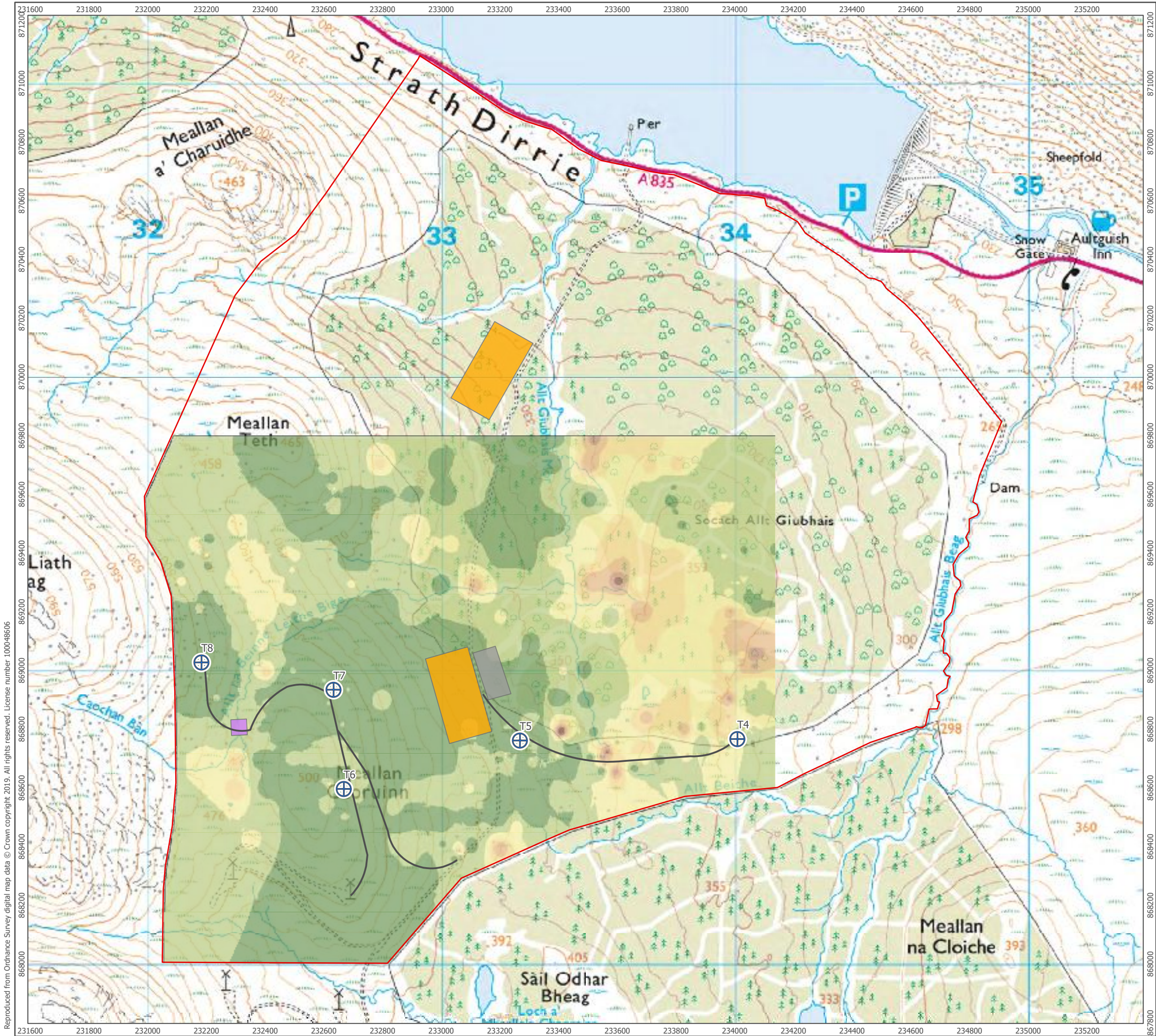


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Checked By: AG	Date: 01/08/2019

**Recorded Peat Depths**  
Figure 2

**Lochluichart Extension II  
Peat Management Plan**





INFINERGY

ARCUS

- Site Boundary
- Proposed Turbine Location
- Indicative Access Track
- Borrow Pit
- Substation/ Control Building/ Construction Compound
- Watercourse Bridge

Interpolated Peat Depths (m)

- 0 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00

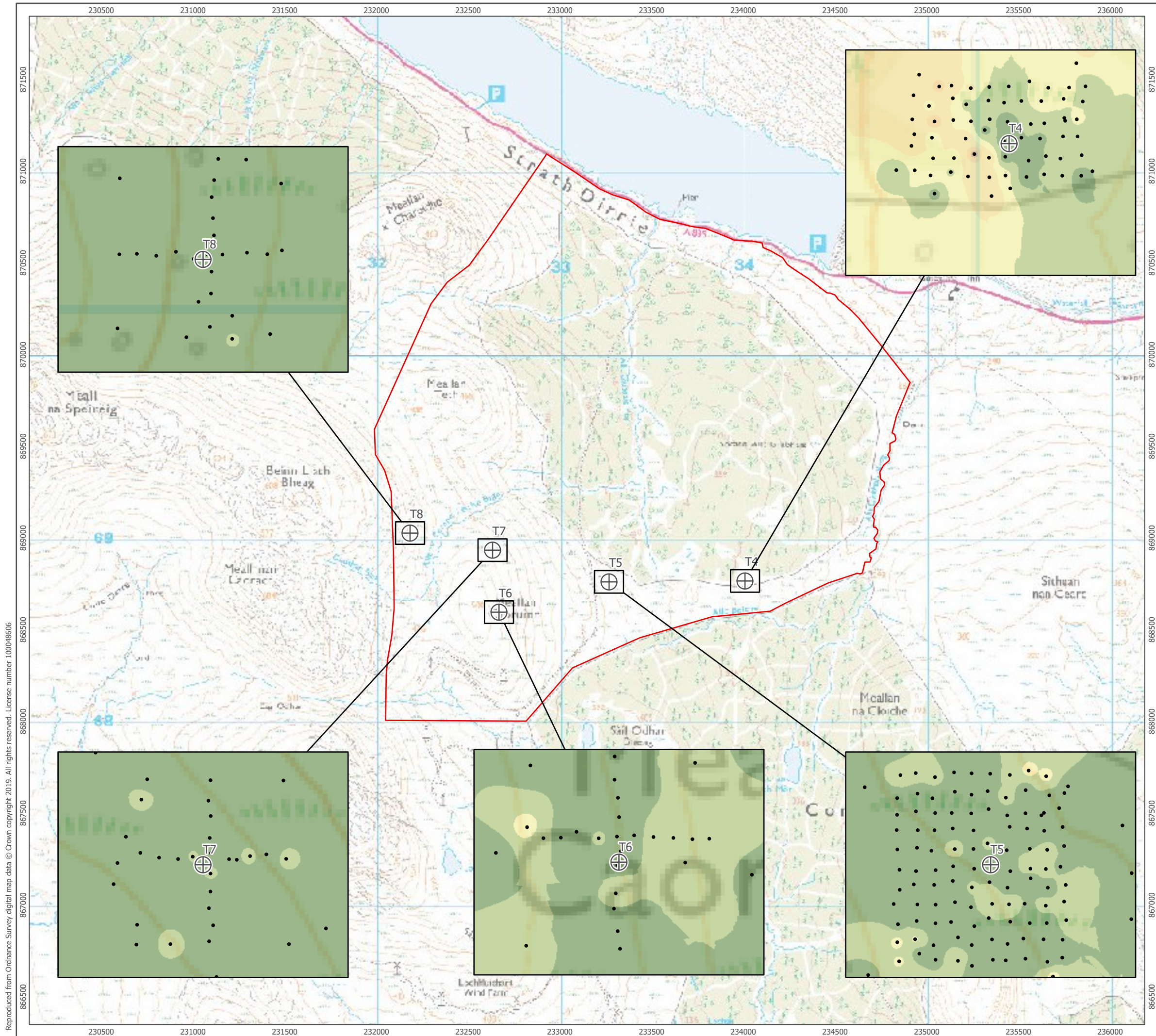
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NORTH

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Interpolated Peat Depths  
Figure 3

Lochluichart Extension II  
Peat Management Plan





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Site Boundary

Proposed Turbine Location

Peat Probe Locations

Interpolated Peat Depths (m)

0 - 0.50

0.51 - 1.0

1.01 - 1.50

1.51 - 2.0

2.01 - 2.50

2.51 - 3.0

3.01 - 3.50

3.51 - 4.0

4.01 - 4.50

1:20,000 Scale @ A3

0

0.5

1 km

NORTH

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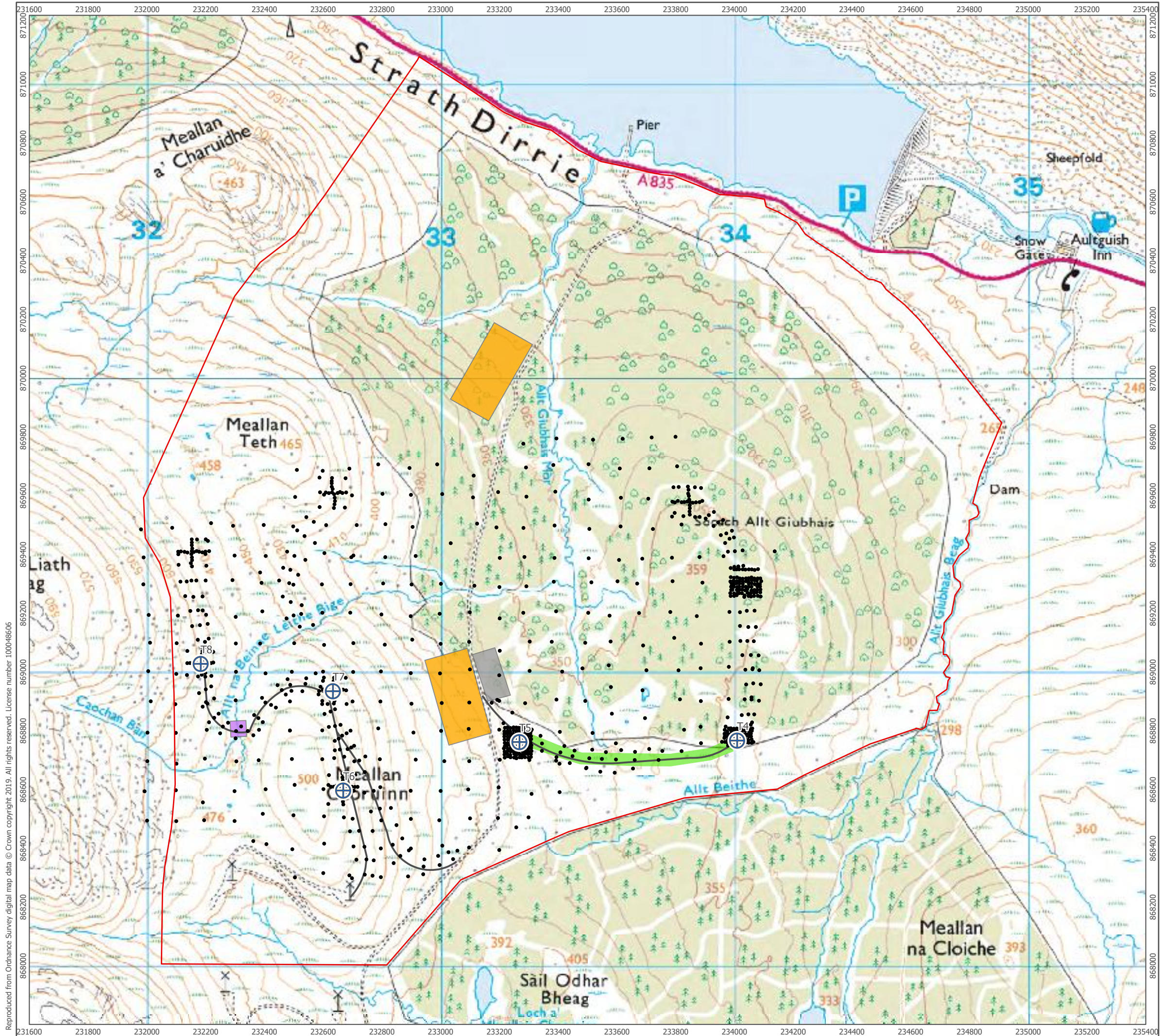
Checked By:

Date: 09/08/2019

**Interpolated Peat Depths Turbine Detail**  
Figure 3a

**Supplementary Information -  
Lochluichart Extension II -  
October 2019 - PMP**





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INFINERGY

ARCUS

- Site Boundary
- Proposed Turbine Location
- Peat Probe Locations
- Indicative Access Track
- Borrow Pit
- Substation/ Control Building/ Construction Compound
- Watercourse Bridge
- Assumed Floating Track Areas

1:12,500 Scale @ A3  
0 0.25 0.5 km  
NORTH

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Assumed Floating Track Areas  
Figure 4

Lochluichart Extension II  
Peat Management Plan

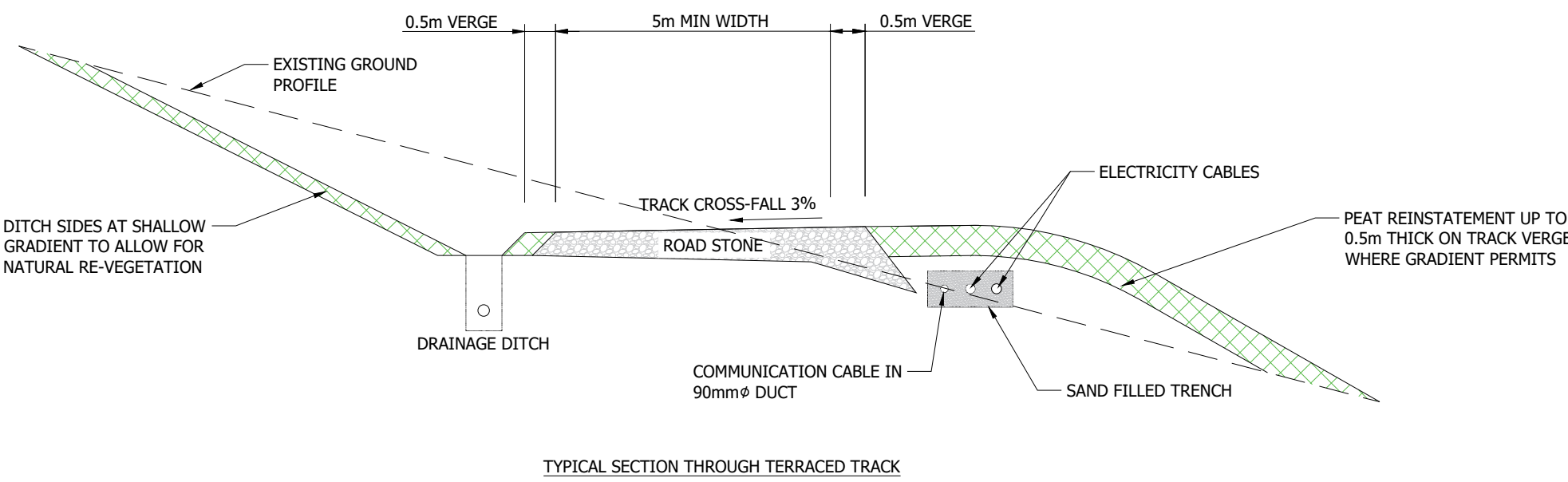
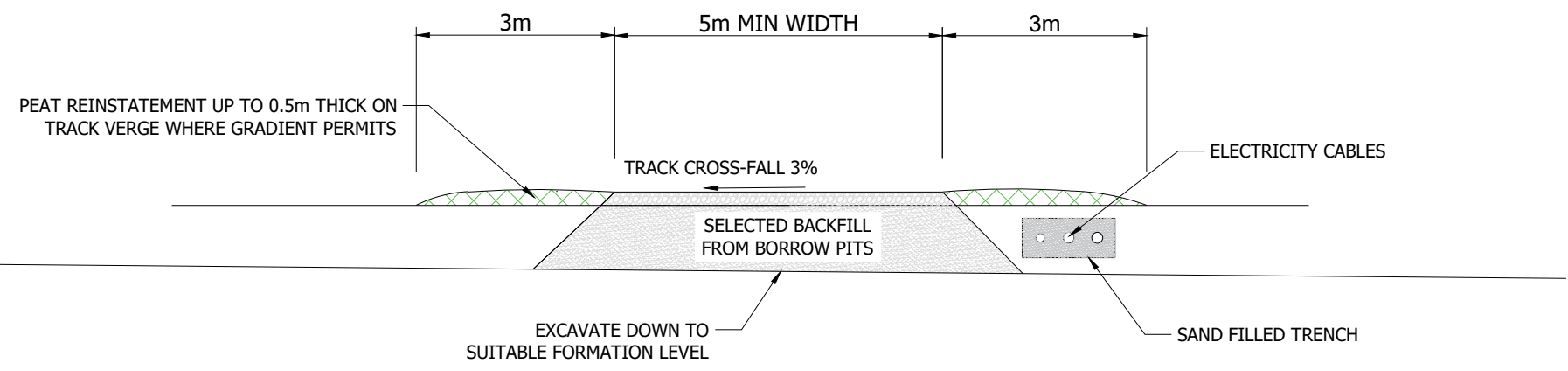
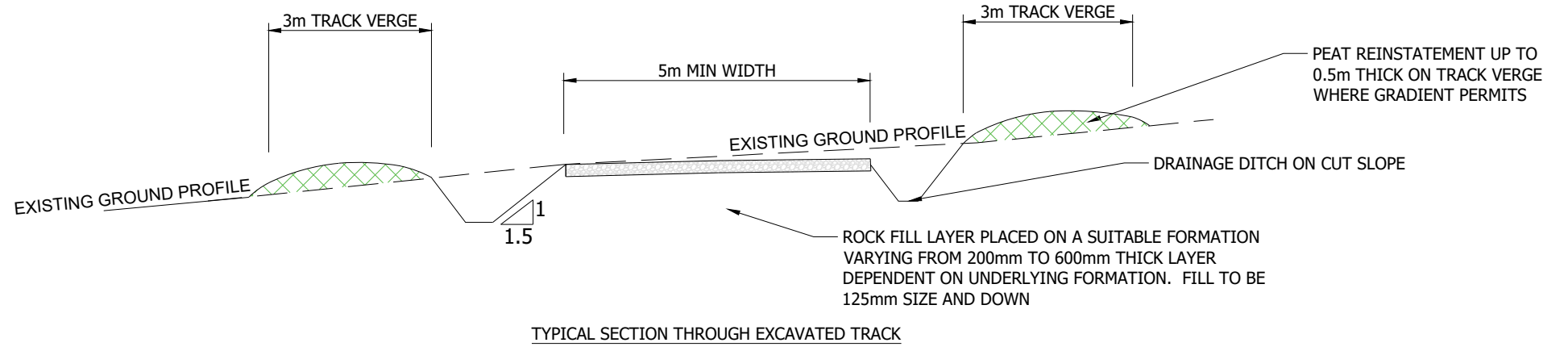


LEGEND:

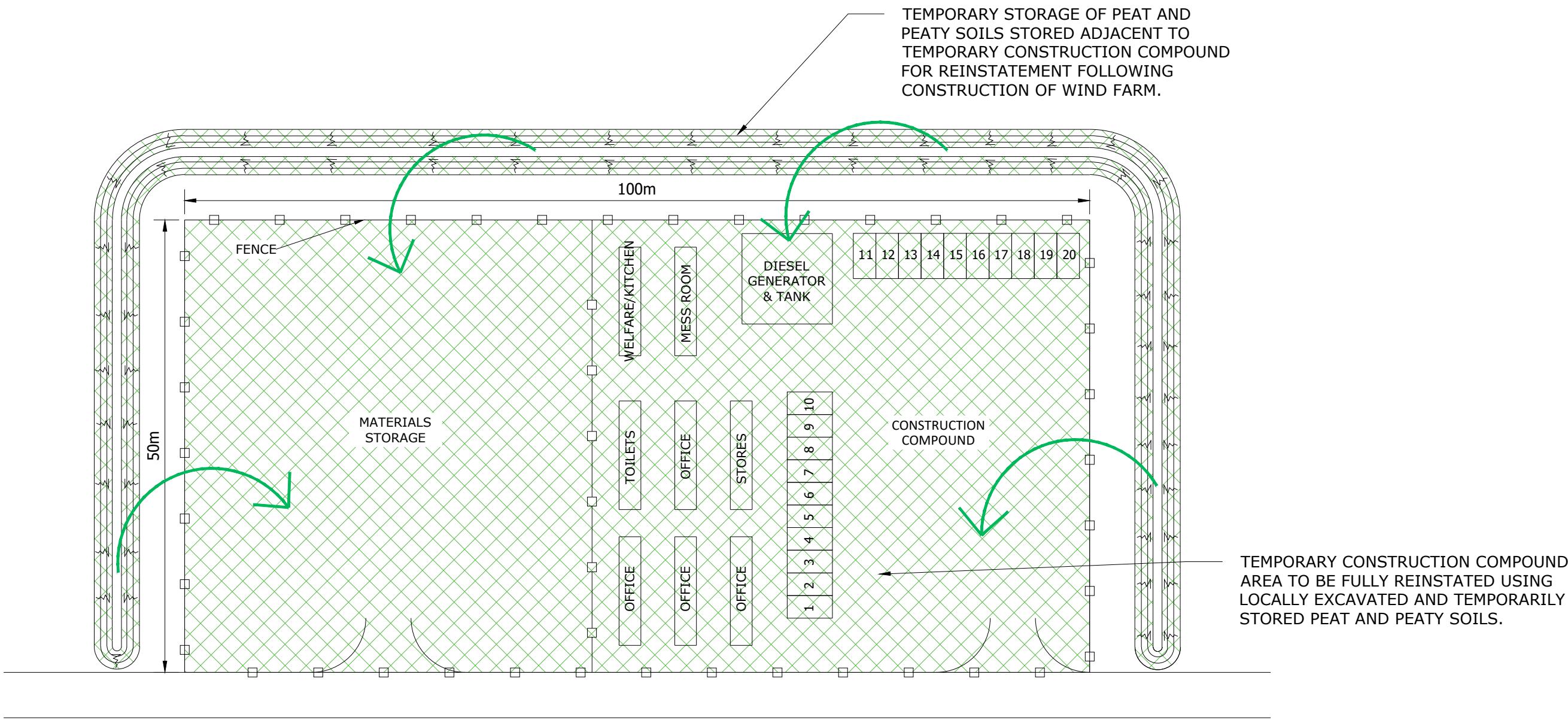
INDICATIVE PEAT REINSTATEMENT AREAS AT PROPOSED INFRASTRUCTURE

NOTES:

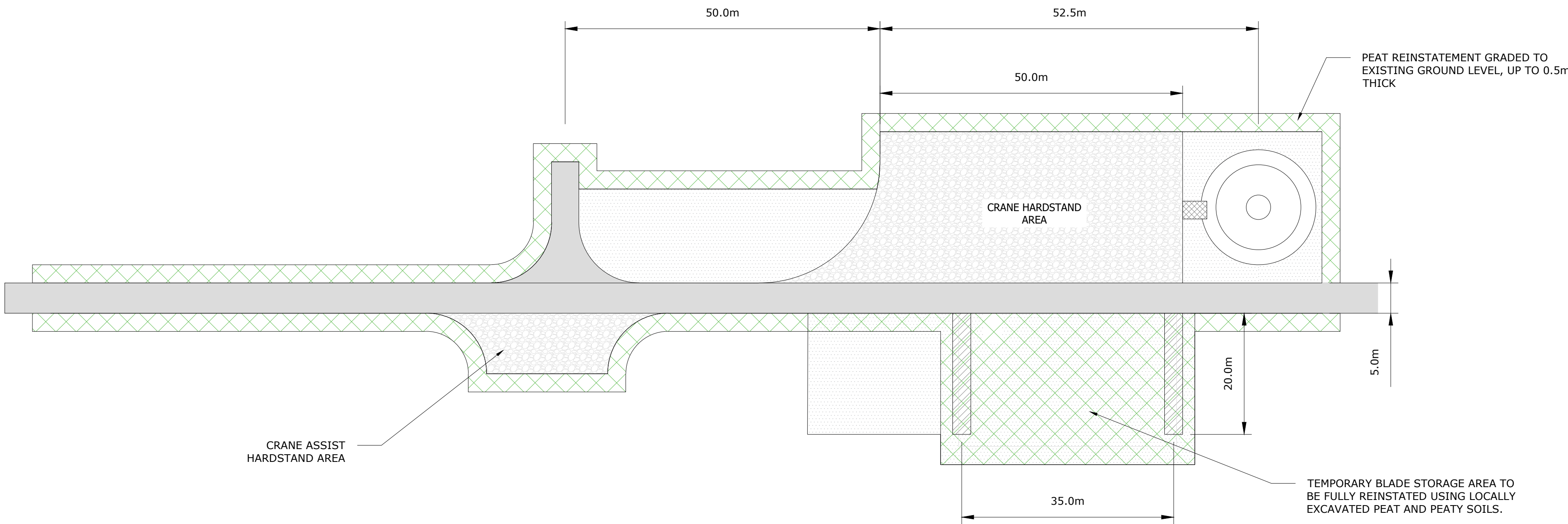
- ALL PEAT AND PEATY SOILS REINSTATED WILL BE WITH LOCALLY EXCAVATED PEAT AND PEATY SOILS.
- TYPICAL REINSTATEMENT ARRANGEMENT AROUND CRANE HARDSTAND AND FOUNDATION, CONSTRUCTION COMPOUND AND TRACK ARRANGEMENTS FOR INFORMATION ONLY.
- BLADE LAYDOWN AREA TO BE FULLY REINSTATED WITH LOCALLY EXCAVATED PEAT AND/OR PEATY SOILS UP TO 0.5m
- TRANSPORTATION OF PEAT AROUND SITE WILL BE AVOIDED WHERE POSSIBLE.



SCALE - 1:100



SCALE - 1:500



SCALE - 1:500

AS SHOWN Scale @ A1

Produced: KB  
Reviewed: DB  
Approved: AG

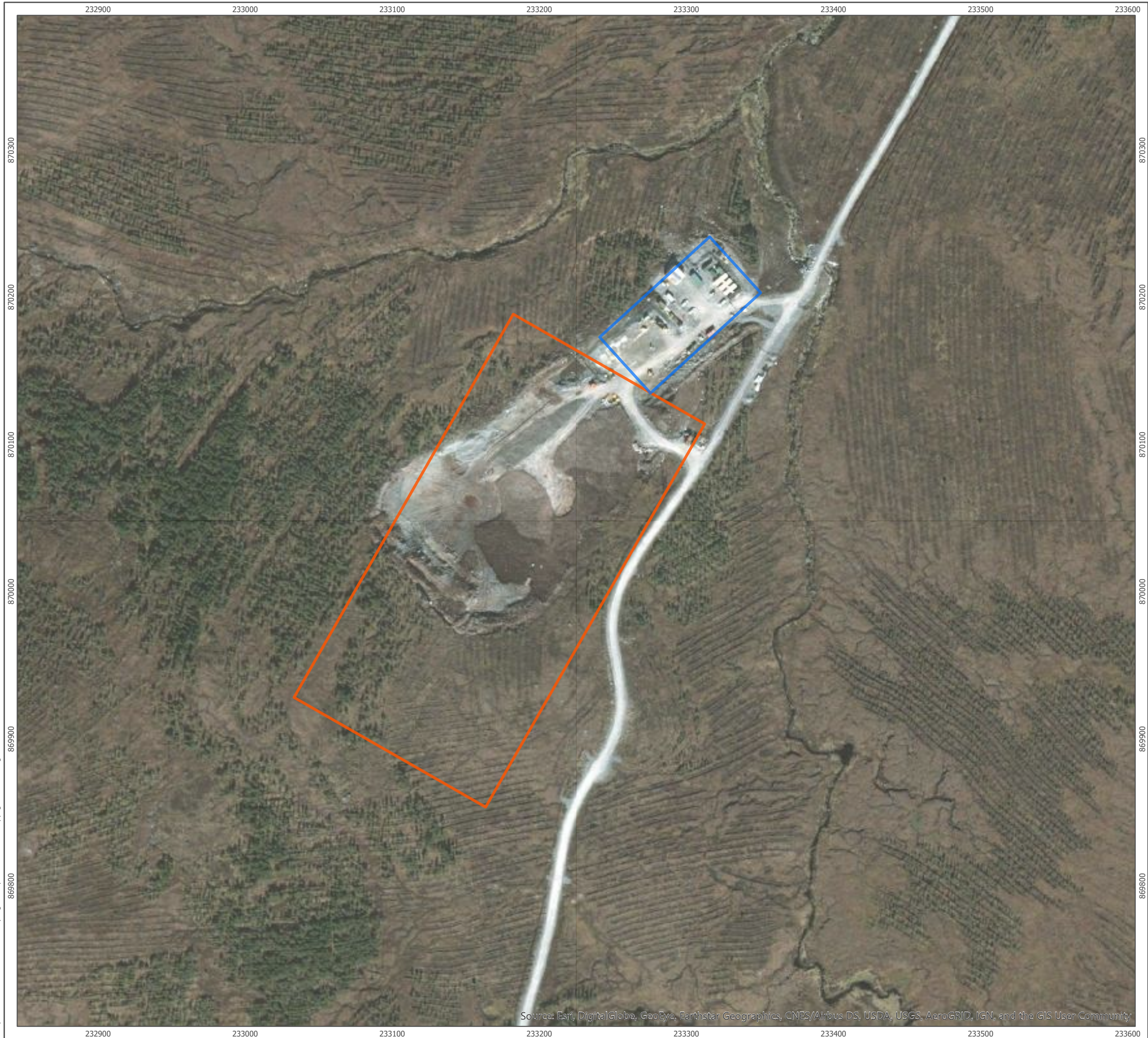
Ref: 2414\_DR\_P\_0001  
Date: 15/05/19

Indicative Peat Reinstatement  
Figure 5

Lochluichart Wind Farm  
Extension II  
Peat Management Plan





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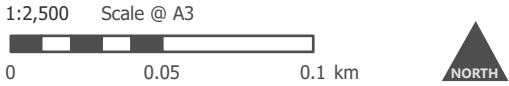


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

INFINERGY

ARCUS

-  Existing Borrow Pit working area to be utilised for temporary peat storage
-  Borrow Pit

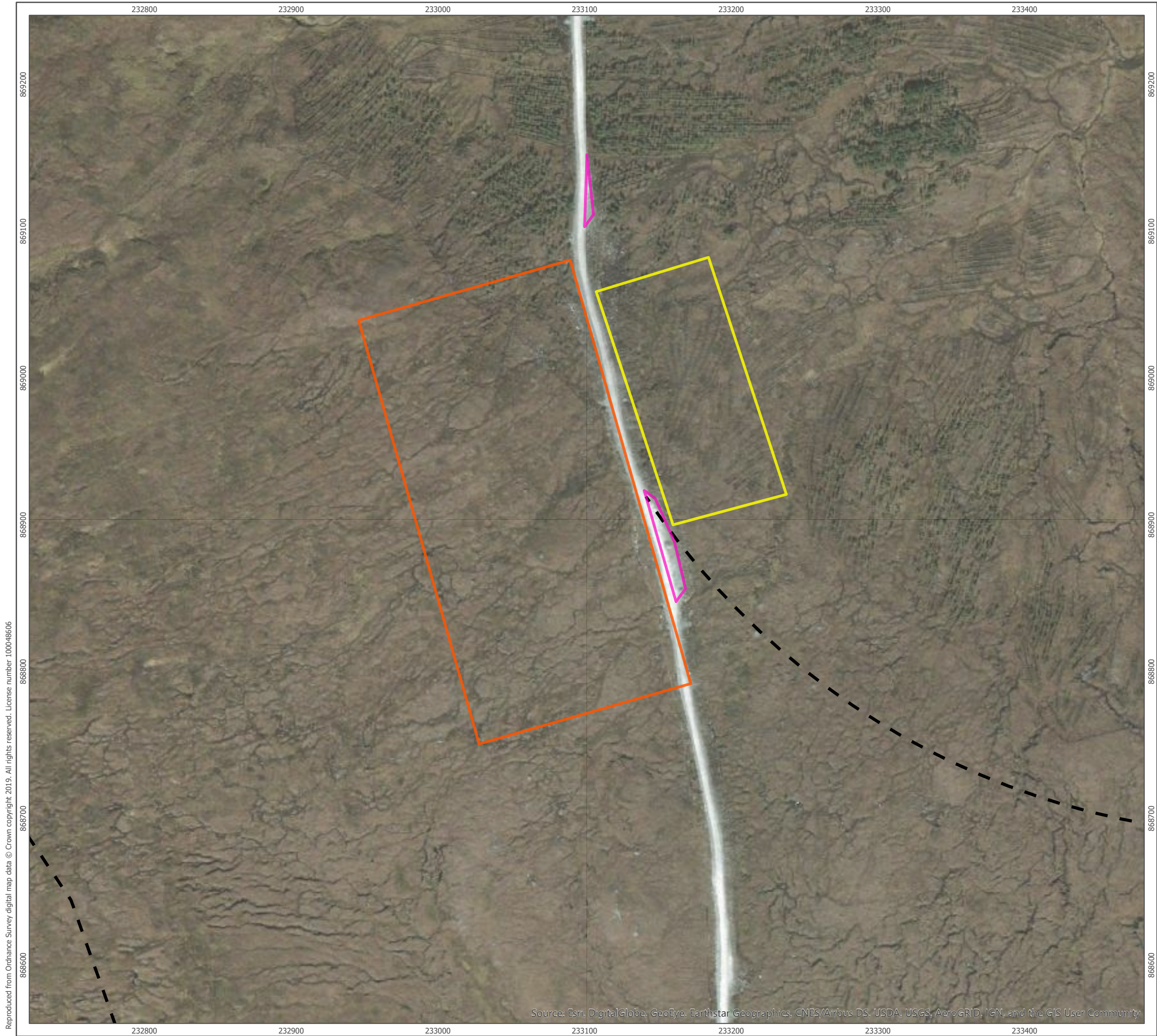


Produced By: RL	Ref: 2414-REP-049
Checked By: DB	Date: 09/08/2019



**Indicative Temporary Peat Storage Areas**  
Figure 6a


**Lochluichart Extension II Peat Management Plan**






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Existing widened track section  
to be utilised for temporary  
peat storage



Borrow Pit




Substation/ Control Building/  
Construction Compound




Indicative Access Track

1:2,500    Scale @ A3



0      0.05      0.1 km



NORTH

Produced By: RL	Ref: 2414-REP-052
Checked By: DB	Date: 09/08/2019

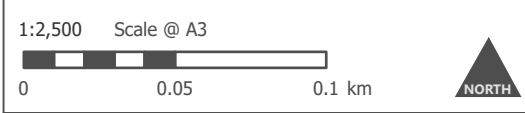
**Indicative Temporary  
Peat Storage Areas**  
Figure 6b

**Lochluichart Extension II  
Peat Management Plan**





Existing widened track section  
to be utilised for temporary  
peat storage



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Checked By: DB	Date: 09/08/2019

**Indicative Temporary  
Peat Storage Areas**  
Figure 6c

**Lochluichart Extension II  
Peat Management Plan**



## **APPENDIX 2 - EARTHWORKS VOLUMES AND CALCULATIONS**

2414 - Lochluichart Windfarm Extension II SEI - Outline Peat Management Plan - Calculations and Estimations							Notes/Assumptions
Version 3							
Peat Excavation Calculations and Estimates							
Turbine No.	Ave. Peat Depth	Crane Hardstand/Foundation Area		Peat Excavation Estimation	Acrotelmic	Catotelmic	
4	2.00	1875.00		3750	1250	2500	
5	0.50	1875.00		938	938	0	
6	0.25	1875.00		469	469	0	
T6-EW	0.25	1875.00		469	469	0	
7	0.25	1875.00		469	469	0	
T7-EW	0.25	1875.00		469	469	0	
8	0.25	1875.00		469	469	0	
T8-EW	0.25	1875.00		469	469	0	Assumed turbines 2-5 are at grade with existing
Turbine-Crane Hardstand Totals				7500	5000	2500	
Tracks	Ave. Peat Depth	Estimated m2	Distance of Track Over Peat Depth	Peat Excavation Estimation	Acrotelmic	Catotelmic	
Western Side of Spine Road	0.25	5750.00	1150.00	1438	1438	0	Assumed that the western side of spine road
Associated EarthW West	0.25	5750.00	1150.00	1438	479	958	will have wide verges/earthworks associated
Eastern Side of Spine Road	0.50	2000.00	400.00	1000	667	333	
Associated EarthW East	0.50	2000.00	400.00	1000	667	333	
Eastern Side of Spine Road	1.00	1000.00	200.00	1000	667	333	with the construction works due to topography.
Associated EarthW East	1.00	1000.00	200.00	1000	667	333	
Eastern Side of Spine Road	1.50	925.00	185.00	1388	463	925	Allowance of up to 5m wide verges/earthworks to the west of the spine road and
Associated Earth W East	1.50	925.00	185.00	1388	463	925	up to 3m wide verges/ earthworks to the east of the spine road.
Track Totals				9650	5508	4142	
Construction Compound	Ave. Peat Depth	Estimated m2		Peat Excavation Estimation	Acrotelmic	Catotelmic	
Construction Compound	0.50	5000.00		2500	2500	0	
CC Totals				2500	2500	0	
Borrow Pits	Ave. Peat Depth	Estimated m2		Peat Excavation Estimation	Acrotelmic	Catotelmic	
Borrow Pits	0.50	15000.00		7500	2625	4875	
Borrow Pit Totals				7500	2500	5000	
TOTAL PEAT EXCAVATION							
Deduction Due to Floating Tracks				27150	15508	11642	
Tracks	1.25	3750.00	750.00	4688	1563	3125	Floating Tracks assumed between T5 and T4
Earthworks	1.25	750.00	750.00	938	313	625	
TOTAL PEAT EXCAVATION following FLOATING TRACKS				21525	13633	7892	
Peat Re-Use Calculations and Estimates							
Infrastructure Element	Peat Depth Reinstated max depth	Area for Peat Reinstatement		Peat Re-Use Estimation	Acrotelmic	Catotelmic	
T4-EW	0.5	460.00		244	184	60	Assumes 0.50m thick peat reinstatement over verge and earthwokrs areas up to
T4 Blade Laydown	0.5	875.00		464	350	114	5.0m wide based on topography
T5-EW	0.5	460.00		244	184	60	
T5 Blade Laydown	0.5	875.00		464	350	114	Assumes full reinstatement of construction compound
T6-EW	0.5	460.00		244	184	60	
T6 Blade Laydown	0.5	875.00		464	350	114	Reinstatement of borrow pits only to depths similar of the soils
T7-EW	0.5	460.00		244	184	60	originating from the borrow pit, 0.5m thick generally.
T7 Blade Laydown	0.5	875.00		464	350	114	
T8-EW	0.5	460.00		244	184	60	
T8 Blade Laydown	0.5	875.00		464	350	114	
Associated EW West of Spine Road	0.5	11500.00		6314	2875	3439	
Associated EW East of Spine Road	0.5	2310.00		1268	924	344	
Construction Compound	0.5	5000.00		2500	2500	0	
Borrow Pits	0.5	15000.00		7950	4671	3279	
TOTAL REUSE				21569	13640	7929	
BALANCE (+/- Surplus/Deficit)							
				-44	-7	-38	