Chapter 4 Description to the Proposed Project

Slieveacurry Renewable Energy Development, Co. Clare

Environmental Impact Assessment Report (EIAR)



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4. DESCRIPTION OF THE PROPOSED PROJECT

4.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) describes the Proposed Project and all its component parts. The planning application will be made to An Coimisiún Pleanála (ACP) under Section 37E of the Planning and Development Act, 2000, as amended. Construction methodologies for the main infrastructural components of the Proposed Project are also included in this chapter (or its associated appendices) of the EIAR.

The development description for the current planning application as appears in the public notices is as follows:

The Proposed Project will consist of the provision of the following:

(i) 9 No. wind turbines with an overall ground-to-blade tip height of 175 metres; rotor diameter of 150 metres; and hub height of 100 metres, and a meteorological mast with a height of 30 metres, and subsequent decommissioning of the wind turbines and meteorological mast, following a thirty five-year operational period from the date of full commissioning of the wind turbines;

(ii) Associated wind turbine and meteorological mast foundations and hardstanding areas;

(iii) An extension to the existing 110kV substation compound in the townland of Knockalassa (Including the provision of a new control building (floor area of 112.5 sq.m) with welfare facilities, all associated electrical plant and apparatus for an additional 110kV bay, security fencing, underground cabling, underground wastewater holding tank, site drainage and all ancillary works);

(iv) Underground electrical (33kV) and communications cabling connecting the proposed wind turbines and meteorological mast to the 110kV substation extension via proposed and existing private access road/tracks and the R460 regional road;

(v) Temporary accommodation works to facilitate the delivery of turbine components and other abnormal sized loads on the L6230, L1076, L2118 and L1074 local roads;

(vi) Upgrade and widening works to the L6230 local road and access junction off the L6230 local road;

(vii) Upgrade of existing tracks/roads and provision of new site access roads and hardstanding areas;

(viii) A borrow pit;

(ix) 2 no. temporary construction compounds (including site offices and welfare facilities, with a combined floor area of 202.5 sq.m);

(x) Peat and Spoil Management;

(xi) Site Drainage;

(xii) Tree felling and vegetation removal;

(xiii) Biodiversity Management and Enhancement Plan measures (including hedgerow planting, peatland, marsh fritillary and hen harrier habitat enhancement areas);

(xiv) Operational stage site signage; and

(xv) All associated site development works and apparatus.

This application seeks a ten-year planning permission and a 35-year operational life from the date of commissioning of the Proposed Project.

Section 1.1.2 of Chapter 1 of this EIAR provides a definition of the various project references used throughout the document. All elements of the 'Proposed Project' have been assessed within this EIAR. The Proposed Project is located within the EIAR Site Boundary or the 'Site' which measures approx. 1260 hectares (ha). The 'Proposed Grid Connection Site' refers to the part of the Site containing the

proposed extension to the existing 110kV Slievecallan substation and the extent of 33kV underground cabling from the wind farm road to the proposed substation extension. The 'Proposed Wind Farm Site' refers to the portion of the Site containing the proposed turbines and ancillary infrastructure, excluding the Proposed Grid Connection Site. The Proposed Project layout is illustrated on Figure 4-1.

4.2 Site Location

The Site is located approx. 7km south of Ennistimon, Co. Clare and 8km west of Inagh, Co. Clare. The town of Miltown Malbay is located approx. 5.8km east of the nearest proposed turbine (T07). The Proposed Wind Farm Site is located in an upland setting comprising predominantly cutover bog with areas of commercial forestry, agricultural land and low density residential properties. The nearest Natura 2000 site to the Site, i.e., Special Area of Conservation (SAC) or Special Protection Area (SPA) is the Inagh River Estuary SAC located approximately 6.7km north of the Proposed Wind Farm Site at its closest point (T03). Elevations within the Proposed Wind Farm Site range from ~120mOD (metres above Ordnance Datum) in the south to ~250m in the centre of the Proposed Wind Farm Site.

Current land-use on the Site comprises coniferous forestry, agriculture, turf cutting and public road corridor. Land-use in the wider landscape comprises a mix of agriculture, low density housing, renewable energy and commercial forestry.

The Site location is described in detail in Chapters 1-16 of the EIAR.

4.3 Proposed Project Layout

The overall layout of the Proposed Project is shown on Figure 4-1 below, which includes the Propsoed Wind Farm Site, Proposed Grid Connection Site and the Proposed Enhancement Site.

The Proposed Project has been designed to minimise potential environmental effects, while at the same time maximising the energy yield from the Proposed Wind Farm Site. A constraints study, as described in Chapter 3 Section 3.2.5.2.1 of this EIAR, has been carried out to ensure that turbines and ancillary infrastructure are located in the most appropriate areas of the Site and makes use of the existing access tracks within the Site where appropriate thereby minimising the extent of proposed new roads required. Similarly, as described in Chapter 3 Section 3.2.5.6 of this EIAR, a route selection constraints study was undertaken to ensure that the most appropriate route for the underground electrical cabling connecting to the Slievecallan 110kV substation was selected.

The overall layout of the Proposed Project is shown on Figure 4-1. This figure shows the proposed locations of the wind turbines, underground 33kV cabling, permanent extension of the Slievecallan 110kV substation, peat and spoil management areas, met mast, temporary construction compounds, biodiversity management and enhancement areas, internal roads layout and entrance to the Site. The Proposed Wind Farm Site is then shown in Figure 4-2 and the Proposed Grid Connection Site in Figure 4-3. Detailed site layout drawings of the Proposed Project are included in Appendix 4-1 to this EIAR.

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681000 679500 678000 676500 675000

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T1 T2 T3 T4 T5 T6 T7 T8 T9

Silverhill

R460 R474

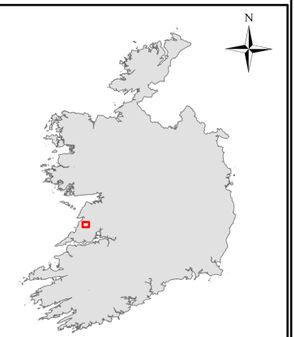
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Map Legend

- EIAR Site Boundary
- Proposed Turbines
- Proposed Turbine Hardstands
- Existing Roads to be Upgraded
- Proposed New Roads
- Public Road to be Upgraded
- Public Road to be Maintained
- Proposed Borrow Pit
- Proposed Temporary Construction Compound
- Met Mast
- Proposed 33kV Underground Cabling
- Existing Slievecallan 110kV Substation
- Proposed Extension to Existing Slievecallan 110kV Substation
- Proposed Access Track
- Proposed Peat and Spoil Management Areas
- Turbine Delivery Overrun Areas
- Proposed Biodiversity Enhancement Areas

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator



SITE LOCATION - NOT TO SCALE

Drawing Title

Proposed Project Layout

Project Title

Slieveacurry Renewable Energy Development Co. Clare

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T9

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0.55

1.1 km

Map Legend

- EIAR Site Boundary
- Proposed Turbines
- Proposed Turbine Hardstands
- Existing Roads to be Upgraded
- Proposed New Roads
- Public Road to be Upgraded
- Public Road to be Maintained
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Met Mast
- Proposed 33kV Underground Cable Connection
- Proposed Peat and Spoil Management Areas
- Proposed Access Track
- Turbine Delivery Overrun Areas
- Proposed Biodiversity Enhancement Areas

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Proposed Wind Farm Site

Project Title

Slieveacurry Renewable Energy Development Co. Clare

Project No.	Drawing No.	Scale
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MVN	BT	01/05/2026

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Email: info@mkoireland.ie/ Website: www.mkoireland.ie

511500
513000
514500
679500
678000
676500
N
T9
T6
T8
T7
R460
R460
R460
R460
R474
0
0.75
1.5 km

Map Legend

- EIAR Site Boundary
- Proposed Turbines
- Proposed Turbine Hardstands
- Existing Roads to be Upgraded
- Proposed New Roads
- Proposed Peat and Spoil Management Areas
- Proposed 33kV Underground Cabling
- Proposed Access Track
- Existing Slievecallan 110kV Substation
- Proposed Extension to Existing Slievecallan 110kV Substation
- Proposed Biodiversity Enhancement Areas

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator



SITE LOCATION - NOT TO SCALE

Drawing Title

Proposed Grid Connection Site

Project Title

Slieveacurry Renewable Energy Development Co. Clare

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4.4 Proposed Project Components

This section of the EIAR describes the components of the Proposed Project. Further details regarding Site Activities (Section 4.5), Site Access and Transportation (Section 4.6), Site Drainage (Section 4.7), Construction Management (Section 4.8) and Construction Methodologies (Section 4.9) are provided subsequently in this chapter.

4.4.1 Wind Turbines

4.4.1.1 Turbine Locations

The Proposed Wind Farm Site layout has been optimised using wind farm design software (WindPro) to maximise the energy yield from the Proposed Project, while maintaining sufficient distances between the proposed turbines to ensure turbulence and wake effects do not compromise turbine performance. The ITM Grid Reference coordinates of the Proposed Turbines are listed in Table 4-1 below. The final finished top of foundation level of the turbine foundations will be determined by the actual ground conditions at each proposed turbine location and may differ slightly from those levels listed in Table 4-1.

Table 4-1 Proposed Wind Turbine Locations and Elevations

Turbine	ITM Coordinates		Top of Foundation Elevation (m OD)
	Easting	Northing	
T01	511800	680767	162
T02	512456	680814	172.5
T03	511518	680283	211.5
T04	512025	680280	212
T05	512851	680510	201
T06	512391	679844	233
T07	511487	679203	231
T08	511996	679451	243.5
T09	511797	679833	213

4.4.1.2 Site Investigations

Site reconnaissance including shear strength and peat depth measurements undertaken following initial multidisciplinary constraints study (by the design team) to determine the proposed construction areas within the Site i.e. the area within the overall Site where development is possible following multidisciplinary review and assessment of constraints.

As part of the design process for the Proposed Project, numerous intrusive site investigations were undertaken across the built infrastructure footprint.to provide detail and clarity on the nature and extent

of sublayers and bedrock as a means of characterising the Site. This assisted in providing additional information on the most suitable location for turbines and associated infrastructure. Intrusive Peat Probing was carried out in 2020, 2021, 2024 and 2025 at 914 no. locations across the Site by Fehily Timoney and Company (FTC) MKO, HES and the Applicant.

Geotechnical ground investigations (i.e. trial pitting) were undertaken on the 17th June 2021, under the supervision of FTC. The objectives of the intrusive site investigations included mapping the subsoil lithology for all Proposed Turbines and other identified locations and assessing the underlying bedrock. This data was used to inform the final layout of the Site.

In summary, a total of 7 no. trial pits, supervised by FTC, were carried out at 5 no. Proposed Turbines and at other identified locations to investigate the underlying mineral soil lithology and subsoil/bedrock interface. The complete geotechnical ground investigations were carried out in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Ground Investigations with precedence given to IS EN 1997-2 where applicable.

The geotechnical ground investigations were further supplemented by geophysical surveys (2D-resistivity (ERT) and Seismic Refraction (p-wave)), supervised by FTC on the 11th February 2025. The objectives of the non-intrusive surveys included further mapping of ground conditions at 4 no. Proposed Turbines where access with an excavator was not feasible, and provide further detail on the proposed borrow pit location. The complete geophysical surveys were carried out in accordance with Eurocode 2007 and BSI 2020 standards.

Further details on site investigations completed are outlined in Appendix 4-2 Peat and Spoil Management Plan (PSMP) and Appendix 8-1 Geotechnical and Peat Stability Risk Assessment (GPSRA).

4.4.1.3 Turbine Type

Wind turbines use the energy from the wind to generate electricity. A wind turbine, as shown in Plate 4-1 below, consists of four main components:

- Foundation unit
- Tower
- Nacelle (turbine housing)
- Rotor



Plate 4-1 Wind Turbine Components

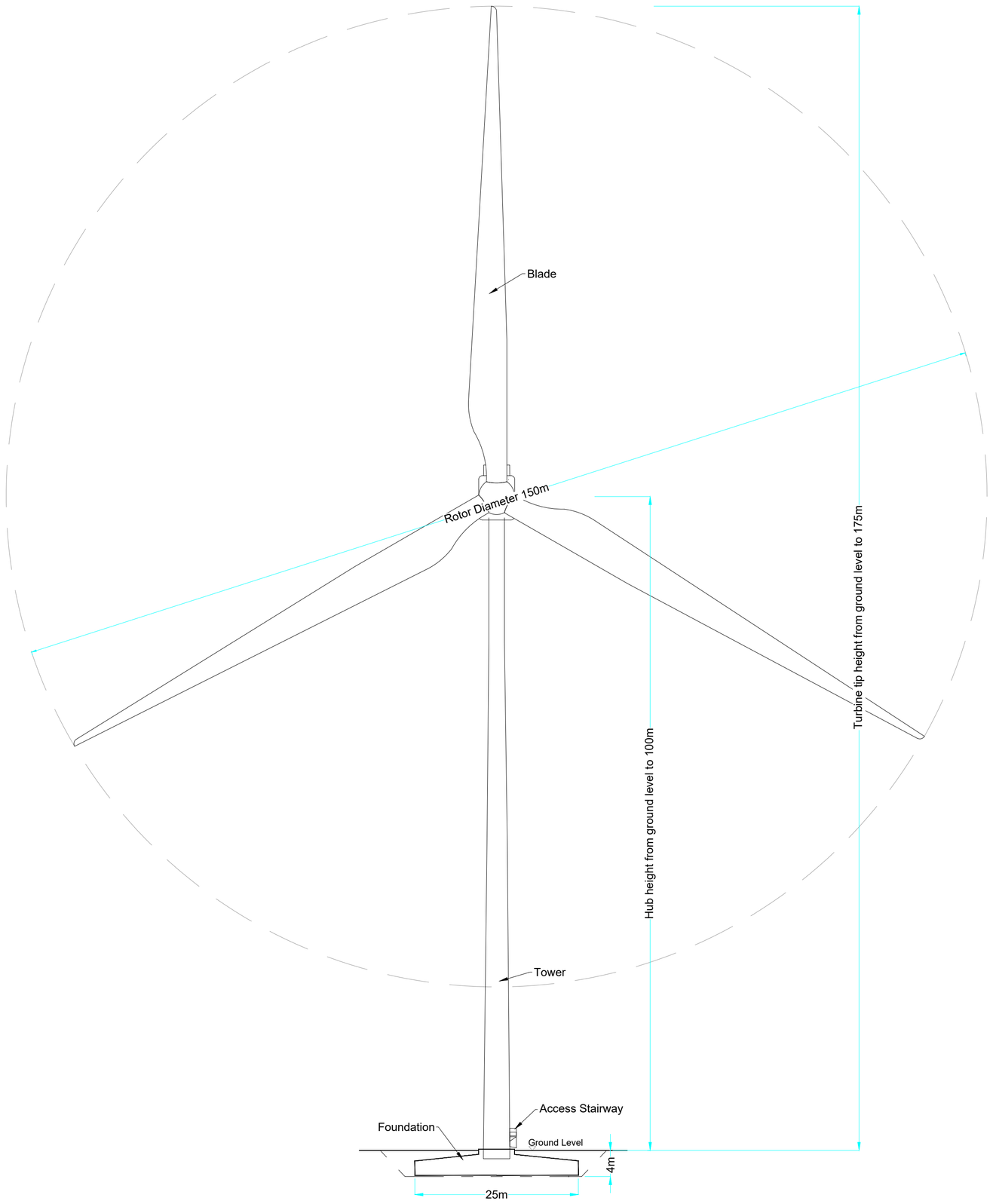
The Proposed Turbines will have the following dimensions:

- Turbine Tip Height – 175 metres
- Hub Height – 100 metres
- Rotor Diameter - 150 metres

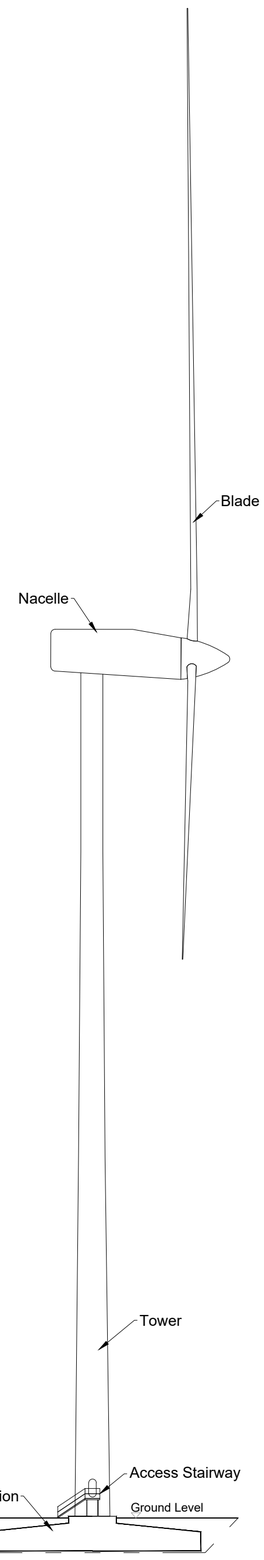
Modern wind turbines from the main turbine manufacturers have evolved to share a common appearance and other major characteristics, with only minor cosmetic differences differentiating one from another. The Proposed Turbines will be conventional three-blade turbines, that will be geared to ensure the rotors of all turbines rotate in the same direction at all times.

The Proposed Turbines will be multi-ply coated to protect against corrosion. It is proposed that the turbines would be of a light grey colour to blend into the sky background to minimise visual impact as recommended in the 2006 DoEHLG Guidelines and '*The Influence of Colour on the Aesthetics of Wind Turbine Generators*' (ETSU, 1999).

A drawing of the Proposed Turbines is shown in Figure 4-4. The individual components of a geared wind turbine nacelle and hub are shown in Figure 4-5 below.



Front/Sectional Elevation



Side/Section Elevation



Plan

PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
Wind Turbine Elevations and Plan

PROJECT No.:	DRAWING No.:	SCALE:
240718	Figure 4-4	1:500 @ A1

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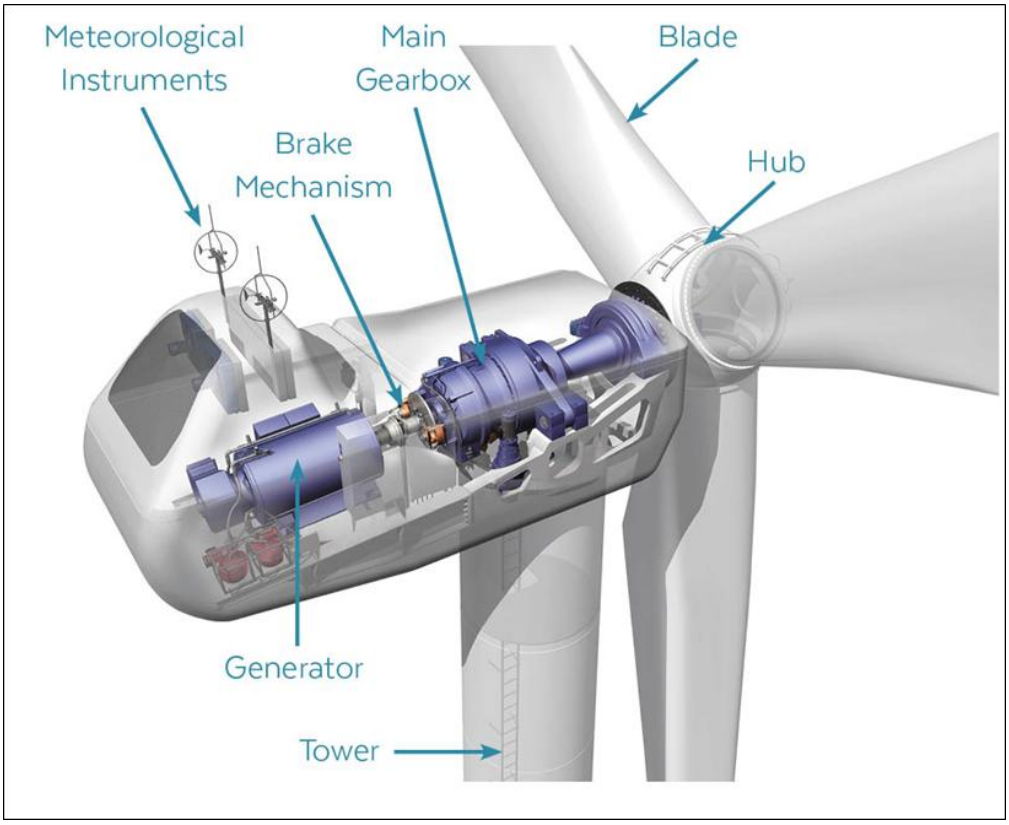


Figure 4-5 Turbine nacelle and hub components

4.4.1.4 Turbine Foundations

Each wind turbine is secured to a reinforced concrete foundation that is installed below the finished ground level. The size of the foundation will be dictated by the turbine manufacturer, and the final turbine selection will be the subject of a competitive tender process. Different turbine manufacturers use different shaped turbine foundations, depending on the requirements of the final turbine supplier, however, a foundation area large enough to accommodate modern turbine models has been assessed in this EIAR adopting a precautionary approach. The turbine foundation transmits any load on the wind turbine into the ground. The horizontal and vertical extent of the turbine foundation will be 25m and 4m respectively. Where ground conditions are unfavourable to excavate and replace, piles will be installed to formation level. Both foundation options have been assessed in this EIAR and are shown in Figure 4-6 and Figure 4-7.

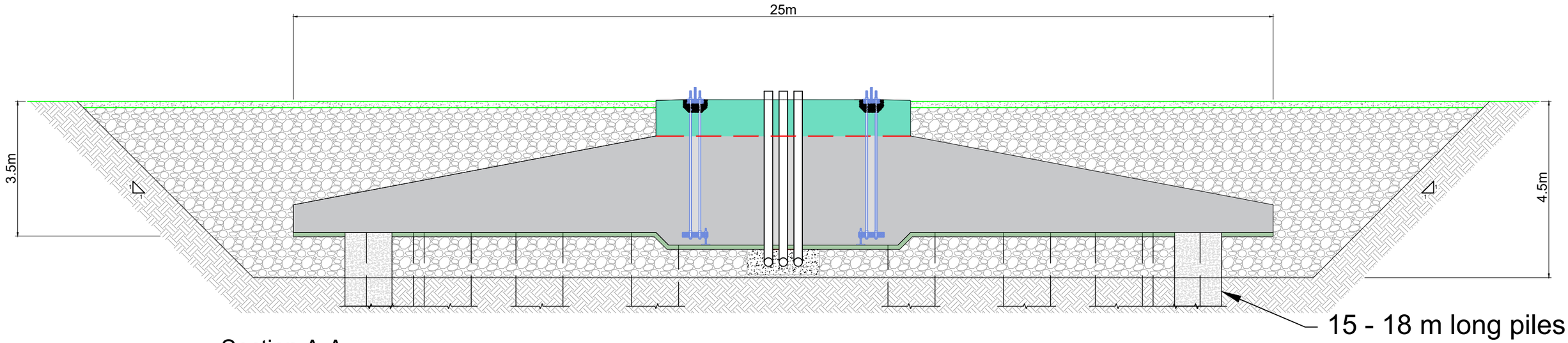
After the foundation level of each turbine has been formed using piling methods or on competent strata (i.e., bedrock or subsoil of sufficient load bearing capacity), the “Anchor Cage” (anchors the first section of the turbine tower to the foundation) is levelled and reinforcing steel is then built up around and through the anchor cage. The outside of the foundation is shuttered with demountable formwork to allow the pouring of concrete and is backfilled accordingly with appropriate granular fill to finished surface level (Plate 4-2 and Plate 4-3 below).



Plate 4-2 Turbine Foundation Anchor Cage surrounded by reinforcing steel.

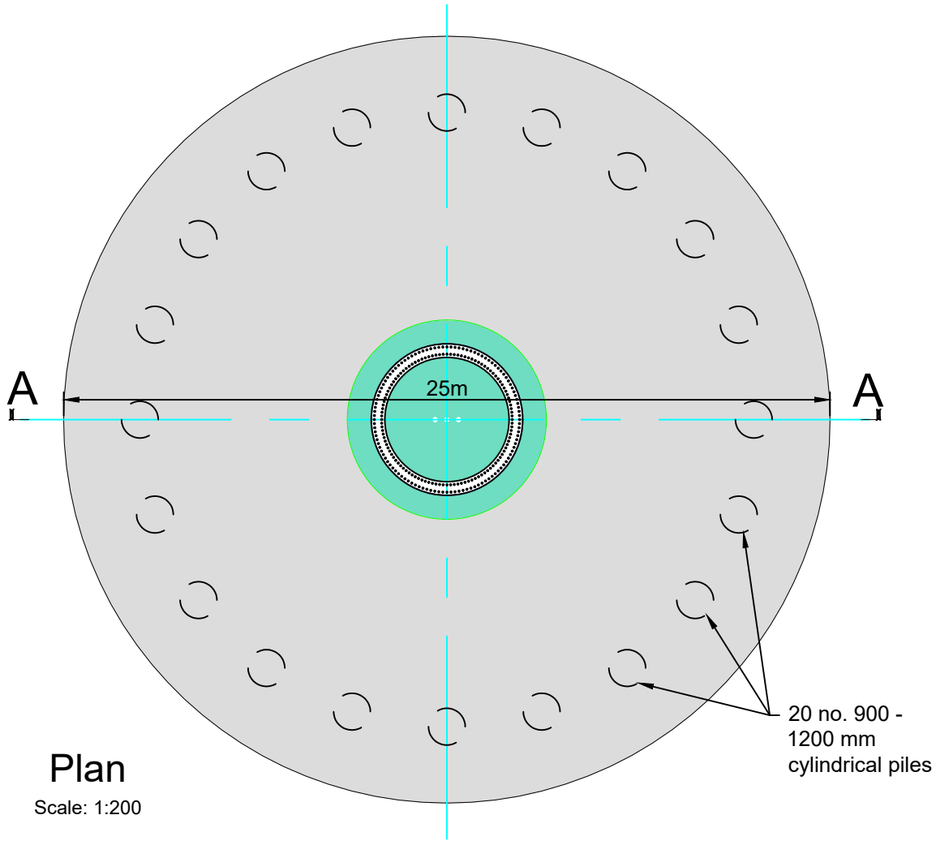


Plate 4-3 Finished Turbine Foundation



Section A-A

Scale 1:100



Plan

Scale: 1:200

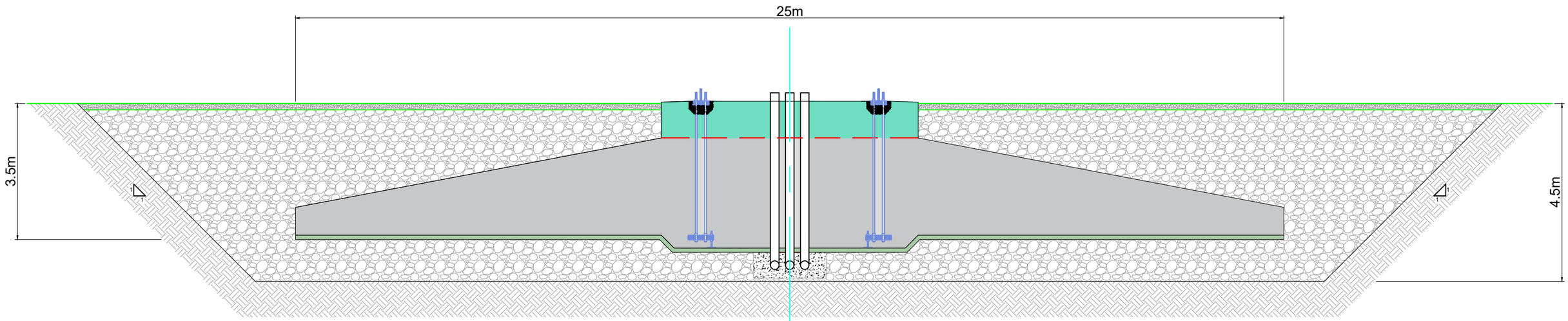
PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
Bored Pile Foundation Details

PROJECT No.:	DRAWING No.:	SCALE:
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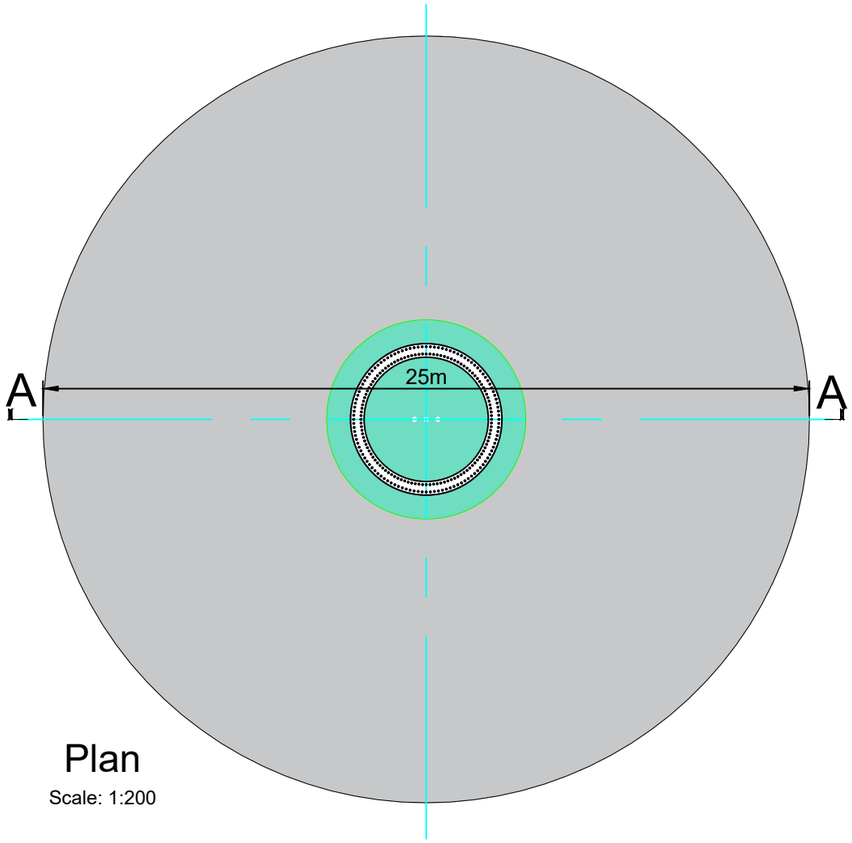
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Section A-A

Scale 1:100



Plan

Scale: 1:200

PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
Gravity Foundation Details

PROJECT No.:	DRAWING No.:	SCALE:
240718	**Figure 4-7**	**As shown @ A3**

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FB	**RD**	**27.04.2026**	P01

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4.4.1.5 Hardstanding Areas

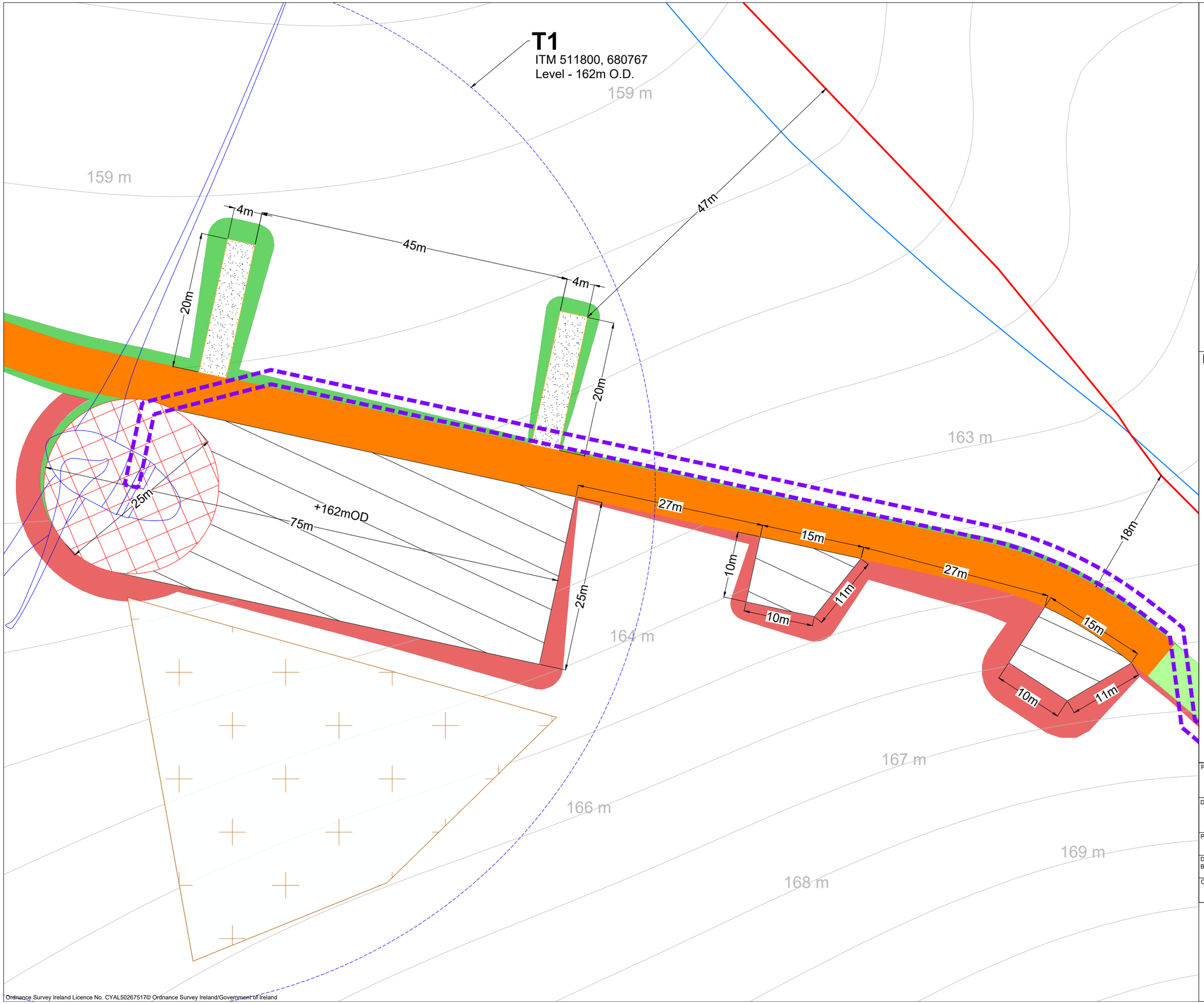
Hard standing areas consisting of levelled and compacted hardcore are required around each turbine base to facilitate access, turbine assembly and turbine erection. The hard-standing areas are used to accommodate cranes used in the assembly and erection of the turbine, offloading and storage of turbine components, and provide a safe, level working area around each turbine position. The hard-standing areas are extended to cover the turbine foundations once the turbine foundation is in place. All crane hardstand areas will be designed taking account of the loadings provided by the turbine manufacturer and will consist of a compacted stone structure. The crane hardstands will be constructed in a similar manner to the excavated site roads and will measure approximately 50m x 30m.

The precise sizes, arrangement and positioning of hard standing areas are informed by the turbine manufacturers. The extent of the required areas at each turbine location may be optimised on-site depending on topography, position of the Proposed Wind Farm Site access road, the proposed turbine position and the turbine supplier's exact requirements.

Figure 4-8 shows a turbine base layout (Turbine No. 1), including turbine foundation, hard standing area, assembly area, access road and surrounding works area. The proposed hard standing areas for each individual turbine are shown as part of the detailed layout drawings included in Appendix 4-1.

4.4.1.6 Assembly Area

Levelled assembly areas will be located on either side of the hard-standing area as shown on Figure 4-8. These assembly areas are required for offloading turbine blades, tower sections and hub from trucks until such time as they are ready to be lifted into position by cranes and to assist the main crane during turbine assembly. The extent of the area required for the assembly areas is shown on Figure 4-8 and the detailed site layout drawings in Appendix 4-1.



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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Upgrades to Existing Road
- Proposed New Roads
- Peat and Spoil Management Areas
- Blade Setdown Area
- Turbine Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Internal Cable Trench
- Cut
- Fill
- River/Stream

N

PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
Turbine 1 Layout Plan

PROJECT No.:	DRAWING No.:	SCALE:
240718	Figure 4-8	1:500 @ A3

DRAWN BY:	CHECKED BY:	DATE:	REVISION.:
FB	RD	28.04.2026	P02

OS SHEET No.: 4199 4200 4201 4202 4257 4258 4259 4260 4315 4316 4317 4318 4373 4374 4375 4376

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4.4.1.7 Generating Capacity

Modern wind turbine generators currently have a typical generating capacity in the 4 to 7 MW range, with the generating capacity continuing to evolve upwards as technology improvements are achieved by the turbine manufacturers. Turbines of the exact same make, model and dimensions can have different generating potential depending on the capacity of the electrical generator installed in the turbine nacelle. The exact generating capacity of the installed turbine will be designed to match the wind regime on the Proposed Wind Farm Site and will be determined by the selected manufacturer.

For the purposes of this EIAR, a rated output of 6MW has been chosen to calculate the potential generating capacity of the proposed 9-turbine renewable energy development, which would result in an estimated installed capacity of 54MW.

Assuming an installed capacity of 54MW, the Proposed Project therefore has the potential to produce up to 170,294MWh (megawatt hours) of electricity per year, based on the following calculation:

A x B x C = Megawatt Hours of electricity produced per year

where:

A = The number of hours in a year: 8,760 hours

B = The capacity factor, which takes into account the intermittent nature of the wind, the availability of wind turbines and array losses etc. A capacity factor of 36%[1] is used here.

C = Rated output of the wind farm: 54MW

The 170,294MWh of electricity produced by the Proposed Project would be sufficient to supply approximately 40,546 Irish households with electricity per year, based on the average Irish household using 4.2 MWh of electricity[2] (this latest figure is available from the March 2017 CER Review of Typical Consumption Figures Decision Paper).

The 2022 Census of Ireland recorded a total of 46,553 occupied households in Co. Clare. Per annum, based on a capacity factor of 36%, the Proposed Project would therefore produce sufficient electricity for the equivalent of 87% of the households in Co. Clare.

4.4.2 Site Roads

4.4.2.1 Road Construction Types

To provide access within the Proposed Wind Farm Site and to connect the Proposed Turbines and associated infrastructure, existing roads and tracks will need to be upgraded, and new access roads will need to be constructed. FTC were appointed to assess the existing ground conditions and specify the type of road required to access all locations onsite. The road construction design has taken into account the following key factors as stated in the PSMP in Appendix 4-2:

1. *Buildability considerations;*
2. *Maximising use of existing infrastructure;*

[1] *Enduring Connection Policy 2.3 Solar and Wind Constraints Report: Assumptions and Methodology (2024)* <https://cms.eirgrid.ie/sites/default/files/publications/ECP-2.3-Solar-and-Wind-Constraints-Report-Assumptions-and-Methodology-v1.1.pdf>
[2] *March 2017 CER (CRU) Review of Typical Consumption Figures Decision Paper* <https://www.cru.ie/document_group/review-of-typical-consumption-figures-decision-paper/>

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 road design, the actual construction technique employed for a particular length of road will be determined on the prevailing ground conditions encountered along that length of road.

The Proposed Wind Farm Site makes use of the existing road network insofar as possible. It is proposed to upgrade approx. 2.5km of existing roads and tracks, and to construct approx. 5.2km of new access road on the Proposed Wind Farm Site. Areas such as wide junctions and proposed hardstands will be used as passing bays throughout the construction phase of the Proposed Wind Farm Site.

The road construction techniques to be considered are as follows:

- Upgrades of Existing Access Roads – Type A/A1 and B
- Construction of New Excavated Roads through Peat – Type C/E
- Construction of New Floated Roads Over Peat – Type D

Upgrades of Existing Access Roads Type A/A1 and B

As noted above, up to 2.5km of existing access roads will be upgraded as part of the Proposed Project construction phase. Upgrade works will involve the widening of the existing access roads (Type A), as well as the widening of a section of the public road at the site entrance (Type A1). Approx 400m of existing floating road is proposed to be upgraded along the site entrance road west of T01 (Type B)

The general construction methodology for upgrading of existing sections of access roads or tracks, as presented in the PSMP in Appendix 4-2 of this EIAR, is summarised in Section 4.9.2. This methodology includes procedures that are to be included in the construction to minimise any adverse impact on peat stability.

Sections of road undergoing upgrades (Type A and Type B) are shown in Figure 4-9 and Figure 4-10 below.

Construction of New Excavated Roads through Peat – Type C/E

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 Wind Farm Site (Type C). 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. A similar detail is proposed along a section of the proposed 33kV underground cabling (Type E); however, this will only be 4m in width.

The general construction methodology for the construction of new excavated access roads or tracks, as presented in the PSMP in Appendix 4-2 of this EIAR, is summarised in Section 4.9.2.

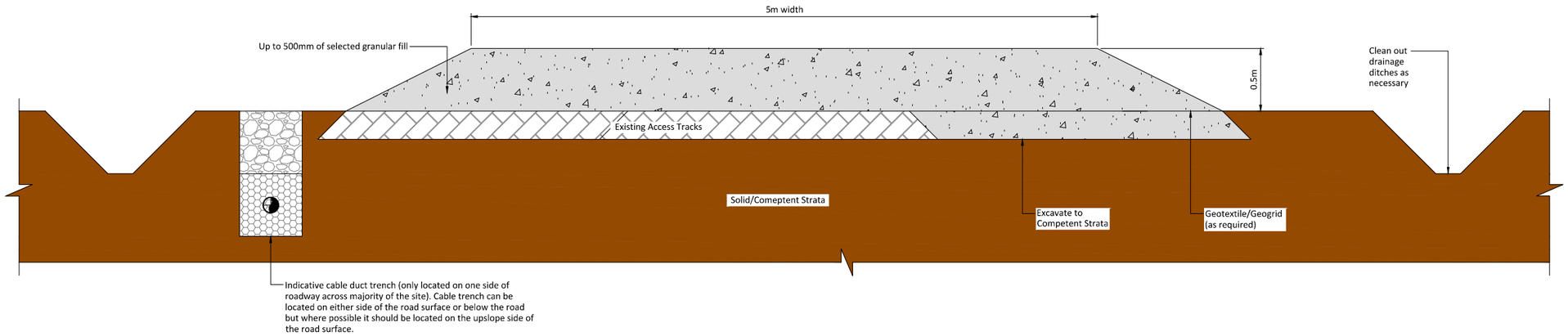
Sections of new excavated roads through peat (Type C/E) are shown in Figure 4-11 below

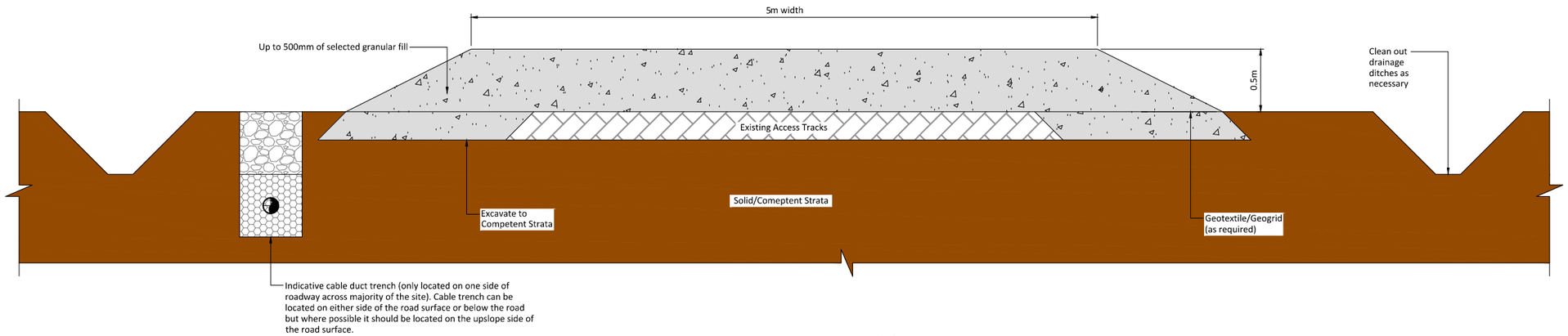
Construction of New Floated Roads Over Peat – Type D

A new floating road will be constructed in a single area on the Proposed Wind Farm Site (to the west of T01) where the peat depth is in excess of 1m and the slope angle is less than a 5 degree slope.

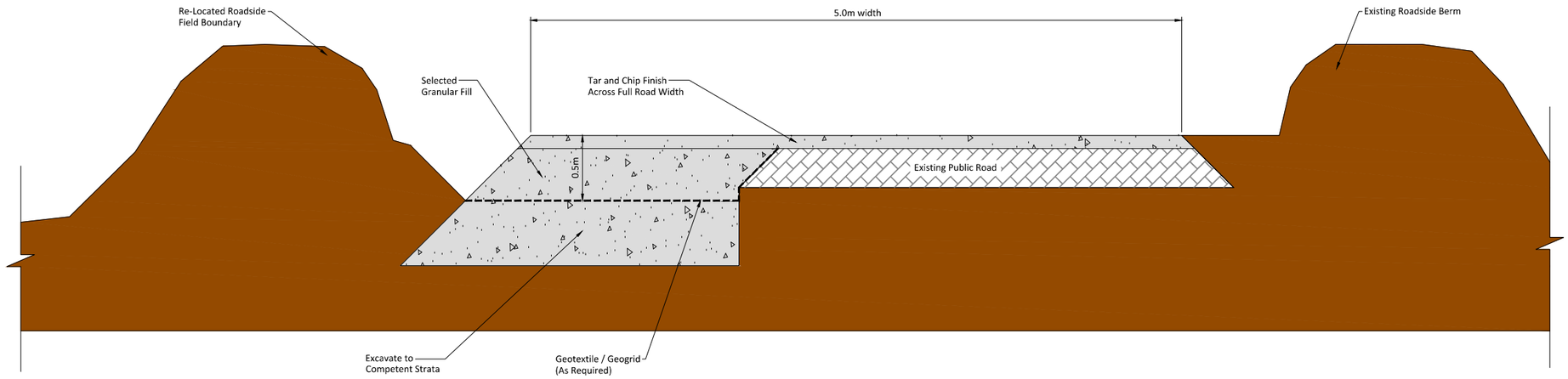
The construction methodology for the construction of excavated roads, as presented in the PSMP in Appendix 4-2 of this EIAR, is summarised In Section 4.9.2.

Section of a new floated road over peat (Type D) is shown in Figure 4-12 below.





DETAIL A
1:20



DETAIL A1
1:20

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P01	FOR INFORMATION	BDH	18.12.25
P02	FOR INFORMATION	BDH	23.04.26

PROJECT
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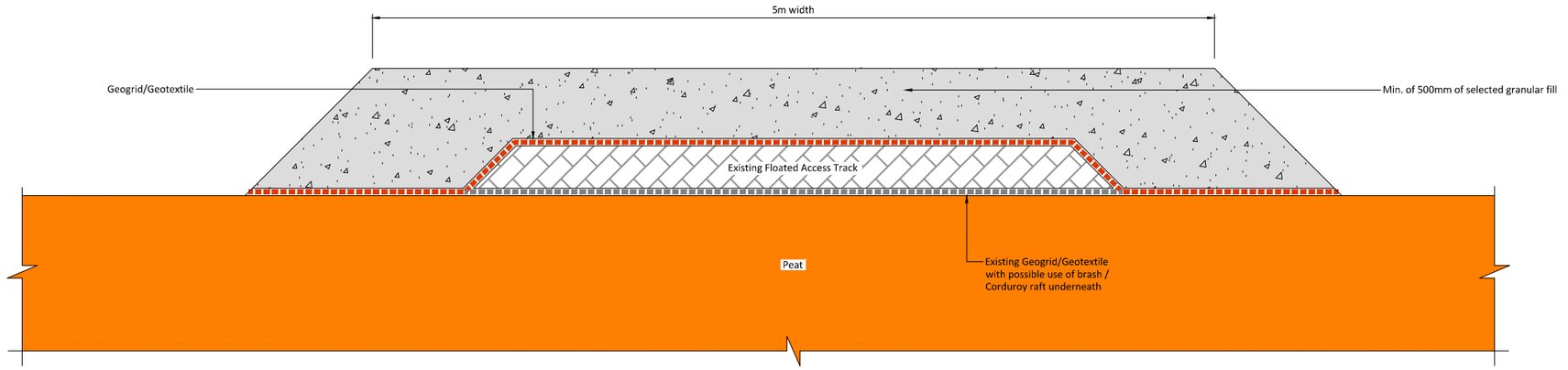
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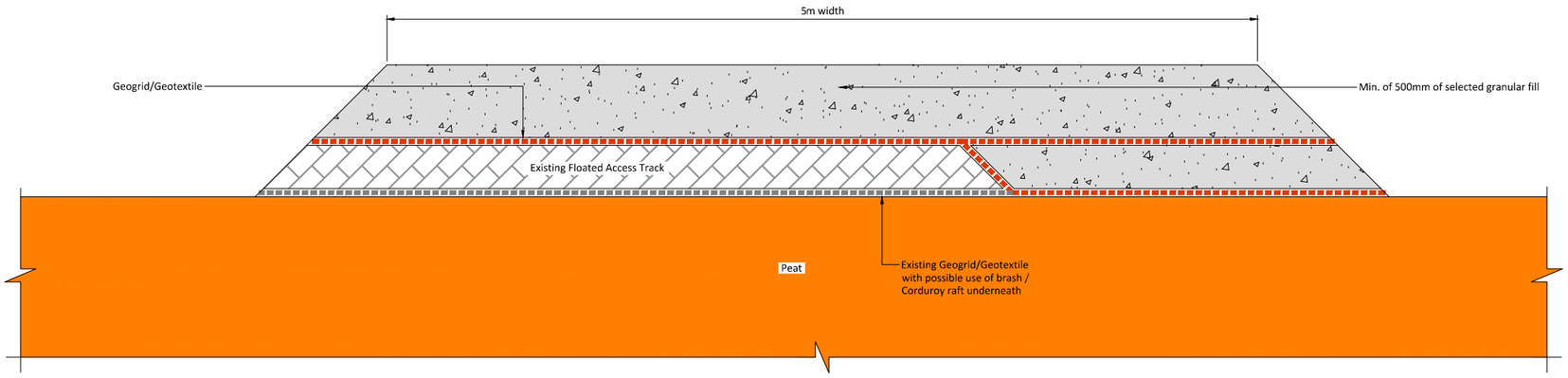
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Date: 23.04.26
Drawn by: POR
Checked by: IH
Project number: P24-264
Scale (@ A1): 1:20
Drawing Number: P24-264-0600-0007
Rev: P02
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PROJECT
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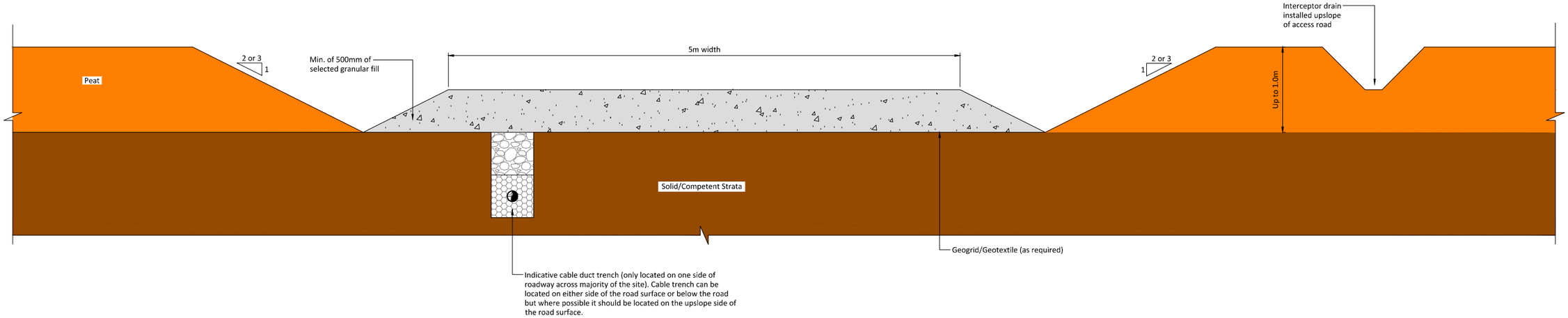
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SHEET
TYPE B – UPGRADE OF EXISTING FLOATING ACCESS ROAD

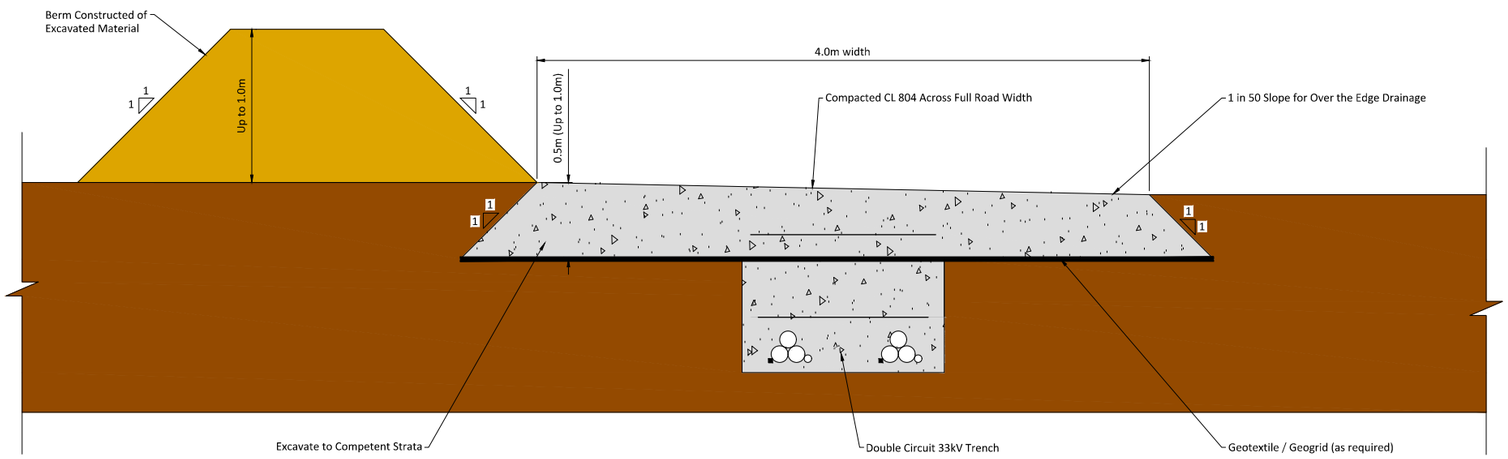
Date: 18.12.25
Drawn by: POR
Checked by: IH
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Rev: **P01**

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DETAIL C
1:25



DETAIL E
1:20

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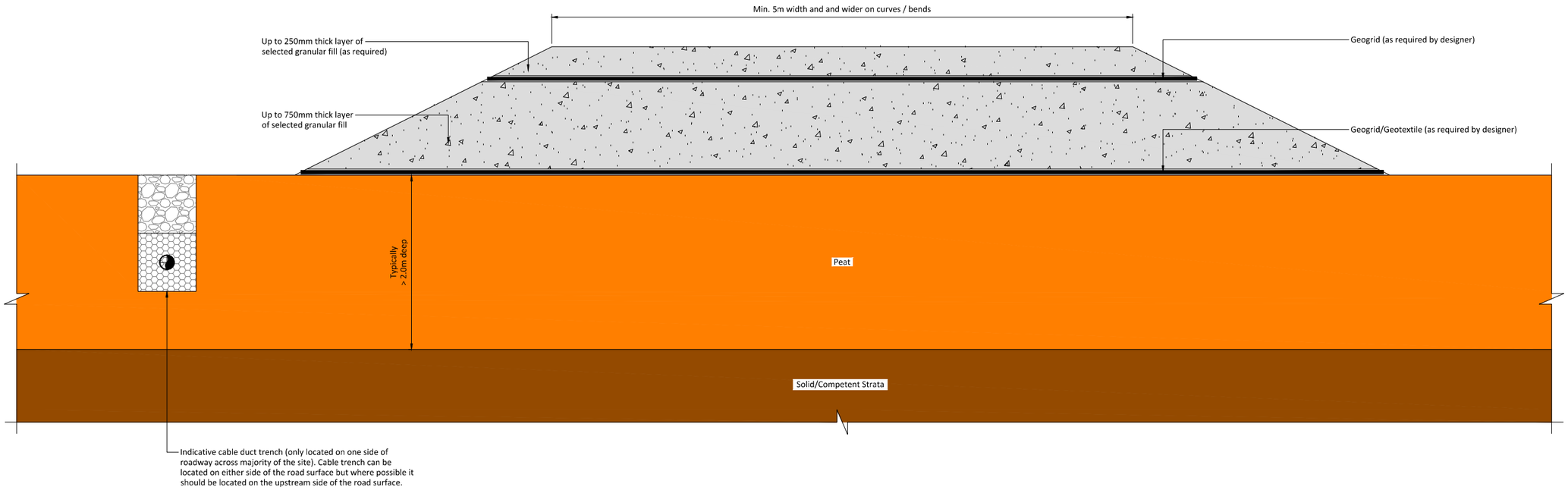
SHEET
TYPE C & E – NEW EXCAVATE AND REPLACE ACCESS ROAD

Date 23.04.26
Drawn by POR
Checked by IH

Project number P24-264
Scale (@ A1) As Shown
Drawing Number P24-264-0600-0009
Rev P02
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PROJECT
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CLIENT
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SHEET
TYPE D – NEW FLOATING ACCESS ROAD

Date 23.04.26
Drawn by POR
Checked by IH
Project number P24-264
Scale (@ A1) 1:20
Drawing Number P24-264-0600-0010
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4.4.3 Watercourse / Culvert Crossings

The Site is extensively drained by a network of natural watercourses and manmade land drains. The following watercourses flow through the Site:

- Fahanlunaghtamore Stream– flows in north direction through the Proposed Wind Farm Site and Proposed Enhancement Site
- Ballynew Stream – flows westerly through the Proposed Wind Farm Site and Proposed Enhancement Site
- Curraghodea Stream – flows east from the Proposed Wind Farm Site
- Letterkelly Stream – flows in southwest direction from the Proposed Wind Farm Site
- Knockacarn – flows northeast from the Proposed Grid Connection Site and Proposed Enhancement Site
- Kildeema – flows west along the Proposed Grid Connection Site
- Annagh [Clare] – flows west across the Proposed Grid Connection Site
- Drumcullaun – flows east through the Proposed Enhancement Site
- Inagh [Ennistymon] – flows east through the Proposed Enhancement Site
- Clonalaheen East – flows south through the Proposed Enhancement Site

To facilitate the construction of the Proposed Wind Farm Site roads, there are a total of 5 no. new watercourse crossing locations over natural watercourses. The crossing locations are outlined below:

- A new crossing is proposed along the proposed access road to the west of T01
- A new crossing on the proposed access road to T03;
- A new crossing on the proposed access road between T02, T03 and T04;
- A new crossing on the proposed access road to the northeast of T02; and,
- A new crossing on the proposed access road to T09

Within the Proposed Wind Farm Site, there is 1 no. existing natural watercourse crossings that will require upgrading to facilitate the construction of site roads. The crossing locations are as follows:

- 1 no. existing culvert along the existing forestry road proposed to be upgraded to the east of T01

In addition to the natural watercourses, there are manmade agricultural, peat and forestry drains within the Proposed Wind Farm Site, which will rerouted around the permanent built infrastructure of the Proposed Project and/or integrated into the proposed drainage design as required.

Please see Section 4.9.3 and 4.9.4 below for further details on the watercourse crossings to be used within the Proposed Wind Farm Site, and the associated construction methodologies.

4.4.3.1.1 *Bottomless Box Culvert Crossing*

It is proposed to construct a bottomless box culvert crossing at 5 no. locations where new watercourse crossings are required within the Proposed Wind Farm Site. The construction methodology for these crossings has been designed to eliminate the requirement for in-stream works at these locations. The watercourse crossings will be constructed to the specifications of the Office of Public Work (OPW) bridge design guidelines 'Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945', and in consultation with Inland Fisheries Ireland (IFI).

Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material. Confirmatory inspections of the proposed new watercourse crossing locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to

the construction of the crossing. Please see Appendix 4-1 for the location of the bottomless box culvert crossings, Figure 4-26 for the design details and Section 4.9.3 for the construction methodology.

4.4.3.1.2 *Culvert Crossing*

All new proposed culverts and proposed culvert upgrades at field drain crossings required for the Proposed Project will be suitably sized for the expected peak flows in the watercourse. Some culverts may be installed to manage drainage waters from works areas of the Proposed Project, particularly where the waters have to be taken from one side of an existing roadway to the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base but will have a minimum 900m diameter. In all cases, culverts will be oversized to allow mammals to pass through the culvert.

Culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. This will help dissipate its energy and help prevent problems of erosion. Smaller water crossings will simply consist of an appropriately sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling does not occur above or below the culvert and water can continue to flow as necessary.

All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance. Please see Appendix 4-1 for the location of the proposed culvert crossings, Figure 4-32 for the design details and Section 4.9.4 for the construction methodology.

4.4.4 Permanent Extension to Existing Slievecallan 110kV Substation

It is proposed to permanently extend the existing Slievecallan 110kV substation to accommodate the connection of the Proposed Project, as shown in Figure 4-3. The works will consist of the construction of a new control building with welfare facilities, associated electrical plant and equipment and security fencing. The proposed substation extension is located in an established expansion area within the Slievecallan Wind Farm and accessed by existing wind farm access roads.

The layouts and elevations of the proposed substation extension works are shown on Figure 4-13. The construction and electrical components of the proposed substation extension will be to EirGrid specifications. Further details regarding the connection between the Site and the national electricity grid are provided in Section 4.4.5 of this EIAR chapter. The footprint of the proposed substation extension compound measures approximately 3,950 square metres.

The proposed substation extension will include an extension of the steel palisade fence (approximately 2.8m high or as otherwise required by ESB), and internal fences will also segregate different areas within the main substation.

The extension to the Slievecallan 110kV substation will remain in place after the operational phase of the Proposed Project as it will be under the ownership and control of the ESB Networks and/or EirGrid, and will form a permanent part of the national electricity grid.

4.4.4.1 Substation Control Building

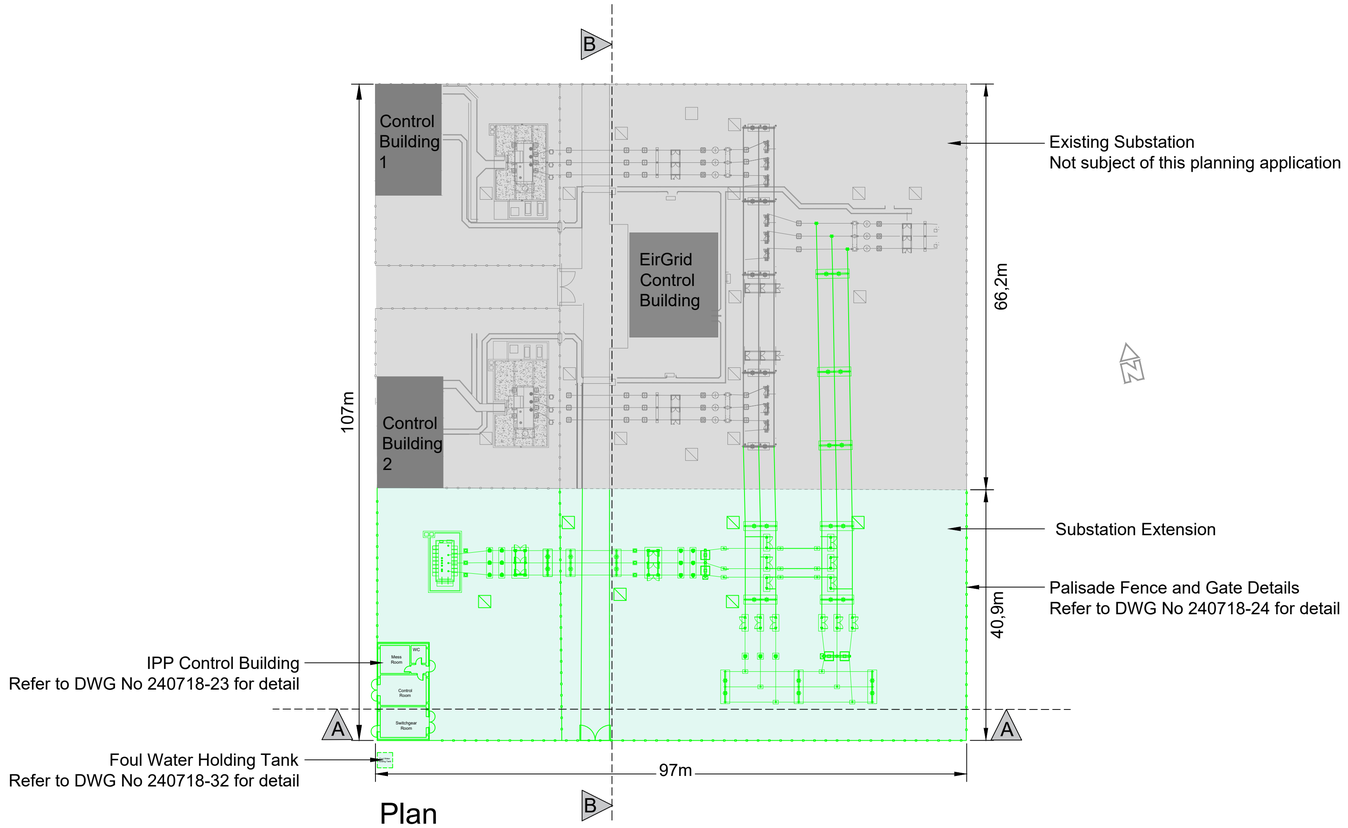
A control building will be located within the proposed substation extension compound. The control building will measure 16 metres by 8.5m and 6m in height. Layout and elevation drawings of the control building are included in Figure 4-14.

The substation control building will include staff welfare facilities for the staff that will work on the substation during the operational phase of the Proposed Project. Toilet facilities will be installed with a low-flush cistern and low-flow wash basin. There will be a very small water requirement for occasional toilet flushing and hand washing and therefore the water requirement for the substation extension does not necessitate a potable source. It is proposed to harvest rainwater from the roofs of the buildings, and if necessary, bottled water will be supplied for drinking.

It is proposed to manage wastewater from the staff welfare facilities in the control buildings by means of a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. It is not proposed to treat wastewater on-site, and therefore the EPA's 2009 'Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses (p.e. 10)' does not apply. Similarly, the EPA's 1999 manual on 'Treatment Systems for Small Communities, Business, Leisure Centres and Hotels' also does not apply, as it too deals with scenarios where it is proposed to treat wastewater on-site.

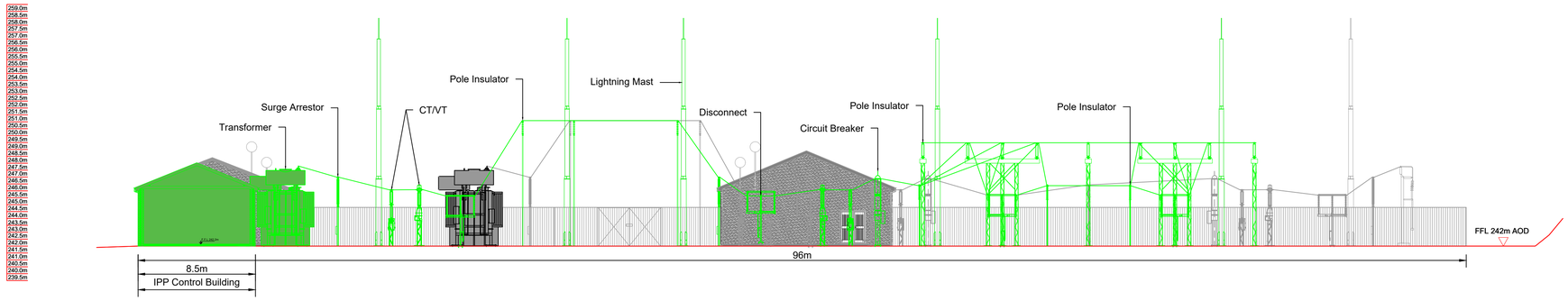
Such a proposal for managing the wastewater arising on site has become almost standard practice on substation sites, which are often proposed in areas where finding the necessary percolation requirements for on-site treatment would be challenging and has been accepted by numerous Planning Authorities and An Coimisiún Pleanála as an acceptable proposal.

The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. The wastewater storage tank alarm will be part of a continuous stream of data from the Proposed Turbines, wind measurement devices and electricity substation extension that will be monitored remotely 24 hours a day, 7 days per week. Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007 (as amended), will be employed to transport wastewater away from the site to a licensed facility.



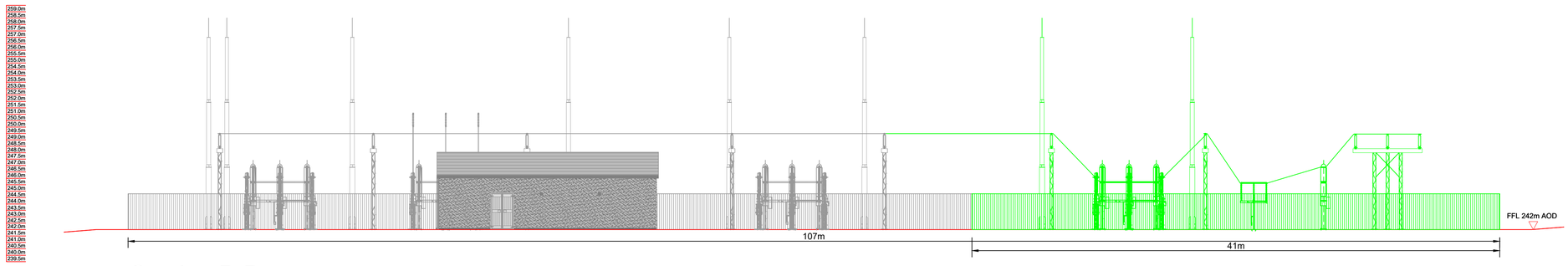
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Section A-A

Scale 1:200



Section B-B

Scale 1:200

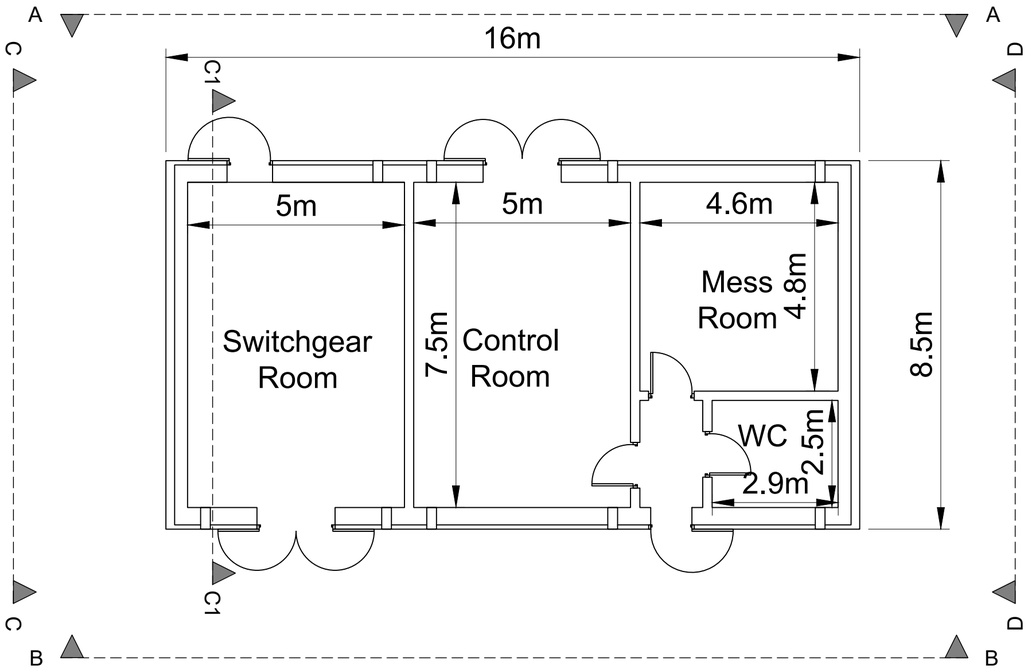
PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
Substation Extension Plan & Sections

PROJECT No.:	DRAWING No.:	SCALE:
240718	**Figure 4-13**	**As shown @ A1**

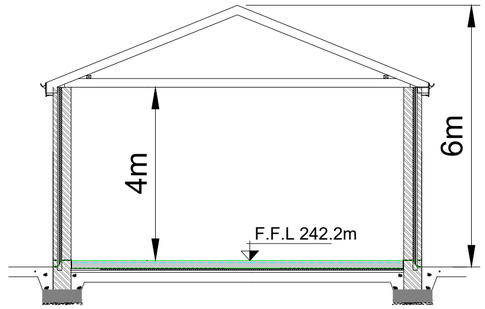
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FB	**RD**	**27.04.2026**	P02

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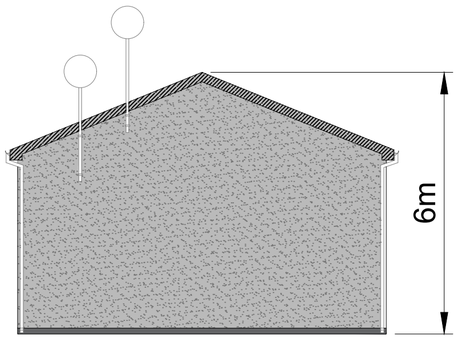
Plan

Scale 1:100



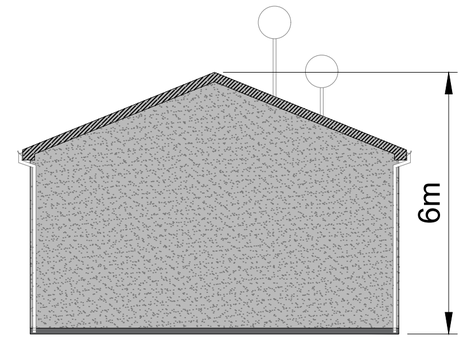
Section C1-C1

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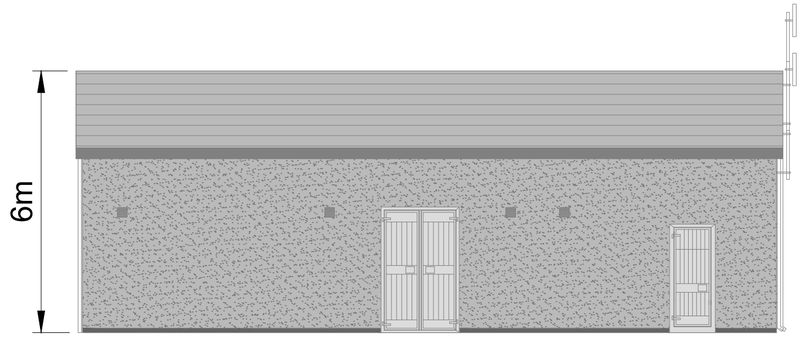
Section C-C

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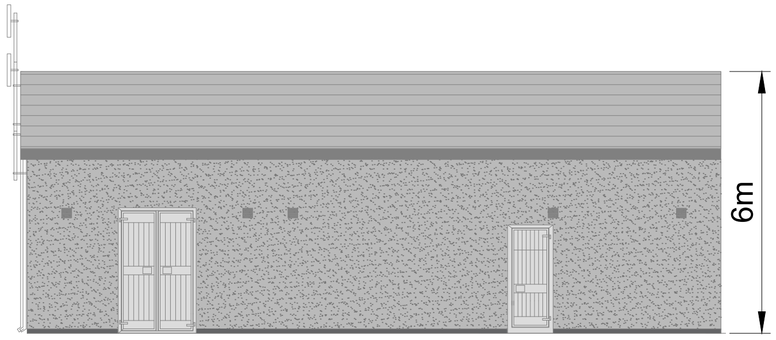
Section D-D

Scale 1:100



Section A-A

Scale 1:100



Section B-B

Scale 1:100

PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
IPP Control Building

PROJECT No.:	DRAWING No.:	SCALE:
240718	**Figure 4-14**	**1:100 @ A2**

DRAWN BY:	CHECKED BY:	DATE:	REVISION.:
FB	**RD**	**27.04.2026**	P02

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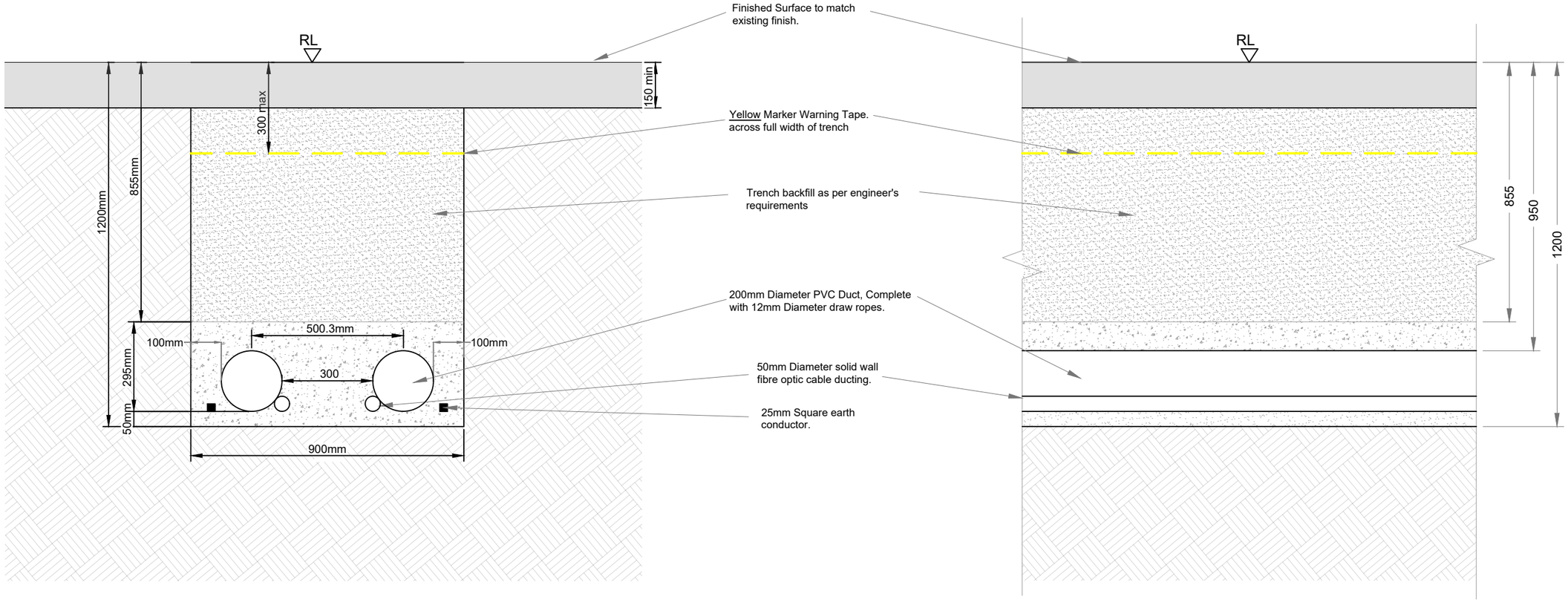
4.4.5 Underground Electrical (33kV) and Communications Cabling

Each turbine and the meteorological mast (refer to Section 4.4.6 below) will be connected to the proposed substation extension compound via underground 33kV electricity cabling. Fibre-optic cables will also connect each wind turbine and the meteorological mast to the proposed substation extension compound. The electricity and fibre-optic cabling connecting to the proposed substation extension compound will be run in cable ducts approx. 1.2m beneath ground level following the access tracks to each turbine location.

The proposed 33kV underground electrical cabling will continue from the wind farm road to the proposed substation extension compound located in the townland of Knockalassa. The cable route exits the Proposed Wind Farm site through forestry for approximately 0.83km, onto a farm track for 0.55km before entering the public road corridor. It stays within the public road corridor for approximately 1.55km. the cable route then exits onto existing forestry /windfarm roads, following these for approximately 4.17km before reaching the proposed substation extension compound. The total length of cabling along the Proposed Grid Connection Site measures approximately 7.1km. A methodology for these works is provided in Section 4.9.6.

The route of the cable ducts will follow the access track to each turbine location and are illustrated on the site layout drawings included as Appendix 4-1, the exact number and configuration of cable ducting may vary within the cabling route. Figure 4-15 below shows a cable trench. The exact number and configuration of cable ducting may vary within the cabling trench. The cabling may be placed on either side of the roads, on both sides of the road and/or within the road. The exact configuration of the underground cabling will be set by the requirements of the electrical designers at detailed design stage.

Clay plugs (water flow barrier) will be installed at regular intervals of not greater than 50 metres along the length of the trenches where required to prevent the trenches becoming conduits for runoff water. Backfill material will be compacted in layers with approved engineer's specified material, which may be imported onto the Proposed Wind Farm Site should sufficient volumes of suitable material not be encountered during the excavation phase of the proposed infrastructure.



33kV IPP Wind Farm Road Trench Section - 2 Circuits

SCALE 1:15

33kV IPP Wind Farm Road Trench Elevation - 2 Circuits

SCALE 1:15

PROJECT TITLE: **Slieveacurry Renewable Energy Development**			
DRAWING TITLE: **Road Trench Details Through 33kV - Two Circuits 900mm**			
PROJECT No.: **240718**		DRAWING No.: **Figure 4-15**	SCALE: **1:15 @ A3**
DRAWN BY: **FB**	CHECKED BY: **RD**	DATE: **27.04.2026**	REVISION.: P02

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4.4.6 Meteorological Mast

One meteorological (met) mast is proposed as part of the Proposed Project. The met mast will be equipped with wind monitoring equipment at various heights. The proposed met mast will be located at E512714, N680150 (ITM) as shown on the Proposed Wind Farm Site layout in Figure 4-2 above and the detailed site layout drawings included as Appendix 4-1. The met mast will be a free-standing slender lattice structure 30m in height. It will be constructed on a hard-standing area sufficiently large to accommodate the equipment that will be used to erect the mast. A standard detail of a meteorological mast is shown in Figure 4-16.

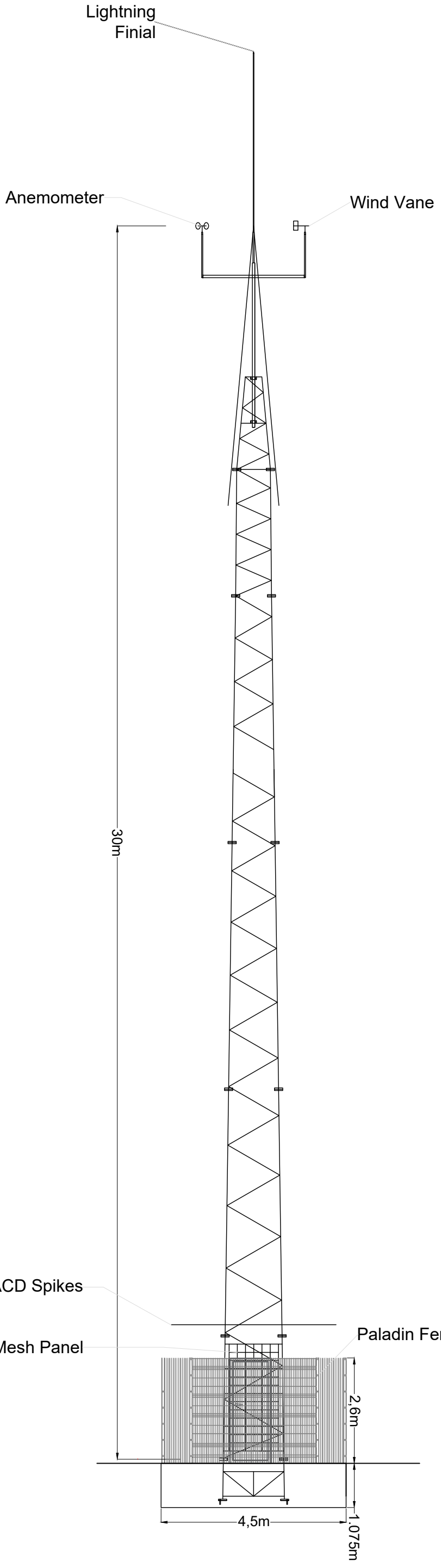
4.4.7 Temporary Construction Compounds

There are 2 no. temporary construction compounds proposed as part of the Proposed Project. The primary construction compound will be located in the northern section of the Proposed Wind Farm Site, adjacent to the existing access road approximately 125m to the west of T01 and measures approximately 2,400m^2 in area. The secondary construction compound will be located southwest of T05 and measures approximately 2,000m^2 in area.

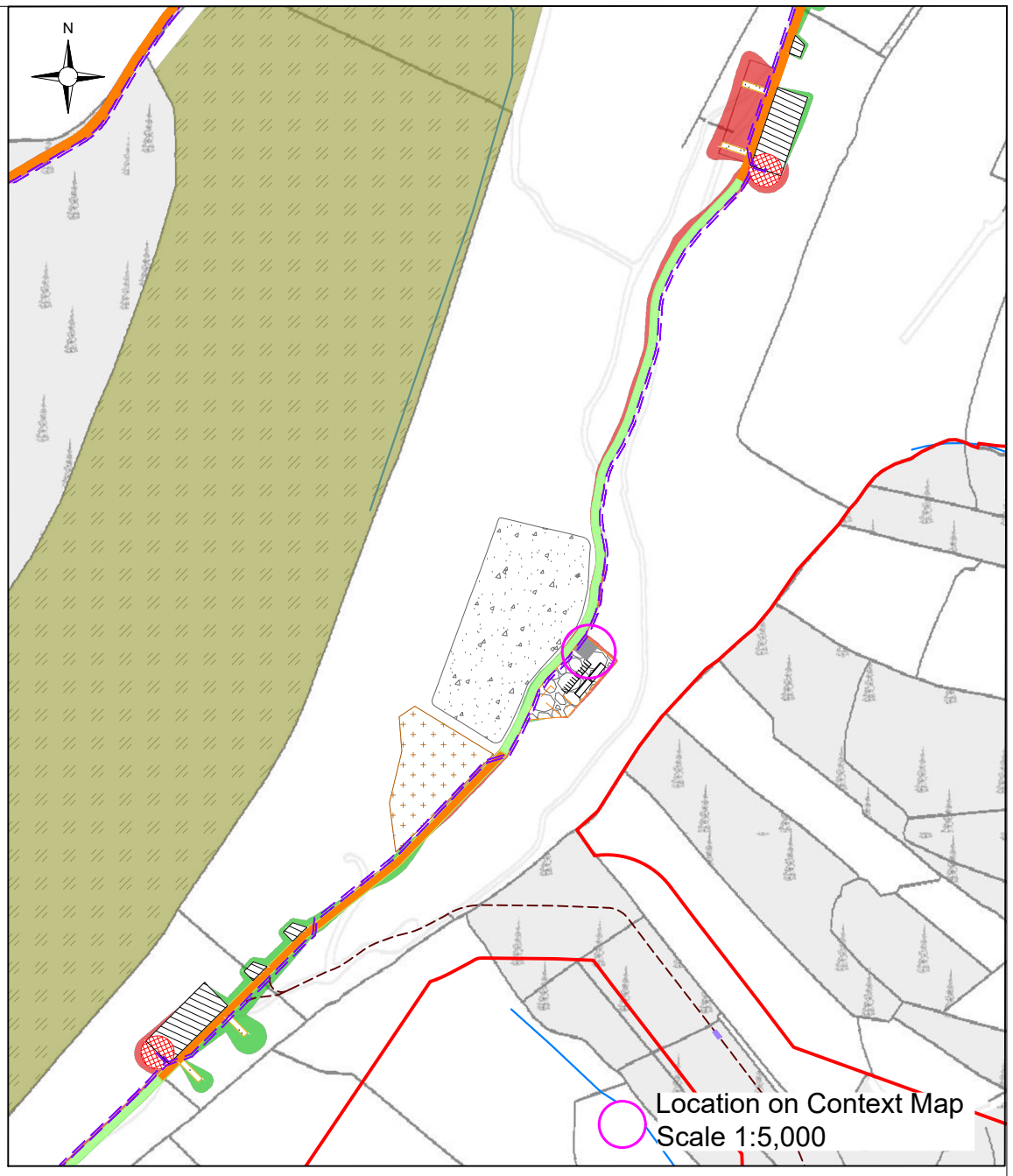
The locations of the proposed temporary construction compounds are shown on the Site layout drawing in Figure 4-1 above. The layouts of these construction compounds are shown on Figure 4-17 and Figure 4-18 below.

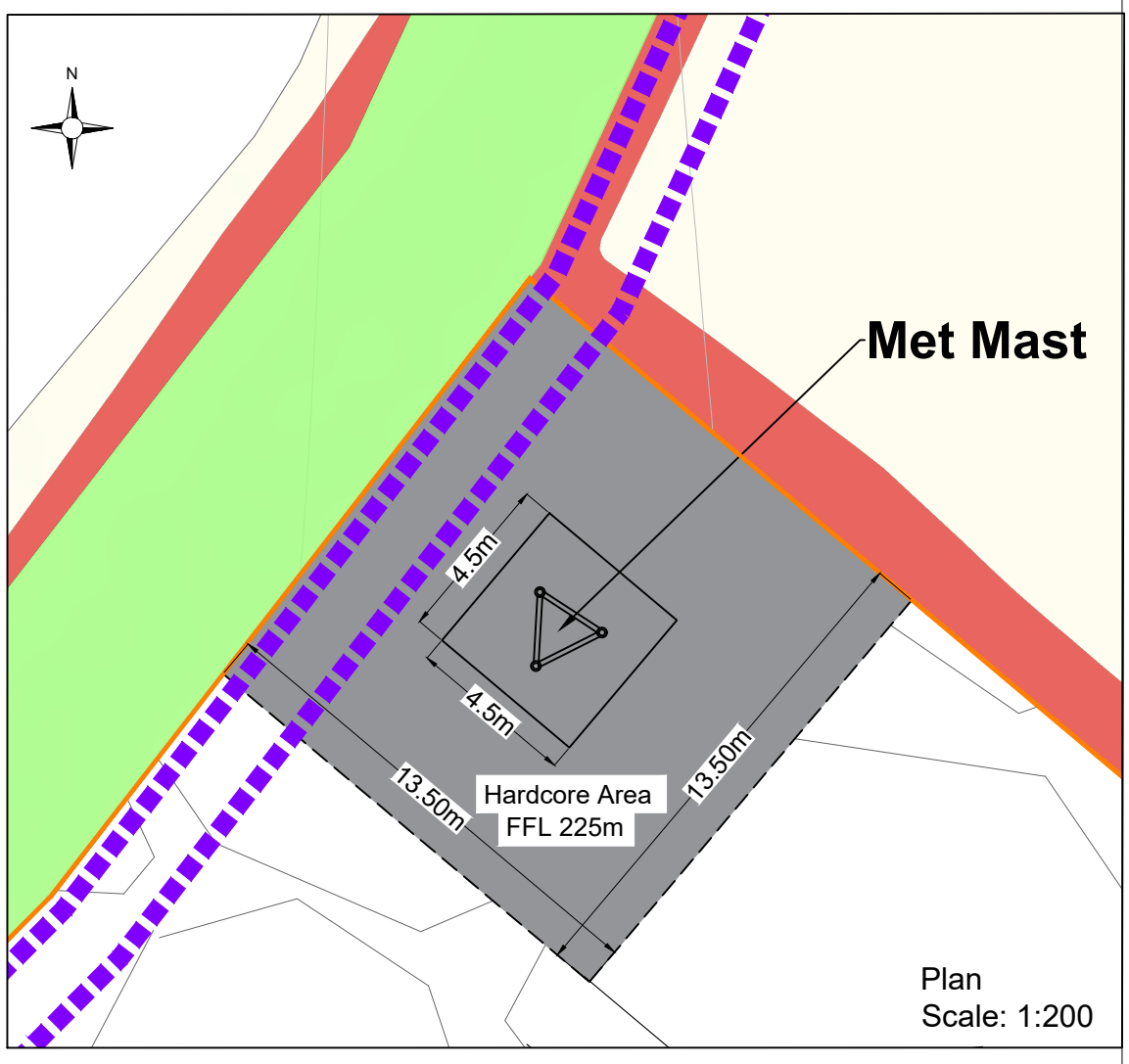
The temporary construction compounds will consist of temporary site offices, staff facilities and car-parking areas for staff and visitors. Temporary port-a-loo toilets and toilets located within a staff portacabin will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. There will also be a water supply onsite for hygiene purposes, by way of a temporary storage tank. The temporary construction compounds will also include a bunded refuelling and containment area for the storage of oil, lubricants and site generators etc, and full retention oil interceptor.

Both temporary construction compounds will be removed as part of the post-construction reinstatement works of the Proposed Wind Farm Site. The foundation of these compounds will be left in situ and will be left to revegetate naturally.



Elevation
Scale: 1:100





Note:

1. Met Mast exact detail may differ depending on the selected manufacturer.
2. Finished level of the mast to match ground conditions.
3. Mast/foundation orientation to be confirmed with met mast supplier.
4. Earthing and ducting requirements to be confirmed with met mast supplier and forwarded to foundation designer

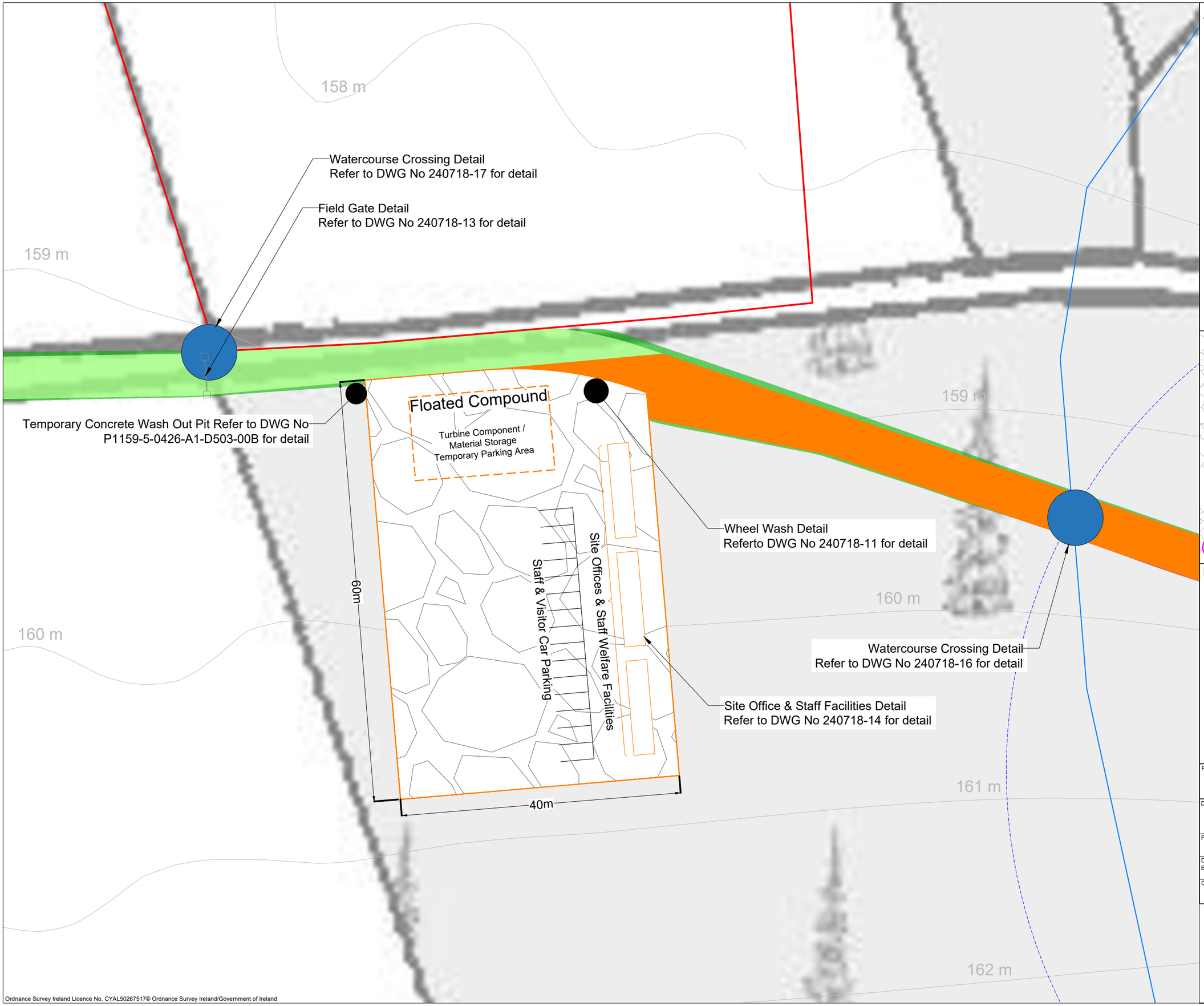
PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
Metrological Mast Detail

PROJECT No.:	DRAWING No.:	SCALE:
240718	Figure 4-16	As Shown @ A3

DRAWN BY:	CHECKED BY:	DATE:	REVISION.:
FB	RD	27.04.2026	P02

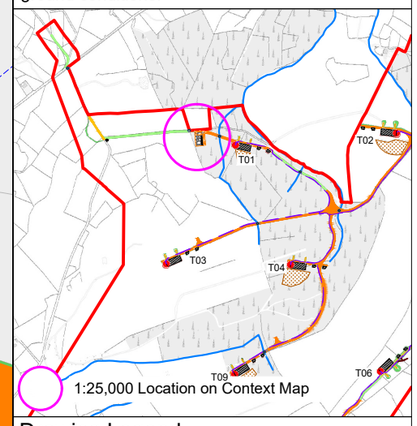
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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.



1:25,000 Location on Context Map

Drawing Legend

- Planning Application Boundary
- Upgrades to Existing Road
- Proposed New Roads
- River/Stream
- Temporary Construction Compound
- Watercourse Crossing
- Field Gate
- Cut
- Fill

N

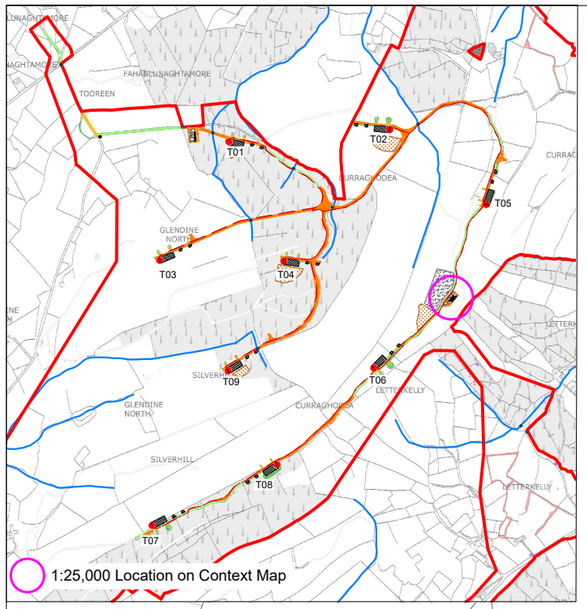
PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
Temporary Construction Compound 1

PROJECT No.:		DRAWING No.:	SCALE:
240718		Figure 4-17	1:500 @ A3
DRAWN BY: FB	CHECKED BY: RD	DATE: 27.04.2026	REVISION.: P02

OS SHEET No.: 4199 4200 4201 4202 4257 4258 4259 4260 4315 4316 4317 4318 4373 4374 4375 4376

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Met Mast
ITM 512714, 680150
Level - 225m O.D.

Metrological Mast
Refer to DWG No 240718-07 for detail

30m

Staff & Visitor Car Parking

Site Offices & Staff Welfare Facilities

+225m Turbine Component / Material Storage Temporary Parking Area +225m

Site Construction Compound

55m

Site Office & Staff Facilities
Refer to DWG No 240718-14for detail

33m

58m

228 m
227 m
226 m
225 m
226 m
220 m
221 m
225 m
209 m

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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Upgrades to Existing Road
- Proposed New Roads
- Peat and Spoil Management Areas
- Temporary Construction Compound
- Borrow Pit
- River/Stream
- Internal Cable Trench
- Cut
- Fill

N

PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
Temporary Construction Compound 2 & Met Mast Plan

PROJECT No.:	DRAWING No.:	SCALE:
240718	Figure 4-18	1:500 @ A3

DRAWN BY:	CHECKED BY:	DATE:	REVISION.:
FB	RD	27.04.2026	P02

OS SHEET No.: 4199 4200 4201 4202 4257 4258 4259 4260 4315 4316 4317 4318 4373 4374 4375 4376

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4.4.8 Biodiversity Management and Enhancement Plan

A Biodiversity Management and Enhancement Plan (BMEP) has been prepared for the Proposed Project and is included as Appendix 6-4 of the EIAR.

A total of 13 areas totalling approx. 172.7 ha within the Site have been selected for biodiversity enhancement measures as part of the Proposed Project and to enhance the Site for species and habitats known to occur within the Site. An overview map of the Proposed Enhancement Site is shown in Appendix 6-4 of the EIAR and Figure 4-19 below.

4.4.8.1 Hen Harrier Habitat Enhancement

4.4.8.1.1 *Deforestation Measures*

In summary, Areas A, B, C, D, E, F, G, H, I, and J are comprised of conifer plantations ranging from immature to mature to recently felled. Additional measures within Areas F and G are proposed which aim to restore blanket bog habitat using appropriate and proven 'forest to bog' methodologies, see Section 4.4 of Appendix 6-4 for further details. Sections within the forestry plantation of Area B included powerline setbacks which had species compositions which were characteristic of upland blanket bog. There are also areas of dense conifer plantations, with sitka spruce (*Pichea sitchensis*) dominating these areas. Gaps in these dense plantations come in the form of access paths and fire breaks allowing light and in turn more plant growth in some sections. Management prescriptions to be implemented by the applicant include:

- The identified area of existing forestry will be permanently removed. The timber, brash and stumps will be collected and removed off-site. The area will be allowed to revert to peatland habitat. This process will be aided by drain blocking as discussed below. This will create suitable foraging habitat for hen harrier and its associated prey species. Pre-mature felling of forestry will be undertaken before the first breeding season of the construction phase of the project programme. This will allow time (i.e. min. three growing seasons) for the clear-felled site to revegetate in advance of the operational phase, thereby ensuring replacement habitat would be available should the predicted displacement effect occur.
- A hydrology/hydrogeology study will be undertaken to map the movement of ground and surface water to inform the requirement for drain blocking. Forestry drainage channels will be blocked where necessary, using peat dams or plastic dams, as appropriate. In flat areas drain blocks will be placed every 15 meters and more frequently when accounting for a slope. When drains are blocked this reinstates the waterlogged conditions which are crucial for the survival of peatland plants. These works will be subject to a separate planning application if required.
- Self-seeding conifers originating as windblown seedlings from adjacent and nearby commercial conifer plantations, are a threat to the viability of the enhancement areas. They gradually take hold, and if unmanaged, would eventually make the area unsuitable for nesting/foraging hen harrier. Habitat maintenance of the area will involve the eradication of self-seeding conifers, and removal off-site. It is envisaged that the forestry areas will require maintenance twice during the life of the Proposed Project, once after approximately 10 and 20 years. The monitoring outlined in Section 5 below will monitor the level of encroachment by self-seeding conifers and will bring the scheduled removal forward as required.
- In the event of any invasive species being recorded within the Proposed Enhancement Areas, an invasive species management plan will be put in place to eradicate any stands of such species.
- Herbicides will not be used for the eradication of self-seeding trees and will not be relied upon for the clearance of invasive species.
- Enhancement and maintenance works will be undertaken outside of the nesting season as per the Wildlife Acts 1976 – 2023 as amended. A suitably qualified ornithologist will be present at

the removal of all woody vegetation, to ensure that identified breeding bird sites are avoided. If breeding activity of birds of high conservation concern is identified, no works shall be undertaken within a species-specific buffer (as per Goodship and Furness, 2022) in line with best practice, until it can be demonstrated that the nest is no longer occupied.

- The felling license for these lands will be applied for in tandem with the felling license application that will be required to facilitate the construction of the built infrastructure of the Proposed Project. The felling license will include management prescriptions for the felling of the forestry. Following felling, these enhancement lands will be managed for the benefit of hen harrier and peatland restoration.
- If at any point, hen harrier are identified to be nesting on any part of the Proposed Hen Harrier Habitat Enhancement Areas, the Applicant, in cooperation with the individual landowner, will provide for the protection of the nest site.
- The use of poisons or stupefying bait is not permitted within the Proposed Enhancement Habitat Enhancement Areas. Hen harriers and other birds of prey can fall victim to secondary and direct poisoning.

4.4.8.1.2 *Creation of Patchy Scrub Habitat*

Areas of patchy scrub will be planted within Areas A, B, C, D, E, F, G, H, I, and J in order to create a diversity of vegetation structures to provide cover and resources for hen harrier prey species.

- Scrub patches will be planted using a mix of bare-root saplings and 2-3 year old potted trees to provide some structural diversity and to maximise establishment success.
- Areas for planting will measure approximately 0.2ha in size and not exceed 10% of the total area of each area. The scrub will be distributed throughout the deforestation areas.
- Patches of existing native scrub remaining post- deforestation will be targeted for reinforced through planting.

The following species, which are present locally and are suitable for the upland exposed location with peat soils, will be used:

- Grey willow (*Salix cinerea)*
- Birch (*Betula pendula*)
- Alder (*Alnus glutinosa*)
- Hawthorn (*Crataegus monogyna)*
- Blackthorn (*Prunus spinosa)*
- Holly (*Ilex aquifolium)*
- Hazel (*Corylus avellana)*
- Elder (*Sambucus nigra)*
- Rowan (*Sorbus aucuparia)*

4.4.8.2 Management of Farmland for Hen Harrier

4.4.8.2.1 *Grazing Regime*

Habitat management prescriptions for wet grassland and peatland are outlined below:

- In general, maintain stocking levels of no greater than 0.15 livestock units (LU) per forage hectare;
- Participating landowners will remove any self-seeding conifers as they appear or as they are noticed and can also be removed by the Applicant as provided for in the farm plan agreements.
- On areas of wet grassland, the application of chemical or organic fertiliser will be prohibited;

- All rhododendron or other invasive species must be removed in Year 1 of the plan. Ongoing control will be required in each subsequent year. Acceptable control methods are cutting/pulling;
- Consideration will be given to the creation of shallow pools 30- 50 cm deep to provide spawning sites for amphibians; and
- In cases where the land is wet, concentrate grazing during the summer months.

4.4.8.2.2 *Rush Management*

Habitat management prescriptions to be included in the farm management plan for managing rushes on wet grassland are outlined below:

- In general, rushes will be cut on a 2-year cycle unless there are specific reasons for a longer cycle, e.g. weak rush growth.
- In most cases, active rush management will commence in Year 1 of the plan and should only be delayed until Year 2 or 3 where improved grassland is in reversion, where rush growth is very weak or where the rushes were cut or treated with herbicide in the year prior to joining the scheme.
- On farms with a large area of rushy wet grassland (> 10 hectares), active rush management can be delayed on a portion of the area until Year 2 of the farm plan. The area where active rush management is to be delayed for this reason should not normally exceed 50% of the wet grassland component of the farm.
- The planned rush management will be reviewed on an annual basis to determine if it is having the desired effect. If it is found during an annual inspection that rush recovery has been stronger or weaker than had been originally anticipated, the farm plan will be changed to adjust the cutting sequence for future years and provisions for these amendments will be included in the farm plan management agreements. These details have been consented to by the consenting landowners.

4.4.8.2.3 *Delayed Topping/Mowing*

Topping or mowing will not be carried out during the period 1 March – 31 August inclusive to avoid disturbance and mortality or injury of ground-nesting bird species and other wildlife. The availability of tussocky rushes and multi-layered swards is key to supporting the prey species of birds and small mammals favoured by hen harrier. However, individual landholdings may be allowed, on the advice of the ecologist and agricultural advisor, to top or mow grasslands during the period referenced above. Any such allowance/deviation would be written into the Farm Plan.

4.4.8.2.4 *Reduction/Cessation of Fertiliser Application*

The requirements for reduction or cessation of the application of fertilisers will be determined by soil testing and survey carried out by the agricultural advisor to inform the individual farm plan. This measure will aim to increase the species and structure diversity of the grassland sward through reduced nitrate application. This measure will also assist in meeting the requirements of the Nitrates Directive and improve the quality of surface water run-off to streams and drains locally.

4.4.8.3 Marsh Fritillary Enhancement

4.4.8.3.1 *Wet Grassland Management*

The measures provided in Section 4.2 of Appendix 6-4 of the EIAR provides for the management of approx. 20 ha of existing farmland (Areas 1 and Area 2) into more species diverse/rich Wet grassland (GS4) habitat, which will also promote supporting habitat for marsh fritillary.

During the surveys undertaken, the larval food plant of marsh fritillary, Devils-bit scabious, was frequently recorded within these agricultural grasslands, and therefore, provided the management measures in Section 4.2.3 of Appendix 6-4 of the EIAR are implemented, suitable habitat for this species will be established once a varied sward of between 12 and 25cm in height is achieved.

4.4.8.3.2 *Adaptive Grazing Regime*

It is proposed implement an adaptive grazing regime which will be informed by annual monitoring of Area 3, increasing or decreasing grazing as required.

The following management regime of Area 3 will be implemented, to promote suitable sward structure for marsh fritillary:

- Sheep grazing is unsuitable as they will graze selectively for flowers. Enhancement areas will be grazed by cattle.
- Supplementary feeding to be only provided outside of the enhancement area.
- Use a low stocking level of approx. 0.5LU/ha[3]. However, the stocking rate is to be subject to annual monitoring and altered as required. The goal is to have a structured sward between 12 and 25cm in height. Extensive (but non-intensive) grazing will result in areas that look under grazed, but which are used for basking adults.
- No fertiliser, slurry, herbicide, pesticide usage
- No reseeding with perennial rye grass
- Field operations such as rush or scrub control should only be carried out November to February when caterpillars are in hibernation and less subject to disturbance, and outside of bird nesting season

4.4.8.4 Peatland Habitats

Additional measures within Areas F and G are proposed, amounting to 36.4 ha, which aim to restore blanket bog habitat using appropriate and proven 'forest to bog' methodologies, as described below.

4.4.8.4.1 *Tree Felling*

Felling will be undertaken as set out in Section 4.4.8.1.1 above. Timber and brash will be gathered and removed from the Proposed Enhancement Site in line with best practice. Windrow is not considered suitable for the blanket bog restoration area, as best practice guidance recommends that brash recovery is particularly important in water quality sensitive catchments (2026). Brash mats may be left in place to facilitate access for restoration activities.

The machine operators used will be experienced at working on deep peat and made aware of the specific risks on the Proposed Enhancement Site. The Proposed Enhancement Site will be walked before commencement of works. On wet parts of the bog, the excavator may need to travel on bog mats.

4.4.8.4.2 *Furrow and Drain Blocking*

The first action will be to effectively block direct connection between the restoration works and the watercourse within Area F. Any collector artificial drains (interceptor drains) that provide connection to the watercourse will be blocked to prevent run off of suspended solids or other pollutants. These measures will take the form of peat dams where there is no flow (as is the case in the vast majority of drains/furrows) and check dams, if any flowing drains are encountered. The restoration works will then

[3] *Byrne, Dolores and Moran, James (2018). Best practice guidelines for managing lowland species-rich grasslands and marsh fritillary grassland habitat in north-west Ireland. Report prepared for the European Commission, DG Environment, Agreement No. 07.027722/2014/697042/SUB/B2.*

commence upslope at the highest point and work systematically downslope towards the natural watercourse.

Given the topography and small size of drains and furrows, it is likely that surface smoothing will be the main action undertaken (see description below). However, if it becomes apparent, following felling, that additional drain blocking is required, this will be undertaken as necessary following the procedures provided below.

Peat Dams

Given the topography of the Site and nature of the drains, it is likely that, if dams are required, they will be peat dams as opposed to plastic dams that would be required on sites with higher flows and gradients and where there is no other option. Construction of peat dams will be achieved using a low ground pressure excavator with a moderate to long bucket reach to reduce movements.

Method:

1. *Remove the turfs from the surface of the in ditch borrow pit and the dam location, and place to the side.*
2. *Clean out/push away from dam location the unconsolidated peat and debris.*
3. *Key the dam into the sides of the ditch, with a 0.5 to 1 m indent on both sides.*
4. *Use consolidated peat from an in-ditch borrow pit upstream to create the dam. Avoid leaving steep sided or deep holes behind the dam, as these can be dangerous to stock.*
5. *If necessary, shallow swales that extend out (or on one side) from behind the dam can be added to re-direct water from the ditch line.*
6. *Regularly compact the peat in the dam with the back of the excavator bucket to ensure an effective seal.*
7. *When the dam is 50 cm above the surface place the vegetation turfs across the top of the dam (and in swale if present) and press with the bucket to ensure good contact between the turf and the peat.*

Timber may be used in conjunction with peat dams to block small drains and furrows.

Plastic Dams

It is unlikely that the use of plastic dams will be required. However, this section provides the proposed methodology for the installation of plastic piling dams on ditches less than 1.5m wide – should it be required. Plastic piling is light, versatile and slots together on site. Plastic piling dams form a watertight seal that lasts for decades. Generally, dams are placed at between 10 and 20 m intervals on flat ground but would need to be closer where there is a slope. It is expected that the final water level from the lower dam will rise half way up the upstream dam. The final water level to be at the peat surface or no more than 20 cm below the surface. Plastic piling dams will be used in the following situations:

- On ground that is too soft and/or unstable to allow safe machine access.
- On portions of the site that are inaccessible by machine.
- On active drains that are partially infilled with vegetation yet hold too much water to allow effective installation of peat dams.

The methodology for the installation of plastic dams is provided below:

- Hammer piles in starting from the centre of the ditch
- Position the longest pile in the deepest part of the drain. Use a sharp spade to pre-cut the outline of each pile in the surface vegetation. Push the pile into the peat using your own weight.
- Ensure that the piles remain vertical as it will become increasingly difficult to insert piles if they lean in any direction. Using a mel, drive further and when firm guide

adjacent piles into their cams, repeating the process. Continue until all piles are firm in the peat.

- Piling will only create a good seal if driven into at least 75 cm of solid peat, usually found below the 50 cm of soft peat in the base of the ditch.
- The top edge of the pile may require shielding from the metal of the hammer. Several methods are used but the most effective is a timber batten resting on the pile.
- Shape the dam to form a gently curving upstream 'C' shape at the ends. This shape assists dam strength and increases the amount of water retained. The dam must extend well into the banks of the ditch. A rule of thumb is the extensions into the bank on each side, equal the width of the ditch. On slopes, the wings of the dam can be angled down the slope to re-distribute water over the site and reduce pressure behind the dam.
- Continue driving the piles starting at the centre, until all piles are approximately 30 cm above bank level. Leave the dam to fill with water, as the last firming is best done with water behind the dam to lubricate the piles. Finally, hammer the piles until they sit no more than 10 cm above the ground surface. The dams are not to be visible above the vegetation. If they are too high after installation, then the tops of the piling will be trimmed off to make sure that the dams blend in with the landscape. Do not hammer the piles below the ground level, as this reduces the amount of water held and spread across the adjacent peatland.

4.4.8.4.3 *Stump flipping and Surface Smoothing*

Surface smoothing and stump flipping is likely to be the primary restoration activity undertaken in the blanket bog restoration site. Bog restoration techniques must reverse the impact of the ridge-furrow cultivation process which continues to persist post-felling, as well as raising the bog water table within the underlying peat mass which have been damaged by the afforestation process. Methods comprising various surface smoothing techniques, and furrow/drain blocking or a combination of both have shown good results in restoring active blanket bog habitat. A variety of techniques can be used depending on the site conditions.

The key principles are 'enough and no more' and aim to minimise compaction and disturbance. Mitigation measures to manage surface run-off (particularly water quality) from restored sites may be necessary, depending on the method used, site conditions and sensitivity of receptors. Research in Scotland shows a clear differentiation between ridge-furrow original surface in terms of depth to water table and therefore rates of recolonisation of specialist bog species to post felling sites. Leaving furrows untreated may allow bog vegetation to colonise them over time, but the prospects for expanding cover of bog vegetation onto plough shoulders (the original surface level) and then to ridges seems very poor and the process would likely take a very long time. Plough ridges often occupy up to 50% of the plantation surface area.

Surface smoothing is the process where the ridge and furrows of the forestry drains are levelled or smoothed out using a combination of damping down with the excavator bucket, flipping or mulching stumps, and cross tracking. The operation can employ all 3 techniques.

Smoothing with Bucket

When the peat is malleable and stumps are small and can be crushed into the ground, damping down with the bucket can be used. When the peat is not as malleable, the stump can be mulched or flipped as described below. The entire area can be smoothed off either by damping down with the bucket, or cross tracking.

Cross-Tracking

Once the surface of the ground has been smoothed as described above, the excavator then tracks over the bog surface and the weight of the machine will compress the surface (cross tracking). The aim is to

retain as much of the bog vegetation as possible and not bring up too much deep peat to the surface which takes longer to revegetate. The use of a low ground pressure excavator with wide tracks (1.9m or greater) will reduce compaction of the site.

4.4.8.4.4 *Stump Flipping and mulching*

Using a low ground pressure excavator with a toothed bucket, the root plate of a stump can be carefully dug up, flipped and pushed into the adjacent furrow. The plough ridges are then smoothed out by sliding the ridge material carefully into the furrows with the excavator bucket, ensuring any vegetation remains on top.

Stump mulching: Involves the removal of the stump using a stump removal attachment fitted to an excavator. This process is similar to stump flipping, except that the stump is mulched instead of flipped before the ground is smoothed.

4.4.8.4.5 *Removal of Self-Seeded Trees*

To prevent the colonisation of the restoration area by tree species, the site is to be monitored for all seedling regeneration and the regeneration removed annually for the first five years. The frequency of maintenance and monitoring will be reviewed at that stage and can be reduced if there is little ongoing colonisation. The colonisation will not be allowed to compromise the conservation status of the restored habitat and the monitoring frequency will ensure that this does not happen. The period between monitoring visits and associated maintenance will not exceed 5 years.

4.4.8.5 Linear Habitats

It is proposed to plant c. 1,960m of hedgerow and riparian woodland habitat within the Site, as shown in Figure 4-5. These have been strategically chosen to link up existing areas of bat activity and to extend connectivity through the Site. It is also proposed to bolster and maintain c.3.4 km of gappy or poor-quality hedgerow habitats in the eastern section of the Site.

Riparian planting will be carried out along the Knockacarn River in the east of the Site; all saplings will be planted by hand to reduce to potential for bare soil exposure and sediment runoff. Strictly no fertilisers will be used in the riparian zone.

Species to be planted for both hedgerows and riparian planting include:

- Hawthorn (*Crataegus monogyna*)
    - Proportion of hedgerow mix: 75%
    - Age class to be planted: combination of whips and advanced nursery stock (10cm – 12 cm girth trees) to increase structure diversity.
- Hazel (*Corylus avellana*)
- Blackthorn (*Prunus spinosa*)
- Rowan (*Sorbus aucuparia*)
- Elder (*Sambucus nigra*)
- Goat Willow (*Salix caprea*)
- Grey willow (*Salix cinerea*)

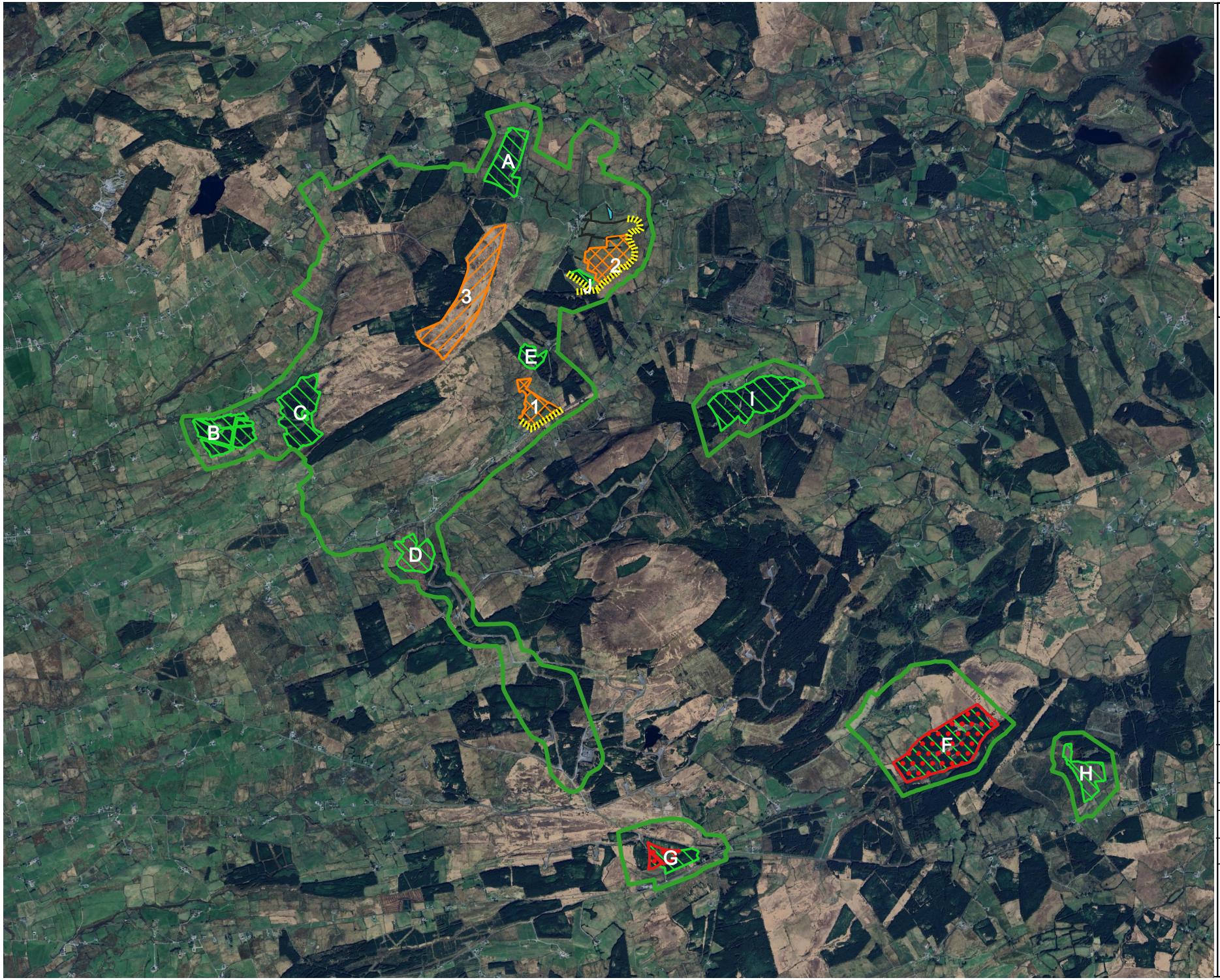
The following measures will be followed when planting Riparian woodland:

- Mark out the area for planting so it is clear exactly where planting will be established.
- Use thin stakes or sticks to mark the rows or areas of trees to be planted.
- It is recommended that there are 2m spacings between trees. Shelterbelt planting may be applied by planting up two lines of trees as a staggered row.
- All planting will be done by hand and will be undertaken by a suitably qualified arborist.

- Planting will be undertaken in the dormant season, between November and March.
- Hedgerow will be pit planted, in areas of clear vegetation. This involves using a spade to dig a hole with roots placed in the centre. Soil is then placed around the hedgerow and firmed in, ensuring the tree is upright.

4.4.8.5.1 *Hedgerow Management*

- Hedgerows to be trimmed on a 2 or 3-year rotation to maximise structural diversity and to prevent over-trimming,
- Hedgerows to reach approx. 2.5m height with an 'A' shape,
- Cut hedgerows between November and January. This will avoid the bird nesting season (March 1st to August 31st) and will avoid impacts on foraging pollinators,
- It is expected that ivy will self-colonise, and this will be retained where possible,
- Grassy margins will be retained to preserve flowering ground flora,
- Avoid the use of fertilisers, slurry, herbicides and pesticides.



Map Legend

- EIAR Site Boundary
- Grassland management
- Stock Management
- Forestry Felling
- Forest to Bog
- Hedgerow Enhancement/ Planting
- Hedgerow and Scrub Management

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Drawing Title

Proposed Enhancement Site

Project Title	Slieveacurry Renewable Energy Development, Co. Clare
Drawn By: PD	Checked By: BT
Project No.: 240718	Drawing No.: Figure 4-19
Scale: 1:45,000	Date: 2026-04-24

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Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

4.4.9 Tree Felling and Replanting

4.4.9.1.1 *Tree Felling*

Tree felling will be required within and around the permanent built infrastructure footprint of the Proposed Project to allow for the construction of the Proposed Turbines, access roads, underground cabling, and other ancillary infrastructure.

Approximately 144ha (hectares) of forestry will be felled to accommodate the Proposed Project, 20.7ha of which will be around the permanent built infrastructure of the Proposed Project, inclusive of Proposed Turbines T01, T02, T04 and T09 and associated infrastructure, and an additional 123.3ha as part of the BMEP as identified in Section 4.4.8 above. Figure 4-20 shows the extent of commercial forestry to be permanently felled as part of the permanent built infrastructure of the Proposed Project.

Please note, the conifer plantation to be felled as part of the permanent built infrastructure of the Proposed Project footprint will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments. The policy requires that a copy of the planning permission for the Proposed Project be submitted with the felling licence application; therefore, the felling licence cannot be applied for until such time as planning permission is obtained for the Proposed Project.

4.4.9.1.2 *Forestry Replanting*

In line with the Forest Service's published policy on granting felling licences for wind farm developments, areas cleared of forestry for access roads, and any other wind farm-related uses will have to be replaced by replanting at an alternative site or sites. The Forest Service policy requires replacement or replanting on a hectare for hectare basis for the felling carried out as part of the Proposed Project.

The identified 20.7ha of conifer plantation that will be permanently felled for the Proposed Project will be replaced or replanted on a hectare for hectare basis as a condition of any felling licence that will be issued in respect of the Proposed Project felling. Replanting is a requirement of the Forestry Act and is primarily a matter for the statutory licensing processes that are under the control of the Forest service. An additional 123.3ha will be permanently felled as part of the hen harrier enhancement plan included in the BMEP measures identified above and in Appendix 6-4, will be subject to the condition of any felling licence that will be issued in respect of the Proposed Project. The replacement of the felled forestry as part of the Proposed Project may occur on any lands, within the State benefitting from Forest Service Technical Approval[4] for afforestation, should the Proposed Project receive planning permission. Under the Forestry Regulations 2017, all applications for licences for afforestation require the prior written approval (technical approval) of the Minister for Agriculture, Food and the Marine. Before the Minister can grant approval, he/she must first determine if the project is likely to have significant effects on the environment (for EIA purposes) and assess if the development, individually or in combination with other plans or projects is likely to have a significant effect on a European site (for Appropriate Assessment purposes).

The Applicant commits to replanting the required extent of conifer plantation, outside the hydrological catchments within which the Site is located as per the condition of the felling licence in respect of the Proposed Project. On this basis, it is reasonable to conclude that there will be no cumulative effects associated with the replanting of 20.7ha of conifer plantation. Therefore, the forestry replanting is not considered further in the impact assessment chapters of this EIAR. In addition, the Applicant commits to not commencing the Proposed Project until both a felling and afforestation licence(s) is in place and,

[4] *All proposed forestry developments where the area involved is greater than 0.1 hectare must receive the prior written approval of the Forest Service. The application for approval is known as Pre-Planting Approval – Form 1.*

therefore, this ensures the afforested lands are identified, assessed and licenced appropriately by the relevant consenting authority.

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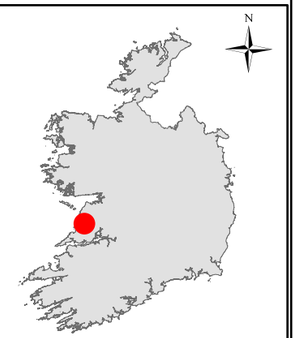
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0 0.5 1 km

Map Legend

- EIAR Site Boundary
- Proposed Commercial Forestry Felling
- Built Infrastructure of the Proposed Project

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator



SITE LOCATION - NOT TO SCALE

Drawing Title
Commercial Forestry Felling Areas

Project Title
Slieveacurry Renewable Energy Development Co. Clare

Project No.	Drawing No.	Scale
240718	4-20	1:10,000
Drawn By	Checked By	Date
MVN	BT	29/04/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

4.4.10 Borrow Pit

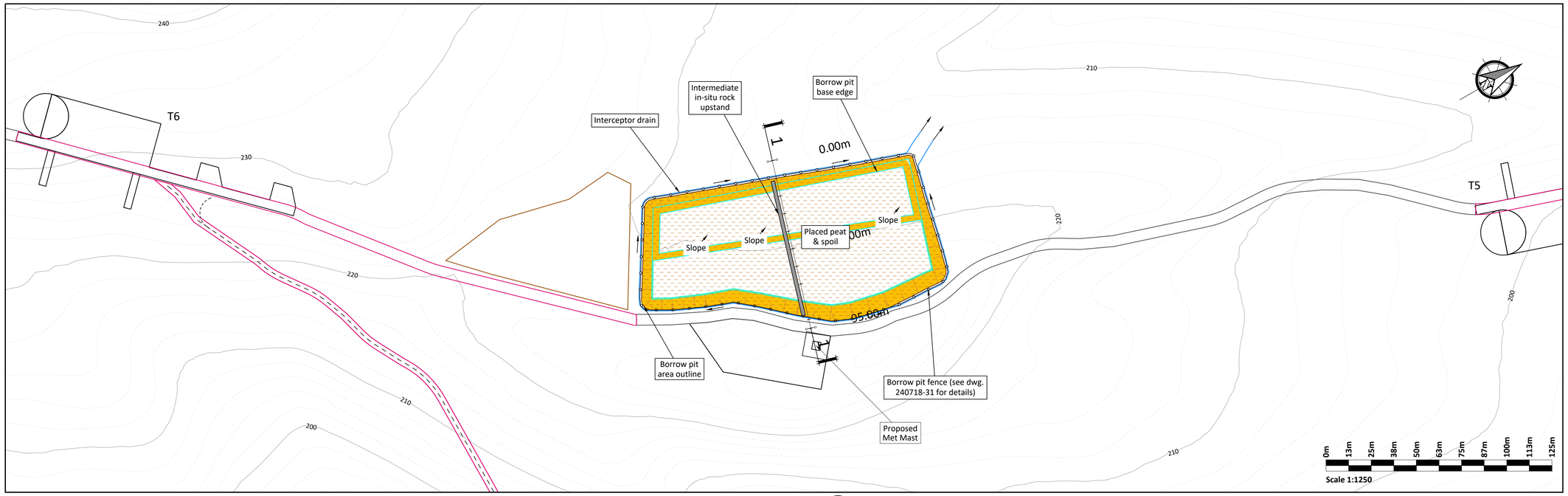
It is estimated that approx. 101,600m^3 of stone material will be required to construct the Proposed Project. It is intended to obtain the majority of materials for the construction of the Proposed Project from the proposed onsite borrow pit (engineer's specified material to be imported onto the Site should sufficient volumes of suitable material not be encountered during the excavation phase of the proposed infrastructure, to come from local licenced quarries). Please see Figure 4-21 for details of the proposed borrow pit. The proposed onsite borrow pit is located approximately 300m southwest of T05 and measures approximately 11,640m^2 with an estimated volume of 100,000m^3.

Access to the borrow pit will be via a proposed new access road from the north. Please see Figure 4-2 for details. Post-construction, the borrow pit will be backfilled with excavated spoil, then reseeded or left to vegetate naturally. A stock-proof fence will be erected after construction materials have been extracted to prevent unauthorised access.

The extraction of material from the borrow pit is a construction phase activity only of the Proposed Project which will be a temporary operation run over a short period of time. Hardcore materials will be extracted from the borrow pit (and some turbine locations, if necessary), principally by means of rock breaking. Depending on the hardcore volume, blasting may also be used as a more effective rock extraction method, capable of producing significant volumes of rock in a matter of milliseconds. Blasting will only be carried out after notifying any potentially sensitive receptors. These two rock extraction methods are discussed below. The processing and crushing of boulders may be required to achieve the grading requirements for use in construction. The potential noise and vibration impact on sensitive receptors associated with the rock extraction measures, detailed below, are assessed in Chapter 12 of this EIAR. Post-construction, any unsafe areas around the borrow pit area will be permanently secured and a stock-proof fence will be erected around the borrow pit area to prevent access to this area. Appropriate health and safety signage will also be erected on this fencing and at locations around the fenced area.

The extraction of rock from the borrow pit will be a temporary operation during the construction phase. The topsoil and subsoil will be stripped back and temporarily stockpiled using standard tracked excavators. Two extraction methods have been assessed for breaking out the useful rock below: rock breaking and blasting. Please see Section 4.9.10 below for the borrow pit construction methods.

The proposed borrow pit can be seen in Figure 4-21 below.



PLAN 0001 -
1:1250

Legend:

- EIAR Site Boundary
- Proposed Turbine
- Proposed Upgrades to Existing Road
- Proposed New Road
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Underground Cable Connection
- Proposed Turbine Delivery Route
- Proposed Peat & Spoil Management Area
- Proposed Biodiversity Enhancement Area
- Proposed Delivery Overrun Area
- Proposed Public Road to be Upgraded
- Proposed Public Road to be Maintained
- 50.0 Existing Ground Level - Major Contour
- Existing Ground Level - Minor Contour

Construction Notes Borrow Pit:

(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.

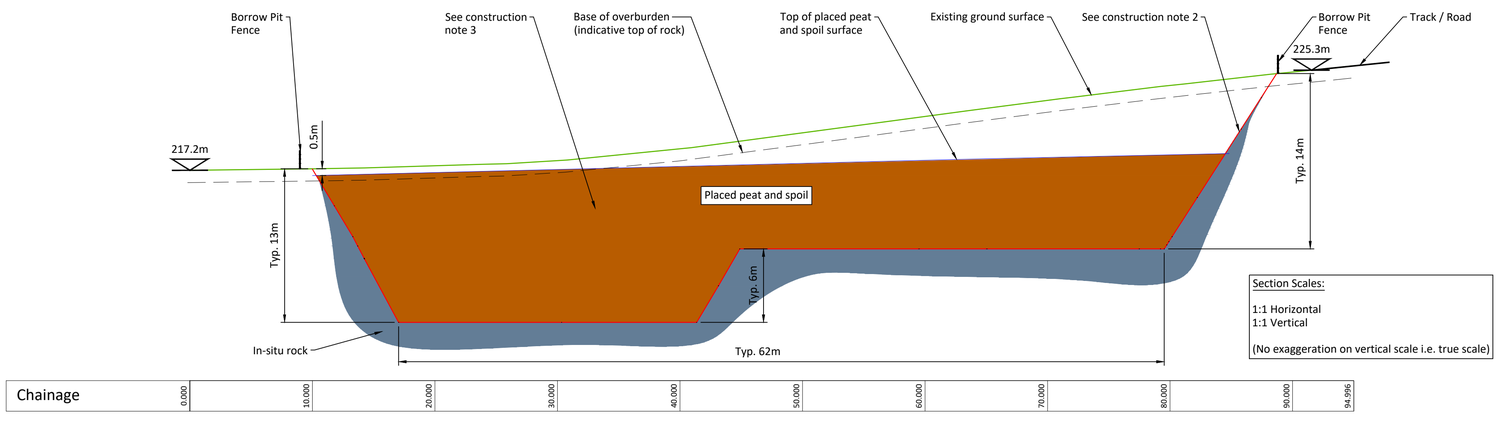
(3) Infilling of the peat & spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance. A rock upstand will be left in place to allow the borrow pit to be developed and infilled in cells.

(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.

(7) Further guidelines on the construction of the borrow pit are included within Section 6.6 of the Peat & Spoil Management Plan.



SECTION 1 - 1 -
1:250

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Rev.	Description	App By	Date
P01	FOR INFORMATION	BDH	18.12.25
P02	FOR INFORMATION	BDH	17.02.26
P03	FOR INFORMATION	BDH	23.04.26

PROJECT: SLIEVEACURRY RENEWABLE ENERGY DEVELOPMENT

CLIENT: MKO

SHEET: BORROW PIT 1 - PLAN AND SECTION DETAILS

Date: 23.04.26
Drawn by: POR
Checked by: IH
Project number: P24-264
Scale (@ A1): As Shown
Drawing Number: P24-264-0600-0011 (Sheet set subset 0600)
Rev: P03

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23 April 2026 (O:\ACAD\2024\P24-264\P24-264-0600-0011)

4.4.11 Quantities of Peat, Spoil and Crushed Stone

4.4.11.1 Peat and Spoil Management Plan

The construction of the Proposed Project will require the excavation of peat and spoil. The quantities of peat and spoil, requiring management on the Proposed Wind Farm Site has been calculated, as presented in Table 4-2 below. The quantities were calculated by FTC as part of the (PSMP) included as Appendix 4-2 of this EIAR.

Table 4-2 Spoil Volumes requiring management

Development Component	Area (m2) (approx.)	Peat Volume (m3) (approx.)	Spoil Volume (m3) (approx.)
9 no. Turbines and Hardstands	27m diameter excavation footprint for turbine foundation with 50 x 30m hardstand area.	23,000	37,100
Access Roads	Assumed 5m running surface with 6-8m wide development footprint.	31,000	13,000
2 no. Temporary Construction Compounds	Hardstanding area of 60 x 40m and 60m x 30m	450	450
Meteorological Mast	12.5 x 14.5m hardstanding area.	100	200
Borrow Pit	Area of 13,400m^3.	2,600	10,000
33kV Underground Cable Trench	1.2m x 0.9m	1,300	5,300
Extension to Existing 110kV Slievecallan substation	Hardstanding area of 95m x 40m.	0	0
Total Peat and Spoil to be managed		**58,450**	**66,050**
		124,500	

Note: 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.

Tree felling is proposed at various locations across the Site; however, this will not involve the excavation of tree stumps, outside of the permanent built infrastructure footprint of the Proposed Project, unless otherwise stated as per the BMEP in Section 4.4.8 above and as such does not affect the excavation volumes. Where tree stumps are removed along proposed access roads etc., the excavation volume has been included in the above table.

4.4.11.2 Peat and Spoil Management Areas

As identified in Table 4-2 above, the total volume of peat requiring management onsite is estimated at 58,450m^3 and the total volume of spoil requiring management onsite is estimated at 66,050m^3. This material will be excavated and deposited in the proposed borrow pit as outlined in Section 4.4.10 above (95,000m^3) peat and spoil management areas, with a total capacity volume of 20,400m^3, around turbine foundations and hardstands within clear felled areas, sidecasting along access roads, and landscaping. Peat will be stored within 4 no. peat management areas within clearfelling areas around Proposed Turbines (T01, T02, T04 and T09) and spoil within 1 no. spoil management area adjacent to the proposed borrow pit. As such, there is enough capacity in the peat and spoil management areas within the Proposed Wind Farm Site, for the total volumes of peat and spoil requiring management for the Proposed Project as detailed in Table 4-2 above. The location of peat and spoil management areas within the Proposed Wind Farm Site are shown in Figure 4-2. Drawing details of the 4 no. peat management areas and 1 no. spoil area are included as Figures 4-22 to 4-27 below.

Further details on construction methodologies, including recommendations and best practice guidelines for the placement of peat and spoil in borrow pits, are detailed in Section 4.9.11 below, and in the Peat & Spoil Management Plan in Appendix 4-2 of this EIAR.

4.4.11.3 Crushed Stone

The quantity of crushed stone required for the construction of the Proposed Project has been calculated, as presented in Table 4-3 below.

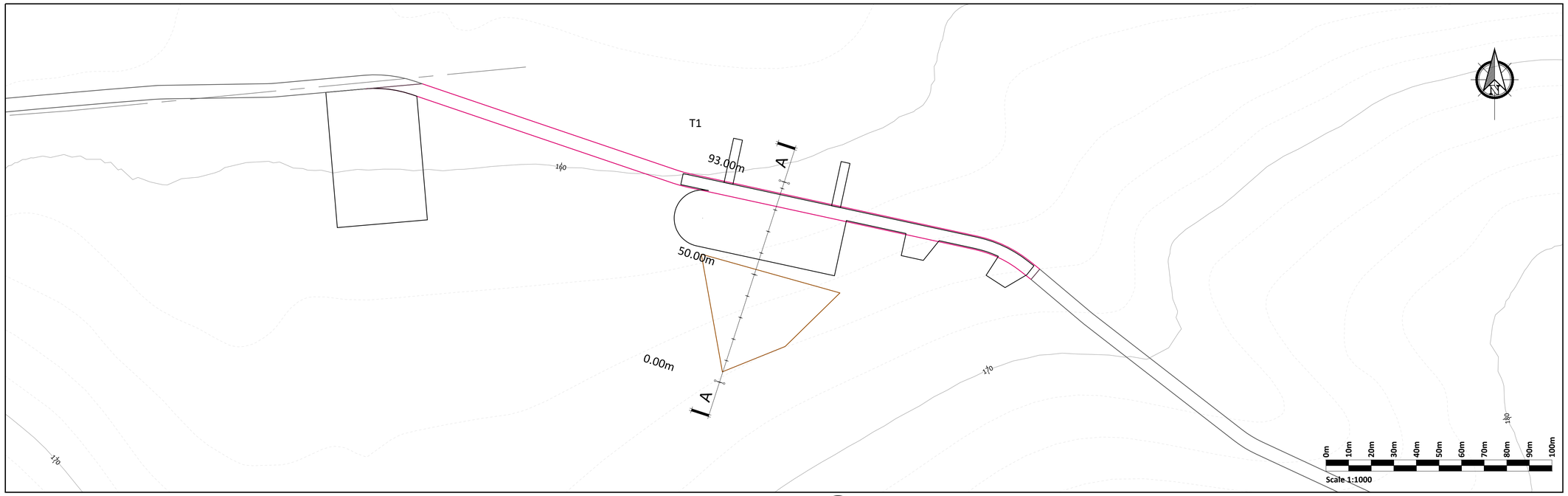
Table 4-3 Crushed Stone Requirement

Development Component	Crushed Stone Requirement (m^3) (approx.)
9 no. Turbines and Hardstanding Areas	59,000
Access Roads (including cabling)	39,000
Meteorological Mast	200
Temporary Construction Compounds	3,400
Extension to Existing 110kV Slievecallan substation	0
Total	**101,600**

Note: A contingency factor of 10% has been applied and is included in the crushed stone requirements volumes above to allow for a variation in ground conditions across the Site.

It is considered that any spoil generated by the proposed cabling trench will be removed and either accommodated within the spoil management area within the Proposed Wind Farm Site or transported to a Materials Recovery Facility (MRF) where necessary. Any road material containing tar will be managed separately. Further detail on this can be found in Chapter 15: Traffic and Transport.

There will be a requirement to remove some sections of forestry and linear vegetation i.e. treelines and hedgerows to facilitate the Proposed Project infrastructure, however, this will not involve the excavation of tree stumps outside of the permanent infrastructure footprint unless otherwise stated as per the BMEP in Section 4.4.8 above, and as such does not affect the excavation volumes.



PLAN 0001
1:1000 -

Legend:

- EIAR Site Boundary
- Proposed Turbine
- Proposed Upgrades to Existing Road
- Proposed New Road
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Underground Cable Connection
- Proposed Turbine Delivery Route
- Proposed Peat & Spoil Management Area
- 50.0 Existing Ground Level - Major Contour
- Existing Ground Level - Minor Contour

Construction Notes Peat & Spoil Managment Areas:

(1) An interceptor drain should also be installed upslope of the management areas.

(2) A silting pond will be required at the lower side of the management areas.

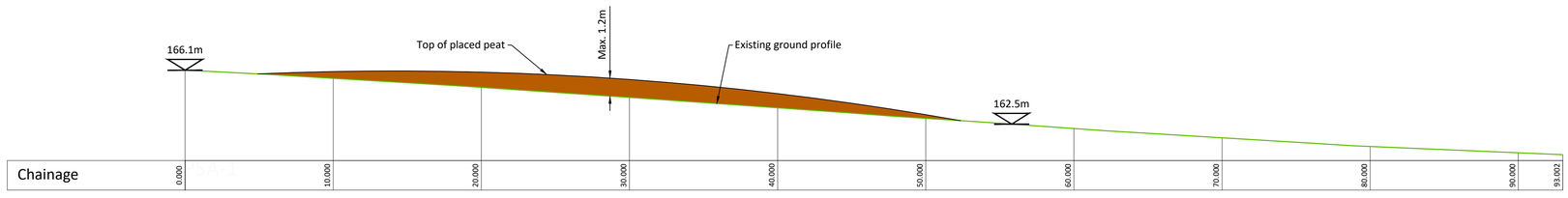
(3) The placement of the excavated peat/spoil should commence at the downslope edge of the management area against the stone buttress and placement should then continue upslope.

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

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

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

(7) Further guidelines on the construction of the management area are included within Section 6.7 of the Peat & Spoil Management Plan.



SECTION A - A
1:200 -

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P02	FOR INFORMATION	BDH	17.02.26

PROJECT: SLIEVEACURRY RENEWABLE ENERGY DEVELOPMENT

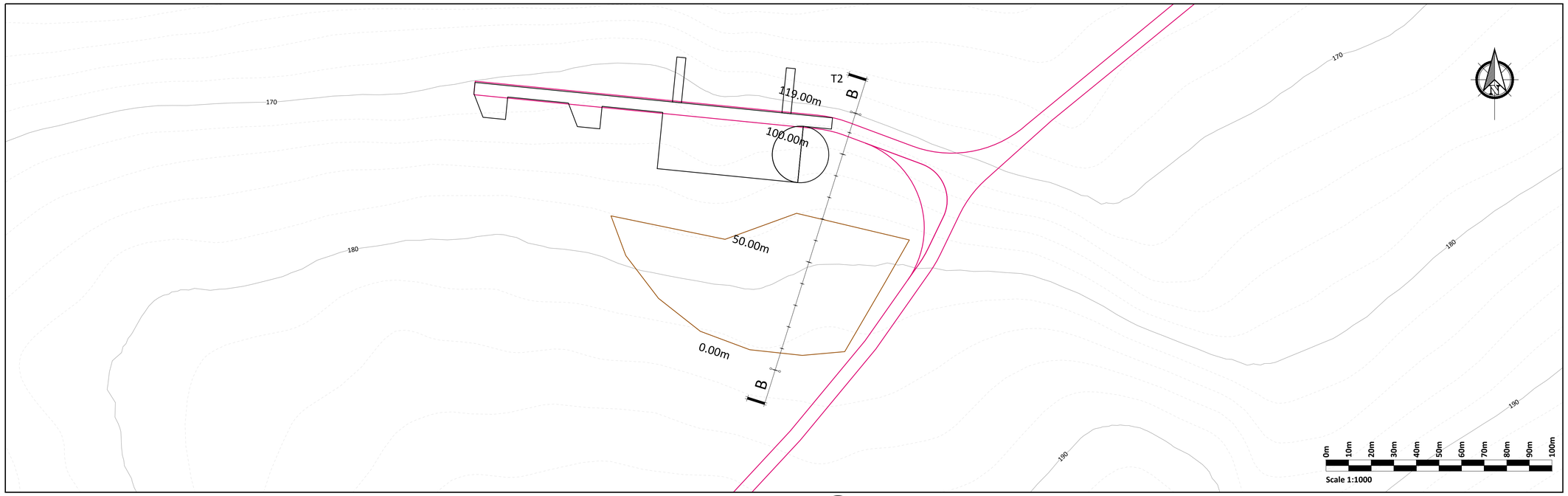
CLIENT: MKO

SHEET: PEAT MANAGEMENT AREA (T01)

Date: 17.02.26
Drawn by: POR
Checked by: IH
Project number: P24-264
Scale (@ A1): As Shown
Drawing Number: P24-264-0600-0012 (Sheet set subset 0600)
Rev: P02

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11 March 2026 (O:\ACAD\2024\P24-264\P24-264-0600-0012)



PLAN 0001
1:1000 -

Legend:

- EIAR Site Boundary
- Proposed Turbine
- Proposed Upgrades to Existing Road
- Proposed New Road
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
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- Proposed Peat & Spoil Management Area
- 50.0 Existing Ground Level - Major Contour
- Existing Ground Level - Minor Contour

Construction Notes Peat & Spoil Managment Areas:

(1) An interceptor drain should also be installed upslope of the management areas.

(2) A silting pond will be required at the lower side of the management areas.

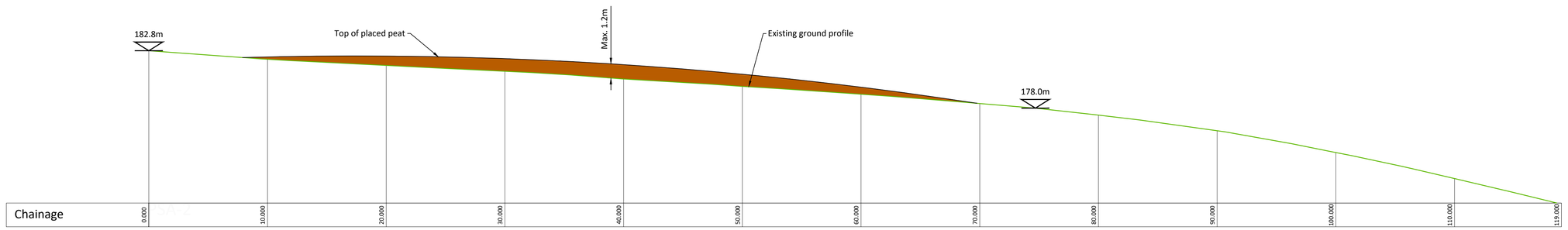
(3) The placement of the excavated peat/spoil should commence at the downslope edge of the management area against the stone buttress and placement should then continue upslope.

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

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

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

(7) Further guidelines on the construction of the management area are included within Section 6.7 of the Peat & Spoil Management Plan.



SECTION B - B
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P01	FOR INFORMATION	BDH	18.12.25
P02	FOR INFORMATION	BDH	17.02.26

PROJECT: SLIEVEACURRY RENEWABLE ENERGY DEVELOPMENT

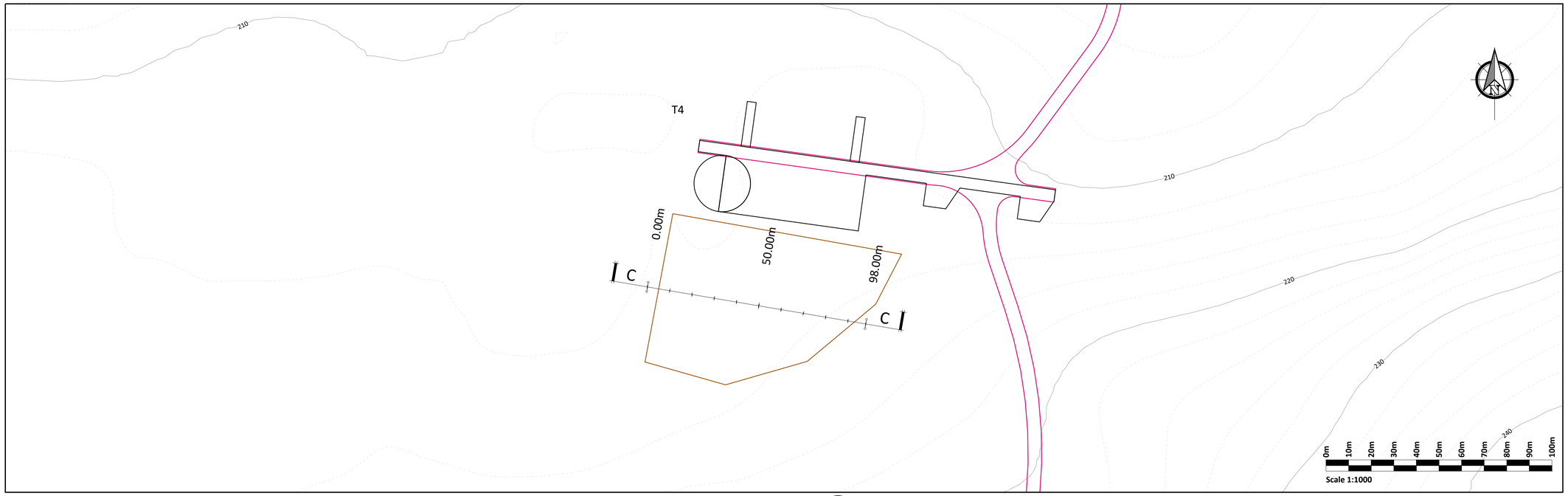
CLIENT: MKO

SHEET: PEAT MANAGEMENT AREA (T02)

Date: 17.02.26
Drawn by: POR
Checked by: IH
Project number: P24-264
Scale (@ A1): As Shown
Drawing Number: P24-264-0600-0013 (Sheet set subset 0600)
Rev: P02

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11 March 2026 (O:\ACAD\2024\P24-264\P24-264-0600-0013)



PLAN 0001
1:1000 -

Legend:

- EIAR Site Boundary
- Proposed Turbine
- Proposed Upgrades to Existing Road
- Proposed New Road
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Underground Cable Connection
- Proposed Turbine Delivery Route
- Proposed Peat & Spoil Management Area
- 50.0 Existing Ground Level - Major Contour
- Existing Ground Level - Minor Contour

Construction Notes Peat & Spoil Managment Areas:

(1) An interceptor drain should also be installed upslope of the management areas.

(2) A silting pond will be required at the lower side of the management areas.

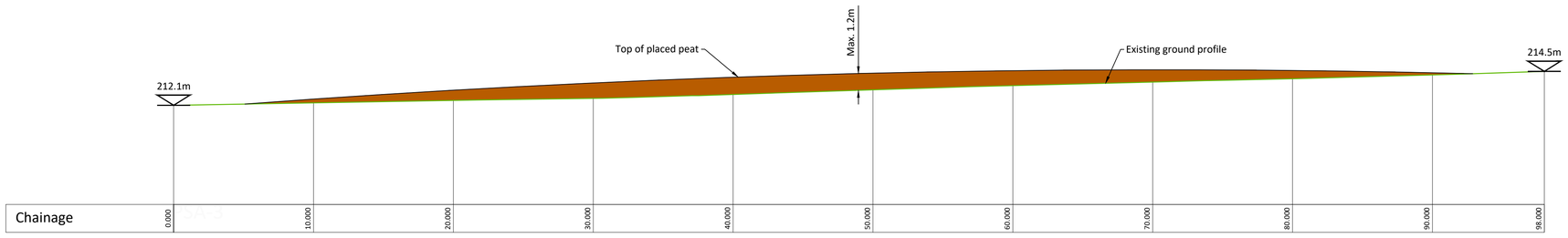
(3) The placement of the excavated peat/spoil should commence at the downslope edge of the management area against the stone buttress and placement should then continue upslope.

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

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

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

(7) Further guidelines on the construction of the management area are included within Section 6.7 of the Peat & Spoil Management Plan.



SECTION C - C
1:200 -

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P02	FOR INFORMATION	BDH	17.02.26

PROJECT: SLIEVEACURRY RENEWABLE ENERGY DEVELOPMENT

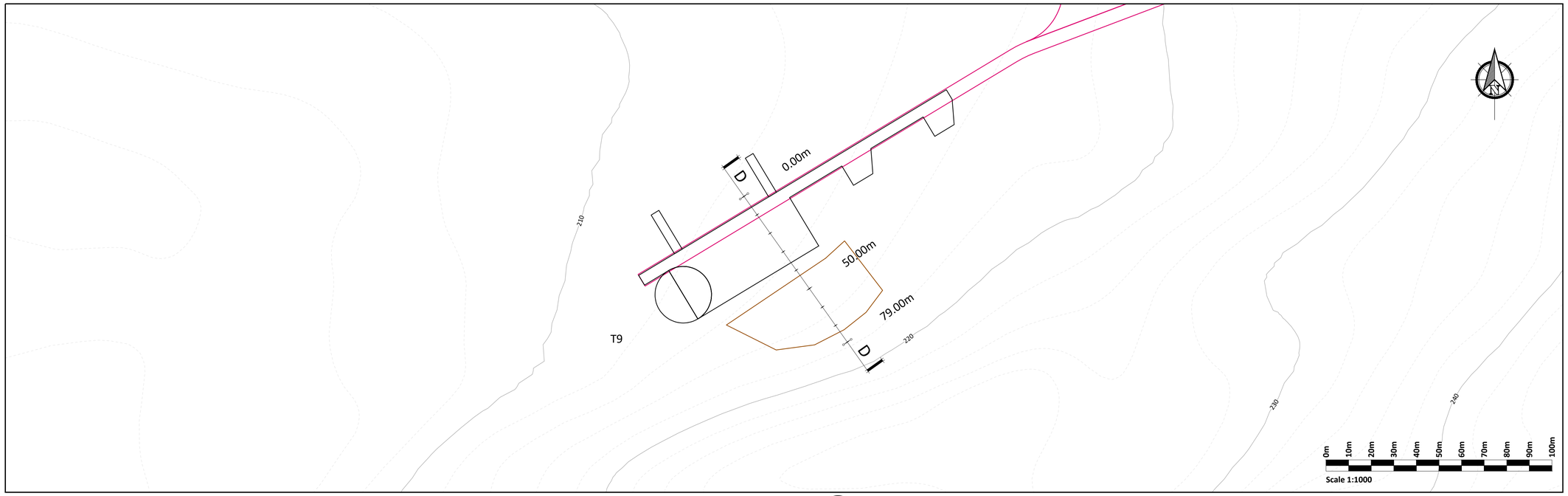
CLIENT: MKO

SHEET: PEAT MANAGEMENT AREA (T04)

Date: 17.02.26
Drawn by: POR
Checked by: IH
Project number: P24-264
Scale (@ A1): As Shown
Drawing Number: P24-264-0600-0014 (Sheet set subset 0600)
Rev: P02

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11 March 2026 (O:\ACAD\2024\P24-264\P24-264-0600-0014)



PLAN 0001
1:1000 -

Legend:

- EIAR Site Boundary
- Proposed Turbine
- Proposed Upgrades to Existing Road
- Proposed New Road
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Underground Cable Connection
- Proposed Turbine Delivery Route
- Proposed Peat & Spoil Management Area
- 50.0 Existing Ground Level - Major Contour
- Existing Ground Level - Minor Contour

Construction Notes Peat & Spoil Managment Areas:

(1) An interceptor drain should also be installed upslope of the management areas.

(2) A silting pond will be required at the lower side of the management areas.

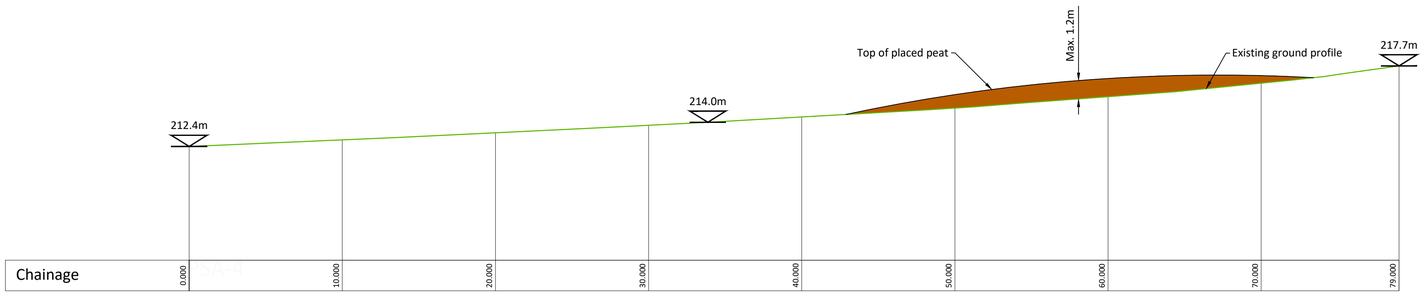
(3) The placement of the excavated peat/spoil should commence at the downslope edge of the management area against the stone buttress and placement should then continue upslope.

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

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

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

(7) Further guidelines on the construction of the management area are included within Section 6.7 of the Peat & Spoil Management Plan.



SECTION D - D
1:200 -

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Rev.	Description	App By	Date
P01	FOR INFORMATION	BDH	18.12.25
P02	FOR INFORMATION	BDH	17.02.26

PROJECT: SLIEVEACURRY RENEWABLE ENERGY DEVELOPMENT

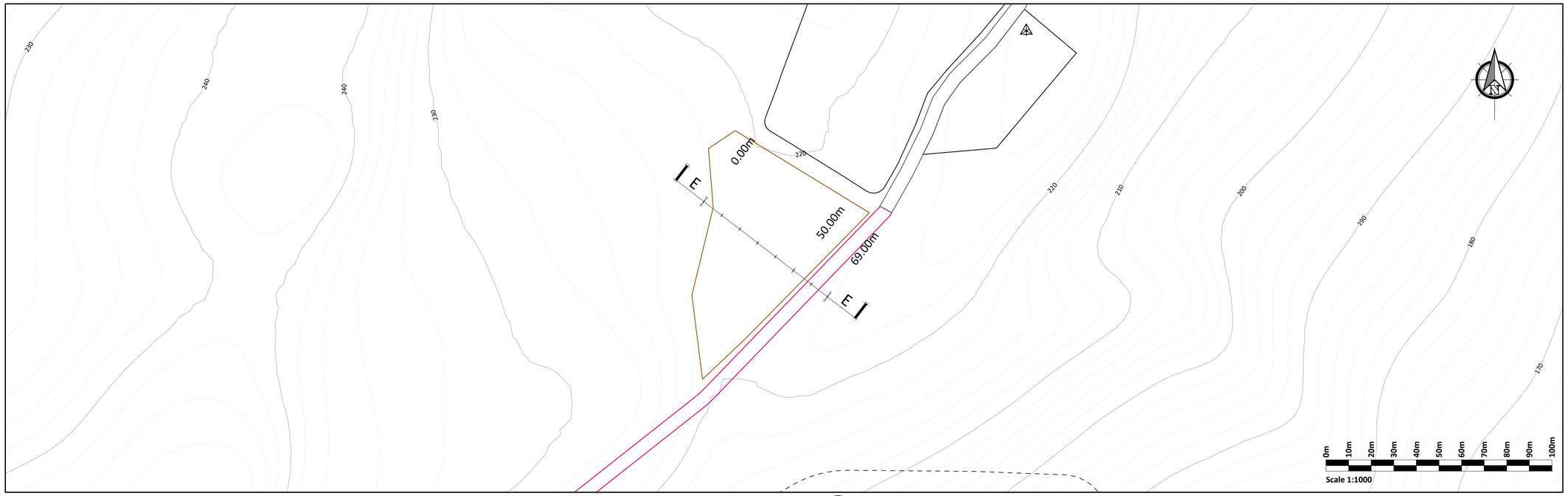
CLIENT: MKO

SHEET: PEAT MANAGEMENT AREA (T09)

Date: 17.02.26
Drawn by: POR
Checked by: IH
Project number: P24-264
Scale (@ A1): As Shown
Drawing Number: P24-264-0600-0015 (Sheet set subset 0600)
Rev: P02

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11 March 2026 (O:\ACAD\2024\P24-264\P24-264-0600-0015)



PLAN 0001
1:1000

Legend:

- EIAR Site Boundary
- Proposed Turbine
- Proposed Upgrades to Existing Road
- Proposed New Road
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Underground Cable Connection
- Proposed Turbine Delivery Route
- Proposed Peat & Spoil Management Area
- 50.0 Existing Ground Level - Major Contour
- Existing Ground Level - Minor Contour

Construction Notes Spoil Managment Area

(1) An interceptor drain should also be installed upslope of the management areas.

(2) A silting pond will be required at the lower side of the management areas.

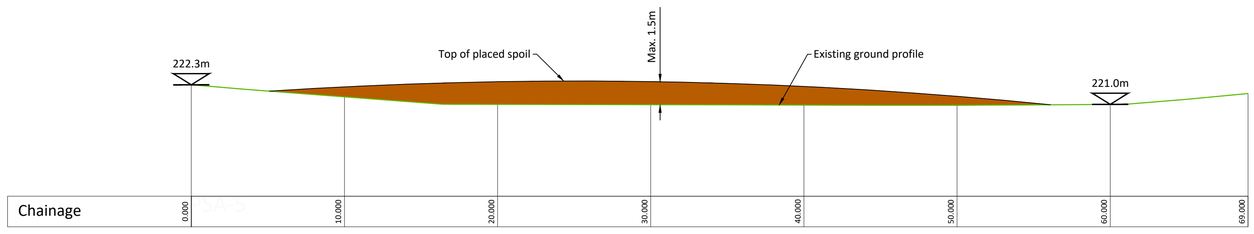
(3) The placement of the excavated spoil should commence at the downslope edge of the management area against the stone buttress and placement should then continue upslope.

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

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

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

(7) Further guidelines on the construction of the management area are included within Section 6.7 of the Peat & Spoil Management Plan.



SECTION E - E
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Rev.	Description	App By	Date
P01	FOR INFORMATION	BDH	18.12.25
P02	FOR INFORMATION	BDH	17.02.26

PROJECT
SLIEVEACURRY RENEWABLE ENERGY DEVELOPMENT

CLIENT
MKO

SHEET
SPOIL MANAGEMENT ADJACENT TO BORROW PIT

Date 17.02.26
Drawn by POR
Checked by IH
Project number P24-264
Scale (@ A1) As Shown
Drawing Number P24-264-0600-0016
Rev P02
(Sheet set subset 0600)

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11 March 2026 (O:\ACAD\2024\P24-264\P24-264-0600-0016)

4.5 Site Activities

4.5.1 Environmental Management

All proposed activities on the Site will be provided for in a Construction and Environmental Management Plan (CEMP). A CEMP has been prepared for the Proposed Project and is included in Appendix 4-5 of this EIAR. The CEMP sets out the key environmental considerations to be considered by the contractor during construction of the Proposed Project. The CEMP includes details of drainage, spoil management and waste management, and details the mitigation and monitoring measures to be implemented in order to comply with the environmental commitments outlined in the EIAR. The contractor will be contractually obliged to comply with all such measures. In the event planning permission is granted for the Proposed Project, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for approval.

4.5.2 Refuelling

Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles. On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site. Heavy plant and machinery will be refuelled on-site by a fuel truck that will come to the Site as required on a scheduled and organised basis. All refuelling will be carried out outside designated watercourse buffer zones. Only designated trained and competent operatives will be authorised to refuel plant on-site. Mobile measures such as drip trays and fuel absorbent mats will used during refuelling operations as required. All plant and machinery will be equipped with fuel absorbent material and pads to deal with any event of accidental spillage.

4.5.3 Concrete Deliveries

Only ready-mixed concrete will be used during the construction phase, with all concrete being delivered from local batching plants in concrete delivery trucks. The use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching.

Before leaving the Site, washing of the delivery truck will be minimised and restricted to designated wash out areas. Wash out will be restricted to the concrete lorry's chute only. Concrete trucks will be washed out fully at the off-site batching plant, where facilities are already in place.

The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area, or a Siltbuster-type concrete wash unit or equivalent. This type of Siltbuster unit catches the solid concrete and filters and holds wash liquid for pH adjustment and further solids separation. The residual liquids and solids will be removed off-site by an appropriately authorised waste collector for disposal at an authorised waste facility. Where temporary lined impermeable containment areas are used, such containment areas are typically built using straw bales and lined with an impermeable membrane. Two examples are shown in Plates 4-4 and Plate 4-5 below.



Plate 4-4 Concrete washout area



Plate 4-5 Concrete Wash Out Area

The areas are covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents will be tankered off-site to an appropriately authorised facility as necessary. Any residual solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste, as noted above, by an appropriately authorised waste collector for disposal at an authorised waste facility.

The risks of pollution arising from concrete deliveries will be further reduced by the following:

- Concrete truck bodies will not be washed out on the Site but will be directed back to their batching plant for washout.
- Site roads will initially be constructed with a subgrade and compacted with the use of a roller to allow concrete delivery trucks access all areas where the concrete will be

needed. The final wearing course for the Site roads will not be provided until all bases have been poured. No concrete will be transported around the Site in open trailers or dumpers so as to avoid spillage while in transport. All concrete used in the construction of turbine foundations will be pumped directly into the shuttered formwork from the delivery truck. If this is not practical, the concrete will be pumped from the delivery truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete to the location where it is needed.

- The arrangements for concrete deliveries to the Site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout and discussing emergency procedures.
- Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted at the Site.

4.5.3.1 Concrete Pouring

Due to the volume of concrete required for each turbine foundation, and the requirement for the concrete pours to be continuous, deliveries may be carried out outside normal working hours to limit the traffic impact on other road users, particularly peak period school and work commuter traffic. Such activities are limited to the day of turbine foundation concrete pours, which are normally completed in a single day per turbine.

Given the scale of the turbine foundation concrete pours the pours will be planned approximately 1 week in advance. Special procedures will be adopted in advance of and during all concrete pours to minimise the risk of pollution. These will include:

- Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast.
- Restricting concrete pumps and machine buckets from slewing over watercourses (including drains and ditches) while placing concrete.
- Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets.
- Ensuring that covers are available, and used, when necessary, for freshly placed concrete to avoid the surface washing away in heavy rain.
- The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area, or a Siltbuster-type concrete wash unit or equivalent.

4.5.4 Dust Suppression

In periods of extended dry weather, dust suppression may be necessary along haul roads and the Proposed Grid Connection Site 33kV underground cabling to ensure dust does not cause a nuisance. If necessary, water will be taken from stilling ponds in the Site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads and temporary construction compounds to prevent the generation of dust. Silty or oily water will not be used for dust suppression, as this would transfer the pollutants to the haul roads and generate polluted runoff or more dust. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff.

4.5.5 Vehicle Washing

Wheels or vehicle underbodies are often washed before leaving sites to prevent the build-up of mud on public (and site) roads. It is not anticipated that vehicle or wheel washing facilities will be required as part of the construction phase of the Proposed Project as site roads will be formed before road-going trucks begin to make regular or frequent deliveries to the site (e.g. with steel or concrete). The

Proposed Wind Farm Site roads will be well finished with compacted hardcore, and so the public road-going vehicles will not be travelling over soft or muddy ground where they might pick up mud or dirt.

A road sweeper will be available if any section of the public roads requires cleaning due to construction traffic associated with the Proposed Project.

4.5.6 Waste Management

The CEMP, Appendix 4-5 of this EIAR, provides a waste management plan (WMP) which outlines the best practice procedures during the construction phases of the project. The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the Proposed Project. Disposal of waste will be seen as a last resort. The WMP was produced in line with the EPA's 2021 document '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects' 2021*[5].

The Waste Management Act 1996 and its subsequent amendments provide for measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.

The Act requires that any waste related activity has to have all necessary licenses and authorisations. It will be the duty of the Waste Manager on the Site to ensure that all contractors hired to remove waste from the Site have valid Waste Collection Permits. It will then be necessary to ensure that the waste is delivered to a licensed or permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits/licenses and authorisations.

Prior to the commencement of the development, a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will be in charge of the implementation of the objectives of the plan, ensuring that all hired waste contractors have the necessary permits/licenses and authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the development adheres to the management plan.

The WMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The WMP can then be adapted with changes that are seen through record keeping.

[5] *EPA 2021 Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects. Available at: https://www.epa.ie/publications/circular economy/resources/CDWasteGuidelines.pdf*

4.6 Site Access and Transportation

4.6.1 Site Entrance

The location of the construction phase and operational phase Site access point is shown in Figure 4-2. A Traffic Management Plan is included in Chapter 15 and Appendix 15-2 of this EIAR. In the event planning permission is granted for the Proposed Project, an updated Traffic Management Plan will address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned.

It is proposed to access the Proposed Wind Farm Site via an existing access track off the L6230 local road to the northwest of the Proposed Turbines. This entrance will be widened to facilitate the delivery of the construction materials and turbine components. The site entrance was subject to Autotrack assessment to identify the turning area required, as described in Section 15.1 of the Traffic and Transport Assessment. Appropriate sightlines will be established to the north and south of the proposed site entrance for the safe egress of traffic. The proposed works will result in a permanent upgrade of this current site access from the L6230 local road, which will also act as the operational phase entrance to the Proposed Wind Farm Site.

Temporary accommodation works will be required at the Proposed Wind Farm Site entrance to facilitate abnormal load delivery. The abnormal load entrance will be temporary in nature, over a short period of the construction phase only. The abnormal load entrance will be reinstated after all abnormal loads have been delivered to the Site. However, should replacement components be required, this entrance will be temporarily reopened to facilitate such works.

4.6.2 Turbine Component Transport Route

There are a range of ports within the island of Ireland that have proven capability to accept and store large wind turbine components. These ports include Cork, Foynes, Galway and Dublin ports. Furthermore, subsequent access to the national motorway network during transportation from these ports has been demonstrated. The facilities within the ports and access to and from the ports is continually being upgraded as part of general improvements. It is on this basis that it is not foreseen that this project will require any material change to the port selected should the project be consented and enter into the construction phase.

For the purpose of this EIAR, the Port of Foynes has been selected and assessed to facilitate turbine delivery to the Site. It is proposed that the Turbine Delivery Route (TDR) will be via the Port of Foynes in County Limerick as follows;

- From the access road serving Foynes Port the route turns left (south) onto the N69 National Secondary Road at the existing priority junction.
- From this point the route heads east on the N69 for approximately 32kms, passing through various bends on the route.
- The route for turbine blade delivery then turns left off the N69 at the Dock Road West Roundabout to head north onto the N18/M18 for approximately 30km to Junction 12 of the M18.
    - For turbine tower sections, the route will continue east at the N69 Dock Road West roundabout along the R510 for approximately 3.4km, passing through 1 no. roundabout before turning left at the Shannon Bridge Roundabout onto the R527.
    - The route continues along the R527 heading northwest through the 1 no. roundabout for approximately 4.1km before turning left at the Coonagh Roundabout onto the R445 for approximately 3.0km, passing through the 3 no. roundabouts before joining the N18/M18 at Junction 4.

- At this point the route turns off the M18 onto the N85 National Road and heads west and then north bypassing the town of Ennis for approximately 7.3km passing through the Skehanagh Roundabout, the R458 Clareabbey Roundabout, the Rocky Road Roundabout, Beechpark Roundabout to the N85 Claureen Roundabout located northwest of Ennis.
- From this roundabout the TDR heads west for approximately 13.7km on the N85 to Inagh.
- The route then turns left in the village of Inagh heading west on the R460 for 4.3 km before veering right onto the local L1074.
- The routes continues westbound on the L1074 for 4.2 kms before taking a left hand bend on the L1076 and continuing in a southwest direction for a further 2.0 kms. At this point the route turns left onto the L6230 heading south for 0.3km. Access to the site is then gained by turning left onto an existing forest track heading in an eastern direction towards the site.

The TDR is approximately 94km from the Port of Foynes to the proposed site access off the L6230.

The proposed turbine component transport route to the Site is shown on Figure 4-27.

4.6.2.1 Turbine Delivery Accommodation Works

Works such as road widening are sometimes required along proposed turbine transport routes to accommodate the large vehicles used to transport turbine components to wind farm sites. The proposed transport route for the Proposed Project has been the subject of a route assessment to determine if any works are required along its length. Full details of the assessment are included as part of the traffic impact assessment set out in Section 15.1.9 of this EIAR and summarised below. There are sections on the L1074 where the vertical alignment may require specialist transport vehicles. These sections will be further considered by the appointed transport company following turbine procurement process. Accommodation works will be required at various locations on the national and regional road network between the port of arrival and Ennis. These will be limited to temporary measures including temporary local road widening, overruns of roundabout island and temporary relocation of some signs and street furniture.

Location 1 – N85 / R460 junction at Inagh

Minor temporary alterations will be required to the existing streetscape during the delivery of the abnormally sized loads.

Location 2 – Bend on R460

The swept path analysis undertaken for this location shows that the abnormally sized turbine vehicles will be accommodated at this location with minor impacts on sections of hedge (over-sail) and grass verges.

Location 3 – R460 / L1074 junction

The preliminary swept path analysis indicates that the wind farm turbine vehicles will be able to negotiate this bend junction.

Location 4 – Bend on L1074 / L1076

The preliminary swept path analysis indicates that the wind farm blade vehicle will require a narrow strip over overrun on the southern corner of this junction.

Location 5 –L1076 / L6230 junction

The analyses indicate that temporary local road widening will be required at this junction in order to accommodate the wind turbine vehicles.

Location 6 – Proposed Wind Farm Site Access (*L6230 / forestry access road junction)*

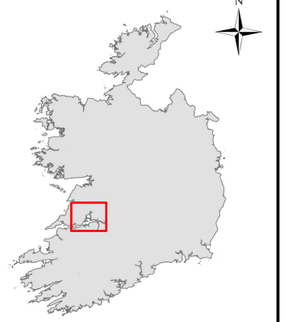
The proposed junction layout, including the temporary run-over area shown on the western side of the L6230, required for the delivery of the abnormally sized turbine vehicles and visibility splays will be required at this junction in order to accommodate the wind turbine vehicles. Full details are provided in Chapter 15 Section 15.1.10 of the EIAR.

510000
525000
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N
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County Clare
Ennis
M18
Doo Lough
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N68
N68
Newmarket on Fergus
Shannon
E-20
Cratloe Woods
Shannon Airport
E-20
Limerick
N69
N69
Foynes
N69
N69
Askeaton
N69
M20
N69
N20
N21
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7.5
15 km
510000
525000
540000
555000

Map Legend

- EIAR Site Boundary
- Proposed Turbine Delivery Route

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SITE LOCATION - NOT TO SCALE

Drawing Title

Turbine Delivery Route

Project Title

Slieveacurry Renewable Energy Development

Project No.	Drawing No.	Scale
240718	4-27	1:150,000
Drawn By	Checked By	Date
MVN	BT	28/04/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

4.6.2.2 Traffic Management

A turbine with the maximum blade length of 75m has been used in assessing the traffic impact of the Proposed Project. The blade transporter for such a turbine blade would have a total vehicle length of 81m, including the blade which overhangs the back of the vehicle. The total length of the tower transporter is 41.6m with the axles located at the front and rear of the load with no overhang.

The vehicles used to transport the nacelles will be similar to the tower transporter. All other vehicles requiring access to the Site will be smaller than the large turbine component transport vehicles. The turbine delivery vehicles have been modelled in the swept path assessments of identified pinch points along the proposed turbine delivery route, as detailed in Chapter 15: Material Assets of this EIAR.

The need to transport turbine components on the public roads is not an everyday occurrence in the vicinity of the Site. However, the procedures for transporting abnormal size loads on the country's roads are well established. While every operation to transport abnormal loads is different and requires careful consideration and planning, escort vehicles, traffic management plans, drive tests, road marshals and convoy escorts from the Garda Traffic Corps are all measures that are regularly employed to deliver oversized loads from origin to destination. With just under 400 No. wind farms already built and operating in Ireland (Republic and Northern Ireland combined, as per latest available figures on www.windenergyireland.com), transport challenges are something the wind energy industry and specialist transport sector has become particularly adept in finding solutions to.

As an alternative solution for transport of turbine blades, alternative delivery systems are available. For example, delivery vehicles fitted with blade adapters may be used in order to navigate the existing roads along the turbine delivery route. Blade adaptors allow the turbine blade to be transported at a suitable angle in order to navigate tight bends or obstacles along the delivery route. Plate 4-6 below shows an example of a blade adapter.



Plate 4-6 Blade Adaptor Transport System

A detailed Traffic Management Plan (TMP) will be provided specifying details relating to traffic management and included in the CEMP prior to the commencement of the construction phase of the Proposed Project. The TMP will be agreed with the local authority and An Garda Síochána prior to construction works commencing on-site. The TMP will include:

- A delivery schedule.
- Details of works or any other minor alteration identified.
- A dry run of the route using vehicles with similar dimensions.

The deliveries of turbine components to the Proposed Wind Farm Site may be made in convoys of three to four vehicles at a time, and at night when roads are quietest. Convoys will be accompanied by escorts at the front and rear operating a "stop and go" system. Although the turbine delivery vehicles are large, they will not prevent other road users or emergency vehicles passing, should the need arise. The delivery escort vehicles will ensure the turbine transport is carried out in a safe and efficient manner with minimal delay or inconvenience for other road users.

It is not anticipated that any section of the public road network will be closed during transport of turbines, although there will be some delays to local traffic at pinch points. During these periods it may be necessary to operate local diversions for through traffic. All deliveries comprising abnormally large loads where required will be made outside the normal peak traffic periods, usually at night, to avoid disruption to work and school-related traffic.

Prior to the Traffic Management Plan being finalised, a full dry run of the transport operation along the potential routes will be completed using vehicles with attachments to simulate the dimensions of the wind turbine transportation vehicles. This dry run will inform the Traffic Management Plan for agreement with the relevant Authorities. All turbine deliveries will be provided for in a Traffic Management Plan which will be finalised in advance of oversized load deliveries, when the exact transport arrangements are known, delivery dates confirmed and escort proposals in place. Such a traffic management plan is typically submitted to the relevant Authorities for agreement in advance of any abnormal loads using the local roads, and will provide for all necessary safety measures, including a convoy and Garda escort as required, off-peak turning/reversing movements and any necessary safety controls.

General construction deliveries and staff will access the Proposed Wind Farm Site via the proposed existing site entrance on the L6230 at the northwest of the Site, as described in Section 4.6.1 above. It is proposed that temporary traffic management measures will be introduced at this location during the construction phase, including signs and the presence of a Flagman on days with high volumes of construction material deliveries. Appropriate visibility splays will be maintained at the Proposed Wind Farm Site entrance as detailed in Section 15.1.9.1 of the EIAR.

4.7 Site Drainage

4.7.1 Introduction

The drainage design for the Proposed Project has been prepared by Hydro Environmental Services Ltd (HES). The drainage design has been prepared based on experience of the project team of other wind farm sites, and the number of best practice guidance documents referred to in the References section of the EIAR.

The protection of the watercourses within and surrounding the Site, and downstream catchments that they feed is important to establish the most appropriate drainage proposals for the Proposed Project.

The drainage design for the Proposed Project has been planned with the intention of having no significant negative impact on the water quality of the Site and its associated rivers, and consequently no impact on downstream catchments and ecological ecosystems. The assessment of potential impacts on hydrology and hydrogeology due to the construction, operation and decommissioning of the Proposed Project is included in Chapter 9: Hydrology and Hydrogeology.

No routes of any natural drainage features will be altered as part of the Proposed Project. Turbine locations and associated new roadways were designed to avoid natural watercourses with existing roads to be used wherever possible. There will be no direct discharges to any natural watercourses or land drains, with all drainage waters being dispersed as overland flows. All discharges from the proposed works areas will be made over vegetation filters at an appropriate distance from natural watercourses

and drains. Buffer zones around the existing natural drainage features have been used to inform the layout of the Proposed Project.

4.7.2 Existing Drainage Features

There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from natural watercourse and lakes. Buffer zones around the existing natural drainage features have informed the layout of the Proposed Project and are indicated on the drainage design drawings.

Where artificial drains are currently in place in the vicinity of proposed works areas, these drains may have to be diverted around the proposed works areas to minimise the amount of water in the vicinity of works areas. Where it may not be possible to divert artificial drains around proposed work areas, the drains will be blocked to ensure sediment laden water from the works areas has no direct route to other watercourses. Where drains have to be blocked, the blocking will only take place after an alternative drainage system to handle the same water has been put in place.

Existing artificial drains in the vicinity of existing site roads will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. If road widening or improvement works are necessary along the existing roads, where possible, the works will take place on the opposite side of the road to the drain.

4.7.3 Drainage Design Principles

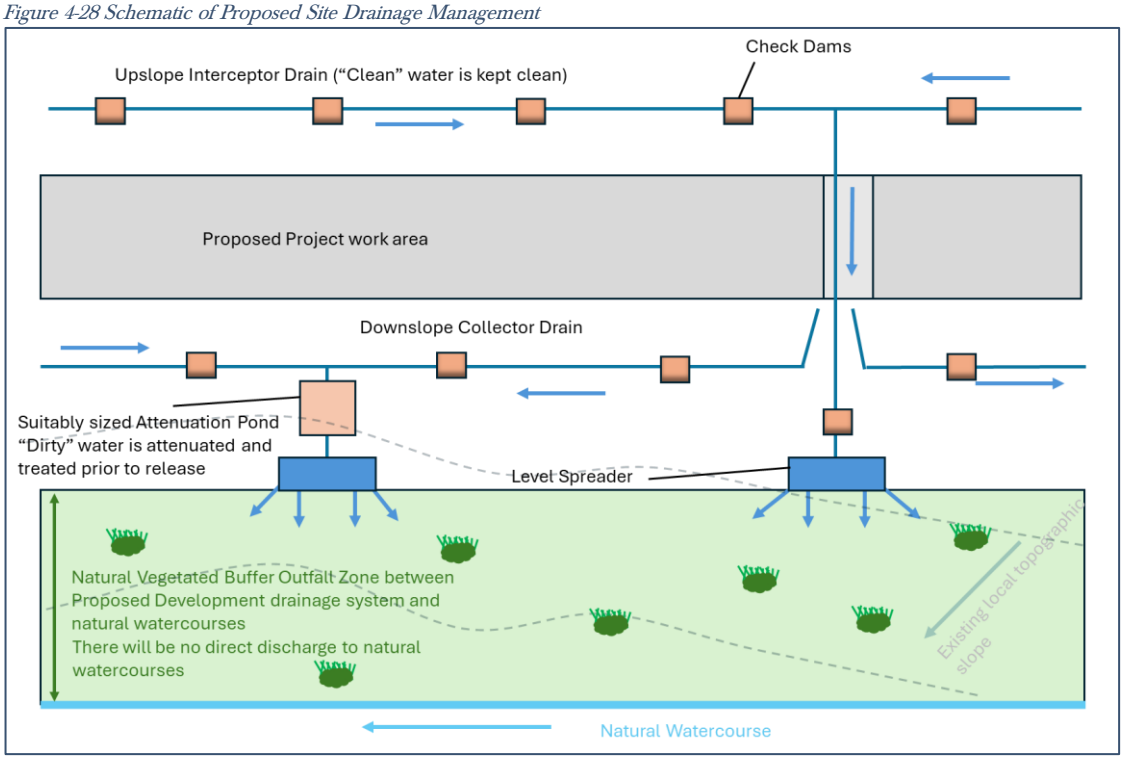
The key principles of drainage design that will be implemented and adhered to as part of the Proposed Project are as follows:

- Keep clean water clean by intercepting it where possible, upgradient of works areas, and divert it around the works areas for discharge as diffuse overland flow or for rewetting of land.
- Collect potentially silt-laden runoff from works areas via downgradient collector drains and manage via series of avoidance, source, in-line, treatment and outfall controls prior to controlled diffuse release as overland flow or for rewetting of land.
- No direct hydraulic connectivity from construction areas to watercourses or drains connecting to watercourses.
- Where possible, maintain 50-metre watercourse buffer zones for the wind turbines.
- No alteration of natural watercourses.
- Maintain the existing hydrology of the Site.
- Blocking of existing manmade drainage as appropriate.
- Daily inspection and recording of surface water management system by on-site Environmental Clerk of Works and immediate remedial measures to be carried out as required and works temporarily ceased if a retained stormwater/sediment load is identified to have the potential to migrate from the Site.
- Use of siltbuster or equivalent system if required.

Drainage water from any works areas of the Site will not be directed to any natural watercourses within the Site. Two distinct methods will be employed to manage drainage water within the Proposed Wind Farm Site. The first method involves keeping clean water clean by avoiding disturbance to natural drainage features, minimising any works in or around artificial drainage features, and diverting clean surface water flow around excavations and construction areas. The second method involves collecting any drainage waters from works areas within the Site that might carry silt or sediment, to allow attenuation and settlement prior to controlled diffuse release.

The drainage design is intended to maximise erosion control, which is more effective than having to control sediment during high rainfall. Such a system also requires less maintenance. The area of exposed ground will be minimised. The drainage measures will prevent runoff from entering the works areas of the Site from adjacent ground, to minimise the volume of sediment-laden water that has to be managed. Discoloured run-off from any construction area will be isolated from natural clean run-off. A schematic of the proposed Site drainage management is presented in Figure 4-28 below.

Figure 4-28 Schematic of Proposed Site Drainage Management



4.7.4 Drainage Design

A drainage design for the Proposed Project, incorporating all principles and measures outlined in this drainage design description, has been prepared, and is included in Appendix 4-3 to this EIAR. A Surface Water Management Plan (SWMP) is also included as Appendix 4-7. The drainage design employs the various measures further described below and is cognisant of the following guidance documents:

- Forestry Commission (2011): Forests and Water UK Forestry Standard Guidelines, Fifth Edition. Publ. Forestry Commission, Edinburgh;
- Coillte Forest (2013): Operations and Water Protection Guidelines;
- Forest Services (Draft) Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures;
- Forest Service (2000): Forestry and Water Quality Guidelines. Forest Service, DAF, Johnstown Castle Estate, Co. Wexford;
- COFORD (2004): Forest Road Manual – Guidelines for the Design, Construction and Management of Forest Roads;
- Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Watercourses;
- Scottish Natural Heritage, 2019 Good Practice During Wind Farm Construction
- UK Guidance Note 2020 GPP1 - General Guide to Prevention of Pollution (UK Guidance Note);
- UK Guidance Note 2018 GPP5 – Works or Maintenance in or Near Watercourses

- Construction Industry Research and Information Association (CIRIA) 2006: Guidance on 'Control of Water Pollution from Linear Construction Projects' (CIRIA Report No. C648, 2006); and,
- Construction Industry Research and Information Association (CIRIA) 2006: Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors. CIRIA C532. London, 2006.

4.7.4.1 Interceptor Drains

Interceptor drains will be installed upgradient of any works areas to collect surface flow runoff and prevent it reaching excavations and construction areas of the site where it might otherwise have come into contact with exposed surfaces and picked up silt and sediment. The drains will be used to divert upslope runoff around the works area to a location where it can be redistributed over the ground surface as sheet flow. This will minimise the volume of potentially silty runoff to be managed within the construction area.

The interceptor drains will be installed in advance of any main construction works commencing. The material excavated to make the drain will be compacted on the downslope edge of the drain to form a diversion dike. On completion of the construction phase works, it is envisaged that the majority of the interceptor drains could be removed. At that stage, there will be no open excavations or large areas of exposed ground that are likely to give rise to large volumes of potentially silt-laden run off. Any areas in which works were carried out to construct roads, turbine bases or hardstands, will have been built up with large grade hardcore, which even when compacted in place, will retain sufficient void space to allow water to infiltrate the subsurface of these constructed areas. It is not anticipated that roadways or other installed site infrastructure will intercept ground-conveyed surface water runoff to any significant extent that would result in scouring or over-topping or spill over. Where the drains are to be removed, they will be backfilled with the material from the diversion dike. Interceptor drains may have to be retained in certain locations, for example where roadways are to be installed on slopes, to prevent the roadways acting of conduits for water that might infiltrate the roadway sub-base. In these cases, interceptor drains would be maintained in localised areas along the roadway with culverts under the roadway, which would allow the intercepted water to be discharged to vegetation filters downgradient of the roadway. Similarly, in localised hollows where water is likely to be funnelled at greater concentrations than on broader slopes, interceptor drains and culverts may be left in situ following construction. Figure 4-29 below shows an illustrative drawing of an interceptor drain.

The velocity of flow in the interceptor will be controlled by check dams (see Section 4.7.4.4 below), which will be installed at regular intervals along the drains to ensure flow in the channel is non-erosive. On steeper sections where erosion risks are greater, a geotextile membrane will be added to the channel.

Interceptor drains will be installed horizontally across slopes to run in parallel with the natural contour line of the slope. Intercepted water will travel along the interceptor drains to areas downgradient of works areas, where the drain will terminate at a level spreader (see Section 4.7.4.5 below). Across the entire length of the interceptor drains, the design elevation of the water surface along the route of the drains will not be lower than the design elevation of the water surface in the outlet at the level spreader.

4.7.4.2 Over the Edge Drainage

Over the edge drainage is where runoff will drain diffusely across the adjacent ground, and soak to ground or drain to a downstream watercourse via overland flow. This method is applicable embankment conditions where the embankment is constructed of free draining material.

4.7.4.3 Swales

Drainage swales are shallow drains that will be used to intercept and collect run off from construction areas of the site during the construction phase. Drainage swales will remain in place to collect runoff from roads and hardstanding areas of the Proposed Project during the operational phase. A swale is an excavated drainage channel located along the downgradient perimeter of construction areas, used to collect and carry any sediment-laden runoff to a sediment-trapping facility and stabilised outlet. Swales are proven to be most effective when a dike is installed on the downhill side. They are similar in design to interceptor drains and collector drains described above. Figure 4-24 below, shows an illustrative example of a drainage swale.

Drainage swales will be installed downgradient of any works areas to collect surface flow runoff where it might have come into contact with exposed surfaces and picked up silt and sediment. Swales will intercept the potentially silt-laden water from the excavations and construction areas of the site and prevent it reaching natural watercourses.

Drainage swales will be installed in advance of any main construction works commencing. The material excavated to make the swale will be compacted on the downslope edge of the drain to form a diversion dike.

4.7.4.4 Check Dams

The velocity of flow in the interceptor drains and drainage swales, particularly on sloped sections of the channel, will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the swale is non-erosive.

Check dams will restrict flow velocity, minimise channel erosion and promote sedimentation behind the dam. The check dams will be installed as the interceptor drains are being excavated. Check dams may also be installed in some of the existing artificial drainage channels on the site, downstream of where drainage swales connect in.

The proposed check dams will be made up of straw bales or stone, or a combination of both depending on the size of the drainage swale it is being installed in. Where straw bales are to be used, they will be secured to the bottom of the drainage swale with stakes. Clean 4-6 inch stone will be built up on either side and over the straw bale to a maximum height of 600mm over the bottom of the interceptor drain. In smaller channels, a stone check dam will be installed and pressed down into place in the bottom of the drainage swale with the bucket of an excavator. Figure 4-29, below, shows illustrative examples of check dams.

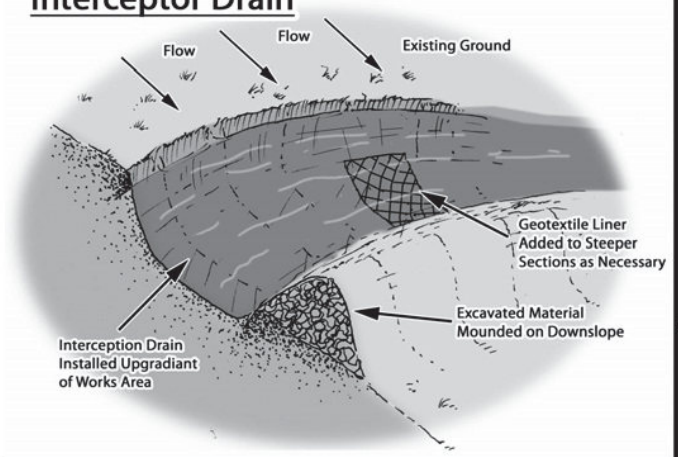
The check dams will be installed at regular intervals along the interceptor drains to ensure the bottom elevation of the upper check dam is at the same level as the top elevation of the next down-gradient check dam in the drain. The centre of the check dam will be approximately 150mm lower than the edges to allow excess water to overtop the dam in flood conditions rather than cause upstream flooding or scouring around the dams.

Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. The check dams will be left in place at the end of the construction phase to limit erosive linear flow in the drainage swales during extreme rainfall events.

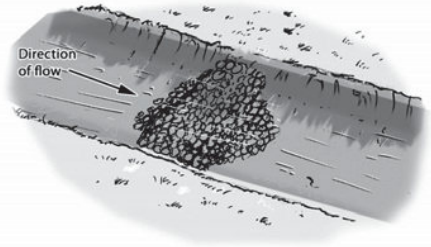
Check dams are designed to reduce velocity and control erosion and are not specifically designed or intended to trap sediment, although sediment is likely to build up. If necessary, any excess sediment build up behind the dams will be removed. For this reason, check dams will be inspected and maintained regularly to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam.

Drainage Design Measures

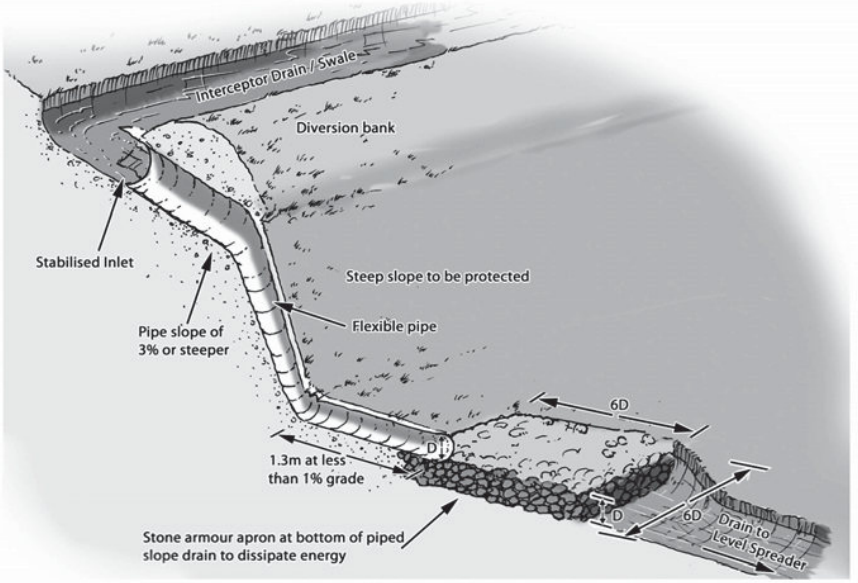
Interceptor Drain



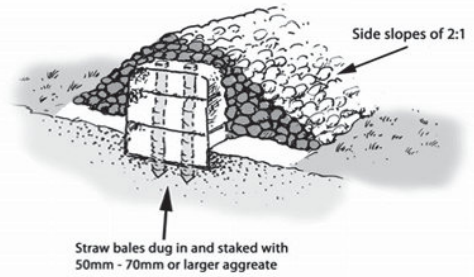
Check Dam (Stone Dam in Drain)



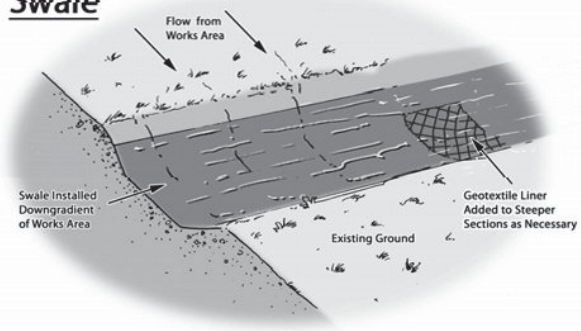
Slope Pipe Drain



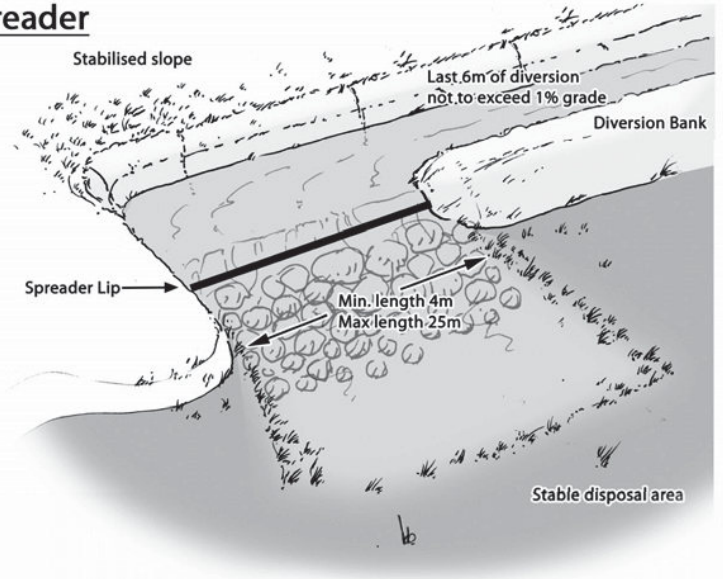
Check Dam
(Straw Bale & Stone Dam - Cross Section)



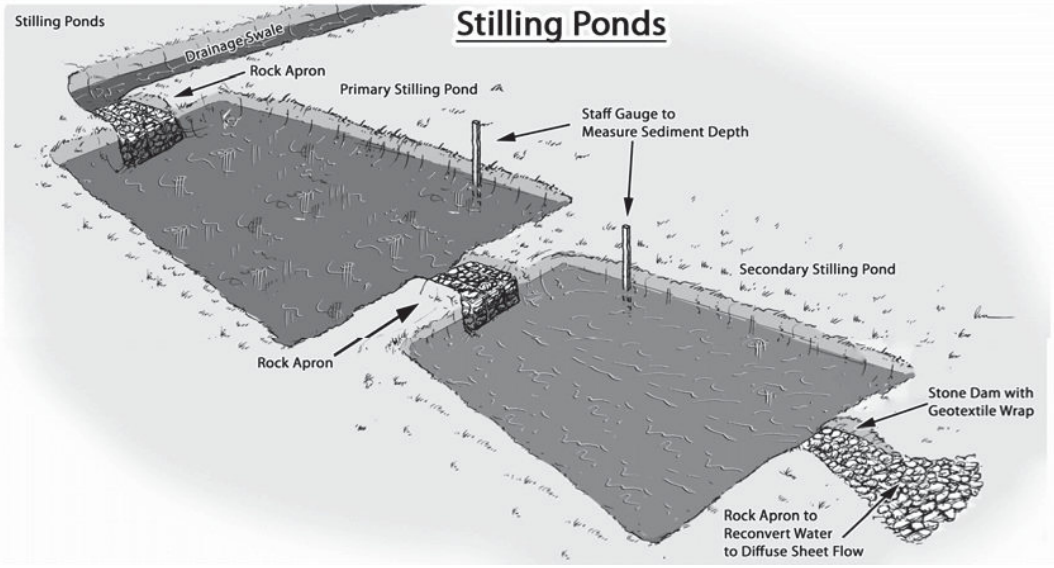
Swale



Level Spreader



Stilling Ponds



Drawing Title: Drainage Design Measures	Drawing No.: Figure 4-29	Scale: NTS
Project Title: Slieveacurry Renewable Energy Development, Co. Clare		Date: 22.04.2026
Drawn By: CF	Checked By: SC	Project No.: 240718

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4.7.4.5 Level Spreaders

A level spreader will be constructed at the end of each interceptor drain to convert concentrated flows in the drain, into diffuse sheet flow on areas of vegetated ground. The levels spreaders will be located downgradient of any proposed works areas in locations where they are not likely to contribute further to water ingress to construction areas of the site.

The water carried in interceptor drains will not have come in contact with works areas of the site, and therefore should be free of silt and sediment. The level spreaders will distribute clean drainage water onto vegetated areas where the water will not be reconcentrated into a flow channel immediately below the point of discharge. The discharge point will be on level or only very gently sloping ground rather than on a steep slope so as to prevent erosion. Figure 4-29, above, shows an illustrative example of a level spreader.

The slope in the channel leading into the spreader will be less than or equal to 1%. The slope downgradient of the spreader onto which the water will dissipate will have a grade of less than 6%. The availability of slopes with a grade of 6% or less will determine the locations of level spreaders. If a slope grade of less than 6% is not available in the immediate area downgradient of a works area at the end of a diversion drain, a piped slope drain (see Section 4.7.4.6 below) will be used to transfer the water to a suitable location.

The spreader lip over which the water will spill will be made of a concrete kerb, wooden board, pipe, or other similar piece of material that can create a level edge similar in effect to a weir. The spreader will be level across the top and bottom to prevent channelised flow leaving the spreader or ponding occurring behind the spreader. The top of the spreader lip will be 150mm above the ground behind it. The length of the spreader will be a minimum of four metres and a maximum length of 25 metres, with the actual length of each spreader to be determined by the size of the contributing catchment, slope and ground conditions.

Clean four-inch stone can be placed on the outside of the spreader lip and pressed into the ground mechanically to further dissipate the flow leaving the level spreader over a larger area.

4.7.4.6 Piped Slope Drains

Piped slope drains will be used to convey surface runoff from diversion drains safely down slopes to flat areas without causing erosion. Once the runoff reaches the flat areas it will be reconverted to diffuse sheet flow. Level spreaders will only be established on slopes of less than 6% in grade. Piped slope drains will be used to transfer water away from areas where slopes are too steep to use level spreaders.

The piped slope drains will be semi-rigid corrugated pipes with a stabilised entrance and a rock apron at the outlet to trap sediment and dissipate the energy of the water. The base of drains leading into the top of the piped slope drain will be compacted and concavely formed to channel the water into the corrugated pipe. The entrance at the top of the pipe will be stabilised with sandbags if necessary. The pipe will be anchored in place by staking at approximately 3-4 metre intervals or by weighing down with compacted soil. The bottom of the pipe will be placed on a slope with a grade of less than 1% for a length of 1.5 metres, before outflowing onto a rock apron.

The rock apron at the outlet will consist of 6-inch stone to a depth equal to the diameter of the pipe, a length six times the diameter of the pipe. The width of the rock apron will be three times the diameter of the pipe where the pipe opens onto the apron and will fan out to six times the diameter of the pipe over its length. Figure 4-29, above, shows a diagrammatic example of a piped slope drain and rock apron.

Piped slope drains will only remain in place for the duration of the construction phase of the Proposed Project. on completion of the works, the pipes and rock aprons will be removed and all channels backfilled with the material that was originally excavated from them.

Piped slope drains will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and blockages. Stake anchors or fill over the pipe will be checked for settlement, cracking and stability. Any seepage holes where pipe emerges from drain at the top of the pipe will be repaired promptly.

4.7.4.7 Vegetation Filters

Vegetation filters are the existing vegetated areas of land that will be used to accept surface water runoff from upgradient areas. The selection of suitable areas to use as vegetation filters will be determined by the size of the contributing catchment, slope and ground conditions.

Vegetation filters will carry outflow from the level spreaders as overland sheet flow, removing any suspended solids and discharging to the groundwater system by diffuse infiltration.

Vegetation filters will not be used in isolation for waters that are likely to have higher silt loadings. In such cases, silt-bearing water will already have passed through stilling ponds prior to diffuse discharge to the vegetation filters via a level spreader.

4.7.4.8 Stilling Ponds (Settlement Ponds)

Stilling ponds will be used to attenuate runoff from works areas of the site of the Proposed Project during the construction phase and will remain in place to handle runoff from roads and hardstanding areas of the Proposed Project during the operational phase. The purpose of the stilling ponds is to intercept runoff potentially laden with sediment and to reduce the amount of sediment leaving the disturbed area by reducing runoff velocity. Reducing runoff velocity will allow larger particles to settle out in the stilling ponds, before the run-off water is redistributed as diffuse sheet flow in filter strips downgradient of any works areas.

Stilling ponds will be excavated/constructed at each required location as two separate ponds in sequence, a primary pond and a secondary pond. The points at which water enters and exits the stilling ponds will be stabilised with rock aprons, which will trap sediment, dissipate the energy of the water flowing through the stilling pond system, and prevent erosion. The primary stilling pond will reduce the velocity of flows to less than 0.5 metres per second to allow settlement of silt to occur. Water will then pass from the primary pond to the secondary pond via another rock apron. The secondary stilling pond will reduce the velocity of flows to less than 0.3 metres per second. Water will flow out of the secondary stilling pond through a stone dam, partially wrapped in geo-textile membrane, which will control flow velocities and trap any sediment that has not settled out. Figure 4-28, above, shows an illustrative example of a stilling pond system.

Water will flow by gravity through the stilling pond system. The stilling ponds will be sized according to the size of the area they will be receiving water from, but will be sufficiently large to accommodate peak flows storm events. The stilling ponds will be dimensioned so that the length to width ratio will be greater than 2:1, where the length is the distance between the inlet and the outlet. Where ground conditions allow, stilling ponds will be constructed in a wedge shape, with the inlet located at the narrow end of the wedge. Each stilling pond will be a minimum of 1-1.5 metres in depth. Deeper ponds will be used to minimise the excavation area needed for the required volume.

The embankment that forms the sloped sides of the stilling ponds will be stabilised with vegetated turves, which will have been removed during the excavation of the stilling ponds area. All material excavated during pond construction will be used locally for landscaping and berm construction around these ponds.

Stilling ponds will be located towards the end of swales, close to where the water will be reconverted to diffuse sheet flow. Upon exiting the stilling pond system, water will be immediately reconverted to diffuse flow via a fan-shaped rock apron if there is adequate space and ground conditions allow. Otherwise, a swale will be used to carry water exiting the stilling pond system to a level spreader to reconvert the flow to diffuse sheet flow.

Stilling ponds will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows. Any excess build-up of silt levels that may decrease the effectiveness of the drainage feature, will be removed.

4.7.4.9 Siltbuster

A "siltbuster" or similar equivalent piece of equipment will be available to filter any water pumped out of excavation areas if necessary, prior to its discharge to stilling ponds or swales.

Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction sites.

The unit stills the incoming water/solids mix and routes it upwards between a set of inclined plates for separation. Fine particles settle onto the plates and slide down to the base for collection, whilst treated water flows to an outlet weir after passing below a scum board to retain any floating material. The inclined plates dramatically increase the effective settling area of the unit giving it a very small footprint on site and making it highly mobile. Figure 4-30 below shows an illustrative diagram of the Siltbuster.

The Siltbuster units are now considered best practice for the management of dirty water pumped from construction sites. The UK Environment Agency and the Scottish Environmental Protection Agency have all recommended/specified the use of Siltbuster units on construction projects.

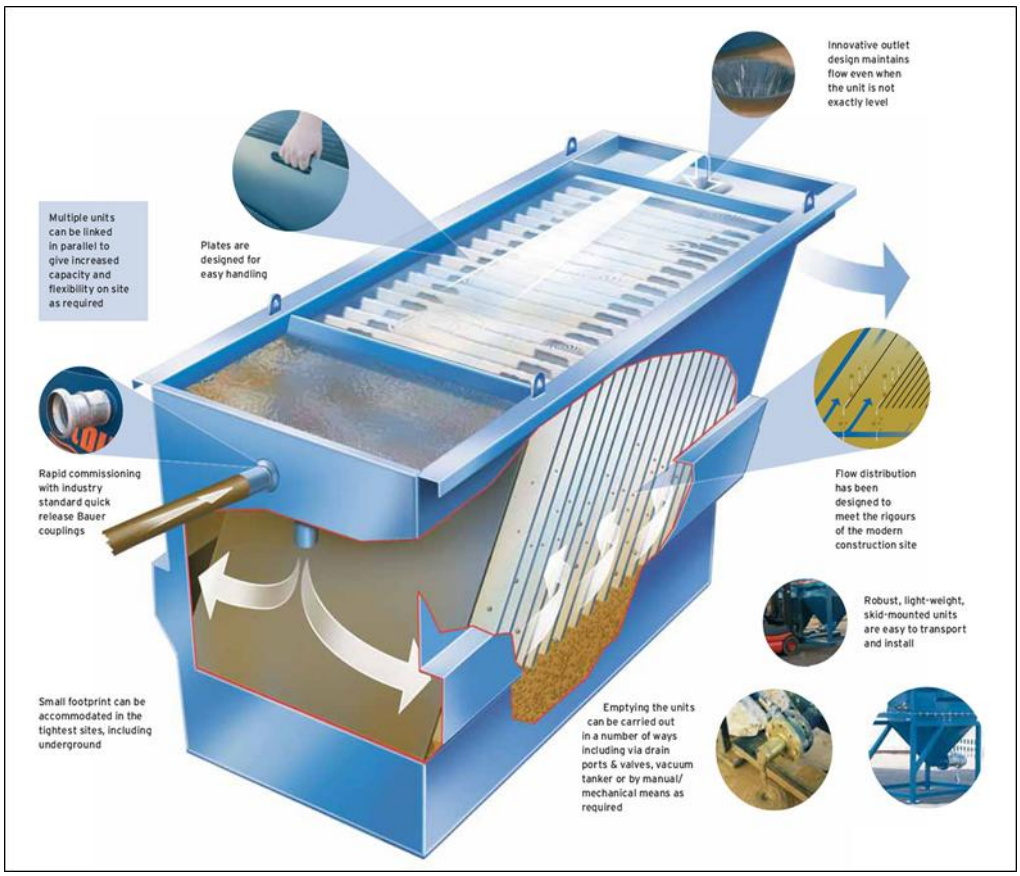


Figure 4-30 Siltbuster (Source: https://www.siltbuster.co.uk/sb_prod/siltbuster-fb50-settlement-unit/)

4.7.4.10 Silt Bags

Dewatering silt bags allow the flow of water through them while trapping any silt or sediment suspended in the water. The silt bags provide a passive non-mechanical method of removing any remaining silt contained in the potentially silt-laden water collected from works areas within the site.

Dewatering silt bags are an additional drainage measure that can be used downgradient of the stilling ponds at the end of the drainage swale channels and will be located, wherever it is deemed appropriate, throughout the site. The water will flow, via a pipe, from the stilling ponds into the silt bag. The silt bag will allow the water to flow through the geotextile fabric and will trap any of the finer silt and sediment remaining in the water after it has gone through the previous drainage measures. The dewatering silt bags will ensure that there will be no loss of peaty silt into the stream.

The dewatering silt bag that will be used will be approximately 3 metres in width by 4.5 metres (see Plate 4-7 and Plate 4-8 below) in length and will be capable of trapping approximately four tonnes of silt. The dewatering silt bag, when full, will be removed from site by a waste contractor with the necessary waste collection permit, who will then transport the silt bag to an appropriate, fully licensed waste facility.



Plate 4-7 Silt Bag with water being pumped through



Plate 4-8 Silt bag under inspection

4.7.4.11 Sedimats

Sediment entrapment mats, consisting of coir or jute matting, will be placed at the outlet of the silt bag to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure.

4.7.4.12 Culverts

All new proposed culverts and proposed culvert upgrades will be suitably sized for the expected peak flows in the watercourse.

Some culverts may be installed to manage drainage waters from works areas of the Proposed Project, particularly where the waters have to be taken from one side of an existing roadway to the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base. In some cases, two or more smaller diameter culverts may be used where this depth is limited, though this will be avoided as they will have a higher associated risk of blockage than a single, larger pipe. In all cases, culverts will be oversized to allow mammals to pass through the culvert.

Culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. This will help dissipate its energy and help prevent problems of erosion. Smaller water crossings will simply consist of an appropriately

sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling does not occur above or below the culvert and water can continue to flow as necessary.

All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.

4.7.4.13 Silt Fences

Silt fences will be installed as an additional water protection measure around existing watercourses in certain locations, particularly where works are proposed within the 50-metre buffer zone of a stream or 100m buffer zone of a lake, which is inevitable where existing roads in proximity to watercourses are to be upgraded as part of the Proposed Project. These areas include around existing culverts, around the headwaters of watercourses, and the proposed locations are indicated on the drainage design drawings included in Appendix 4-3.

Silt fences will be installed as single, double or a series of triple silt fences, depending on the space available and the anticipated sediment loading. The silt fence designs follow the technical guidance document '*Control of Water Pollution from Linear Construction Projects'* published by Construction Industry Research and Information Association (CIRIA, No. C648, 1996). Up to three silt fences may be deployed in series.

All silt fencing will be formed using Terrastop Premium or equivalent silt fence product.

Silt fences will be inspected regularly to ensure water is continuing to flow through the fabric, and the fence is not coming under strain from water backing up behind it.

4.7.4.14 Forestry Felling Drainage

Tree felling will not be undertaken simultaneously with construction groundworks for the permanent built infrastructure of the Proposed Project. Keyhole felling to facilitate construction works will take place prior to groundworks commencing. Some further turbulence felling may take place after all groundworks have been completed but while turbines are being commissioned (depending on the requirements of the selected turbine manufacturer). A Harvest Management Plan is included in Appendix 4-4.

Felling will be undertaken in and around the permanent built infrastructure footprint of the Proposed Project (i.e. access roads, turbines etc) and as part of the BMEP measures described in Section 4.4.8 above. Felling will be carried out around all turbines for bat mitigation. Tree stumps will only be removed in areas around the permanent built infrastructure footprint of the Proposed Project unless otherwise stated as per the BMEP . During tree felling there is a potential to generate peat particles and silts in surface water runoff due to tracking of machinery and disturbance of the peat surface etc, however mitigation is provided in Section 9.5.2.1 of Chapter 9 Hydrology and Hydrogeology with regard surface water quality protection for this activity which is summarised below. Also, prior to the commencement of tree felling for subsequent road construction the following key temporary drainage measures will be installed:

- All existing dry forestry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps;
- Clean water diversion drains will be installed upgradient of the works areas;
- Check dams/silt fence arrangements (silt traps) will be placed in all existing forestry drains that have surface water flows and also along existing forestry roadside drains; and,
- A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone.

Before the commencement of any felling works, an Environmental Clerk of Works (ECoW) shall be appointed to oversee the keyhole and extraction works. The ECoW shall be experienced and competent, and shall have the following functions and operate their record using a Schedule of Works Operation Record (SOWOR), as proposed in the planning application:

- Attend the site for the setup period when drainage protection works are being installed and be present on site during the remainder of the forestry keyhole felling works.
- Prior to the commencement of works, review and agree the positioning by the Operator of the required Aquatic Buffer Zones (ABZs), silt traps, silt fencing (see below), water crossings and onsite storage facilities for fuel, oil and chemicals (see further below).
- Be responsible for preparing and delivering the Environmental Tool Box Talk (TBT) to all relevant parties involved in site operations, prior to the commencement of the works.
- Conduct daily and weekly inspections of all water protection measures and visually assess their integrity and effectiveness in accordance with Section 3.4 (Monitoring and Recording) and Appendix 3 (Site Monitoring Form (Visual Inspections)) of the *Forestry & Freshwater Pearl Mussel Requirements*.
- Take representative photographs showing the progress of operation onsite, and the integrity and effectiveness of the water protection measures.
- Collect water samples for analysis by a 3rd party accredited laboratory, adhering to the following requirements:
    - Surface water samples shall be collected upstream and downstream of the keyhole felling site at suitable sampling locations.
    - Sampling shall be taken from the stream / river bank, with no in-stream access permitted.
    - The following minimum analytical suite shall be used: pH, EC, TSS, BOD, Total P, Ortho-P, Total N, and Ammonia.
- Review of operator's records for plant inspections, evidence of contamination and leaks, and drainage checks made after extreme weather conditions.
- Prepare and maintain a contingency plan.
- Suspend work where potential risk to water from siltation and pollution is identified, or where operational methods and mitigation measures are not specified or agreed.
- Prepare and maintain a Water Protection Measure Register. This document is to be updated weekly by the ECoW.

All relevant measures set out in the *Forestry & Freshwater Pearl Mussel Requirements, Forestry & Water Quality Guidelines, Forest Harvesting & the Environment Guidelines and the Forest Protection Guidelines* will apply. To protect watercourses, the following measures will be adhered to during all keyhole/tree felling activities.

- Works will be overseen by an ECoW as described above.
- The extent of all necessary tree felling will be identified and demarcated with markings on the ground in advance of any felling commencing.
- All roads and culverts will be inspected prior to any machinery being brought on site to commence the felling operation. No tracking of vehicles through watercourses will occur. Vehicles will only use existing road infrastructure and established watercourse crossings.
- Existing drains that drain an area to be felled towards surface watercourses will be blocked, and temporary silt traps will be constructed to ensure collection of all silt within felling areas. These temporary silt traps will be cleaned out and backfilled once felling works are complete. This ensures there is no residual collected silt remaining in blocked drains after felling works are completed. No direct discharge of such drains to watercourses will occur from within felling areas.
- New collector drains and sediment traps will be installed during ground preparation to intercept water upgradient of felling areas and divert it away. Collector drains will

be excavated at an acute angle to the contour (0.3%-3% gradient), to minimise flow velocities.

- All silt traps will be sited outside of buffer zones and have no direct outflow into the aquatic zone. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be carefully disposed of away from all aquatic zones.
- All new collector drains will taper out before entering the aquatic buffer zone to ensures the discharging water gently fans out over the buffer zone before entering the aquatic zone.
- Machine combinations, such as mechanical harvesters or chainsaw felling will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance;
- Mechanised operations will be suspended during and immediately after heavy rainfall.
- Where brash is required to form brash mats, it is to be laid out at harvesting stage to prevent soil disturbance by machine movement.
- Brash which has not been pushed into the soil may be moved within the site to facilitate the creation of mats in more demanding locations.
- Felling of trees will be pointed directionally away from watercourses.
- Felling will be planned to minimise the number of machine passes in any one area.
- Extraction routes, and hence brash mats, will be aligned parallel to the ground contours where possible.
- Harvested timber will be stacked in dry areas, and outside any 50-metre watercourse buffer zone. Straw bales and check dams to be emplaced on the down gradient side of timber storage sites.
- Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but removing of natural debris deflectors will be avoided.
- Please refer to Harvest Management Plan included in Appendix 4-4.

4.7.4.15 Drain Blocking

As identified in Section 4.4.8.4, 36.4 ha within Area F and Area G in the Proposed Enhancement Site are proposed for bog restoration as part of the BMEP for the Proposed Project. The first action will be to effectively block direct connection between the restoration works and the watercourse within Area F. Any collector artificial drains (interceptor drains) that provide connection to the watercourse will be blocked to prevent run off of suspended solids or other pollutants. These measures will take the form of peat dams where there is no flow (as is the case in the vast majority of drains/furrows) and check dams, if any flowing drains are encountered.

Peat Dams

Given the topography of the site and nature of the drains, it is likely that, if dams are required, they will be peat dams as opposed to plastic dams that would be required on sites with higher flows and gradients and where there is no other option. Construction of peat dams will be achieved using a low ground pressure excavator with a moderate to long bucket reach to reduce movements. Timber may be used in conjunction with peat dams to block small drains and furrows.

Plastic Dams

It is unlikely that the use of plastic dams will be required. However, this section provides the proposed methodology for the installation of plastic piling dams on ditches less than 1.5m wide – should it be required. Plastic piling is light, versatile and slots together on site. Plastic piling dams form a good watertight seal that lasts for decades. Generally, dams are placed at between 10 and 20 m intervals on flat ground but would need to be closer where there is a slope. It is expected that the final water level from the lower dam will rise half way up the upstream dam. The final water level to be at the peat

surface or no more than 20 cm below the surface. Plastic piling dams will be used in the following situations:

- On ground that is too soft and/or unstable to allow safe machine access.
- On portions of the site that are inaccessible by machine.
- On active drains that are partially infilled with vegetation yet hold too much water to allow effective installation of peat dams.

Full details on bog restoration and drain blocking methodology are provided in Appendix 4-5 CEMP and Appendix 6-4 BMEP of the EIAR.

4.7.5 Borrow Pit Drainage

While surface water will be contained in the borrow pit areas, the design proposal is to control the level of water in the borrow pit area by creating a single point outlet from the basin-like area that will ensure the water does not overtop the pit area. Run-off from the proposed borrow pit areas will be controlled via a single outlet that will be installed at the edge of the borrow pit. The single outfall point will be constructed to control runoff from the borrow pit and its immediate surrounds. Interceptor drains will already have been installed upgradient of the borrow pit area before any extraction begins.

During the construction phase of the project, it will be necessary to keep the borrow pit area free of standing water while rock is still being extracted. This will be achieved by using a mobile pump, which will pump water into the same series of drains, settlement ponds with a level spreader, siltbuster or equivalent, which will receive the water from the single outlet.

4.7.6 Cable Trench Drainage

Cable trenches are developed in short sections, thereby minimising the amount of ground disturbed at any one time and minimising the potential for drainage runoff to pick up silt or suspended solids. Each short section of trench is excavated, ducting installed and bedded, and backfilled with the appropriate materials, before work on the next section commences.

To efficiently control drainage runoff from cable trench works areas, excavated material is stored on the upgradient side of the trench. Should any rainfall cause runoff from the excavated material, the material is contained in the downgradient cable trench. Excess subsoil is removed from the cable trench works area immediately upon excavation, and in the case of the Proposed Project, would be transported to the on-site borrow pit, used for landscaping and reinstatements of other areas elsewhere on site or disposed off-site at an appropriate licensed soil recovery facility.

On steeper slopes, silt fences, as detailed in Section 4.6.4.12, above, will be installed temporarily downgradient of the cable trench works area, or on the downhill slope below where excavated material is being temporarily stored to control run-off.

4.7.7 Site and Drainage Management

4.7.7.1 Preparative Site Drainage Management

All materials and equipment necessary to implement the drainage measures outlined above, will be brought on-site in advance of any works commencing. An adequate amount of straw bales, clean stone, terram, stakes, etc will be kept on site at all times to implement the drainage design measures as necessary. The drainage measures outlined in the above will be installed prior to the works they are intended to drain.

4.7.7.2 Pre-emptive Site Drainage Management

The works programme for the groundworks part of the construction phase of the Proposed Project will also take account of weather forecasts, and predicted rainfall in particular, working under a schedule of works operation system (SOWOR) system as proposed in the planning application. Large excavations, large movements of overburden or large scale overburden or soil stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.

4.7.7.3 Reactive Site Drainage Management

The final drainage design prepared for the Proposed Project prior to commencement of construction will provide for reactive management of drainage measures. The effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treat silt-laden water from the works areas, will be monitored continuously by the ECoW or supervising hydrologist on-site. The ECoW or supervising hydrologist will respond to changing weather, ground or drainage conditions on the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained in so far as is possible. This may require the installation of additional check dams, interceptor drains or swales as deemed necessary on-site. The drainage design may have to be modified on the ground as necessary, and the modifications will draw on the various features outlined above in whatever combinations are deemed to be most appropriate to situation on the ground as a particular time.

In the event that works are giving rise to siltation of watercourses, the ECoW or supervising hydrologist will stop all works in the immediate area around where the siltation is evident. The source of the siltation will be identified and additional drainage measures such as those outlined above will be installed in advance of works recommencing.

4.7.8 Drainage Maintenance

An inspection and maintenance plan for the drainage system onsite will be prepared in advance of commencement of any works on the Proposed Project. Regular inspections of all installed drainage features will be necessary, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the ECoW or the supervising hydrologist.

If necessary, any excess sediment build up behind check dams will be removed. For this reason, check dams will be inspected and maintained weekly during the construction phase of the project to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam.

Check dams will also be inspected weekly during the construction phase of the Proposed Project and following rainfall events to ensure the structure of the dam is still effective in controlling flow. Any scouring around the edges of the check dams or overtopping of the dam in normal flow conditions will be rectified be reinforcement of the check dam.

Drainage swales will be regularly inspected for evidence of erosion along the length of the swale. If any evidence of erosion is detected, additional check dams will be installed to limit the velocity of flow in the channel and reduce the likelihood of erosion occurring in the future.

Silt traps will be inspected weekly during the construction phase of the Proposed Project and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows.

The frequency of drainage system inspections will be reduced following completion of the construction phase of the Proposed Project. The project hydrologist will inspect and review the drainage system after

construction has been completed to provide guidance on the requirements of an operational phase drainage system.

4.8 Construction Management

4.8.1 Construction Timing

It is estimated that the construction phase of the Proposed Project will take approximately 18-24 months from commencement of civil works to the commissioning of the wind turbines. The commencement of works where the removal of vegetation is required, or where works take place in sensitive breeding habitats will be scheduled to commence outside the bird breeding season (1st of March to 31st of August) to avoid any potentially significant effects on nesting birds. Construction where removal of vegetation is required, or where works take place in sensitive breeding habitats may commence from September to March so that construction activities are ongoing by the time the next bird breeding season comes around and can continue throughout that bird breeding season.

Construction activities will be carried out during normal daytime working hours (i.e., 0700 – 1900hrs Monday to Saturday). However, to ensure that optimal use is made of good weather periods or at critical periods within the programme (i.e., concrete pours) or to accommodate delivery of large turbine components along public routes it will be necessary on occasion to work outside of these hours. Any such out of hours working will be notified in advance to the Local Authority.

4.8.2 Construction Sequencing

The construction phase can be broken down into three main overlapping phases and will take approximately 18-24 months to complete: 1) civil engineering works - 10 months, 2) electrical works including grid connection works - 9-12 months, and 3) turbine erection and commissioning - 8 months. The main task items under each of the three phases are outlined below.

Civil Engineering Works

- Construct new Site entrance.
- Upgrade Site roads to temporary compounds.
- Clear and hardcore area for temporary Site offices. Install same.
- Construct bunded area for oil storage.
- Tree felling and replanting
- Construct new Site roads and open borrow pit
- Construct hard-standings and crane pads.
- Construct drainage ditches, culverts etc. integral to road construction.
- Excavate for turbine foundations. Place blinding concrete to turbine foundation. Fix reinforcing steel and anchorage system for tower section. Construct shuttering. Fix any ducts etc. to be cast in. Pour concrete foundations. Cure concrete. Remove shutters after concrete cures.
- Excavate trenches for Site cables, lay cables and backfill. Provide ducts at road crossings.
- Backfill turbine foundations and landscape with previously stored topsoil.
- Complete Site works, reinstate Site.
- Remove temporary Site offices. Provide any gates, landscaping, signs etc. which may be required.

Electrical Works

- Clear and hardcore area for temporary Site offices. Install same

- Clear and Hardcore area for substation footprint
- Construct foundations/plinths for substation building.
- Install external electrical equipment at substation.
- Install transformer at compound.
- Erect stock proof and palisade fencing around substation area.
- Install internal collector network and communication cabling.
- Construct grid connection cabling.

Turbine and Meteorological Mast Erection

- Commission erection crane(s) and deliver components to turbine hardstands.
- Erect towers, nacelles and blades.
- Complete electrical installation.
- Install meteorological mast.
- Commission and test turbines.
- Complete Site works, reinstate Site.
- Remove temporary Site offices. Provide any gates, landscaping, signs etc. which may be required.

All relevant Site Health & Safety procedures, in accordance with the relevant Health and Safety Legislation and guidance (listed in Section 5.1.2 of this EIAR), including the preparation of the Health & Safety Plan, erection of the relevant and appropriate signage onsite, inductions and toolbox talks, will take place prior to and throughout the construction phase of the Proposed Project. Further details of on-site health, safety and welfare are included in Chapter 5 of this EIAR.

The phasing and scheduling of the main construction task items are outlined in Table 4-4 below, where the 1st of January has been selected as an arbitrary start date for construction activities.

Table 4-4 Indicative Construction Schedule

		Year 1				Year 2			
ID	Task Name	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Health and Safety								
2	Underground 33kV Cabling								
3	Site Compounds								
4	Site Roads								
5	Substation Extension and Electrical Works								
6	Turbine Hardstands								
7	Turbine Foundations								
8	Backfilling and Landscaping								
9	Turbine Delivery and Erection								
11	Substation Extension Commissioning								

12	Turbine Commissioning								

4.8.3 Construction Phase Monitoring and Oversight

The requirement for a CEMP to be prepared in advance of any construction works commencing on any wind farm development site and submitted for agreement to the Planning Authority is now well-established. The proposed procedures for the implementation of the mitigation measures outlined in such a CEMP and their effectiveness and completion is typically audited by the ECoW on behalf of the developer, in an and objective manner.

The CEMP Audit Report (Section 10.2 of the CEMP) will list all mitigation measures prescribed in any of the planning documentation and all conditions attached to the grant of planning permission and allows them to be audited on a systematic and regular basis. The first assessment is a simply Yes/No question, has the mitigation measure been employed on-site or not? Following confirmation that the mitigation measure has been implemented, the adherence to mitigation measures must be the subject of regular review and audit during the full construction stage of the project. If remedial actions are needed to improve the effectiveness of the mitigation measure, then these are notified to the Site staff immediately during the audit site visit, and in writing by way of the circulation of the audit report. Depending on the importance and urgency of rectifying the issue, the construction site manager is given a timeframe by when the remedial works need to be completed.

A CEMP has been prepared for the Proposed Project and is included in Appendix 4-5 of this EIAR. The CEMP includes details of drainage, overburden management, waste management etc, and describes how the above-mentioned Audit Report will function and be presented. In the event planning permission is granted for the Proposed Project, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for written approval.

The on-site construction staff will be responsible for implementing the mitigation measures specified in the EIAR and the CEMP and compiled in the Audit Report. Their implementation will be overseen by the ECoW or supervising hydrogeologists, environmental scientists, ecologists or geotechnical engineers, depending on who is best placed to advise on the implementation. The system of auditing referred to above ensures that the mitigation measures are maintained for the duration of the construction phase, and into the operational phase where necessary.

4.9 Construction Methodologies

This section of the chapter outlines the construction methodologies to be used for the various elements of the Proposed Project. Further details in relation to construction methodologies is included in Section 2.3 of the CEMP, included as Appendix 4-5 of this EIAR.

4.9.1 Turbine and Met Mast Foundations

Each of the turbines to be erected on the Proposed Wind Farm Site will have a reinforced concrete base that is installed below the finished ground level. It is anticipated that the turbine foundations will be formed on competent strata (i.e., bedrock or sublayer of sufficient load bearing capacity). As detailed above in Section 4.4.1.2, intrusive site investigations and geophysics surveys were undertaken across the Proposed Wind Farm Site, to provide detail and clarity on the nature and extent of sublayers and bedrock present. This assisted in providing additional information on the most suitable location for turbines and associated infrastructure. A methodology for reinforced concrete foundations and piled foundations is included in Section 2.3.3 of the CEMP, Appendix 4-5 of this EIAR.

Overburden will be stripped off the foundation area to a suitable formation using a 360° excavator with most being removed to the onsite borrow pit while some will be stored locally for later reuse in backfilling around the turbine foundation. A two-metre-wide working area will be required around each turbine base, with the sides of the excavated areas sloped sufficiently to ensure that slippage does not occur. Material excavated to create the working area will be stored locally for later reuse in backfilling the working area around the turbine foundation. The excavated material will be sealed using the back of the excavator bucket and surrounded by silt fences to ensure sediment-laden run-off does not occur.

The formation material will have to be approved by an engineer as meeting the turbine manufacturer's requirements. If the formation level is reached at a depth greater than the depth of the foundation, the ground level will have to be raised with clause 804 or similar hardcore material, compacted in 250 millimetres (mm) layers, with sufficient compacted effort (i.e. compacted with seven passes using 12 tonne roller). Drainage measures will be installed to protect the formation by forming an interceptor drain around the perimeter of the base which will outfall out at the lowest point level spreader or settlement pond.

An embankment approximately 600 mm high will be constructed around the perimeter of each turbine base and a fence will be erected to prevent construction traffic from driving into the excavated hole and to demarcate the working area. All necessary health and safety signage will be erected to warn of deep excavations etc. Access to and from excavated bases will be formed by excavating a pedestrian walkway to 1:12 grade.

There will be a minimum of 100 mm of blinding concrete laid on the formation material positioned using concrete skip and 360° excavator to protect ground formation and to give a safe working platform.

The anchor cage is delivered to site in 2 or more parts depending on the turbine type. A 360° excavator or crane with suitable approved lifting equipment will be used to unload sections of the anchor cage and reinforcing steel. The anchor cage is positioned in the middle of the turbine base and is assembled accordingly. When the anchor cage is in final position it is checked and levelled by using an appropriate instrument. The anchor cage is positioned 250mm – 300mm from formation level by use of adjustable legs. Reinforcement bars are then placed around the anchor cage, first radial bars, then concentric bars, shear bars and finally the superior group of bars. Earthing material is attached during the steel foundation build up. The level of the anchor cage will be checked again prior to the concrete pour and during the concrete pour.

Formwork to concrete bases will be propped/supported sufficiently so as to prevent failure. Concrete for bases will be poured using a concrete pump. Each base will be poured in three stages. Stage 1 will see the concrete being poured and vibrated in the centre of the anchor cage to bring the concrete up to the required level inside the cage. Stage 2 will see the centre of the steel foundation being poured and vibrated to the required level. Stage 3 will see the remaining concrete being poured around the steel foundation to bring it up to the required finished level. After a period of time when the concrete has set sufficiently the top surface of the concrete surface is to be finished with a power float.

Once the base has sufficient curing time it will be backfilled with suitable fill up to existing ground level and finished with the original material that was excavated.

4.9.2 Site Roads and Hardstand Areas

Site roads will be constructed to each turbine base and at each base hard standing will be constructed to the turbine manufacturer's specifications. Tracked excavators will carry out excavation for roads with appropriate equipment attached. The excavations shall follow a logical route working away from the borrow pit locations. Excavated material not required for localised landscaping will be transported back to the borrow pit in haul trucks. A 2-3m wide working area will be required around each hard standing area, with the sides of the excavated areas sloped sufficiently to ensure that slippage does not occur.

Material excavated to create the working area will be stored locally for later reuse in backfilling the working area around the turbine foundation. The excavated material will be covered with polythene sheets or sealed with the excavator bucket and surrounded by silt fences to ensure sediment-laden run-off does not occur.

When the formation layer has been reached, stone from the on-site borrow pit shall be placed to form the road foundation. In the event of large clay deposits being encountered in sections of road, a geotextile layer will be required at sub base level. The sub grade will be compacted with the use of a roller. The final wearing course will not be provided until all bases have been poured. This prevents damage to the wearing course due to stone and concrete trucks movements. The road will be upgraded prior to the arrival of the first turbine. All roads will be maintained for the duration of the operation of the Proposed Project.

The construction methodology for the construction of all site roads, as presented in FTC's PSMP in Appendix 4-2 of this EIAR, is summarised below.

4.9.2.1 Upgrades of Existing Access Roads - Type A/A1 and B

1. *Access road construction shall be to the line and level requirements as per design/planning conditions*

2. *For upgrading of all existing founded access roads (Type A/A1) 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 an average of 500mm 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 roads 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 roads constructed using a floated construction technique (Type B) 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 and will be placed at 10m intervals along these sections.*
   b) *Upgrading of existing access roads will be in accordance with appropriate design from the designer.*
   c) *The surface of the existing access road will 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 road make-up, a layer of geogrid will be placed on top of the existing access road.*
   e) *The basal geogrid on the widened section will be overlaid with an average of 1000mm of selected granular fill.*
   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 road (to be confirmed by the designer)*

g) *Stone delivered to the floating road construction will be end-tipped onto the constructed floating road geogrid. 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 (1.0m 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 running width of 5m, with wider sections on bends and corners.*
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 road, 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.*

4.9.2.2 Construction of New Excavated Roads through Peat – Type C/E

1. *Prior to commencing the construction of the excavated roads, movement monitoring posts will be installed in areas where the peat depth is greater than 2.0m, and in areas identified within the peat stability risk assessment (see Geotechnical & Peat Stability Assessment, FT, 2026) 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 20m lengths i.e. no more than 20m 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) will be transported immediately on excavation to the designated placement 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 areas within the borrow pit, at the designated peat storage areas or reused for landscaping purposes. All peat placement areas will be upslope of founded roads/hardstands and 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 will 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 road, 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 Section 10) 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.*
15. *The construction and upgrading 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.*

4.9.2.3 Construction of New Floated Roads Over Peat – Type D

1. *Prior to commencing floating road construction movement monitoring posts will be installed in areas where the peat depth is greater than 2m.*
2. *Base geogrid will be laid directly onto the existing peat surface along the line of the road in accordance with geogrid provider's requirements.*
3. *The typical make-up of the new floated access road will be up to 1,000mm of selected granular fill with 2 no. layers of geogrid with possibly the inclusion of a geotextile separator.*
4. *Granular fill to be placed and compacted in layers in accordance with the TII Specification for Road Works, Series 600 (2024).*
5. *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 1.0m in height) either side of the access road will reduce the likelihood of potential bearing failures beneath the access road.

6. *The finished road width will be approximately 5m, with wider sections on bends and corners.*
7. *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.*
8. *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.*
9. *Where it is not possible to end-tip over a 10m length of constructed floating road then dumpers delivering stone to the floating road will carry a reduced stone load (not greater than half full) until such time as end-tipping can be carried out over a 10m length of constructed floating road.*

4.9.3 Bottomless Box Culvert Crossing

It is proposed to construct a bottomless box culvert crossing at the 5 no. locations where new watercourse crossings are required within the Proposed Wind Farm Site. The locations of these crossings are shown on the layout drawings included in Appendix 4-1. The bottomless box culvert crossing methodology presented below will ensure that no instream works are necessary. The standard construction methodology for the installation of a bottomless box culvert crossing is as follows:

1. The access road on the approach either side of the watercourse will be completed to a formation level which is suitable for the passing of plant and equipment required for the installation of each watercourse crossing.
2. All drainage measures along the proposed road will be installed in advance of the works.
3. A foundation base will be excavated to rock or competent ground with a mechanical excavator with the foundation formed in-situ using a semi-dry concrete lean mix. The base will be excavated along the stream bank with no instream works required.
4. Access to the opposite side of the watercourse for excavation and foundation installation will require the installation of a temporary pre-cast concrete bridge across the watercourse to provide temporary access for the excavator. Plant and equipment will not be permitted to track across the watercourse.
5. Once the foundation base has been completed, the pre-cast bottomless culvert will be installed using a crane which will be set up on the bank of the watercourse and will be lifted into place from the bank with no contact with the watercourse.
6. Once the crossing is in position stone backfill will be placed and compacted against the structure up to the required level above the foundations.
7. Underground cabling ducting will be contained within the road make-up of the proposed crossing.

A standard design drawing of a pre-cast concrete, bottomless box culvert crossing is shown in Figure 4-31.

The watercourse crossing will be constructed to the specifications of the OPW bridge design guidelines '*Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945*', and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material.

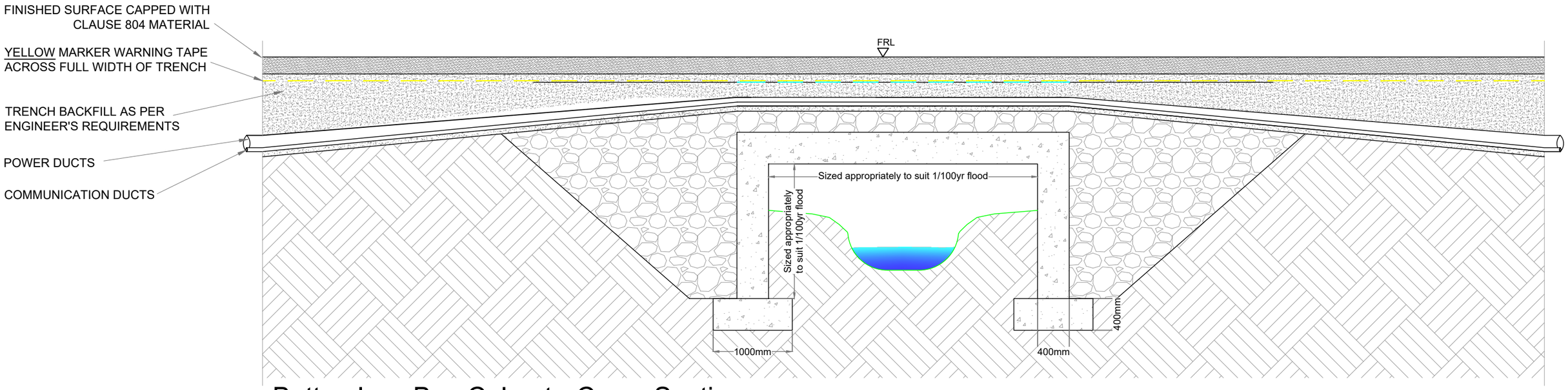
Confirmatory inspections of the proposed new watercourse crossing locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.

4.9.4 Culvert Crossing

All new proposed culverts and culvert upgrades at drain crossings required for the Proposed Project will be suitably sized for the expected peak flows in the watercourse. Some culverts may be installed to manage drainage waters from works areas of the Proposed Project, particularly where the waters have to be taken from one side of an existing roadway to the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base but will have a minimum 900mm diameter. In all cases, culverts will be oversized to allow mammals to pass through the culvert.

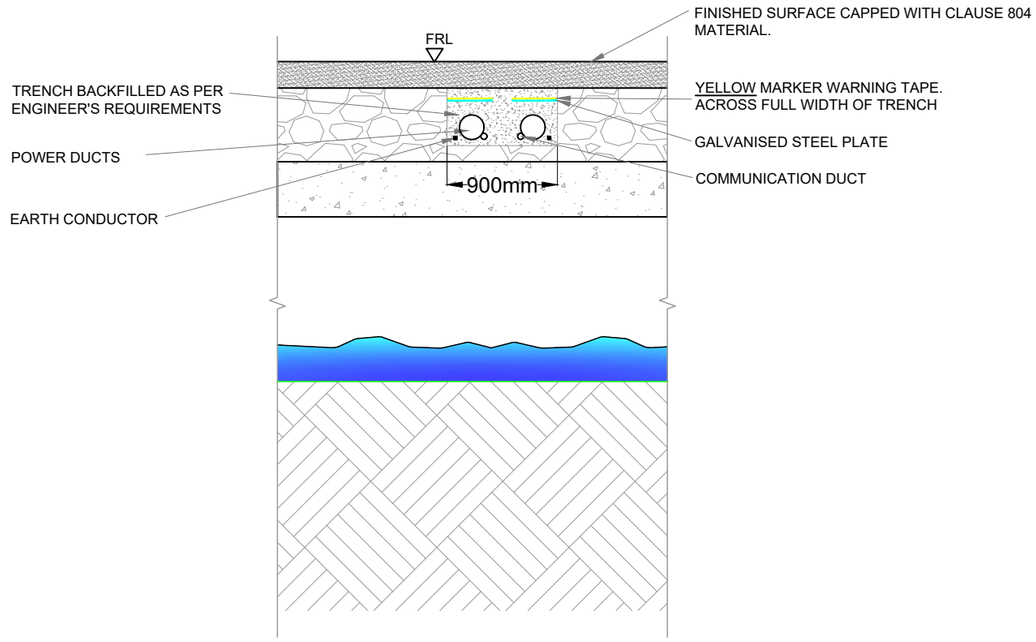
Culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. This will help dissipate its energy and help prevent problems of erosion. Smaller water crossings will simply consist of an appropriately sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling does not occur above or below the culvert and water can continue to flow as necessary.

All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance. Please see Figure 4-32 for details.



Bottomless Box Culvert - Cross Section

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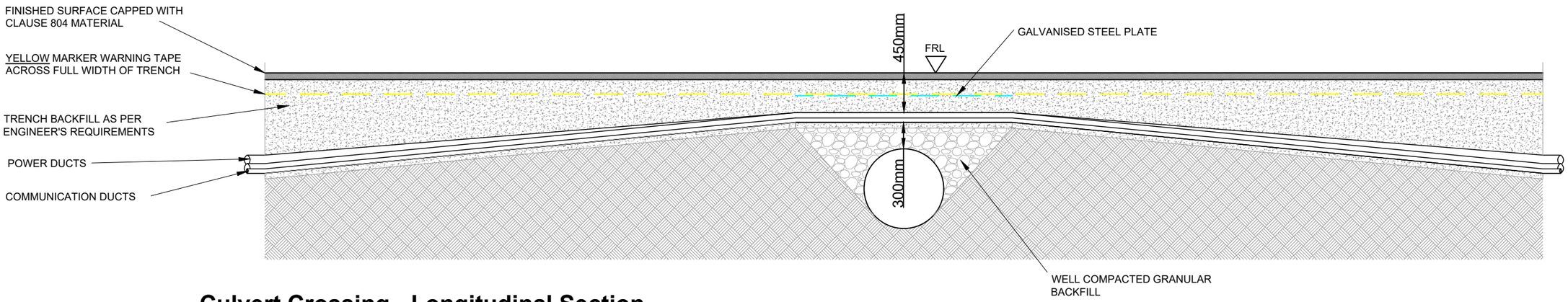


Bottomless Box Crossing - 33kV - Cross Section

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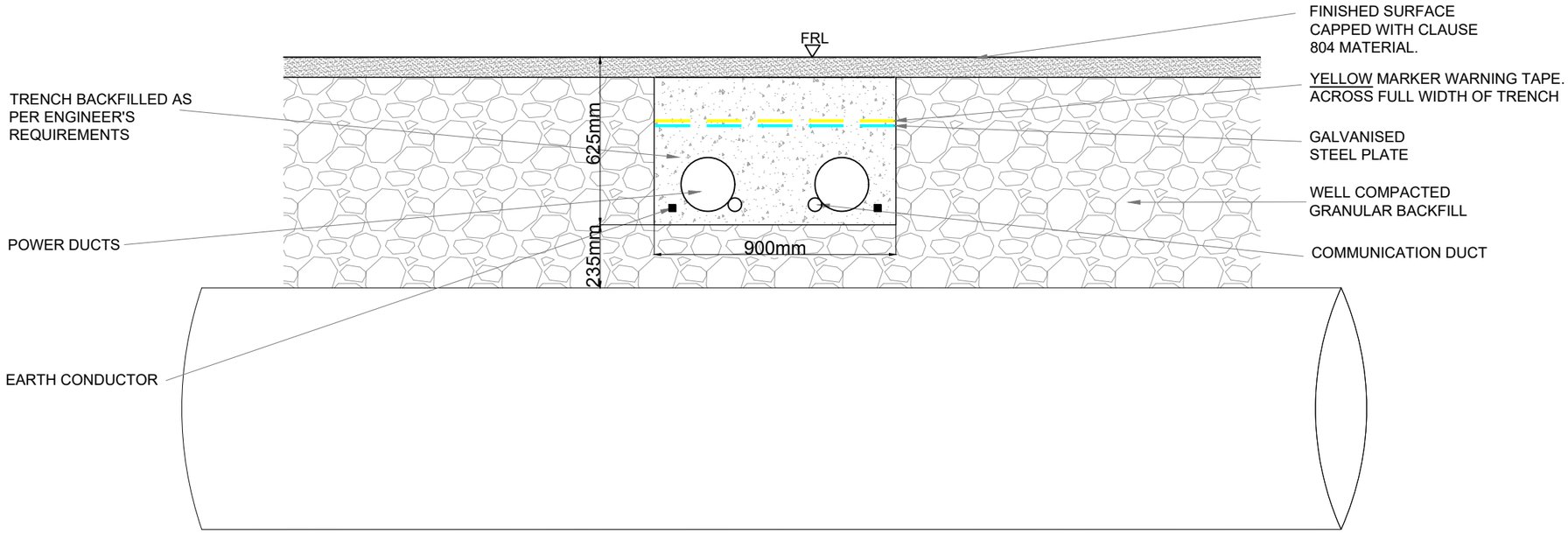
PROJECT TITLE: **Slieveacurry Renewable Energy Development**			
DRAWING TITLE: **33kV Bottomless Box Culvert Crossing**			
PROJECT No.: **240718**		DRAWING No.: **Figure 4-31**	SCALE: **1:50 @ A3**
DRAWN BY: **FB**	CHECKED BY: **RD**	DATE: **27.04.2026**	REVISION.: P02

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Culvert Crossing - Longitudinal Section

SCALE 1:50



Culvert Crossing - 33kV - Cross Section

SCALE 1:20

PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
33kV Culvert Crossing

PROJECT No.:	DRAWING No.:	SCALE:
240718	Figure 4-32	As Shown @ A3

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FB	RD	27.04.2026	P02

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4.9.5 Temporary Construction Compounds

The temporary construction compounds will be constructed as follows:

- The area to be used as the compound will be marked out at the corners using ranging rods or timber posts. Drainage runs and associated settlement ponds will be installed around the perimeter;
- The compound platform in the northern section of the Proposed Wind Farm Site will be established using a similar technique as the construction of new floated road (Type D) as discussed above;
- The compound platform to the southwest of T05 will be established using a similar technique as the construction of new excavated roads (Type C) as discussed above;
- A layer of geo-grid will be installed and compacted layers of well graded granular material will be spread and lightly compacted to provide a hard area for site offices and storage containers;
- Areas within the compound will be constructed as site roads and used as vehicle hardstandings during deliveries and for parking;
- The compounds will be fenced and secured with locked gates if necessary; and,
- Upon completion of the Proposed Project the temporary construction compounds will be decommissioned and allowed to vegetate naturally.
- A section of the temporary construction compound to the southwest of T05 will be repurposed to facilitate the construction of the meteorological mast.

4.9.6 Underground Electrical (33kV) and Communications Cabling

The transformer in each turbine and the met mast will be connected to the proposed substation extension through a network of underground electrical and communication cabling. The ground is trenched using a mechanical excavator. The top layer of soil (or road surface) is removed and saved so that it is replaced on completion. The cables ducting will be bedded with suitable material unless the ground conditions are such that no bedding is required. Cabling will be laid at a depth of approximately 1.2m below ground level; a suitable marker tape is installed between the cabling and the surface (see Plate 4-9 below illustrating an example of a single 33kV cable trench). On completion, the ground will be reinstated. The route of the underground electrical and communication cabling will follow the access tracks as illustrated on the layout drawings included as Appendix 4-1 of the EIAR. The cabling may be placed on either side of the road footprint, on both sides of the road and/or within the road. The exact configuration of the underground cabling will be set by the requirements of the electrical designers at detailed design stage.



Plate 4-9 Typical Single Cable Trench View

Within the Proposed Grid Connection Site, the proposed 33kV underground cabling will be laid beneath the surface of the private access tracks and/or public road using the following methodology:

- Before works commence, surveying will take place along the proposed 33kV underground cabling, with all existing culverts identified. All relevant bodies i.e. ESB, Clare County Council etc. will be contacted and all drawings for all existing services sought.
- When the cable is located on public roads, a traffic management plan will be set up prior to any works commencing. A road opening licence will be obtained where required and all plant operators and general operatives will be inducted and informed as to the location of any services.
- The cable ducts will be concrete surrounded where they pass under the public road and under drains or culverts.
- A tracked 360-degree excavator will then proceed to dig out the proposed trench, typically to a depth of 1200mm, within which the ducts will be laid.
- Trench supports will be installed, or the trench sides will be benched or battered back where appropriate and any ingress of ground water will be removed from the trench using submersible pumps, fitted with appropriate silt filtration systems, to prevent contamination of any watercourse.
- Once the trench has been excavated, a base-layer will be laid and compacted, comprising Clause 804, or 15 Newton CBM4 concrete as required.
- The ducting will be installed as per specification, with couplers fitted and capped to prevent any dirt etc. entering the duct. In poor ground conditions, the ends of the ducts will be shimmed up off of the bed of the trench, to prevent any possible ingress of water dirt. The shims will be removed again once the next length has been connected. Extreme care will be taken to ensure that all duct collars (both ends) are clean and in good condition prior to ducts being joined.
- As the works progress, the as-built location of the ducting will be recorded using a total station or GPS.
- As per the associated base-layer (Clause 804 material or 15 Newton CBM4 concrete) will be installed and compacted as per approved detail, with care not to displace the ducting.
- Spacers will be used to ensure that the correct cover is achieved at both sides of the ducting.

- The remainder of the trench will be backfilled in two compacted layers with approved engineer's specified material.
- Yellow marker warning tape will be installed across the width of the trench, at 300mm depth,
- The finished surface is to be reinstated, as per original specification. Off-road cabling may be finished with granular fill to facilitate access to the trench for any potential maintenance that is required during the operational phase of the Proposed Project.
- Marker posts will then be placed at regular intervals (generally at joint bays and any change in direction) to denote the location of the underground power cables.

4.9.6.1 Existing Underground Services

Any underground services encountered along the Proposed Grid Connection Site will be surveyed for level and the ducting will pass over the service provided adequate cover is available. A minimum clearance of 300 mm will be required between the bottom of the ducts and the service in question. If the clearance cannot be achieved the ducting will pass under the service and again 300 mm clearance between the top of the communications duct and bottom of the service will be achieved. In deeper excavations an additional layer of marker tape will be installed between the communications duct and top level yellow marker tape. If the required separation distances cannot be achieved then a number of alternative options are available such as using steel plates laid across the width of the trench and using 35N concrete surrounding the proposed ducting where adjacent services are within 600mm, with marker tape on the side of the trench. Back fill around any utility services will be with dead sand/pea shingle where appropriate.

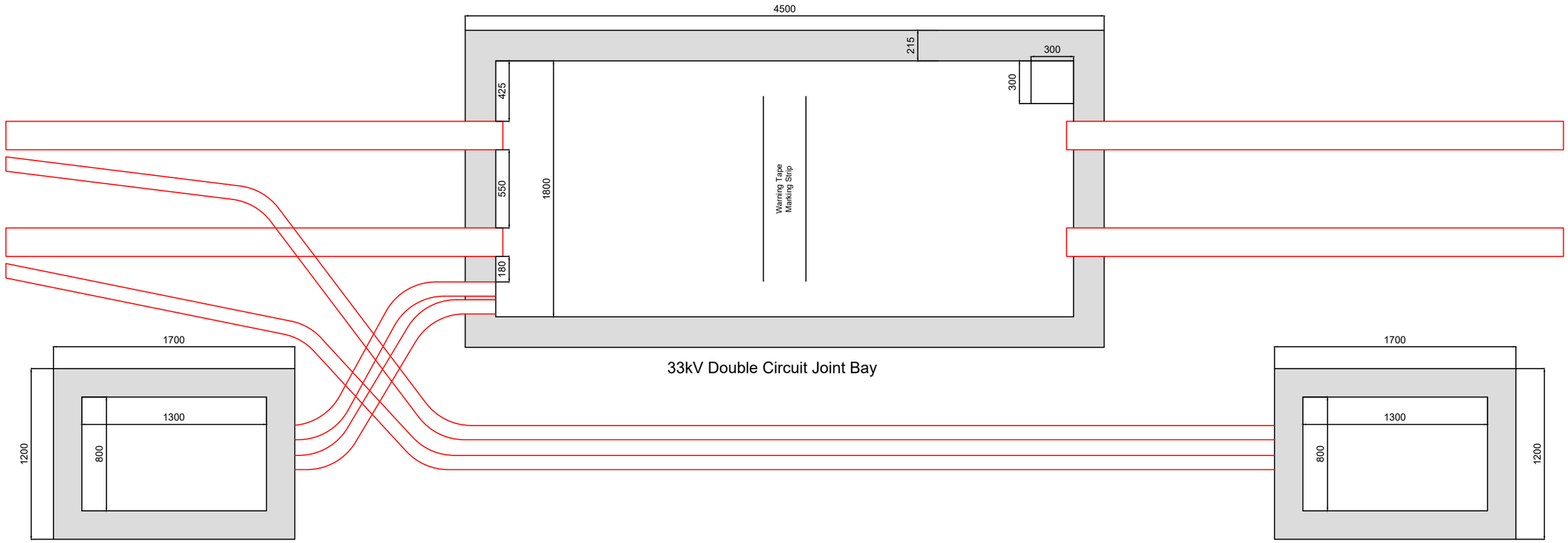
4.9.7 Joint Bays/Pits

Joint bays are typically pre-cast concrete chambers where lengths of cable will be joined to form one continuous cable. Joint bays will be located at various points along the Proposed Grid Connection Site generally between 600 to 800 metre intervals or as otherwise required by the electrical designer requirements. Joint Bays are typically 2.03m x 4.5m x 1.475m pre-cast concrete structures installed below finished ground level.

Where possible, joint bays will be located in areas where there is a natural widening/wide grass margin on the road in order to accommodate easier construction, cable installation and create less traffic congestion. Joint Bays will be located in the non-wheel bearing strip of roadways, however given the narrow profile of local roads this may not always be possible. During construction the joint bay locations will be completely fenced off once they have been constructed, they will be backfilled until cables are being installed. Once the cabling is installed the joint bays will be permanently backfilled with the existing surface re-instated and there will be no discernible evidence of the joint bay on the ground. Mitigation measures will be implemented throughout the construction process to ensure the installation and construction of the joint bays does not impact nearby protected structures and/or watercourses.

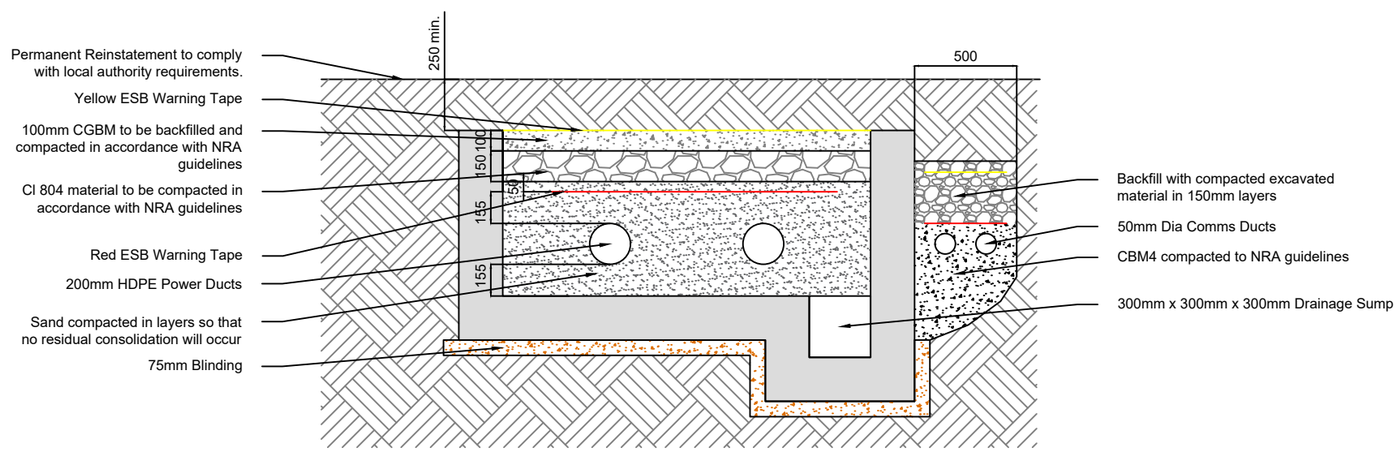
Joint pits are localised trench widenings where the cables can be pulled and connected without the use of pre-cast concrete chambers. Joint pits will be located primarily out of the public road corridor unless requested by the Local Authority. During construction the open pits will be fenced off and will be temporarily backfilled until cable installation. The pits may be supported with sandbags during cable jointing. Following the installation of cabling, the pits will be permanently backfilled with the existing surface re-instated and there will be discernible evidence of the joint pit on the ground. Mitigation measures will be implemented throughout the construction process to ensure the installation and construction of the joint pits does not impact nearby protected structures and/or watercourses.

The proposed location of joint bays and joint pits within the Proposed Grid Connection Site are shown in Appendix 4-1 of this EIAR.



Plan View

Scale 1:30



Section View

Scale 1:30

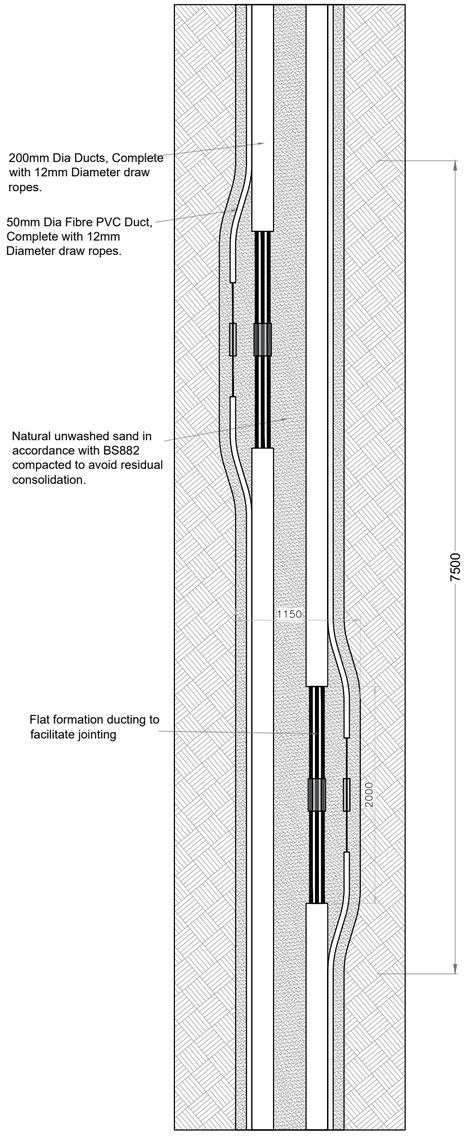
PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
Joint Bay Detail

PROJECT No.:	DRAWING No.:	SCALE:
240718	Figure 4-33	1:30 @ A3

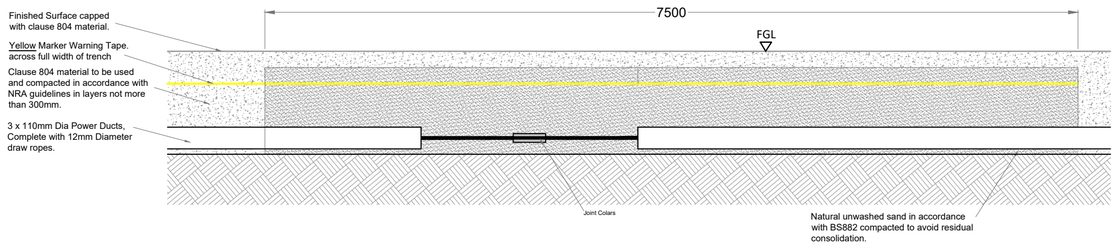
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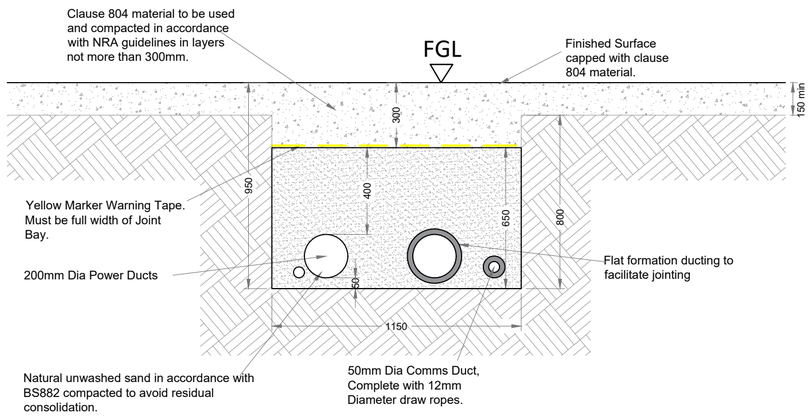
IPP Wind Farm Joint Pit - Plan

SCALE 1:40



33kV IPP Wind Farm Joint Pit - Longitudinal Section

SCALE 1:40



33kV IPP Wind Farm Joint Pit - Cross Section

SCALE 1:20

PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
Joint Pit Detail

PROJECT No.:	DRAWING No.:	SCALE:
240718	Figure 4-34	As Shown @ A2

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4.9.8 Underground Cabling Watercourse/Built Service Crossings

A total of 15 no. watercourse and culvert crossings along the Proposed Grid Connection Site 33kV underground cabling, of which 4 no. are EPA mapped watercourses. The remaining crossings are classified as culverts. The locations of the watercourse crossings are shown on the detailed layout drawings in Appendix 4-1 and on Figure 4-35 below. Details of each crossing method are presented in Table 4-5 below. The watercourse crossing methodologies for the provision of the underground cabling route component of the Proposed Project at these locations is set out below with the most appropriated option being selected for each crossing. Instream works are not required at any watercourse crossing within the Proposed Grid Connection Site.

Should an alternative methodology option be required for individual crossings during the construction process this will be agreed with the relevant authorities including Clare County Council prior to works commencing.

Where culverts require upgrading, the Applicant will commission a survey of culverts, the results of which will be forwarded to the Planning Authority. Having regard to the duration of the consent requested (10 years) it is considered best practice that any such surveys be carried out prior to construction to facilitate accuracy and timely reporting of the surveys.

4.9.8.1.1 *Standard Trefoil Formation Over – Type A*

Watercourses will not be directly impacted upon since no instream works or bridge/culvert alterations are proposed. Where adequate cover exists above a bridge/culvert or where a new bottomless box culvert or clear-span structure has been installed at a sufficient depth, the standard ducting arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert, water course or existing underground service. The cable trench will pass over the crossing in a standard trench as outlined in Figure 4-36.

4.9.8.1.2 *Flatbed Formation Under– Type B*

Where cable ducts are to be installed under an existing watercourse or service crossing where sufficient cover cannot be achieved by installing the ducts in a trefoil arrangement, the ducts will be laid in a much shallower formation, at a depth of which will be determined by the location of the bottom of the obstacle or the depth of excavatable material under it. The ducts will be laid in this trench in a flatbed formation under the existing watercourse/ service and will be encased in 6mm thick steel galvanized plate with a 35N concrete surround as per ESB Networks specification. The cable trench will pass under the crossing as outlined in Figure 4-37.

4.9.8.1.3 *Flatbed Formation Over – Type C*

Where cable ducts are to be installed over a watercourse or service crossing where sufficient cover cannot be achieved by installing the ducts, the ducts will be laid in a much shallower trench the depth of which will be determined by the location of the top of the obstacle or the depth of excavatable material over it. The ducts will be laid in this trench in a flatbed formation over the existing culvert/service and will be encased in 6mm thick steel galvanized plate with a 35N concrete surround as per ESB Networks specification.

Where a bridge/culvert or service has insufficient cover depth to fully accommodate the required trench, the ducts can be laid in a flatbed formation partially within the existing road surface. Where this option is to be employed, the ducts will also be encased in steel with a concrete surround as per ESB Networks specifications. In order to achieve cover over these ducts and restore the carriageway of the road, it may be necessary to raise the pavement level locally to fully cover the ducts. The increased

road level will be achieved by overlaying the existing pavement with a new wearing course as required. Any addition of a new pavement will be tied back into the existing road pavement at grade. After the crossing over the culvert has been achieved, the ducts will resume to the trefoil arrangement within a standard trench. The cable trench will pass over the crossing in as outlined in Figure 4-38.

4.9.8.1.4 *Horizontal Directional Drilling – Type D*

The horizontal directional drilling (HDD) method of duct installation is carried out using Vermeer D36 x 50 Directional Drill (approximately 22 tonnes), or similar plant. The launch and reception pits will be approximately 2.5mm wide, 2.5m long and 2.0m deep. The pits will be excavated with a suitably sized excavator. The drilling rig will be securely anchored to the ground by means of anchor pins which will be attached to the front of the machine. The drill head will then be secured to the first drill rod, and the operator will commence to drill into the launch pit to a suitable angle which will enable him to obtain the depths and pitch required to the line and level of the required profile. Drilling of the pilot bore will continue with the addition of 3.0m long drill rods, mechanically loaded and connected into position.

During the drilling process, a mixture of a natural, inert and fully biodegradable drilling fluid such as Clear Bore™ and water is pumped through the centre of the drill rods to the reamer head and is forced in to void and enables the annulus which has been created to support the surrounding subsoil and thus prevent collapse of the reamed length. Depending on the prevalent ground conditions, it may be necessary to repeat the drilling process by incrementally increasing the size of the reamers. When the reamer enters the launch pit, it is removed from the drill rods which are then passed back up the bore to the reception pit and the next size reamer is attached to the drill rods and the process is repeated until the required bore with the allowable tolerance is achieved.

The use of a natural, inert and biodegradable drilling fluid such as Clear Bore™ is intended to negate any adverse impacts arising from the use of other, traditional polymer-based drilling fluids and will be used sparingly as part of the drilling operations. It will be appropriately stored prior to use and deployed in the required amounts to avoid surplus. Should any excess drilling fluid accumulate in the reception or drilling pits, it will be contained and removed from the Site in the same manner as other subsoil materials associated with the drilling process to a licensed recovery facility.

Backfilling of launch & reception pits will be conducted in accordance with the normal specification for backfilling excavated trenches. Sufficient controls and monitoring, as listed below, will be put in place during drilling to prevent frack-out, such as the installation of casing at entry points where reduced cover and bearing pressure exits.

- The area around the Clear Bore™ batching, pumping and recycling plants shall be bunded using terram and sandbags in order to contain any spillages;
- One or more lines of silt fences shall be placed between the works area and adjacent rivers and streams on both banks;
- Accidental spillage of fluids shall be cleaned up immediately and transported off site for disposal at a licensed facility; and,
- Adequately sized skips will be used for temporary storage of drilling arisings during directional drilling works. This will ensure containment of drilling arisings and drilling flush

A standard HDD crossing detail is outlined in Figure 4-39.

Table 4-5 Watercourse Crossing Types

Watercourse Crossing No.	X ITM	Y ITM	Watercourse Type	Width of Channel (m)	Cover from Road Level to Top of Bridge/Culvert (m)	Watercourse Crossing Type	Crossing Type Description	Extent of in-channel works
UGC1 (Mapped)	512991	679609	Plastic pipe	0.6	1.0	Flatbed Formation Under	Type B	None. No in-stream works required
UGC2	513017	679584	Stone culvert	0.3	1.3	Flatbed Formation Over	Type C	None. No in-stream works required
UGC3 (Mapped)	512013	678169	Metal culvert	2.0	1.5	Flatbed Formation Over	Type C	None. No in-stream works required
UGC4	512341	677312	Plastic pipe	0.3	1.5	Flatbed Formation Over	Type C	None. No in-stream works required
UGC5 (Mapped)	512407	677225	Metal culvert	2.1	1.7	Horizontal Directional Drilling	Type D	None. No in-stream works required
UGC6	512770	677095	Plastic pipe	0.3	1.5	Flatbed Formation Over	Type C	None. No in-stream works required
UGC7	512939	676934	Plastic pipe	0.6	4.0	Standard Trefoil Formation Over	Type A	None. No in-stream works required
UGC8	513026	676806	Plastic pipe	0.6	2.0	Standard Trefoil Formation Over	Type A	None. No in-stream works required
UGC9	513090	676793	Plastic pipe	0.6	2.0	Standard Trefoil Formation Over	Type A	None. No in-stream works required
UGC10 (Mapped)	513289	676739	Plastic pipe	0.9	7.0	Standard Trefoil Formation Over	Type A	None. No in-stream works required
UGC11	513215	676475	Plastic pipe	0.3	3.0	Standard Trefoil Formation Over	Type A	None. No in-stream works required
UGC12	513229	676075	Plastic pipe	0.9	1.5	Flatbed Formation Over	Type C	None. No in-stream works required
UGC13	513289	675904	Plastic pipe	0.3	1.5	Flatbed Formation Over	Type C	None. No in-stream works required
UGC14	513428	676177	Plastic pipe	1.0	3.0	Standard Trefoil Formation Over	Type A	None. No in-stream works required
UGC15	513448	676174	Plastic pipe	1.0	3.0	Standard Trefoil Formation Over	Type A	None. No in-stream works required

510000
511500
513000
514500
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678000
676500
N
T9
T6
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T7
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4
5
6
7
8
9
10
11
12
13
14
15
Silverhill
R460
R474
0
0.75
1.5 km

Map Legend

- EIAR Site Boundary
- Proposed Turbines
- Proposed 33kV Underground Cable Connection
- 50m Watercourse Buffer
- Proposed Grid Connection Site Watercourse Crossings
- Watercourses

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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SITE LOCATION - NOT TO SCALE

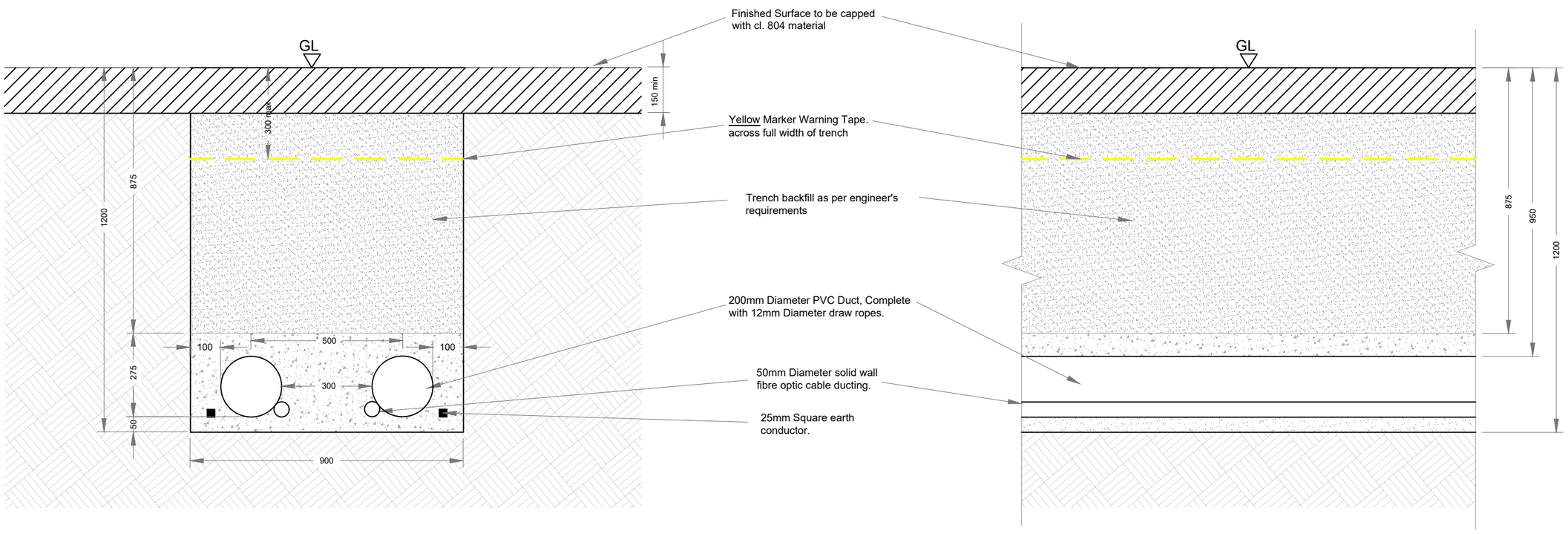
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Watercourse Crossings Proposed Grid Connection Site

Project Title
Slieveacurry Renewable Energy Development, Co. Clare

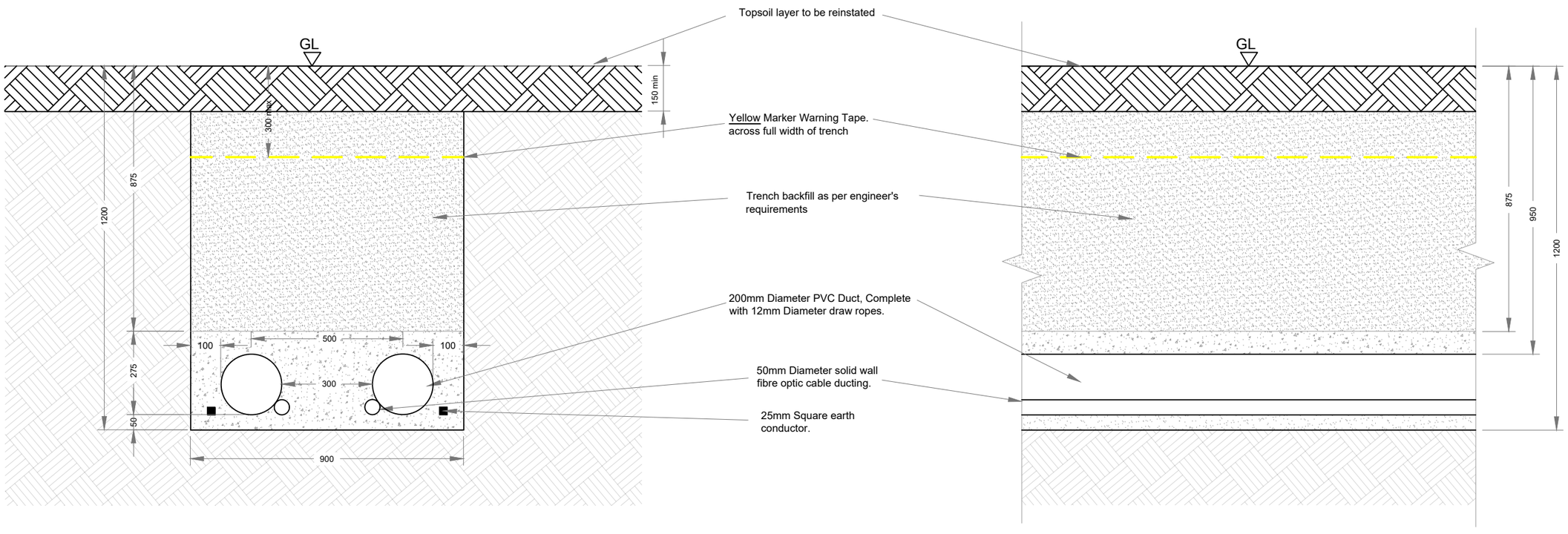
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240718	4-35	1:15,000
Drawn By	Checked By	Date
MVN	BT	24/04/2026

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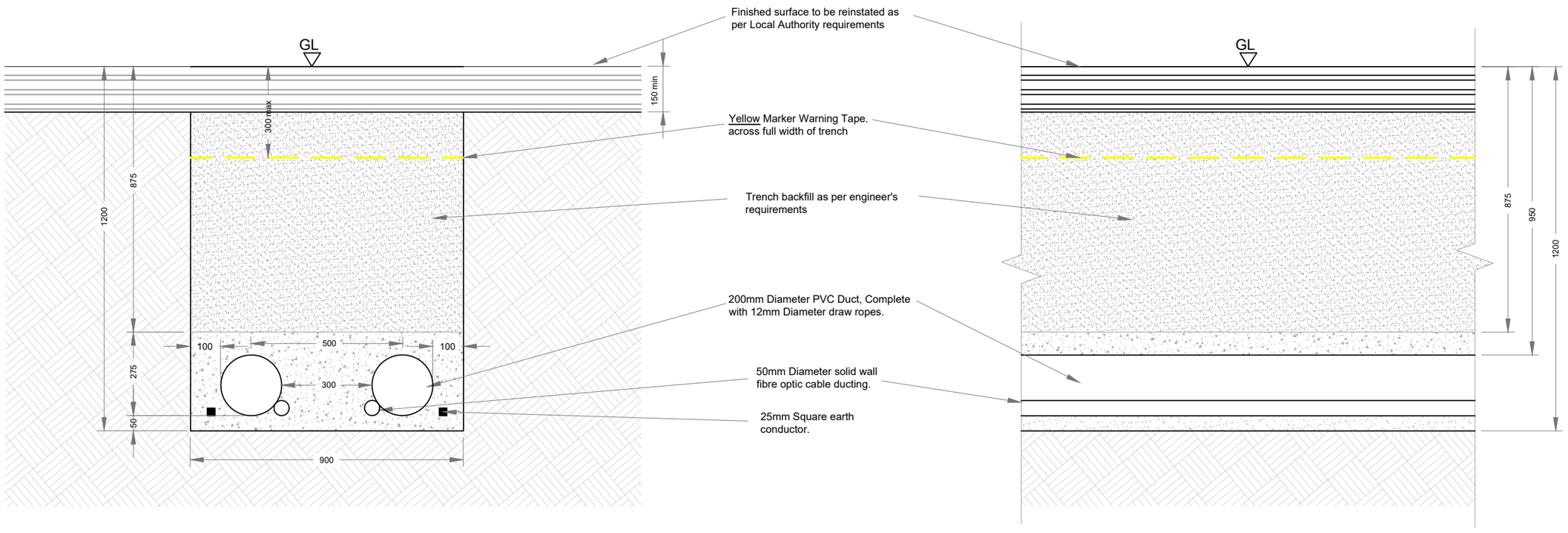
33kV Cable Trench - New/Existing Track
Scale 1:15



33kV Cable Trench - New/Existing Track
Scale 1:15



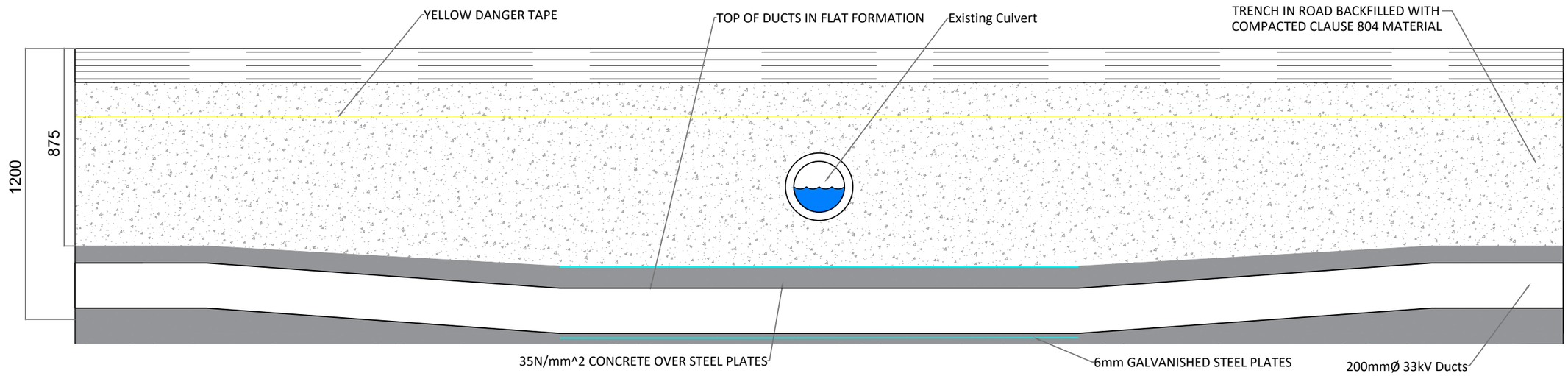
33kV Cable Trench - Off-road
Scale 1:15



33kV Cable Trench - Public Road
Scale 1:15

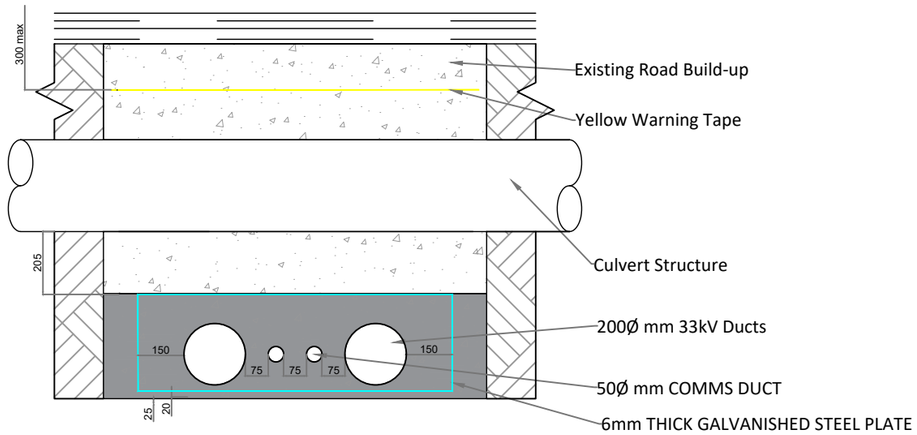
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DRAWING TITLE: **Type A Standard Trefoil Formation**			
PROJECT No.: **240718**		DRAWING No.: **Figure 4-36**	SCALE: **1:15 @ A2**
DRAWN BY: **FB**	CHECKED BY: **RD**	DATE: **27.04.2026**	REVISION.: P02

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Type B - Flatbed Under Existing Culvert 33kV

SCALE 1:20



Type B - Flatbed Under Existing Culvert 33kV

SCALE 1:20

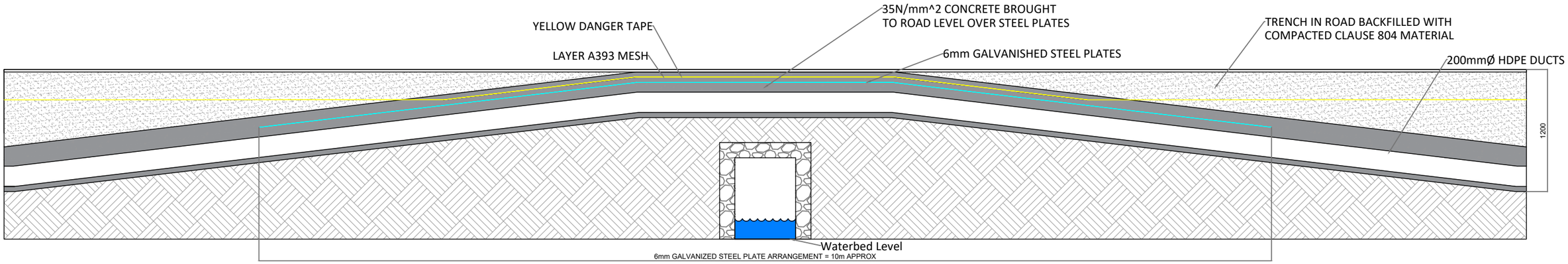
PROJECT TITLE:
Slieveacurry Renewable Energy Development

DRAWING TITLE:
Type B
Flatbed Under Existing Culvert 33kV

PROJECT No.:	DRAWING No.:	SCALE:
240718	Figure 4-37	1:20 @ A3

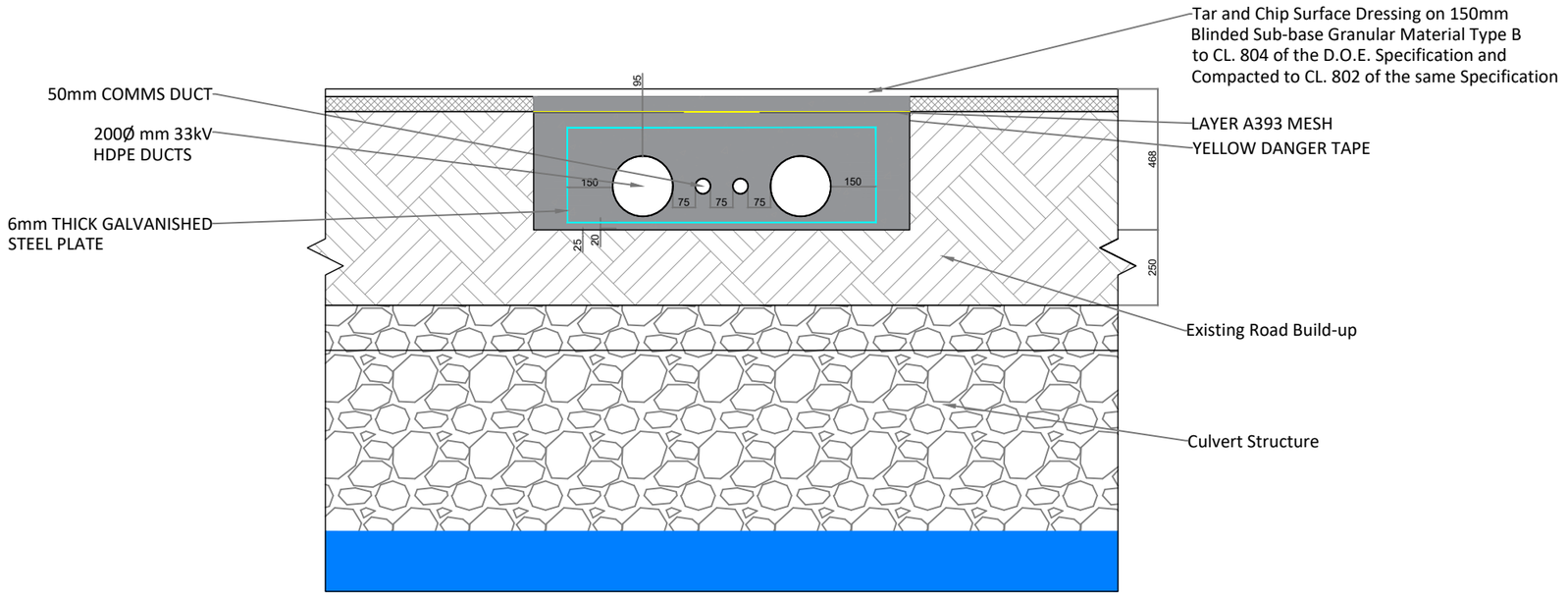
DRAWN BY:	CHECKED BY:	DATE:	REVISION.:
FB	RD	27.04.2026	P02

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Type C - Flatbed Over Existing Culvert 33kV

SCALE 1:40

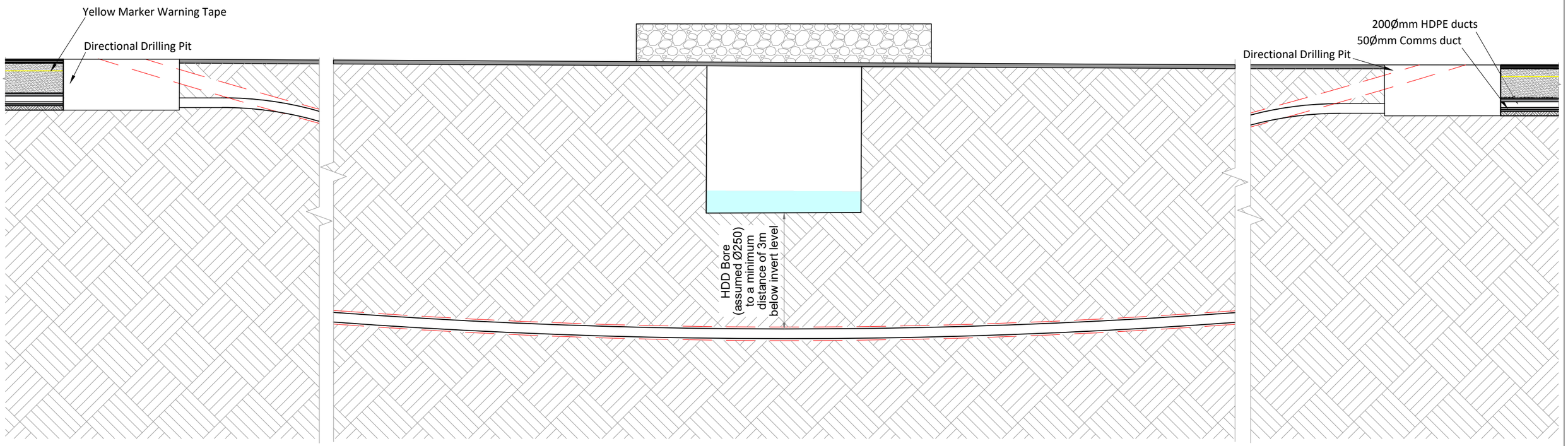


Type C - Flatbed Over Existing Culvert 33kV

SCALE 1:20

PROJECT TITLE: Slieveacurry Renewable Energy Development			
DRAWING TITLE: Type C Flatbed Over Existing Culvert 33kV			
PROJECT No.: 240718		DRAWING No.: Figure 4-38	SCALE: As Shown @A3
DRAWN BY: FB	CHECKED BY: RD	DATE: 27.04.2026	REVISION.: P02

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Type D - Horizontal Directional Drill Under Existing Watercourse Crossing

SCALE 1:100

PROJECT TITLE: **Slieveacurry Renewable Energy Development**			
DRAWING TITLE: **Type D - Horizontal Directional Drill Under Existing Watercourse Crossing**			
PROJECT No.: **240718**		DRAWING No.: **Figure 4-39**	SCALE: **1:100 @A3**
DRAWN BY: **FB**	CHECKED BY: **RD**	DATE: **27.04.2026**	REVISION.: P02

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4.9.9 Electricity Substation Extension and Control Building

The proposed substation extension will be constructed by the following methodology:

- The dimensions of the substation extension area have been designed to meet the current requirements of the ESB or EirGrid;
- One control building will be built within the substation compound;
- The foundations will be excavated down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it. An anti-bleeding admixture will be included in the concrete mix;
- The block work walls will be built up from the footings to damp proof course level and the floor slab constructed, having first located any ducts or trenches required by the follow on mechanical and electrical contractors;
- The block work will then be raised to wall plate level and the gables & internal partition walls formed. Scaffold will be erected around the outside of the building for this operation;
- The concrete roof slabs will be lifted into position using an adequately sized mobile crane;
- The timber roof trusses will then be lifted into position using a telescopic load all or mobile crane depending on site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather.
- The substation plinths will be shuttered and poured with reinforced concrete. An anti-bleeding admixture will be included in the concrete mix.
- The electrical equipment will be installed on a concrete plinth and commissioned.
- Perimeter fencing will be erected.
- The construction and components of the substation extension have been designed to ESB/EirGrid specifications.

4.9.10 Borrow Pit

The estimated volume to be extracted from the borrow pit for the construction of the Proposed Project is up to 100,000m^3. This figure presented is the anticipated maximum volumes; however, the actual volumes to be removed from the borrow pit will be confirmed at the time of construction and following detailed pre-construction site investigation works.

The borrow pit will be constructed as follows:

1. *Peat and overburden will be removed and temporarily stored in a localised area adjacent to the borrow pit location before being placed into the permanent peat/spoil management areas within the borrow pit. The rock within the proposed borrow pit footprint will be removed by either breaking or blasting depending on its excavatability, which will be determined from confirmatory ground investigation carried out at the proposed borrow pit. The ground investigation will comprise rotary core drilling with associated engineering logging including rock quality designation and strength and durability testing. Data from the available ground investigation surveys undertaken to date indicates that the rock can be removed by breaking, however blasting could also be used.*
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 pits, 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. Exposed*

sections of the rock slopes will be left with irregular faces and declivities to promote re-vegetation and provide a naturalistic appearance.

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. *Rock from the borrow pit will be excavated whilst leaving in place upstand/segment of intact rock which will help to retain the placed peat and spoil. The upstands/segments of intact rock will essentially act as an engineered rock berm inside the borrow pit (below ground level).*
6. *Excavation and infilling of the borrow pit will need to be sequenced and programmed. This will involve leaving in place upstands/segments of intact rock which will retain the placed peat and spoil and will allow the borrow pit to be developed and infilled in cells. These cells will be opened in sequence and filled as needed.*
7. *Infilling of the peat and spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance/rock buttress. The contractor excavating the rock will be required to develop the borrow pit in a way which will allow the excavated peat and spoil to be reinstated safely.*
8. *The use of temporary access ramps and long reach excavators during the placement of the excavated peat and spoil will be required.*
9. *The surface of the placed peat and spoil will be shaped 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 5o.*
10. *As the internal buttress is slightly higher than the retained peat, drains will be provided at regular intervals through the berms, at the same level as the top of the peat surface, to prevent ponding of water around the edges of the cells. These drains will be 150mm diameter flexible plastic drainage pipe or equivalent.*
11. *A layer of geogrid to strengthen the surface of the placed peat within the borrow pit will be required.*
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 locations 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.*

Two extraction methods have been assessed for breaking out the useful rock below: rock breaking and blasting.

4.9.10.1 Rock Breaking

Weathered or brittle rock can be extracted by means of a hydraulic excavator and a ripper attachment. This is a common extraction methodology where fragmented rock is encountered as it can be carefully

excavated in layers. In areas where stronger rock is encountered and cannot be removed by means of excavating then a rock breaking methodology may be used. Rock breaking equipment comprises a large hydraulic 360-degree excavator with a rock breaker attachment. Given the power required to break out tight and compact stone at depth, the machines are generally large and in the 40-60 tonne size range. Even where rock might appear weathered or brittle at the surface, the extent of weathering can quickly diminish with depth resulting in strong rock requiring significant force to extract it at depths of only a few metres.

A large rock breaking excavator progressively breaks out the solid rock from the ground in the borrow pit area. A smaller rock breaker, in the 30-40 tonne size range, then breaks the rocks down to a size that can then be fed into a crusher.

The extracted, broken rock is loaded into a mobile crusher using a wheeled loading shovel and crushed down to the necessary size of graded stone required for the on-site civil works. The same wheeled loader takes the stone from the crusher conveyor stockpile and stockpiles it elsewhere within the borrow pit, away from the immediate area of the crusher, until it is required elsewhere within the Site.

4.9.10.2 Rock Blasting

Where blasting is used as an extraction method, a mobile drilling rig is used to drill vertical boreholes into the area of rock that is to be blasted. A drilling rig will drill the necessary number of boreholes required for a single blast in approximately 3 to 4 days. The locations, depth and number of boreholes are determined by the blast engineer. This is a specialist role fulfilled by the blasting contractor.

The blast engineer will arrange for the necessary quantity of explosive to be brought to site to undertake a single blast. The management of explosives on-site and the actual blasting operation will be agreed in advance with and supervised by An Gardaí Siochána. The blast engineer sets the explosives in place in the boreholes, sets the charges, and fires the blast.

A properly designed blast should generate rock of a size that can be loaded directly into a mobile crusher, using the same wheeled loader outlined above. The same method is used for processing the rock generated from a blast, as would be used to process rock generated by rock breaking. Generally, the drilling rig will recommence drilling blast holes for the next blast as soon as one blast is finished. The potential impacts and control measures associated with noise and vibration from this extraction method are assessed in Chapter 12: Noise and Vibration. Any blasting will be carried out in accordance with the *Guidance on the Safe Use of Explosives in Quarries* (Safety and Health Commission for the Mining and Other Extractive Industries, 2002)[6] and the British Standard BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Noise*[7].

4.9.11 Peat and Spoil Management Areas

Peat and spoil will be managed locally within the Proposed Wind Farm Site, in dedicated peat and spoil management areas as shown on Figure 4-2 in the EIAR. The placement of peat and spoil within the peat and spoil management areas will be undertaken as follows:

(1) Excavated peat will be placed/spread across the clearfell areas around 4 no. of the Proposed Turbines.

(2) The peat placed will be restricted to a maximum height of 1.2m. Any weak/liquified peat (if any is encountered) will be placed within the proposed

[6] https://www.hsa.ie/eng/Publications_and_Forms/Publications/Mines_and_Quarries/Guidance%20on%20the%20Safe%20Use%20of%20Explosives%20in%20Quarries.pdf
[7] https://www.thenbs.com/PublicationIndex/documents/details?Pub=BSI&DocID=305965

borrow pit and not stored within these areas. Spoil will be placed to a height of 1.5m in the spoil management area adjacent to the borrow pit.

(3) The placement of peat within the placement areas will require the use of long reach excavators and low ground pressure machinery in particular for drainage works.

(4) The surface of the placed peat will be shaped to allow efficient run-off of surface water. Shaping of the surface of the peat will be carried out as placement of peat within the peat placement area progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability of the placed peat.

(5) Finished/shaped side slopes in the placed peat will be not greater than 1 (v): 4 (h). This slope inclination will be reviewed during construction, as appropriate.

(6) 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 placement areas.

(7) Movement monitoring instrumentation will be placed around the areas where peat has been placed. The locations where monitoring is required will be both upslope and downslope of the peat storage areas and should be monitored on a weekly basis during construction.

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

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

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

4.10 Community Gain Proposal

4.10.1 Background

The Proposed Project has the potential to have significant benefits for the local economy, by means of job creation, landowner payments and commercial rate payments. An important part of a renewable energy development, which Slieveacurry Ltd. (the Applicant) has been at the forefront of developing, is its Community Benefit Package. The concept of directing benefits from wind farms to the local community is promoted by the National Economic and Social Council (NESC) and Wind Energy Ireland (WEI) among others. While it may be simpler and easier to put a total fund aside for a wider community area, the Applicant is endeavouring to develop new ways to direct increased gain towards the local community with particular focus on those living closest to the Proposed Project.

The Applicant has given careful consideration to the issue of community gain arising from the Proposed Project, if permitted and constructed. Community gain from significant development proposals, including wind farms, whilst a relatively recent approach, is now a common consideration for developers and, indeed, planning authorities. This approach recognises that, with any significant wind farm proposal, the locality in which the Proposed Project is situated is making a significant contribution towards helping achieve national renewable energy and climate change targets, and the local community should derive some benefit from accommodating such a development in their locality.

Community gain proposals can take a number of forms, generally depending on the nature and location of the Proposed Project and the nature and make-up of the local community. The nature of the community gain proposal will be subject to discussions with, and input from, the local community. In some instances, funds are paid by the developer, either annually or as a one-off payment, to a community fund that is administered as agreed by the community. These funds may then be used for a variety of projects, such as environmental improvements, local amenities and facilities, voluntary and sporting groups and clubs, educational projects and energy efficiency improvement works, and direct payments could be made to nearby households.

4.10.2 Renewable Energy Support Scheme

The Renewable Electricity Support Scheme (RESS) is a Government of Ireland initiative that provides support to renewable electricity projects in Ireland. RESS is a pivotal component of the Programme for Government and Climate Action Plans 2021, 2023, 2024 and 2025, and is a major step in achieving Ireland's target of at least 80% renewable electricity by 2030. One of the key objectives of RESS is to provide an Enabling Framework for Community Participation through the provision of pathways and supports for communities to participate in renewable energy projects.

The current RESS 5 Terms and Conditions[8], published by the Department of Climate, Energy and Environment in August 2025, make some high-level provisions for how this type of benefit fund will work.

4.10.3 Community Benefit Fund

Throughout the community engagement on the Proposed Project, the RESS 2 guidelines have been used to demonstrate what benefits the community would receive should the project be developed under RESS. The RESS 2 T&C's have since been updated in RESS 5 and will likely change again before the Proposed Project is built. As such, the fund will be adjusted accordingly depending on what RESS iteration is relevant when the Proposed Project becoming operational.

Based on RESS 2 guidelines it is expected that for each megawatt hour (MWh) of electricity produced by the wind farm, the project will contribute €2 into a community fund for the first 15 years of operation of the Proposed Project.

Should the Proposed Project be developed under the RESS 2 T&C's, as a 54MW development it would attract a community contribution in the region of almost €331,000/year for the local community (estimated based on an average energy yield). The value of this fund would be directly proportional to the electricity generated by the wind farm. Under the RESS 2 T&Cs, the following is the recommended breakdown of the fund:

- **Direct payments** – to those living closest to the Proposed Project. A minimum €1,000 payment per annum for houses within 1km of the Proposed Project.
- **Energy Efficiency** – A minimum of 40% per year would be available for the development of
energy initiatives to benefit people living in the local area.
- **Administration costs** – a maximum of 10% per year will be made available for the administration and governance costs of the fund.
- **Support for local groups** – The remaining balance of this community benefit fund would be available for local groups, clubs and not for profit organisations that provide services in the local area. This would include services for the elderly, local community buildings, and the development of sporting facilities such as all-weather playing pitches etc.

The Community Benefit Fund belongs to the local community. The premise of the fund is that it should be used to bring about, significant, positive change in the local area. To make this happen, the first task will be to form a benefit fund development working group that clearly represents both the close neighbours to the project as well as nearby communities. The group will then work on designing the governance and structure of a community entity that would administer the Community Benefit Fund.

Should the Proposed Project not be developed under RESS, the Applicant is committing that for each megawatt hour (MWh) of electricity produced by the wind farm, the project will contribute €1 into a

[8] https://assets.gov.ie/static/documents/RESS_5_Terms_and_Conditions.pdf

community fund for the entire operational life of the Proposed Project. This would equate to an estimated annual fund of approximately €165,000 (using the same formula as above), which across the 35-year operational lifespan would result in funding in the order of €5.75 million to the local community which is a substantial contribution.

The number and size of grant allocations will be decided by a Community Fund liaison committee with various groups and projects benefiting to varying degrees depending on their funding requirement. Please see Appendix 2-2 Community Engagement Report for details.

4.11 Operation

As part of the Proposed Project planning application, permission is being sought for a 35-year operation period commencing from the date of full operational commissioning of the proposed turbines. During the operational period, on a day-to-day basis the wind turbines will operate automatically, responding by means of meteorological equipment and control systems to changes in wind speed and direction.

The wind turbines will be connected, and data relayed from the wind turbines to a central control unit at the proposed extension to the 110kV substation at Knockalassa which will facilitate off-site remote monitoring of the wind farm. Each turbine will be monitored off-site by the appointed Operations and Maintenance contractor (typically the wind turbine manufacturer) and a wind farm operations management company. The monitoring of turbine output, performance, wind speeds, and responses to any key alarms will be monitored off-site by both parties 24-hours per day. Regular on-site visual inspections will also be carried out by the wind farm operations management company.

4.11.1 Maintenance

Each turbine will be subject to a routine maintenance programme involving several checks and changing of consumables, including oil changes. The meteorological mast will be subject to a routine maintenance programme involving several checks and changing of instrumentation when required. In addition, there will be a requirement for unscheduled maintenance, which could vary between resetting alarms to major component changes requiring a crane. Typically, maintenance traffic will consist of four-wheel drive vehicles or vans. Maintenance of the internal site roads will involve filling potholes and maintaining road edge markers. Drainage maintenance will typically involve cleaning of drainage ditches when required to prevent water backing up.

The proposed extension to the existing Slievecallan 110kV substation and internal access roads will also require periodic maintenance. The proposed substation extension would be operational 24 hours per day, 7 days a week throughout the year. Substations can be operated remotely and manually. Supervisory operational and monitoring activities will be carried out remotely using a SCADA system, with the aid of computers connected via a telephone modem link. The following maintenance procedures will also be adhered.

- Periodic service and maintenance work which include some vehicle movement.
- For operational and inspection purposes, substation access is required.
- Servicing of the substation equipment will be carried out in accordance with the manufacturer's specifications, which would be expected to entail the following:
    - Six-month service – three-week visit
    - Annual service – six-week visit
    - Weekly visits as required.

Occasional technical problems may require maintenance visits by technical staff. During the six-month and annual service visits, some waste (lubricating and cooling oils, packaging from spare parts or equipment, unused paint, etc.) will arise. This will be recorded and removed from the Site and reused, recycled or disposed of in accordance with the relevant legislation in an authorised facility.

It is estimated that 1-2 daily visits will be made to the Site for authorised persons and vehicles to undertake minor routine maintenance and inspection, if and when required. Although the level of activity required for the maintenance of the built infrastructure Proposed Project is minimal, the impacts associated with traffic volumes for this period are assessed in Chapter 15 Material Assets: Traffic and Transport.

4.11.2 Monitoring

Section 8 of the CEMP sets out a programme of monitoring required for the operational phase of the Proposed Project. The CEMP should be consulted for detailed information on the monitoring requirements during the operational phase, however a brief summary of the key information is provided below:

- Monthly water sampling and laboratory analysis will be undertaken for six months during the operational phase.
- The drainage system will be monitored in the operational phase until such a time that all areas that have been reinstated become re-vegetated and the natural drainage regime has been restored.
- Post-construction bird monitoring which includes breeding bird surveys, winter roost surveys and corpse searching on the site determine the level of fatalities for the site as a result of collisions with the installed turbines. These surveys will be completed in accordance with guidelines issued by the Scottish Natural Heritage (SNH, 2009)
- Post-construction bat monitoring will be undertaken for at least three years' post construction of the renewable energy development. The monitoring will also include corpse searching in the areas surrounding the turbines to gather data on any actual collisions.
- Post-construction habitat condition monitoring of the Proposed Enhancement Site as per the BMEP to ensure the success of the proposed measures remains long-term
- Monitoring for shadow flicker at properties within the study area where any exceedance of the shadow flicker limit has been predicted as outlined in Chapter 5.
- Post turbine commissioning noise monitoring.

4.12 Decommissioning

The wind turbines proposed as part of the Proposed Project are expected to have a lifespan of approximately 35-years. Following the end of their useful life, the equipment may be replaced with a new technology, subject to planning permission being obtained, or the Proposed Project will be decommissioned fully.

Upon decommissioning of the Proposed Project, the wind turbines and the meteorological mast will be disassembled in reverse order to how they were erected. All above ground turbine and mast components would be separated and removed off-site for recycling. Turbine and mast foundations would remain underground and would be covered with earth and allowed to revegetate. Leaving the foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in significant temporary environment nuisances such as noise, dust and/or vibration. Site roadways will be used during the operational phase by farm machinery and will provide a useful means of extracting the commercial forestry crop which exists on at the Site and therefore will be retained post decommissioning to facilitate these activities.

The underground electrical cabling connecting the turbines to the proposed extension of the 110kV substation will be removed from the cable ducts. The cabling will be pulled from the cable ducts using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at the original cable jointing pits which will be excavated using a mechanical excavator and will be fully re-instated once the cables are removed. The cable ducting will be left in-situ as it is

considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance. The cable materials will be transferred to a suitable recycling or recovery facility.

The proposed extension to the 110kV electricity substation will remain in place as it will be part of the Electricity Grid under the ownership and control of the ESB Networks and EirGrid.

A Decommissioning Plan has been prepared (Appendix 4-6). The Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will agree with the competent authority at that time. The potential for effects during the decommissioning phase of the Proposed Project has been fully assessed in the EIAR.

As noted in the Scottish Natural Heritage report (SNH) *Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms* (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the Proposed Project, technological advances and preferred approaches to reinstatement are likely to change. According to the SNH guidance, it is therefore:

> *"best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm".*