

## 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 current application for planning permission is being made to An Coimisiún Pleanála (ACP) in accordance with Section 37E of the Planning and Development Act 2000, (as amended) for the Proposed Project. This chapter also describes elements of the overall project which are not subject to this planning application but are assessed in this EIAR. Construction methodologies for the main infrastructural components of the Proposed Project are also included in this chapter of the EIAR.

For the purpose of this application the Proposed Project will consist of the following:

- i. 9 no. wind turbines with the following parameters:*
  - *Total turbine tip height of 180 metres;*
  - *A rotor blade diameter of 150 to 162 metres;*
  - *A hub height of 99 to 105 metres;*
- ii. Permanent turbine foundations, hard-standing and assembly areas;*
- iii. Underground electrical (33kV) and communications cabling;*
- iv. 1 no. temporary construction compound (including site offices and welfare facilities);*
- v. A meteorological mast with a height of 100 metres, security fencing and associated foundation and hard-standing area;*
- vi. 1 no. new site entrance on the R332 in the townland Lisavally;*
- vii. 1 no. new access and egress point off the L6056 Local Road in the townland of Dangan Eighter;*
- viii. 1 no. new access and egress point on to an existing access track in the townland of Dangan Eighter;*
- ix. 2 no. new access and egress points off the L6301 Local Road in the townland of Cooloo and Lecarrow;*
- x. Upgrade of existing site tracks/roads and provision of new site access roads, clear span crossings, junctions and hard-standing areas;*
- xi. A new temporary access road from N63 national road and to R332 Regional Road in the townland of Slievegorm to facilitate the delivery of turbine components and other abnormal sized loads;*
- xii. Demolition of an existing derelict house and adjacent outbuilding in the townland of Cooloo;*
- xiii. Peat and Spoil Management Areas;*
- xiv. Tree felling and hedgerow removal;*
- xv. Biodiversity Management and Enhancement measures;*
- xvi. Site Drainage;*
- xvii. Operational Stage site signage; and*
- xviii. All ancillary apparatus and site development works above and below ground, including soft and hard landscaping.*

The 'Proposed Project' which entails the Proposed Wind Farm and Proposed Grid Connection has been assessed within this EIAR. The Proposed Project is located within the EIAR Study Boundary or the 'Site' and measures approx. 355 hectares. The Proposed Project is illustrated on Figure 4-1.

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

## 4.2

## Proposed Project Layout

The overall layout of the Proposed Project is shown on Figure 4-1, this includes the Proposed Wind Farm and the Proposed Grid Connection.

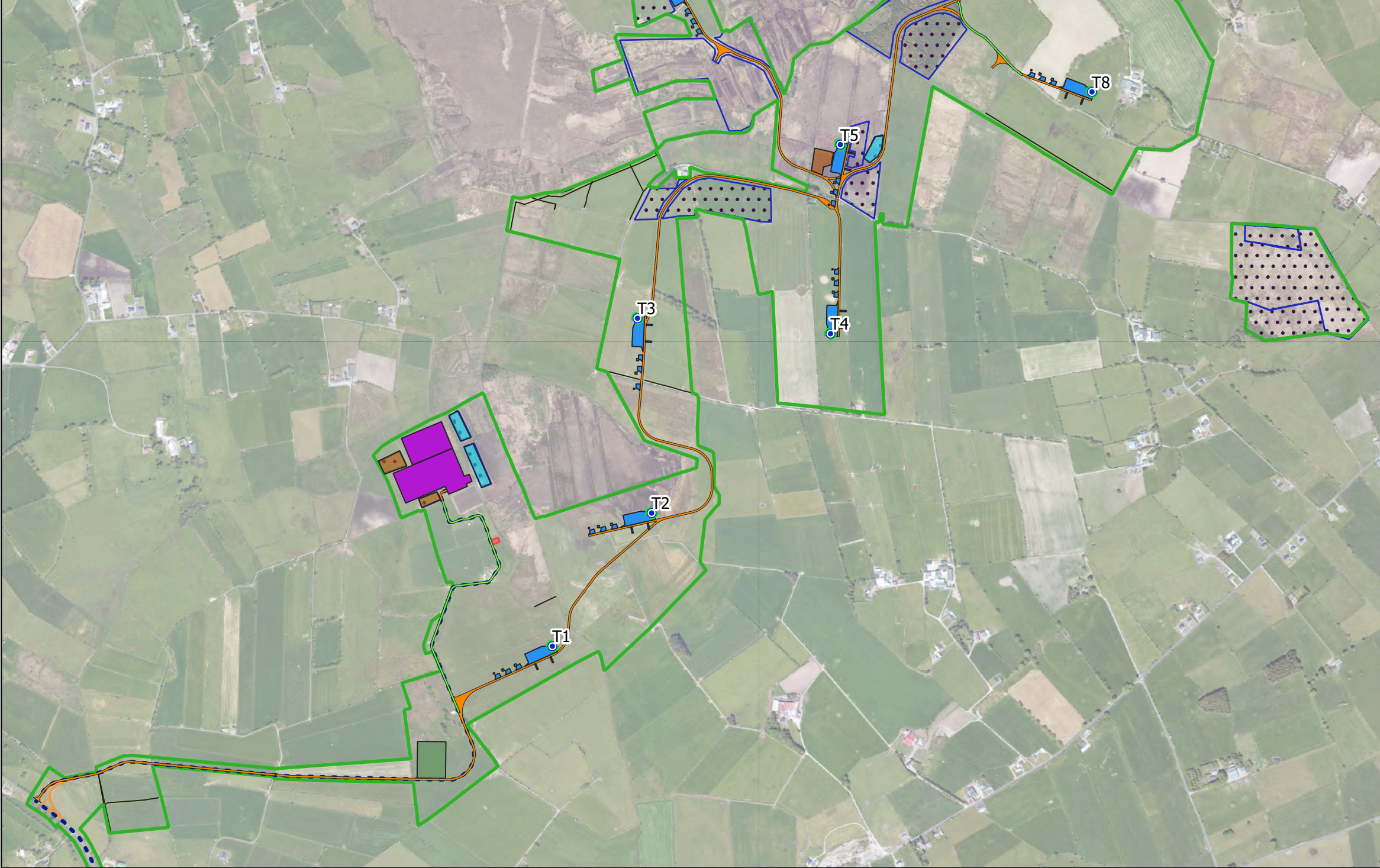
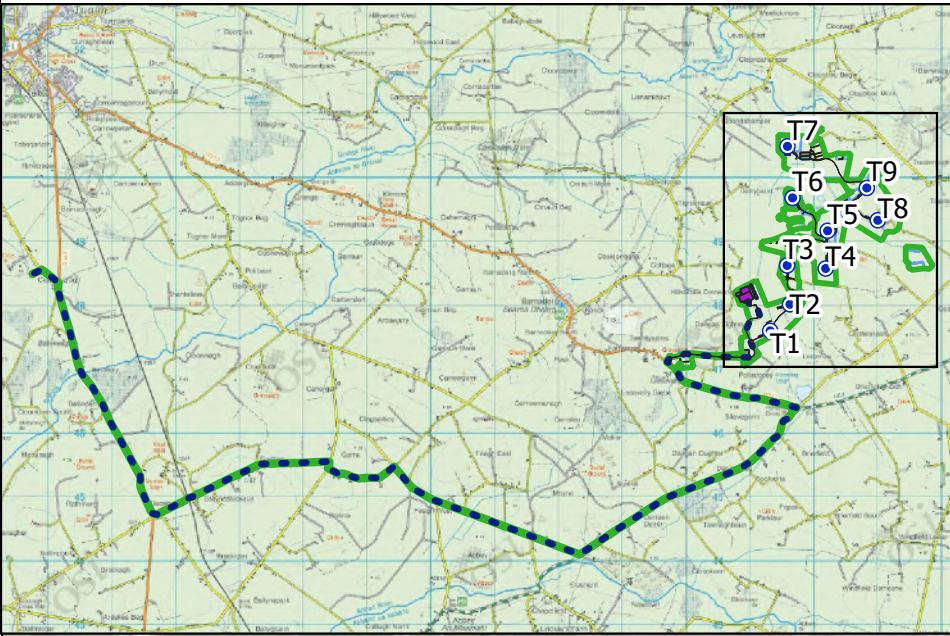
The layout of the Proposed Project has been designed to minimise the potential environmental effects of its construction, operation and decommissioning, while at the same time maximising the energy yield of the wind resource passing over the Site. Constraint studies, as described in Section 3.5.1 of Chapter 3 of this EIAR, have been carried out to ensure that turbines and all ancillary infrastructure are located in the most appropriate areas of the Proposed Wind Farm site and makes use of the existing tracks within the Proposed Wind Farm site where appropriate, thereby minimise the extent of proposed new roads required. Similarly, as described in Section 3.5.4 of this EIAR, an assessment of various alternative grid connection methods and routes was undertaken to ensure that the most appropriate route for the Proposed Grid Connection was selected.

Detailed drawings of the Proposed Wind Farm can be found in Appendix 4-1. Drawings of the Proposed Grid Connection (assessed within this EIAR) can be found in Appendix 4-4.

As part of the design process for the Proposed Project, numerous intrusive site investigations were undertaken across the Proposed Wind Farm site, to provide detail and clarity on the nature and extent of subsoils and bedrock as a means of characterising the Proposed Wind Farm site. This assisted in providing additional information on the most suitable location for turbines and associated infrastructure. Full details of intrusive site investigations is outlined in Chapter 8 Lands, Soils and Geology of this EIAR.



Proposed Grid Connection



Map Legend

- EIAR Site Boundary
- Turbine Layout
- Turbine Crane Platform and Hardstanding
- Turbine Foundations
- Proposed New Roads
- Existing Roads to be Upgraded
- Proposed Met Mast
- Temporary Construction Compound
- Substation and BESS Compound
- Peat and Spoil Management Areas
- Peat Management Areas
- Spoil Magement Areass
- Biodiversity Enhancement Areas
- Linear Enhancment
- Grid Connection Route
- TDR Overrun Area



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Drawing Title

Proposed Project Layout

Project Title

Cooloo Wind Farm, Co. Galway

Drawn By

CF

Checked By

EMcC

Project No.

190723

Drawing No.

Figure 4-1

Scale

1:14,000

Date

2025-09-25



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



## 4.3 Proposed Project Components

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

### 4.3.1 Proposed Wind Farm

#### 4.3.1.1 Wind Turbines

##### 4.3.1.1.1 Turbine Locations

The proposed wind turbine layout has been optimised using wind farm design software (a combination of WAsP and WindPro) to maximise the energy yield from the Site, 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 turbine locations are listed in Table 4-1 below. The final 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. Additionally, in accordance with the micro-siting of the turbine positions may be required within the criteria set out in the 2006 Guidelines and draft 2019 Guidelines.

Table 4-1 Proposed Wind Turbine Locations and Top of Foundation level

| Turbine | ITM X  | ITM Y  | Top of Foundation Levels<br>(metre OD) |
|---------|--------|--------|----------------------------------------|
| 1       | 555297 | 747613 | 73m                                    |
| 2       | 555608 | 748030 | 76m                                    |
| 3       | 555563 | 748640 | 75.5m                                  |
| 4       | 556167 | 748591 | 83.5m                                  |
| 5       | 556198 | 749183 | 66.5m                                  |
| 6       | 555648 | 749699 | 73.5m                                  |
| 7       | 555568 | 750508 | 70m                                    |
| 8       | 556986 | 749348 | 76m                                    |
| 9       | 556813 | 749855 | 66.5m                                  |

##### 4.3.1.1.2 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 wind turbines to be installed on the Proposed Wind Farm site will have the following dimension range:

- Turbine Tip Height – 180 metres
- Hub Height – Maximum height 105 metres, Minimum height 99 metres
- Rotor Diameter: - Maximum diameter 162 metre, Minimum 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 wind turbines that will be installed on the Proposed Wind Farm site 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 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 WEDGs and *'The Influence of Colour on the Aesthetics of Wind Turbine Generators'* (ETSU, 1999).

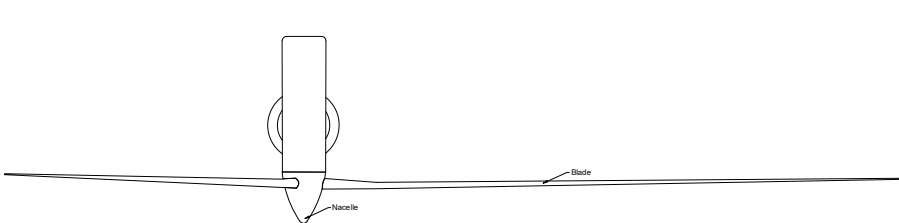
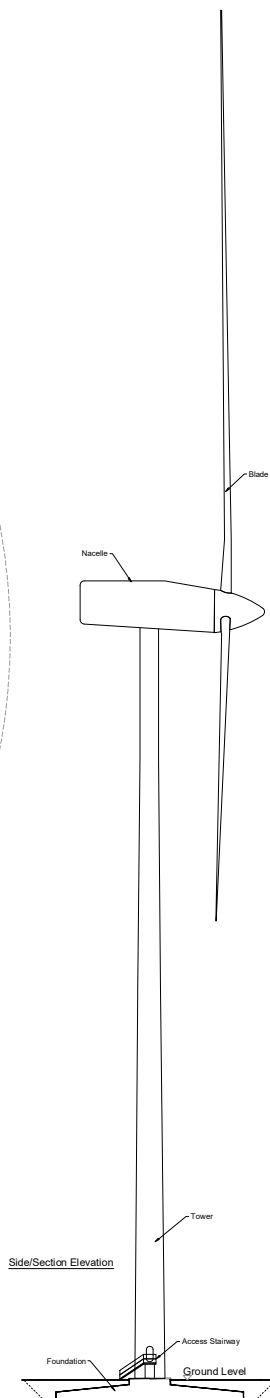
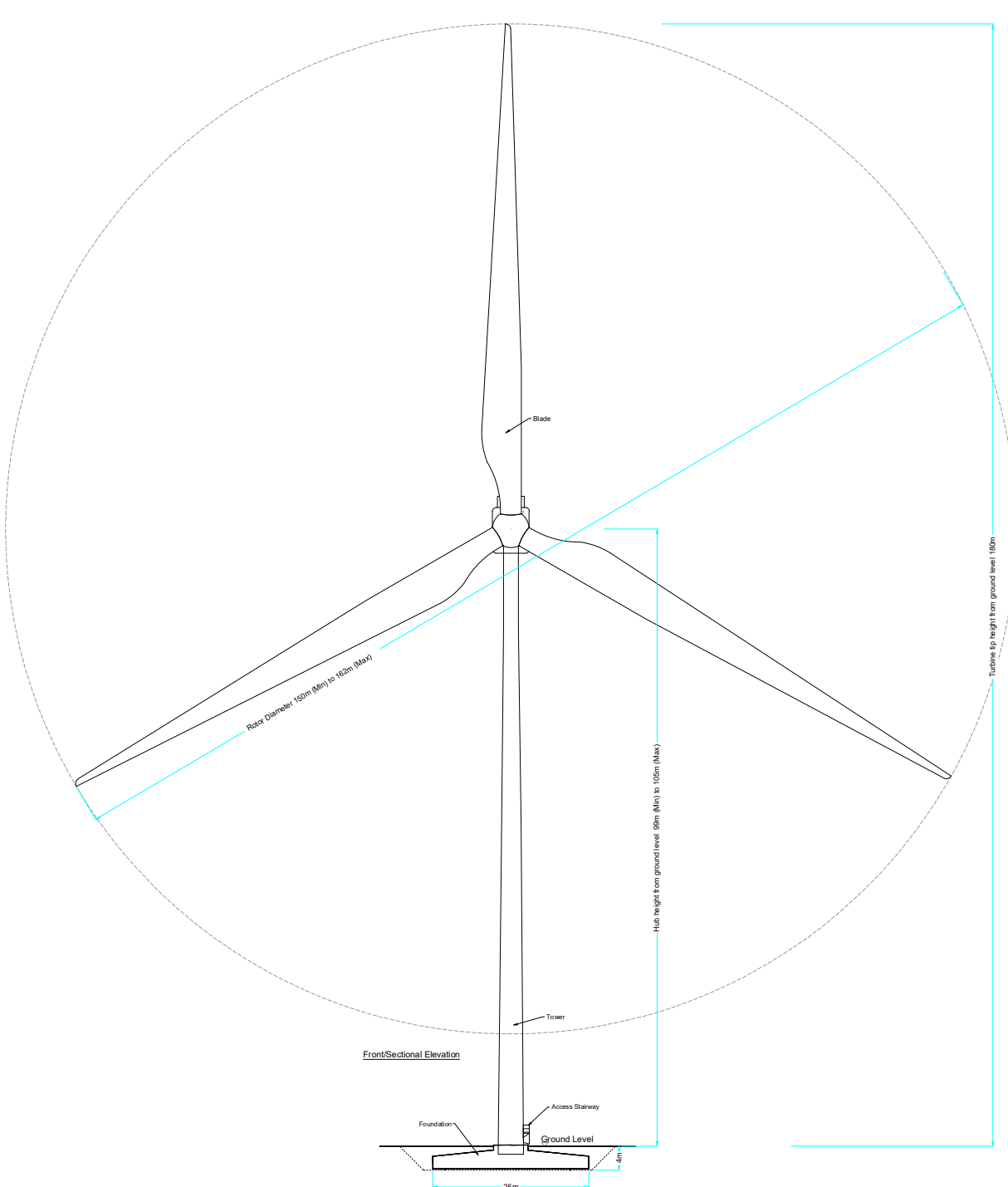
As detailed in Section 1.7.3 of Chapter 1, for the purposes of this EIAR and in compliance with the Opinion issued by ACP and further detailed in Chapter 2, various types and sizes of wind turbines, within the proposed ranges outlined above, have been selected for the purpose of assessing the likely environmental effects of the turbines throughout this EIAR. This allows for a robust assessment of the likely environmental effects of wind turbines within the proposed dimensional range. Turbine design parameters have a bearing on the assessment of shadow flicker, noise, visual impact, traffic and transport and ecology (specifically birds), as addressed elsewhere in this EIAR.

It should also be noted that the assessment of the development footprint of the Proposed Project within this EIAR, is based on the maximum potential footprint for all of the infrastructural elements. This precautionary approach is taken as the assessment of the maximum development footprint will, in the absence of mitigation measures, give rise to the greatest potential for significant effects. Should the development footprint be less than the maximum, this in itself will further mitigate the assessed effects.

A drawing of the proposed wind turbine is shown in Figure 4-2. Figure 4-2 also shows the turbine base layout, including turbine foundation, hard standing area, assembly area, access road and surrounding works area.

The individual components of a geared wind turbine nacelle and hub are shown in Figure 4-3 below.





- Drawing Notes**
- Proposed wind turbines to have a maximum ground to blade tip height of 180m, rotor diameter of 150m - 162m and hub height of 99m - 105m
  - Ground level represents the top of turbine foundation.

|                                                         |                                 |                          |                              |
|---------------------------------------------------------|---------------------------------|--------------------------|------------------------------|
| PROJECT TITLE: <b>Cooloo Wind Farm, Co. Galway</b>      |                                 |                          |                              |
| DRAWING TITLE: <b>Wind Turbine Elevation &amp; Plan</b> |                                 |                          |                              |
| PROJECT No.: <b>231103</b>                              | DRAWING No.: <b>190723 - 23</b> | SCALE: <b>1:500 @ A1</b> |                              |
| DRAWN BY: <b>JOB</b>                                    | CHECKED BY: <b>RD</b>           | DATE: <b>24.09.2025</b>  | REVISION.: <b>Figure 4-2</b> |



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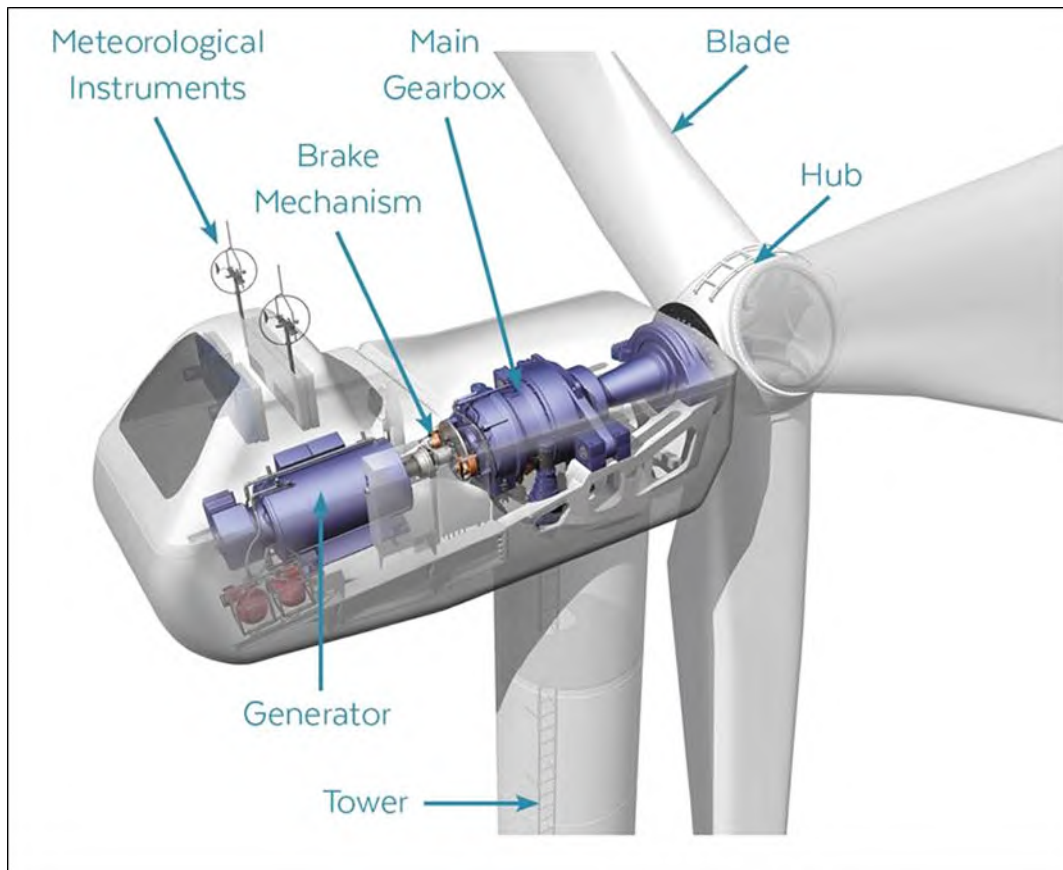


Figure 4-3 Turbine nacelle and hub components

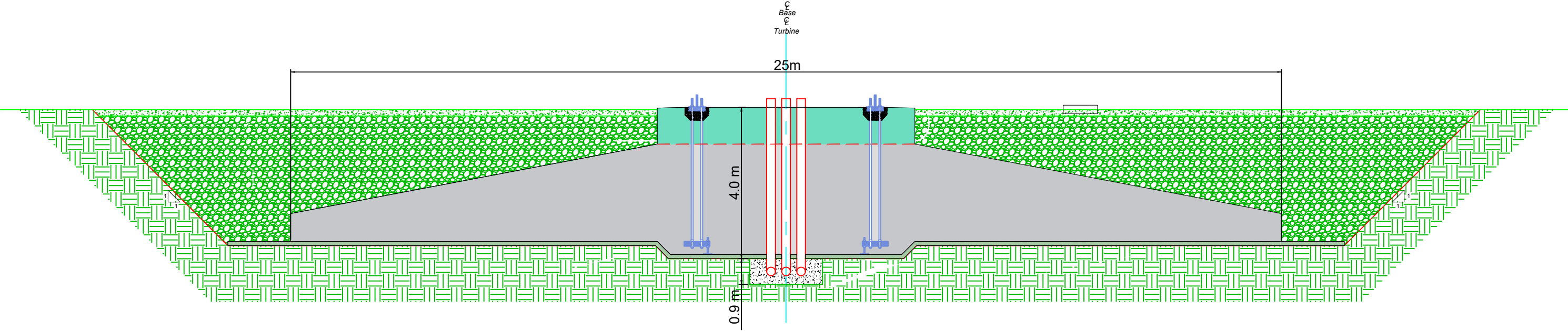
#### 4.3.1.1.3 Turbine Foundations

Turbine foundations are constructed by excavating soil to sub-formation level. Imported structural fill and blinding is placed and compacted to formation level. A reinforced concrete base is cast in-situ. The turbine foundation transmits any load on the wind turbine into the ground. The approximate horizontal and vertical extent of the turbine reinforced concrete foundation will be 25m and 4m respectively. Where ground conditions are unfavourable to excavate and replace, piles will be installed to formation level. Please see Figure 4-4, Figure 4-5 and Figure 4-6 for gravity, bored and piled foundations.

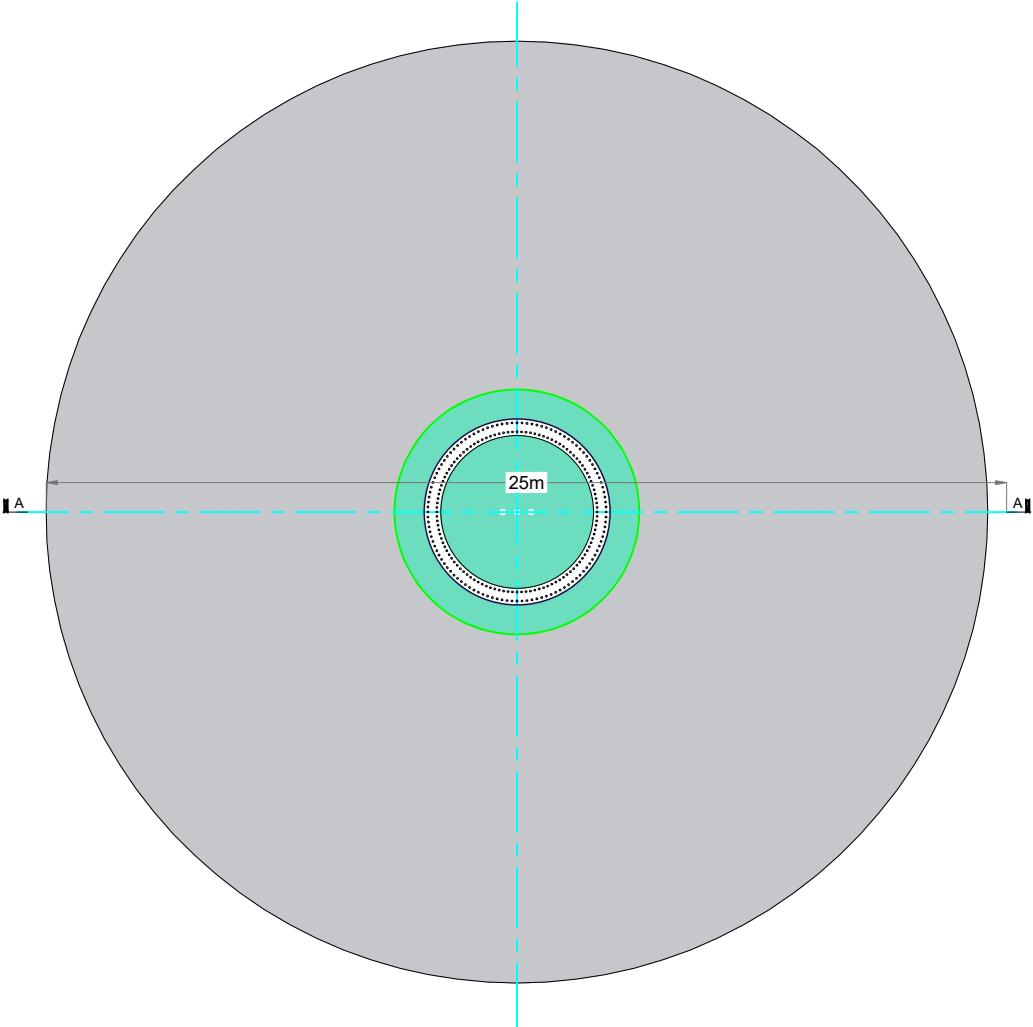
The size of the concrete foundation will be approx. 25m in diameter, based off current models of this scale, but will depend on the loads specified by the turbine manufacturer selected from the competitive tender process. After the formation level has been reached, the turbine “Anchor Cage” is levelled, and reinforcing steel is built up around and through the anchor cage (Plate 4-2 below). The outside of the foundation is shuttered with formwork to allow the pouring of concrete and is backfilled with granular fill to finished surface level (Plate 4-3 below).



Section A-A  
Scale 1:100



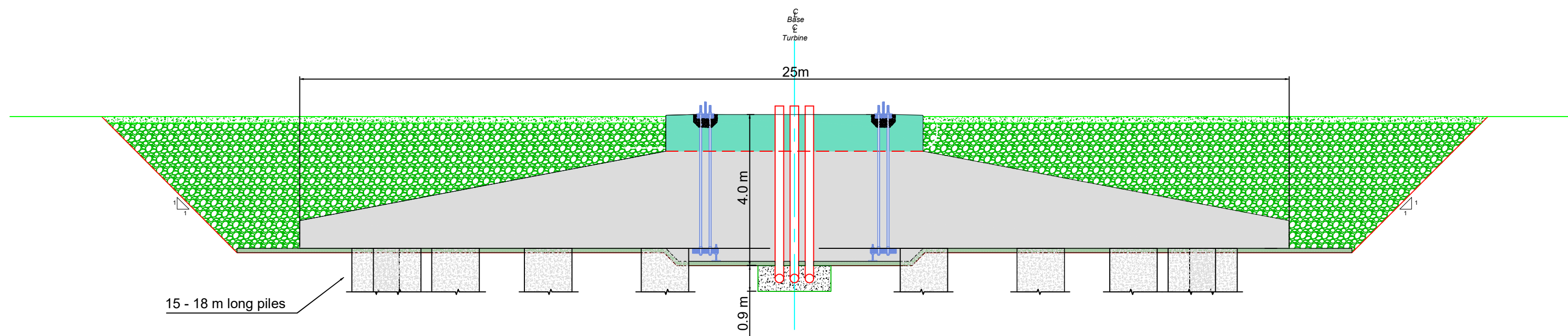
Plan  
Scale: 1:200



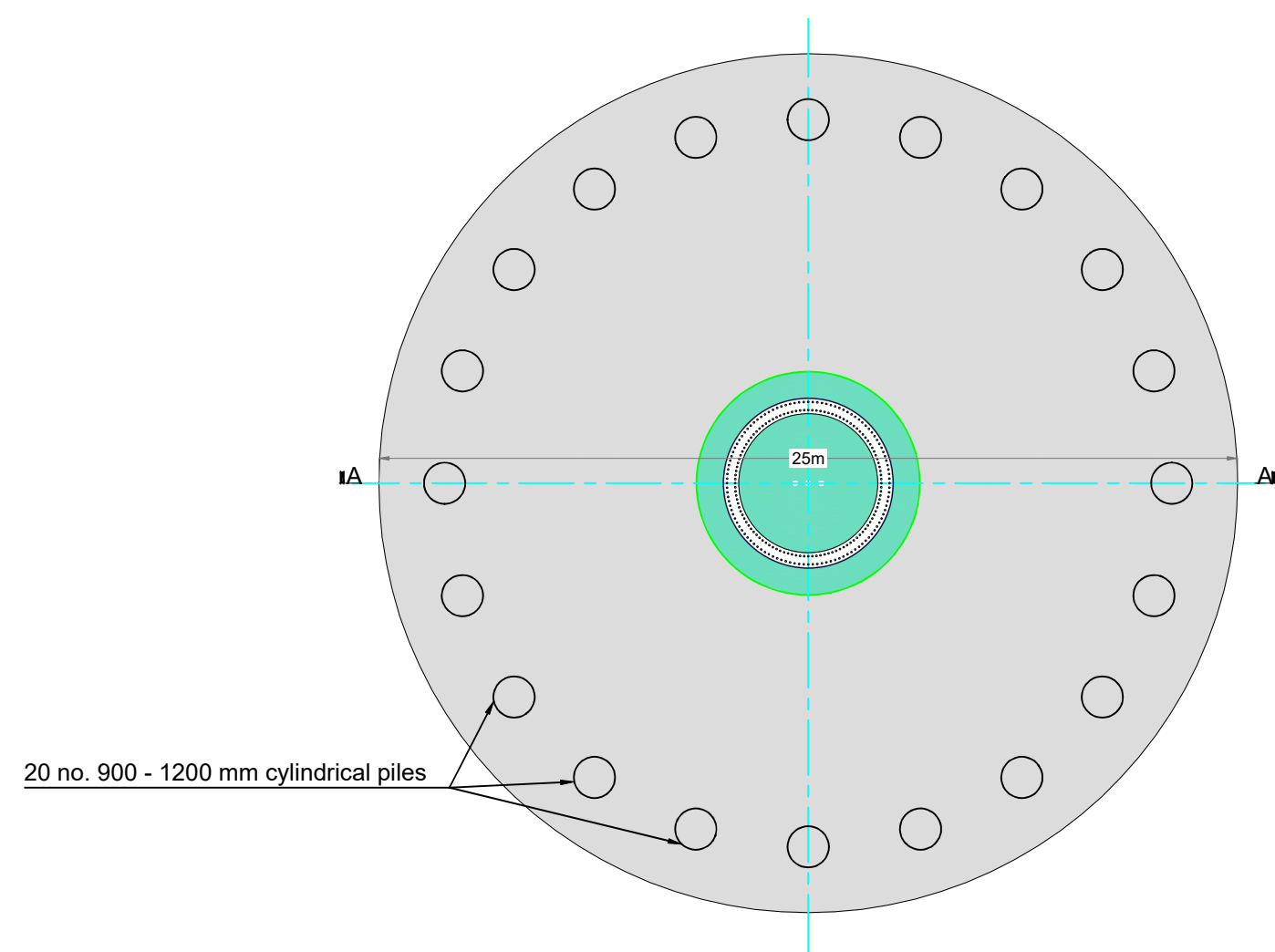
|                                                        |                                    |                                 |
|--------------------------------------------------------|------------------------------------|---------------------------------|
| PROJECT TITLE: <b>Cooloo Wind Farm,<br/>Co. Galway</b> |                                    |                                 |
| DRAWING TITLE: <b>Gravity Foundations<br/>Details</b>  |                                    |                                 |
| PROJECT No.:<br><b>231103</b>                          | DRAWING No.:<br><b>190723 - 24</b> | SCALE:<br><b>As Shown @ A3</b>  |
| DRAWN<br>BY: <b>JOB</b>                                | CHECKED<br>BY: <b>RD</b>           | DATE:<br><b>24.09.2025</b>      |
|                                                        |                                    | REVISION.:<br><b>Figure 4-4</b> |



Section A-A  
Scale 1:100



Plan  
Scale: 1:200

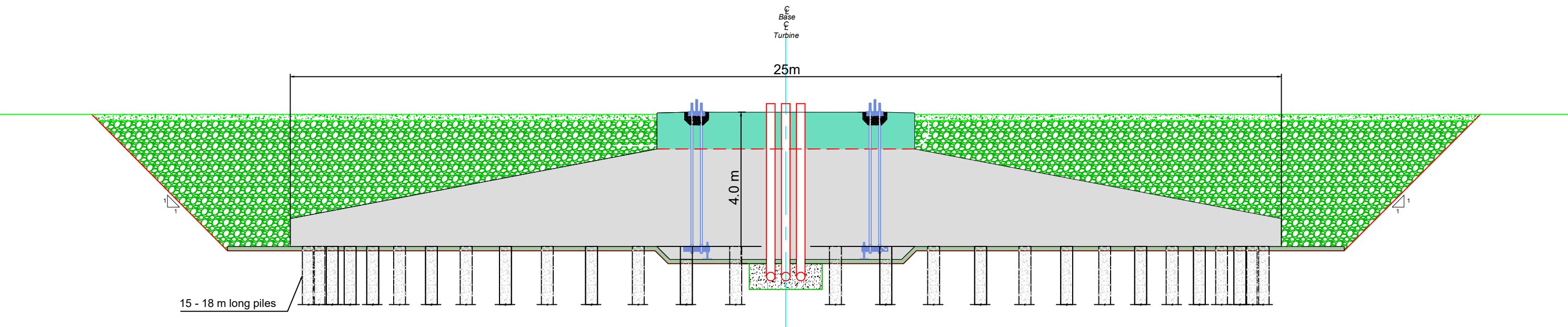


|                                                          |                                    |                                |                                 |
|----------------------------------------------------------|------------------------------------|--------------------------------|---------------------------------|
| PROJECT TITLE: <b>Cooloo Wind Farm,<br/>Co. Galway</b>   |                                    |                                |                                 |
| DRAWING TITLE: <b>Bored Pile Foundations<br/>Details</b> |                                    |                                |                                 |
| PROJECT No.:<br><b>231103</b>                            | DRAWING No.:<br><b>190723 - 25</b> | SCALE:<br><b>As Shown @ A3</b> |                                 |
| DRAWN<br>BY: <b>JOB</b>                                  | CHECKED<br>BY: <b>RD</b>           | DATE:<br><b>24.09.2025</b>     | REVISION.:<br><b>Figure 4-5</b> |

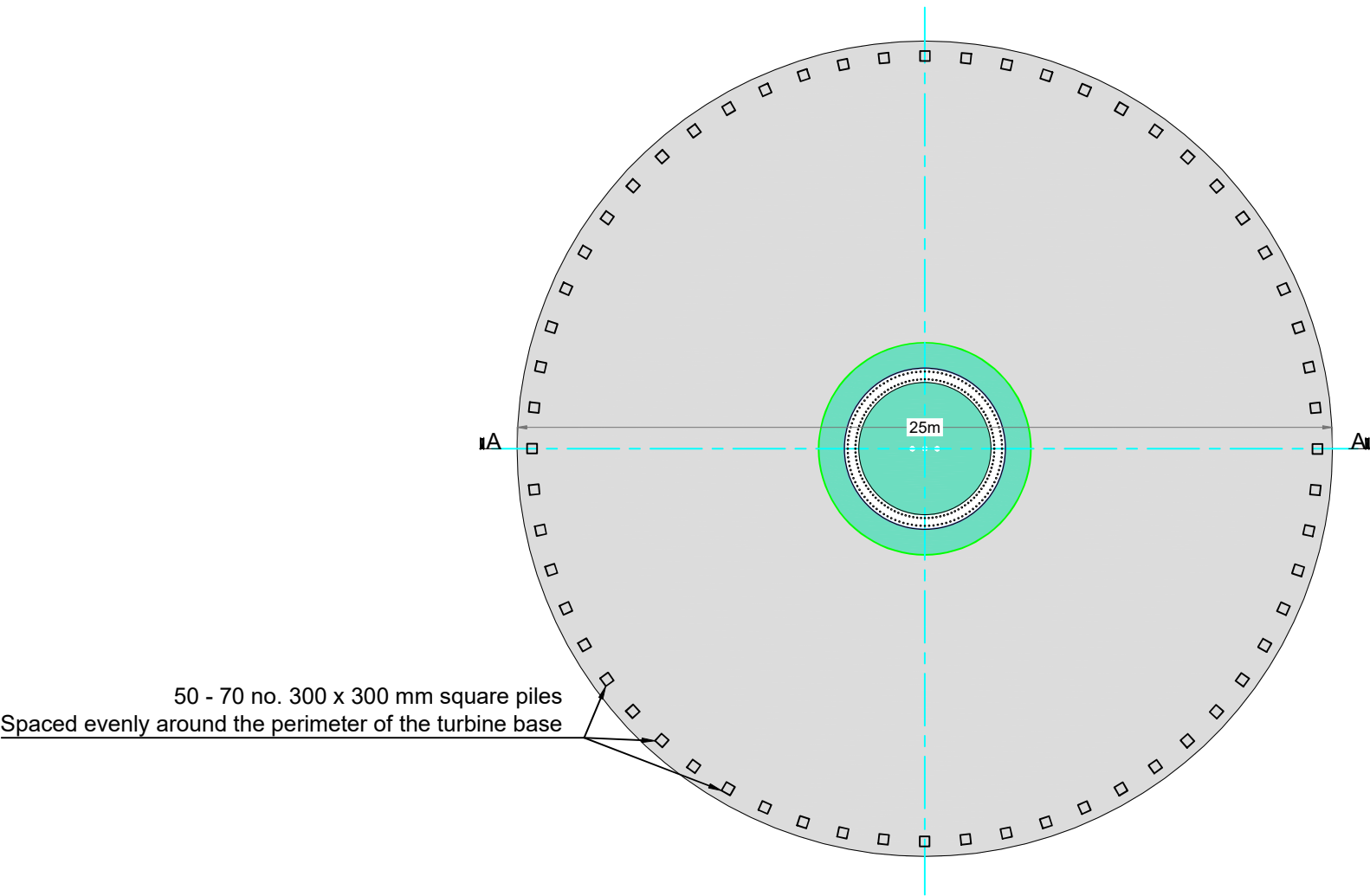


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Section A-A  
Scale 1:100



Plan  
Scale: 1:200



|                                                           |                                    |                                |                                 |
|-----------------------------------------------------------|------------------------------------|--------------------------------|---------------------------------|
| PROJECT TITLE: <b>Cooloo Wind Farm,<br/>Co. Galway</b>    |                                    |                                |                                 |
| DRAWING TITLE: <b>Driven Pile Foundations<br/>Details</b> |                                    |                                |                                 |
| PROJECT No.:<br><b>231103</b>                             | DRAWING No.:<br><b>190723 - 26</b> | SCALE:<br><b>As Shown @ A3</b> |                                 |
| DRAWN<br>BY: <b>JOB</b>                                   | CHECKED<br>BY: <b>RD</b>           | DATE:<br><b>24.09.2025</b>     | REVISION.:<br><b>Figure 4-6</b> |







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



Plate 4-3 Finished Turbine Base

#### 4.3.1.1.4 **Hard Standing Areas**

Hard standing areas consisting of levelled and compacted hardcore are required around each turbine base. These will 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. The hardstands also allow for the offloading and storage of turbine components, and generally provide a safe, level working area around each turbine position. The hard-standing areas are extended to cover the turbine foundations, once completed, by placing crushed stone over the foundation. The arrangement and positioning of hard standing areas are dictated by turbine suppliers. Figure 4-7 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 and using the precautionary principle, represent the maximum sizes required.

#### 4.3.1.1.5 **Assembly Area**

Levelled assembly areas will be located on either side of the hard-standing area as shown on Figure 4-7. These assembly areas are required for offloading turbine blades or turbine blade segments, tower sections and hub from trucks until they are ready to be lifted into position by cranes and to assist the main crane during turbine assembly. The layout represents the full extent of the assembly areas but may be subject to optimisation according to the turbine supplier's requirements.



- Project Design Drawing Notes**
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  2. Drawings not to be used for construction/contract conditions.
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  4. Do not scale off this drawing. Figured metric dimensions only should be taken off this drawing.
  5. All contractors, whether main or sub-contractors, must visit the site and are responsible for taking and checking any and all dimensions and levels that relate to the works.
  6. The use of or reliance upon this drawing shall be deemed to be acceptance of these conditions of use unless otherwise agreed in writing, such written agreement to be sought from and issued by the copyright holder to the use or reliance upon this drawing.
  7. Layout plans show Turbine rotor diameter as per turbine drawing.
  8. Final levels may vary depending on local ground conditions.

**Drawing Legend**

- Planning Application Boundary
- Proposed Road
- Electrical Cable Trench
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill
- Linear Replanting
- Watercourse



|                                                     |                |                                 |                         |
|-----------------------------------------------------|----------------|---------------------------------|-------------------------|
| PROJECT TITLE:                                      |                | Cooloo Wind Farm,<br>Co. Galway |                         |
| DRAWING TITLE:                                      |                |                                 |                         |
| Turbine Base Layout<br>(Turbine 1 Layout Sheet)     |                |                                 |                         |
| PROJECT No.:<br>190723                              |                | DRAWING No.:<br>190723 - 14     | SCALE:<br>1:500 @ A1    |
| DRAWN BY: JOB                                       | CHECKED BY: RD | DATE:<br>24.09.2025             | REVISION:<br>Figure 4-7 |
| OS SHEET No.:<br>2816, 2817, 2884, 2885, 2953, 2954 |                |                                 |                         |



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#### 4.3.1.1.6 Generating Capacity

Modern wind turbine generators currently have a typical generating capacity in the 6 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. As noted in Section 1.4 of Chapter 1 Introduction, the Proposed Wind Farm would have a combined generating capacity of between 54 to 64.8 MW. The exact generating capacity of the installed turbine will be designed to match the wind regime on the Site and will be determined by the selected manufacturer.

For the purposes of this EIAR, a rated generating capacity of 7 MW has been chosen to calculate the potential capacity of the proposed 9-turbine renewable energy development, which would result in an estimated installed capacity of 63 MW.

Based on this estimated installed capacity, the Proposed Wind Farm therefore has the potential to produce 193,158 MWh (Megawatt hours) of electricity per year, based on the following calculation:

$$A \times B \times C = \text{Megawatt Hours of electricity produced per year}$$

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 35%<sup>1</sup> is used here.

C = Rated output of the wind farm: 63 MW

The MWh of electricity produced by the Proposed Wind Farm would be sufficient to supply a range of approx. 45,990 Irish households with electricity per year, based on the average Irish household using 4.2 MWh of electricity (this latest figure is available from the March 2017 CER Review of Typical Consumption Figures Decision)<sup>2</sup>.

For context, the 2022 Census of Ireland recorded a total of 68,021 occupied households in Co. Galway. Per annum, based on a capacity factor of 35%, the Proposed Project would therefore produce sufficient electricity for the equivalent of 68% of the households in Co. Galway.

With regards to the modern turbine range, i.e., those available on the market at the time of writing, of 6 – 7.2MW, the resulting electricity produced would range from 165,564MWh to 198,677MWh per annum. The lower end of this range (165,564MWh) would be sufficient to supply approx. 39,420 Irish households with electricity per year, based on the average Irish household using 4.2MWh of electricity. The higher end of this range (198,677MWh) would be sufficient to supply approx. 47,304 Irish households with electricity per year, based on the average Irish household using 4.2MWh of electricity. For context, based on the 2022 Census of Ireland results for Co. Galway, the output range would produce sufficient electricity for the equivalent of 60% and 68% respectively.

<sup>1</sup> Enduring Connection Policy 2.3 Solar and Wind Constraints Report: Assumptions and Methodology  
<<https://cms.eirgrid.ie/sites/default/files/publications/ECP-2.3-Solar-and-Wind-Constraints-Report-Assumptions-and-Methodology-v1.1.pdf>> The Proposed Project is located within the B wind region for Ireland with an associated capacity factor of 35%.

<sup>2</sup> Commission for Regulation of Utilities 2017: Review of Typical Consumption Figures – Decision Paper [https://www.cru.ie/document\\_group/review-of-typical-consumption-figures-decision-paper/](https://www.cru.ie/document_group/review-of-typical-consumption-figures-decision-paper/)

### 4.3.1.2 Site Roads

#### 4.3.1.2.1 Road Construction Types

To provide access within the Proposed Wind Farm site and to connect the wind turbines and associated, infrastructure, existing roads and tracks will need to be upgraded, and new access roads will need to be constructed. The road construction design, as per the *Peat and Spoil Management Plan* in Appendix 4-2 which was produced by GDG, has taken into account the following key factors:

1. *Constructability;*
2. *Serviceability requirements for construction and WTG component delivery and maintenance vehicles;*
3. *Peat depth;*
4. *Horizontal longitudinal and cross-fall gradient of the tracks;*
5. *Minimisation of excavation arisings; and*
6. *The 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. 1.2km of existing site roads and tracks, and to construct approx. 9.3km of new access roads.

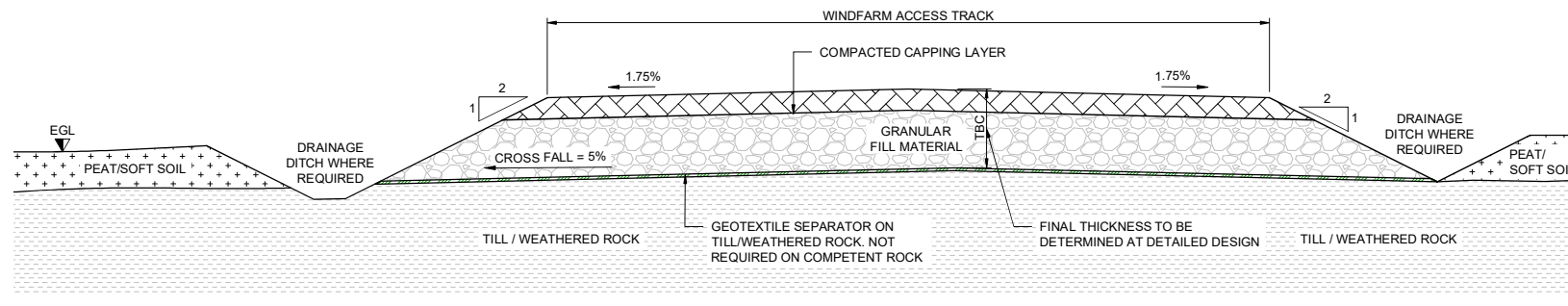
#### Upgrade of Existing Access Roads or Tracks

The existing tracks onsite were constructed using the excavate and replace construction technique. The general construction methodology for upgrading of existing roads or tracks is summarised in Section 4.8.2 below. There is approx. 1.2km of the comprising existing roads for upgrade. They will be constructed at the same level as existing ground levels in order to ensure natural flow paths over the floodplain and avoid backup of the water. The requirement for a layer of geotextile and geogrid and the necessary stone thickness will be confirmed by the Site Engineer. Existing roads for upgrade are shown in Figure 4-1.

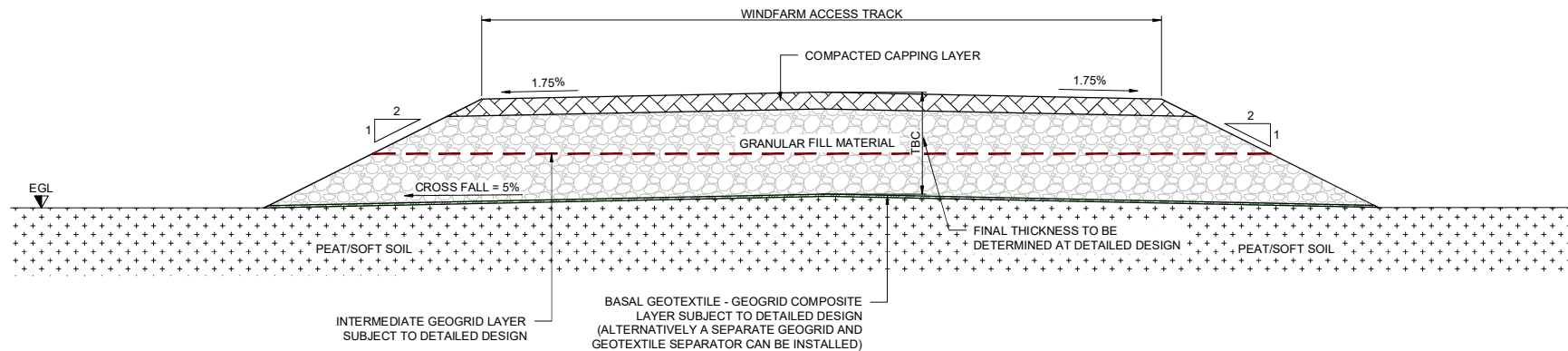
#### Construction of New Roads

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 on the Proposed Wind Farm site. Excavate and replace type access roads are the conventional method for construction of access roads on peatland sites and the preferred construction technique in shallow peat (<1.0m) provided sufficient placement/reinstatement capacity is available onsite for the excavated peat. Floating tracks are also proposed to minimise the impact on the peat, particularly peat hydrology. As there is no excavation required, no peat arisings are generated. However, a founded access track is more suitable if the underlying peat is shallow (<1m) or due to topographic restrictions or stability concerns. The methodology for the construction of new roads (excavated and floating) is detailed in Section 4.1 of the *Peat and Spoil Management Plan* in Appendix 4-2. This methodology includes construction procedures that will minimise any adverse impact on peat stability.

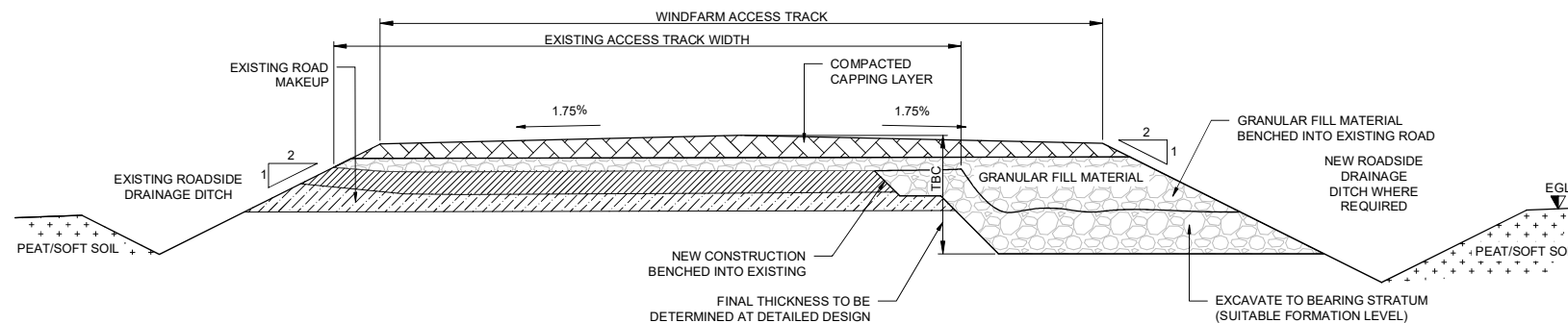
The general construction methodology for construction of excavated roads is summarised in Section 4.8.2 below.



**SECTION THROUGH ACCESS TRACK NEW CONSTRUCTION: FOUNDED - DETAIL 01**  
SCALE: 1:25



**SECTION THROUGH ACCESS TRACK NEW CONSTRUCTION: FLOATED - DETAIL 02**  
SCALE: 1:25



**SECTION THROUGH WIDENING OF EXISTING ACCESS TRACK: FOUNDED - DETAIL 03**  
SCALE: 1:25

#### NOTES:

1. THIS DRAWING IS FOR PLANNING AND ENVIRONMENTAL IMPACT ASSESSMENT PURPOSES AND SHOULD NOT BE USED AS DETAILED DESIGN OR FOR CONSTRUCTION. DO NOT SCALE FROM DRAWINGS.
2. THE STRENGTH OF THE SUBFORMATION SOILS TO BE ASSESSED BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION / PLACEMENT OF FILL.
3. DRAINAGE TO BE PROVIDED TO PREVENT WATER DEGRADATION OF THE SUBFORMATION SOILS IN-LINE WITH DRAINAGE STRATEGY.

#### HEALTH & SAFETY:

1. NO OPERATIVES TO ACCESS ANY UNSUPPORTED TRENCHES. TRENCHES TO BE ADEQUATELY BATTERED BACK OR SUPPORTED WHERE NECESSARY. SAFE TEMPORARY BATTER ANGLES TO BE ASSESSED IN ACCORDANCE WITH CIRIA REPORT 97 "TRENCHING PRACTICE".

|              |                        |              |                |
|--------------|------------------------|--------------|----------------|
| REV: S2-P01  | DATE: 29/08/25         | DRAWN BY: PF | CHECKED BY: DM |
| DESCRIPTION: | ISSUED FOR INFORMATION |              |                |

**GDG**  
GAVIN & DOHERTY  
GEOSOLUTIONS

Unit A2,  
Nutgrove Office Park,  
Rathfarnham,  
Dublin 14, D14 X627  
Ireland.  
T +353 (0)1-2071000  
E info@gdgeo.com  
www.gdgeo.com

ISSUED AS: FOR INFORMATION

CLIENT:



PROJECT TITLE: COOLOO WIND FARM

DRAWING No: 22098-GDG-ZZ-XX-DR-C-0100

DRAWING TITLE: ACCESS ROAD STANDARD DETAILS

|              |                |                   |
|--------------|----------------|-------------------|
| SCALE: 1:25  | SHEET SIZE: A1 | DATE: 29/08/2025  |
| DRAWN BY: PF | CHECKED BY: DM | APPROVED BY: TO'S |



#### 4.3.1.3 Demolition of Existing Derelict Structure

As part of the Proposed Project, there will be demolition works undertaken on an existing derelict structure located approx. 180m southwest of T05 in order to facilitate the construction of new access roads within the Proposed Wind Farm site. Plate 4-4 below provides an image of the existing derelict structure to be demolished.

The methodology for demolition of the existing derelict structure as well as a demolition waste management plan is provided in the Construction and Environmental Management Plan (CEMP), included as Appendix 4-5 of this EIAR.

*Plate 4-4 Existing Derelict Structure to be Demolished*



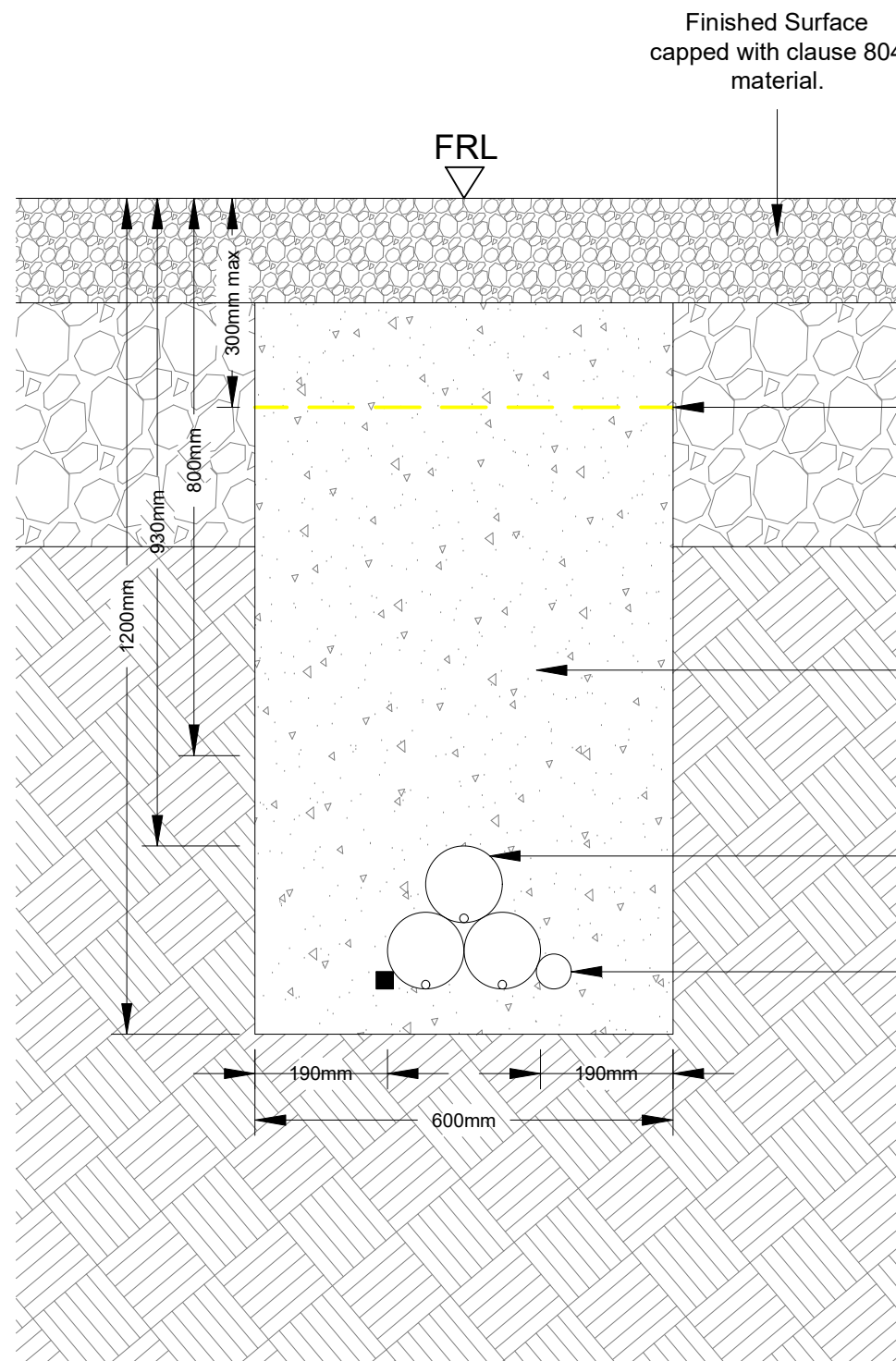
#### 4.3.1.4 **Site Underground Electrical (33kV) and Communications Cabling**

Each turbine will be connected to the onsite electricity substation (part of the Proposed Grid Connection) via underground 33kV (kilovolt) electricity cabling. Fibre-optic cables will also connect each wind turbine and the met mast to the onsite substation. The electricity and fibre-optic cabling connecting to the onsite substation compound will be run in cable ducts approx. 1.2 metres beneath ground level, along the sides of roadways or under the roadways. 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 trench. Figure 4-10 below shows two variations of a typical cable trench, one for off-road trenches and one for on-road trenches. 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.

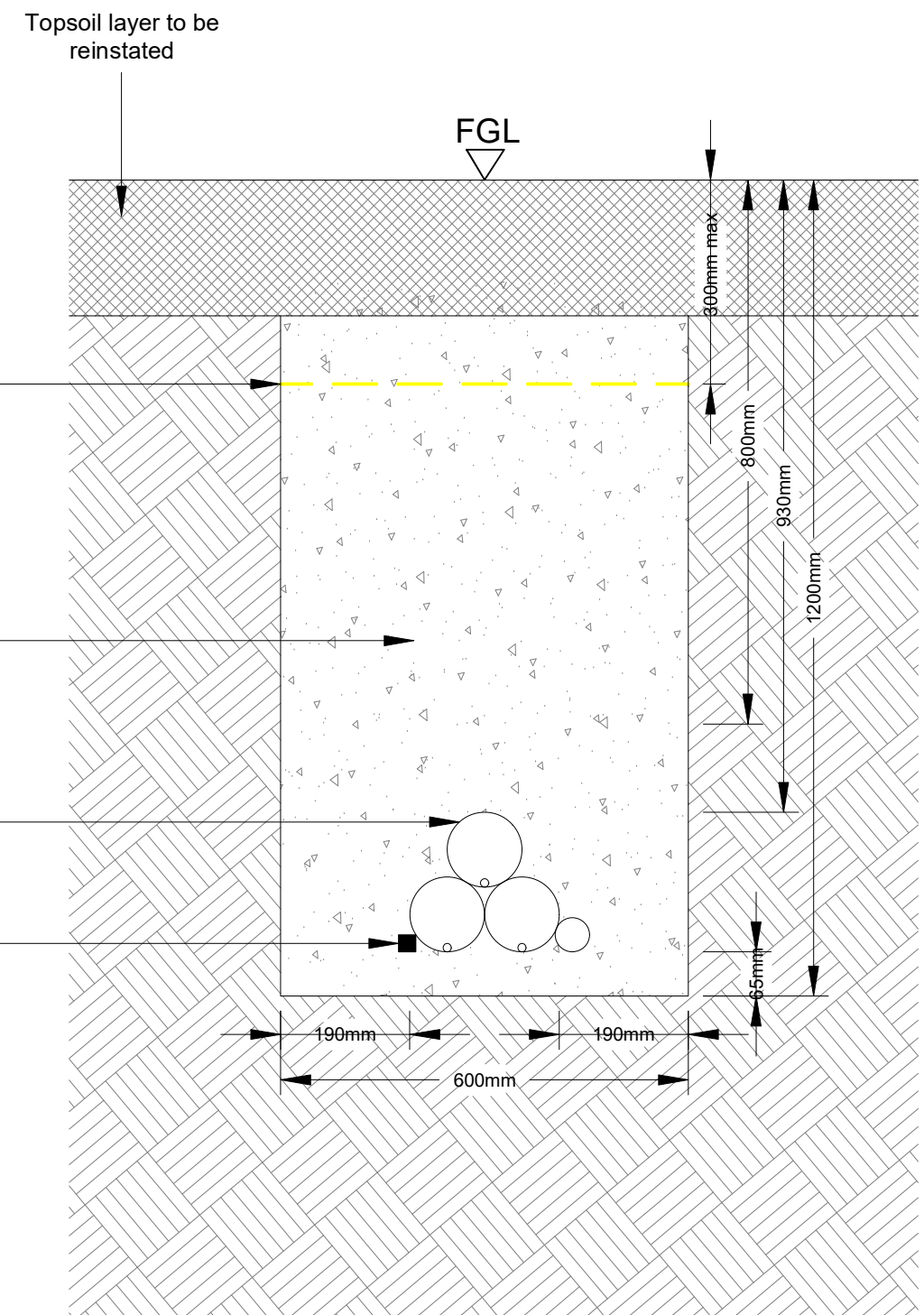
Clay plugs (water flow barrier) will be installed at regular intervals of not greater than 50 metres along the length of the trenches where required to prevent the trenches becoming conduits for runoff water. Backfill material will be compacted in layers with approved engineer's specified material, which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

#### 4.3.1.5 **Meteorological Mast**

One meteorological (met) mast is proposed as part of the Proposed Wind Farm. The met mast will be equipped with wind monitoring equipment at various heights. The proposed met mast will be located at ITM X 555128, ITM Y 747944, as shown on the Site layout drawing in Figure 4-1. The mast will be a free-standing slender lattice structure 100 metres in height. The mast will be constructed on a hard-standing area sufficiently large to accommodate the equipment that will be used to erect the mast. The proposed meteorological mast is shown in Figure 4-11.



**33kV Cable - On Road Trench Detail - Cross Section**



**33kV Cable - Off Road Trench Detail - Cross Section**

|                                                    |                                 |                         |                               |
|----------------------------------------------------|---------------------------------|-------------------------|-------------------------------|
| PROJECT TITLE: <b>Cooloo Wind Farm, Co. Galway</b> |                                 |                         |                               |
| DRAWING TITLE: <b>33kV Cable Trench Sections</b>   |                                 |                         |                               |
| PROJECT No.: <b>190723</b>                         | DRAWING No.: <b>190723 - 43</b> | SCALE: <b>1:10 @ A3</b> |                               |
| DRAWN BY: <b>JOB</b>                               | CHECKED BY: <b>RD</b>           | DATE: <b>24.09.2025</b> | REVISION.: <b>Figure 4-10</b> |



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#### 4.3.1.6 Temporary Construction Compound

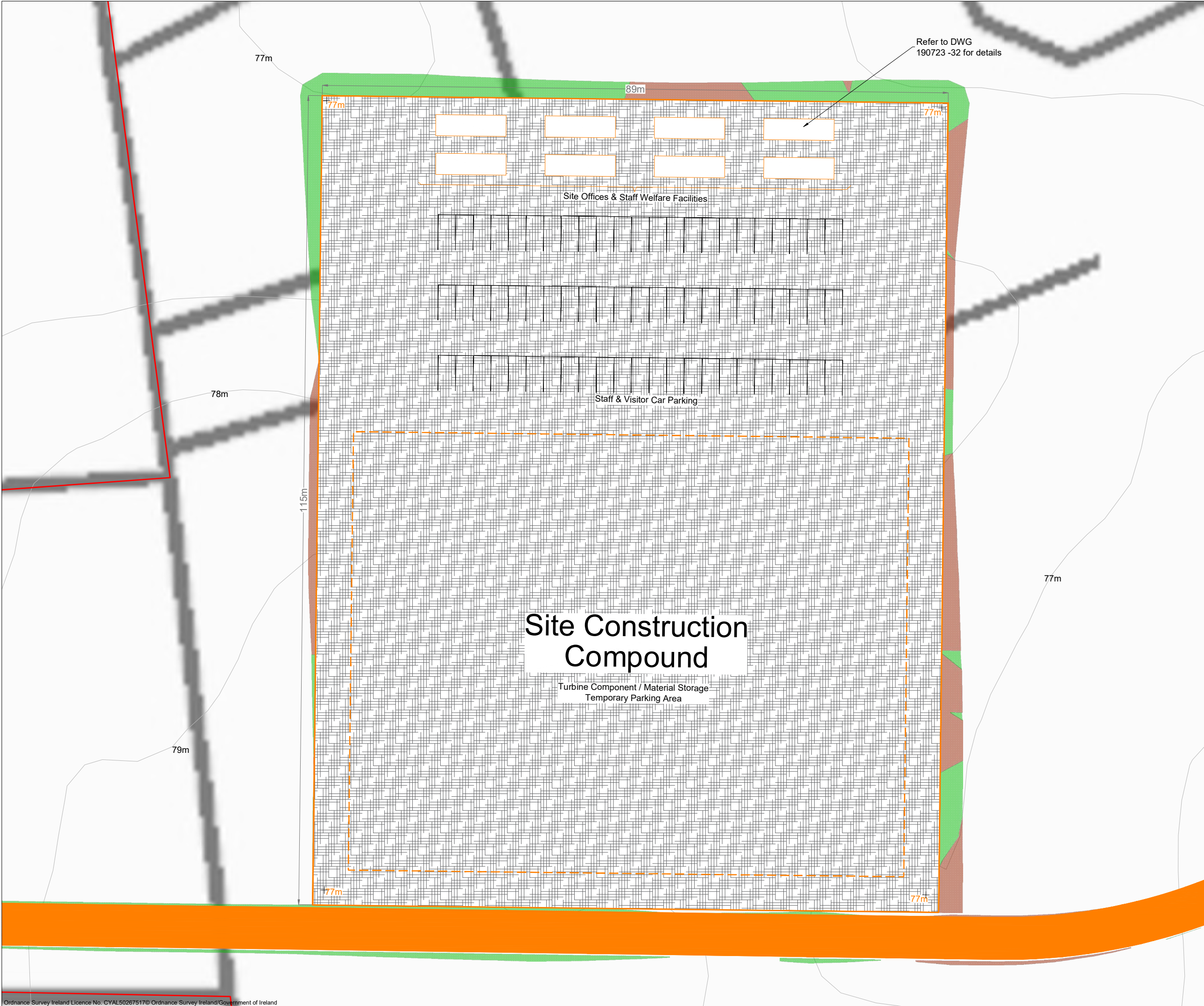
A temporary construction compound measuring approx. 10,240m<sup>2</sup> in area will be located in the southern section of the Proposed Wind Farm site, approx. 450m southwest of T01. The location of the proposed temporary construction compound is shown on the Wind Farm Site layout drawing in Figure 4-1. The layout of this temporary construction compound is shown on Figure 4-12.

The temporary construction compound will include a bunded refuelling and containment area for the storage of lubricants, oils and site generators etc, and full retention oil interceptor, waste storage area, 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 a permitted waste collector to wastewater treatment plants. There will also be a water supply on site for hygiene purposes, by way of a temporary storage tank.

Upon completion of the construction phase, the construction compound area will be reinstated to agricultural pasture.

The construction compound will facilitate the temporary storage of some general construction materials, however, turbine components will be brought directly to the proposed turbine locations following their delivery to the Proposed Wind Farm site.



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

**Drawing Legend**

- Planning Application Boundary
- Proposed Road
- Cut
- Fill

|                                                       |                                 |                          |                               |
|-------------------------------------------------------|---------------------------------|--------------------------|-------------------------------|
| PROJECT TITLE: <b>Cooloo Wind Farm, Co. Galway</b>    |                                 |                          |                               |
| DRAWING TITLE: <b>Temporary Construction Compound</b> |                                 |                          |                               |
| PROJECT No.: <b>190723</b>                            | DRAWING No.: <b>190723 - 27</b> | SCALE: <b>1:500 @ A3</b> |                               |
| DRAWN BY: <b>JOB</b>                                  | CHECKED BY: <b>RD</b>           | DATE: <b>24.09.2025</b>  | REVISION.: <b>Figure 4-12</b> |
| OS SHEET No.: 2816, 2817, 2884, 2885, 2953, 2954      |                                 |                          |                               |



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### 4.3.1.7 Tree Felling and Replanting

#### 4.3.1.7.1 Tree Felling for Construction and Operation of Proposed Wind Farm

Tree felling will be required within and around Proposed Wind Farm infrastructure footprint to allow for the construction of the turbine bases, access roads underground cabling, and the other ancillary infrastructure. Approx. 0.7ha of conifer plantation will be felled to accommodate Turbine 9 and its associated infrastructure as part of the Proposed Wind Farm construction.

In addition to the commercial forestry felling, segments of hedgerows will require removal to facilitate the construction of wind farms roads and ancillary infrastructure, and to achieve the required bat foraging buffers from the proposed turbines. Please see Chapter 6 for details. Figure 4-13 shows the extent of the commercial forestry to be permanently felled as part of the Proposed Wind Farm.

The commercial forestry felling activities required as part of the Proposed Wind Farm 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 licences for wind farm developments. The policy requires that a copy of the planning permission for the Proposed Wind Farm 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 Wind Farm.

#### 4.3.1.7.2 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 footprint of the infrastructure developments.

The identified 0.7 ha of commercial forestry that will be permanently felled for the Proposed Wind Farm 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 Wind Farm. 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. The replacement of the 0.7 ha of forestry felled as part of the Proposed Wind Farm may occur on any lands, within the State benefitting from Forest Service Technical Approval<sup>3</sup> for afforestation, should the Proposed Wind Farm 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 Habitats purposes).

For the balance of the replanting obligation, the Applicant commits to replanting 0.7 ha of forestry outside the hydrological catchment within which the Proposed Project is located. On this basis, it is reasonable to conclude that there will be no cumulative effects associated with the replanting of 0.7 ha of forestry. Therefore, the 0.7 ha of 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, therefore, this ensures the afforested lands are identified, assessed and licenced appropriately by the relevant consenting authority.

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<sup>3</sup> 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.

#### 4.3.1.8 Biodiversity Enhancement and Management Plan

A Biodiversity Management and Enhancement Plan (BMEP) has been prepared for the Proposed Project and is included as Appendix 6-4 of this EIAR. This plan has been developed to offset the loss of habitats identified within the Proposed Wind Farm site and further enhance the biodiversity of the Proposed Wind Farm and its environs.

##### 4.3.1.8.1 Offsetting Habitat Loss

###### Offsetting the loss of Hedgerows

There will be a loss of approx. 3.74km of linear features within the site, including turbines and associated bat buffers, wind farm roads and other key infrastructure. Offsetting measures will include replanting approx. 4.70km of hedgerow habitat within the Proposed Wind Farm site which will provide more than a 960m net gain in linear habitat. The hedgerows will be replanted within suitable areas and in consultation with the landowners who are supportive of the hedgerow planting proposals.

###### Offsetting Woodland Loss and Planting of Native Woodland

As identified in Section 4.3.1.7.2 above, approx. 0.7ha of conifer woodland (WD4) will be lost as a result of the proposed new internal access roads and associated infrastructure. In addition to this, it is proposed to fell approx. 10.55ha of monoculture Sitka spruce conifer woodland within the block immediately adjoining the Alder/Ash plantations. Therefore, there will be a total removal of 11.25ha of conifer woodland (WD4).

In total, approx. 11.5ha of broadleaved woodland will be planted to replace the existing conifer woodland (WD4) within the felled conifer woodland areas, as well as plant additional broadleaved woodland between T3 and T5.

##### 4.3.1.8.2 Enhancement Measures

###### Development of Bog Woodland/Scrub Communities

A number of uncut raised bog (PB1) and regenerating cutover bog (PB4) habitat areas have started to recolonize with scrub. It is proposed to allow these areas to regenerate into what is expected will become bog woodland habitat. Approx. 18ha is available within the site to provide this habitat enhancement.

###### Grassland Enhancement

The majority of the existing grassland habitats within the Proposed Project boundaries are highly modified or re-seeded fields consisting of improved agricultural grassland (GA1). Lesser areas of wet grassland (GS4) exist where drainage is poor and the fields are less intensively grazed, resulting in a higher sward height. There are opportunities within the site to enhance existing lower value grassland to encourage long-flowering meadow management with a reduced grazing regime.

Approx. 4.45ha of grassland areas within the Proposed Wind Farm site will be converted into long-flowering meadows with reduced management and allowing to naturally revegetate.

###### Marsh Fritillary Breeding Habitat

Marsh fritillary habitat has been identified throughout the Site. As part of proposed enhancement measures, existing Marsh Fritillary breeding habitat be safeguarded and maintained within the

Proposed Wind Farm site. It has been agreed that these areas will be protected from development, land clearance or use conversion, or significant agricultural works for at least the duration of the BMEP.

#### **Enhancement of existing grasslands to suitable breeding habitat**

It is proposed to enhance approx. 3.2ha of existing grassland areas that have existing marsh fritillary suitable habitat and an abundance of devil's bit scabious (*Succisa pratensis*), the larval foodplant of the species, within the Proposed Wind Farm site.

#### **Riparian Vegetation/Replanting**

Providing permanent fencing along rivers/drains within fields that are at risk of livestock poaching will be fenced off for the operational life of the Proposed Wind Farm. Preventing livestock access to the riverbank edges will prevent excess nutrients entering into the waterbodies and prevent damage to the stability of the riverbank edge. Encouraging native plants to recolonize in these areas will also improve riverbank stability and preventing soil erosion. Additional replanting of native scrub species will also provide a permanent barrier and increase linear replanting along riverbank edges

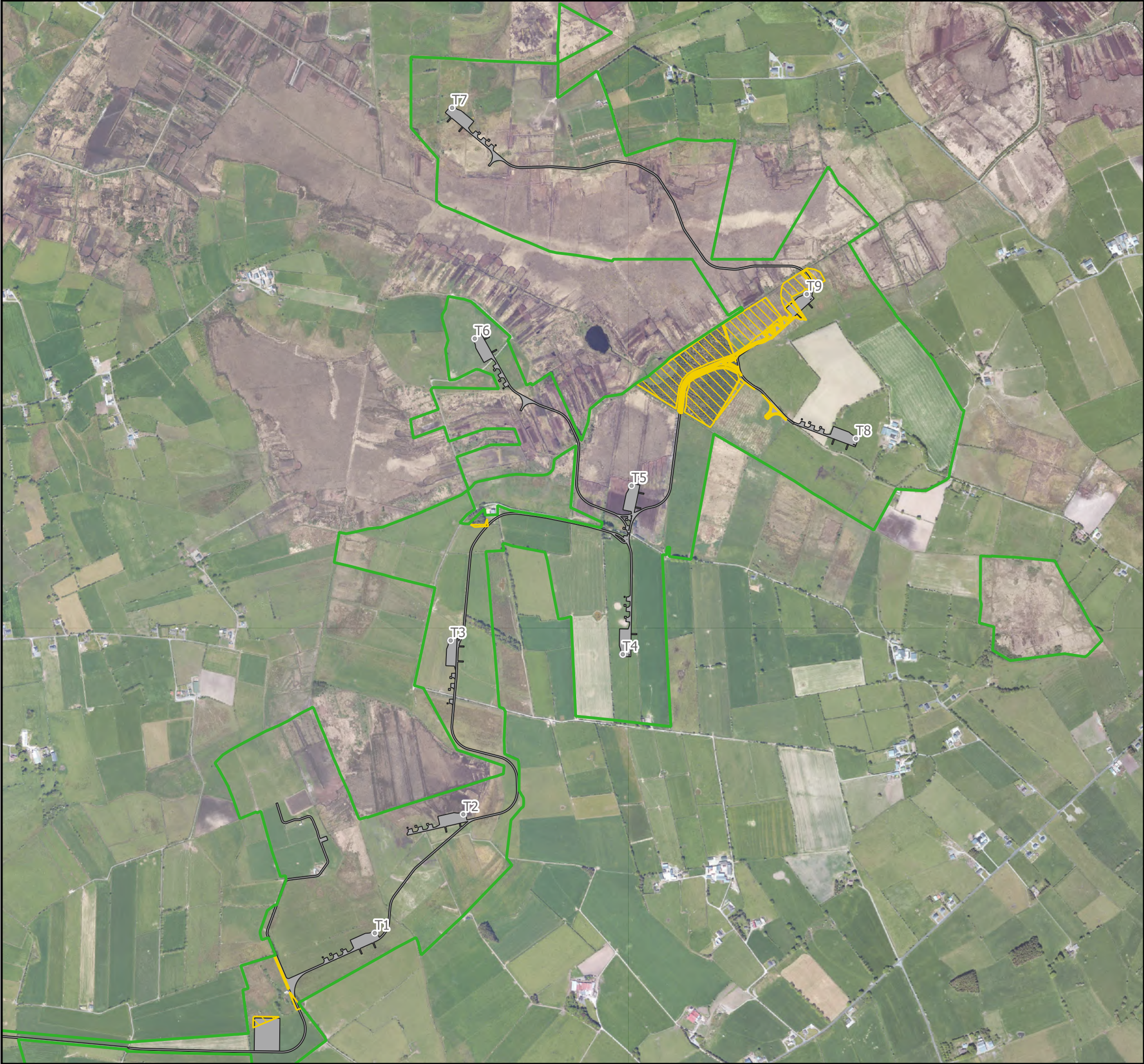
#### **Fen Habitat Enhancement**

An existing 0.77ha of rich fen (PF1) habitat has been identified within a stand-alone field to the east of the main area of the Proposed Project. Species recorded within this habitat are indicators species of the Annex 1 habitat *7230 Alkaline Fen*, and therefore there this habitat likely confirms to *7230 Alkaline Fen*. This field has been entirely retained as part of the Proposed Project in order to provide enhancement opportunities with landowner agreements in place to implement.

#### **Embankments and Pollinator Nesting Habitats**

Using excavated soils from the construction of the infrastructure associated with the Proposed Project, embankments/berms will be constructed around the wind turbines, the substation and other infrastructure. These berms will be allowed to become recolonised by vegetation naturally to ensure the local seedbank is preserved.





Map Legend

- EIAR Site Boundary
- Proposed Wind Farm Footprint
- Forestry Felling



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CYAL50267517

|               |          |                              |             |
|---------------|----------|------------------------------|-------------|
| Drawing Title |          | Forestry Felling             |             |
| Project Title |          | Cooloo Wind Farm, Co. Galway |             |
| Drawn By      | CF       | Checked By                   | EmcC        |
| Project No.   | 190723   | Drawing No.                  | Figure 4-13 |
| Scale         | 1:13,000 | Date                         | 2025-09-25  |



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



## 4.3.2 Proposed Grid Connection

### 4.3.2.1 Onsite 110kV Substation

It is intended to construct a 110kV electricity substation within the Site as shown in Figure 4-1. The proposed substation is located at the southwest of the Site, in the townland of Dangan Eighter, Co. Galway. The construction and exact layout of electrical equipment in the onsite electricity substation will be to Eirgrid/ESB Networks specifications. Access to the proposed onsite 110kV substation will be via the operational site access points along an existing local track. Upon decommissioning of the Proposed Wind Farm, the 110kV substation will remain *in situ* and form part of the national grid infrastructure.

The footprint of the onsite 110kV substation compound measures approx. 34,765m<sup>2</sup> in area and will include 2 no. control buildings and the electrical substation components necessary to consolidate the electrical energy generated by each wind turbine, and export that electricity from the onsite 110kV substation to the national grid. The layouts and elevations of the onsite 110kV substation are shown on Figures 4-14 and 4-15

Further details regarding the connection between the onsite 110kV substation and the national electricity grid are provided in Section 4.8.6 below.

The onsite 110kV substation compound will include steel palisade fencing (approx. 2.4 metre high or as otherwise required by ESB), and internal fences will also segregate different areas within the main substation. Please see Appendix 4-4 for fencing details.



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  7. Exact location of cable/joint bay in the road curtilage to be subject to ESB/EirGrid specifications and agreement with Galway County Council.

**Drawing Legend**

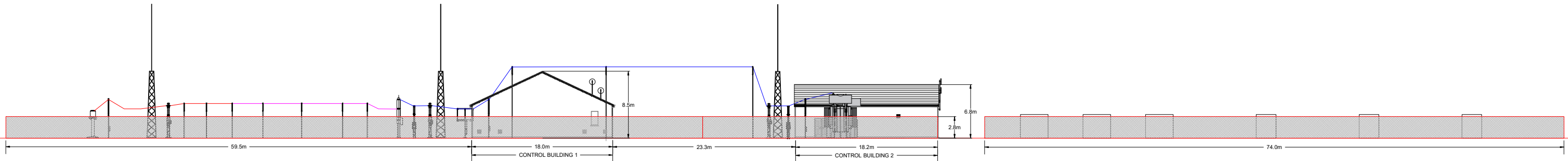
- EIAR Site Boundary
- Underground Electrical Cabling Route
- S37 Infrastructure



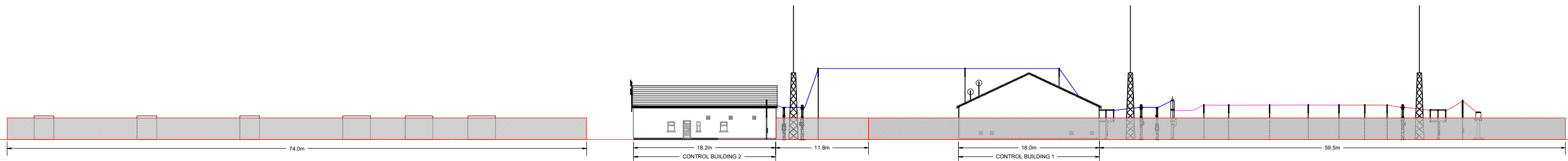
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| DRAWING TITLE: <b>Onsite 110kV Substation Drawing Layout</b>                                                |                                 |                            |                               |
| PROJECT No.: <b>190723</b>                                                                                  | DRAWING No.: <b>190723 - 33</b> | SCALE: <b>1:1,000 @ A3</b> |                               |
| DRAWN BY: <b>JOB</b>                                                                                        | CHECKED BY: <b>BT</b>           | DATE: <b>23.09.2025</b>    | REVISION.: <b>Figure 4-14</b> |
| OS SHEET No: 2811, 2812, 2813, 2814, 2879, 2880, 2881, 2882, 2948, 2949, 2950, 2951, 3018, 3019, 3020, 3021 |                                 |                            |                               |



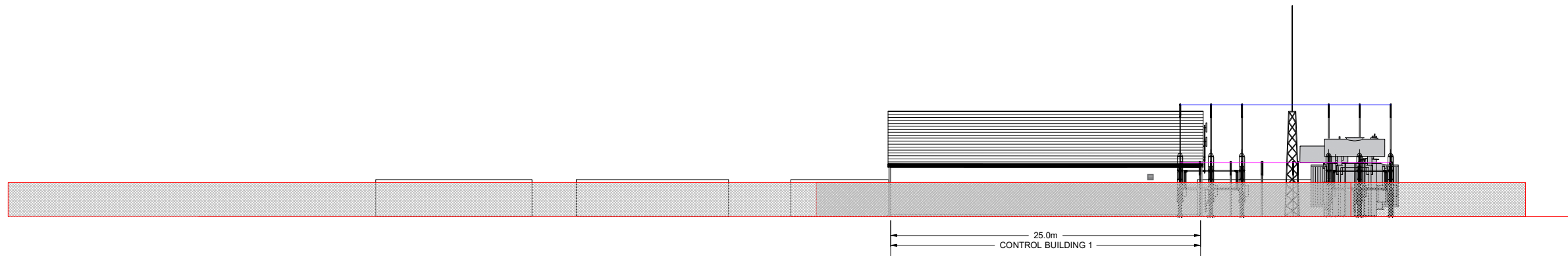
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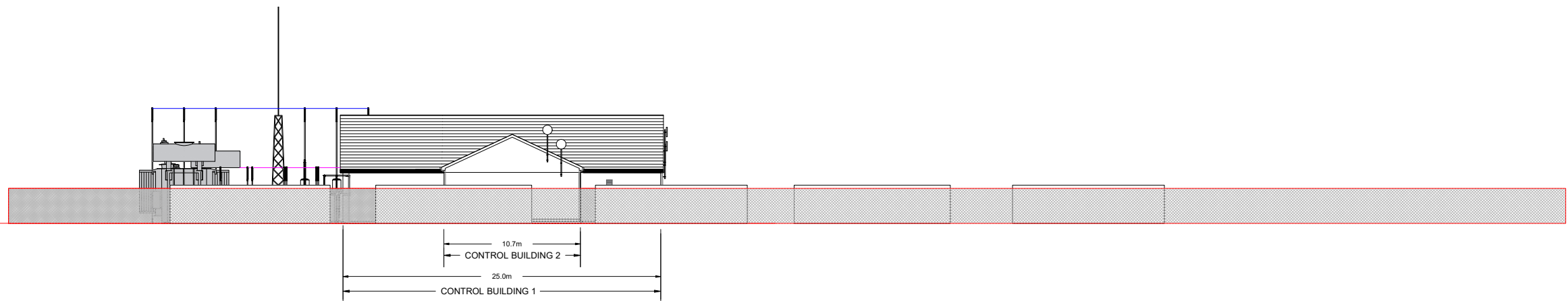
EAST ELEVATION Scale 1:250



WEST ELEVATION Scale 1:250



SOUTH ELEVATION Scale 1:200



NORTH ELEVATION

Scale 1:200

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| DRAWING TITLE:<br><b>Onsite 110kV Substation Drawing<br/>Elevations</b> |                                    |                                |                           |
| PROJECT No.:<br><b>190723</b>                                           | DRAWING No.:<br><b>190723 - 34</b> | SCALE:<br><b>As Shown @ A1</b> |                           |
| DRAWN BY:<br><b>JOB</b>                                                 | CHECKED BY:<br><b>BT</b>           | DATE:<br><b>23.09.2025</b>     | REVISION.:<br>Figure 4-15 |



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### 4.3.2.2 Wind Farm Control Buildings

Two substation control buildings will be located within the substation compound. The Transmission Asset Owner (TSO) Control Building will measure approx. 25 metres by 18 metres and approx. 9.7 metres in height. The Independent Power Producer (IPP) Control Building will measure approx. 19 metres by 12 metres and approx. 7 metres in height. The layouts of the control buildings are shown on Figures 4-16 and Figure 4-17.

The substation control buildings will include staff welfare facilities for the operational phase of the project. Bottled water will be supplied for drinking, if required. Toilet facilities will be installed with a low-flush cistern and low-flow wash basin. Due to the specific nature of the Proposed Grid Connection, there will be a very small water requirement for occasional toilet flushing and hand washing and therefore the water requirement of the Proposed Grid Connection does not necessitate a potable source. It is proposed to either harvest rainwater from the roofs of the buildings or, alternatively, install a groundwater well adjacent to the substation in accordance with the Institute of Geologists Ireland, *Guide for Drilling Wells for Private Water Supplies* (IGI, 2007). The well will be flush to the ground and covered with a standard manhole. A pump house is not required as an in-well pump will direct water to a water tank within the roof space of the control building.

It is not proposed to treat wastewater onsite. Wastewater from the staff welfare facilities in the control buildings will be managed by means of a sealed underground storage tank, with all wastewaters being tankered off site by permitted waste collector to a licenced wastewater treatment plant.

Such a proposal for managing the wastewater arising onsite has become almost standard practice on wind farm sites, which are often proposed in areas where finding the necessary percolation requirements for onsite 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. Full details of the proposed tank alarm system can be submitted to the Planning Authority in advance of any works commencing onsite. The wastewater storage tank alarm will be part of a continuous stream of data from the sites' turbines, wind measurement devices and electricity substation 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 substation underground storage tank.

### 4.3.2.3 Battery Storage

A battery-based energy storage system (BESS) will be located adjacent to the 110kV substation compound. The BESS primarily consists of 15 no. steel containers and 6 no. power supply units assembled in rows at the development site.

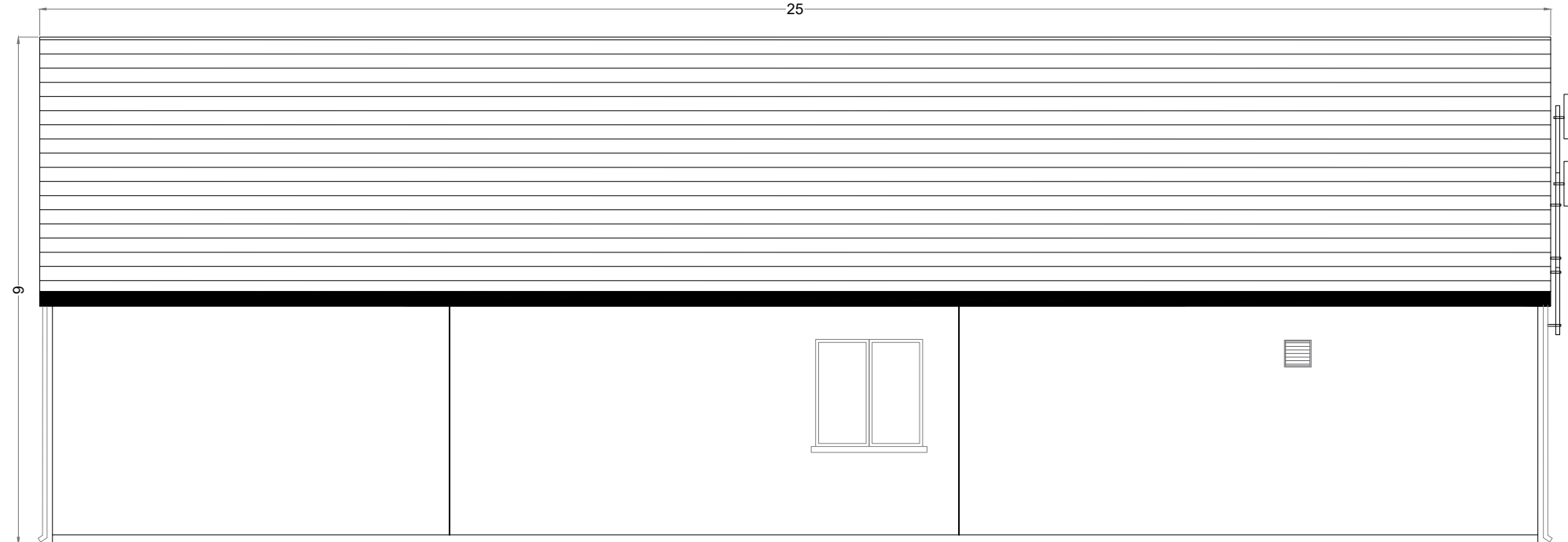
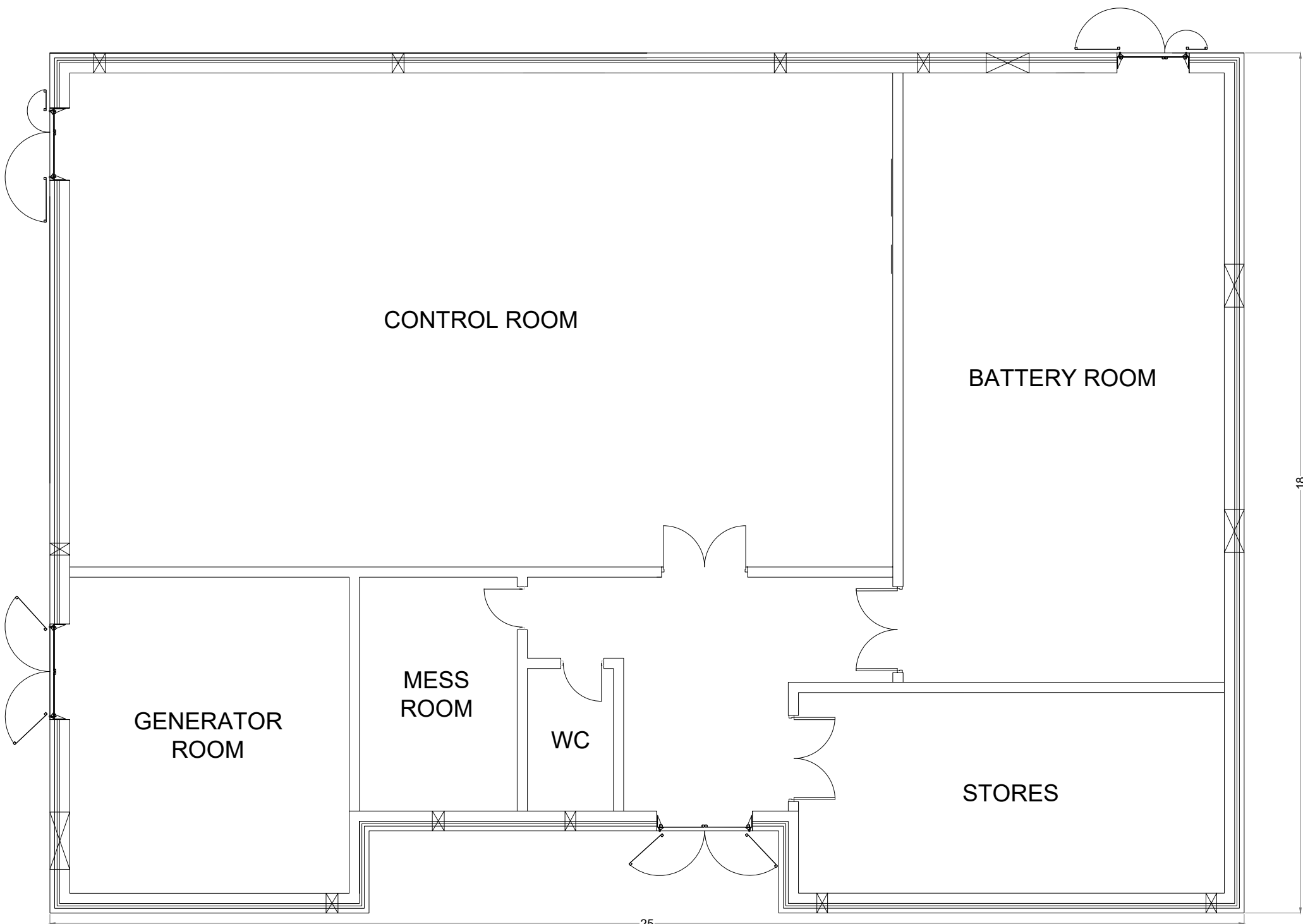
Prior to installing the steel containers, clearance of the site area, levelling of the ground surface and creation of a hard stand will be undertaken. These containers and the adjacent infrastructure house the batteries, inverters, transformers, fire suppression equipment and associated electrical components. The containers will be mounted onto concrete plinth foundations. The containers shall be spaced to allow airflow around the containers, feeding their climate control systems.

In addition to the modular steel containers, other components of the development include:

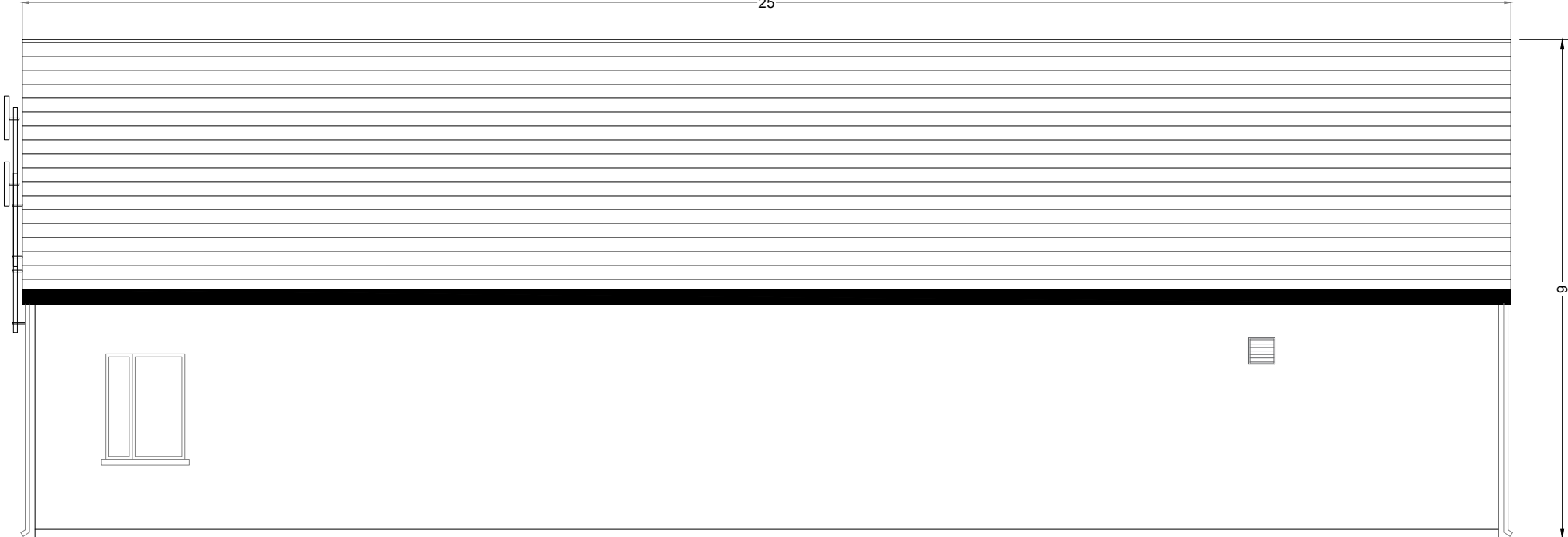
- A grid transformer within the electrical compound;
- Above ground cable junction boxes/ cabling cabinets and cable racks/steel trunking facilitating the necessary electrical connections between containers;
- Underground ducting and cabling;

- A security fence around the perimeter of the Proposed Project;
- Communications equipment; and,
- Lightning protection poles.

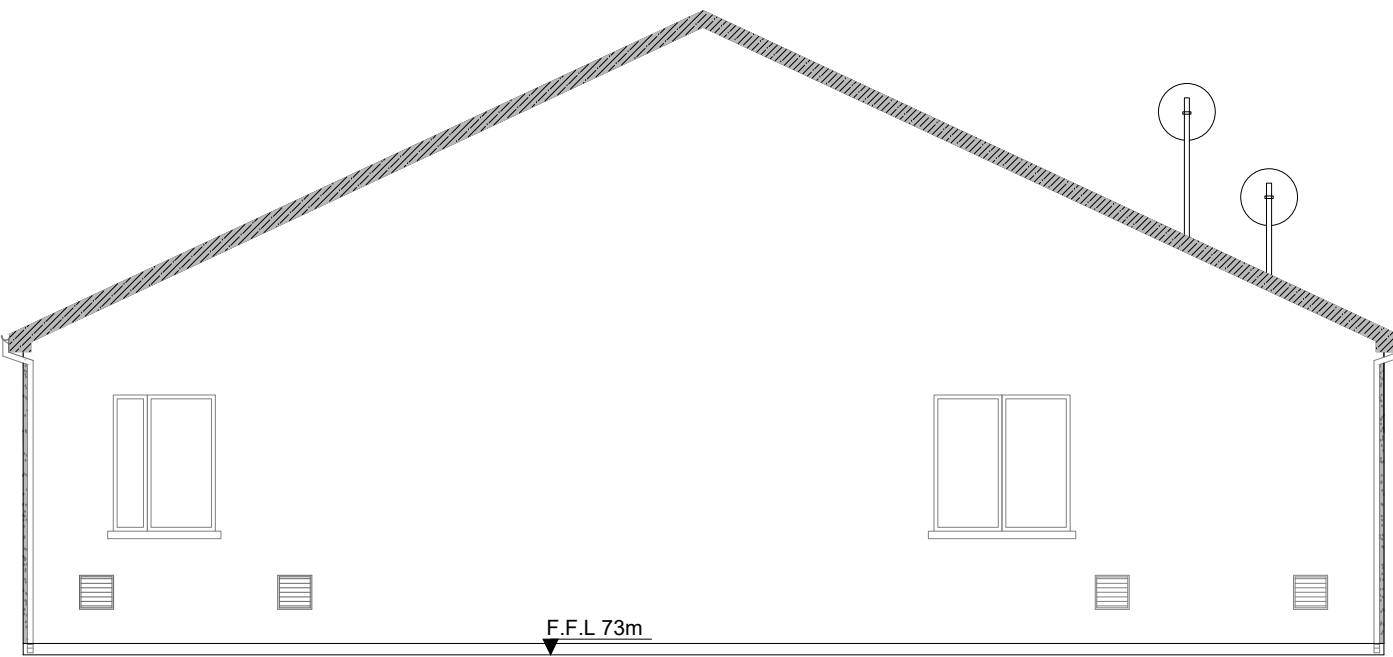
The BESS will operate continuously, linked to the onsite substation. It will be monitored in tandem with the overall development and there will be sporadic maintenance visits as required. The BESS is shown in Appendix 4-4 of this EIAR.



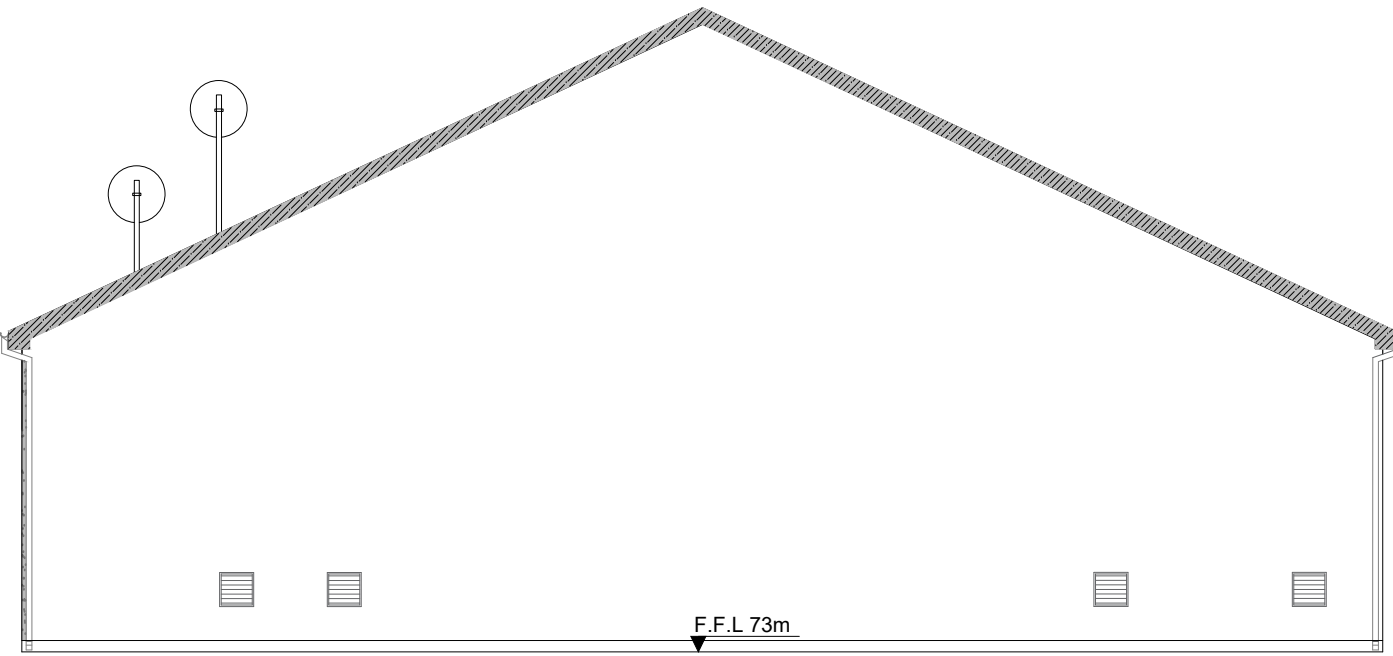
North Elevation



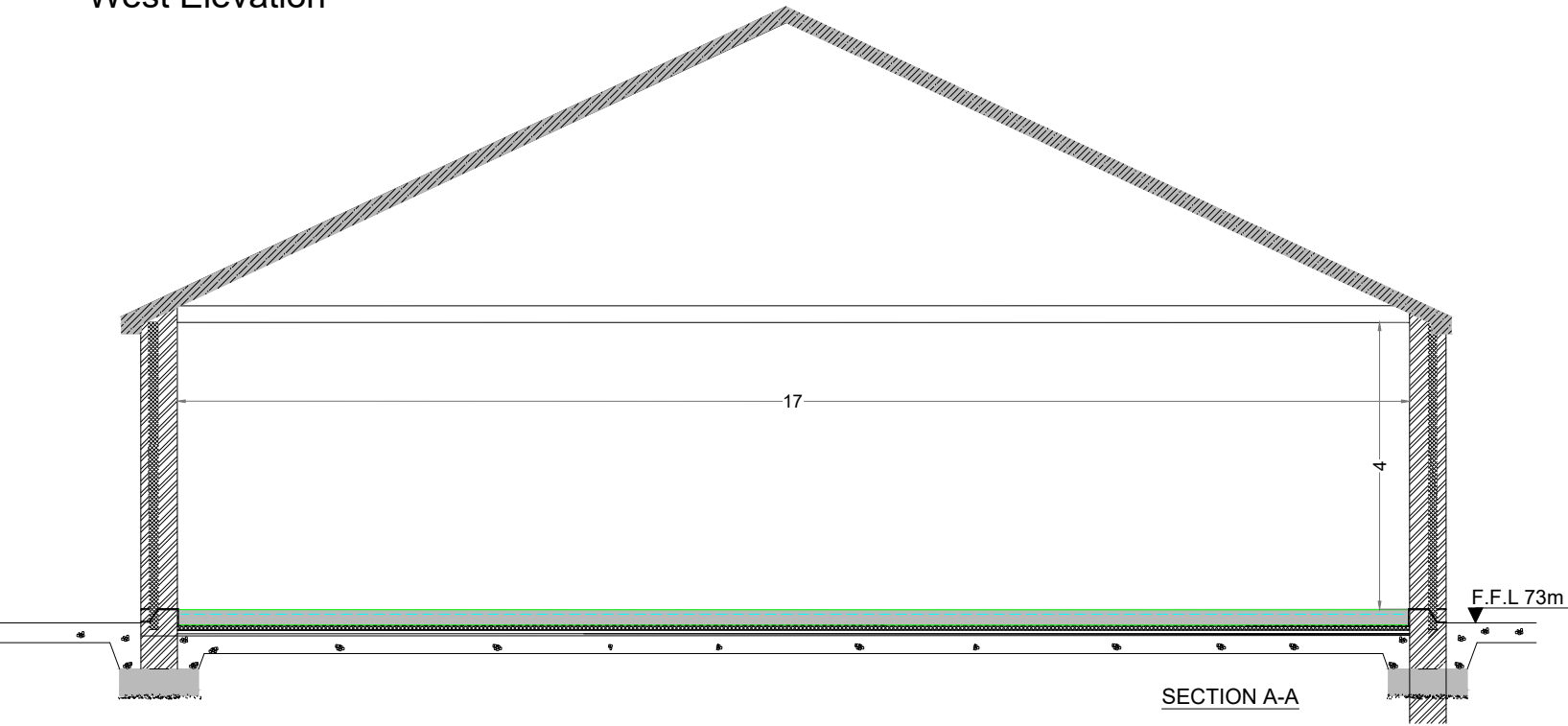
South Elevation



East Elevation



West Elevation

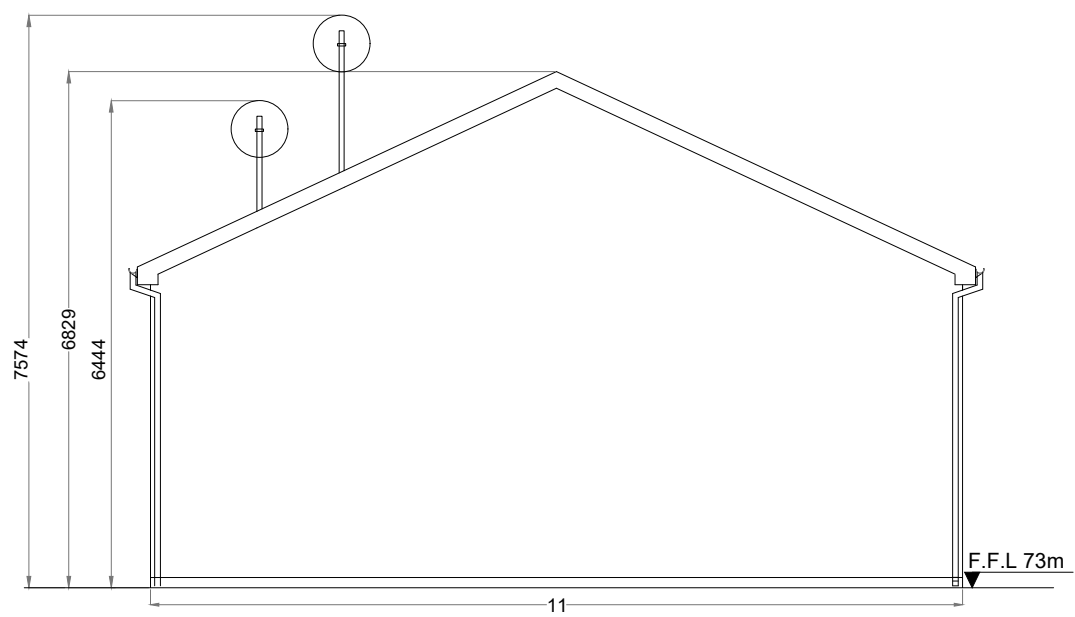


SECTION A-A

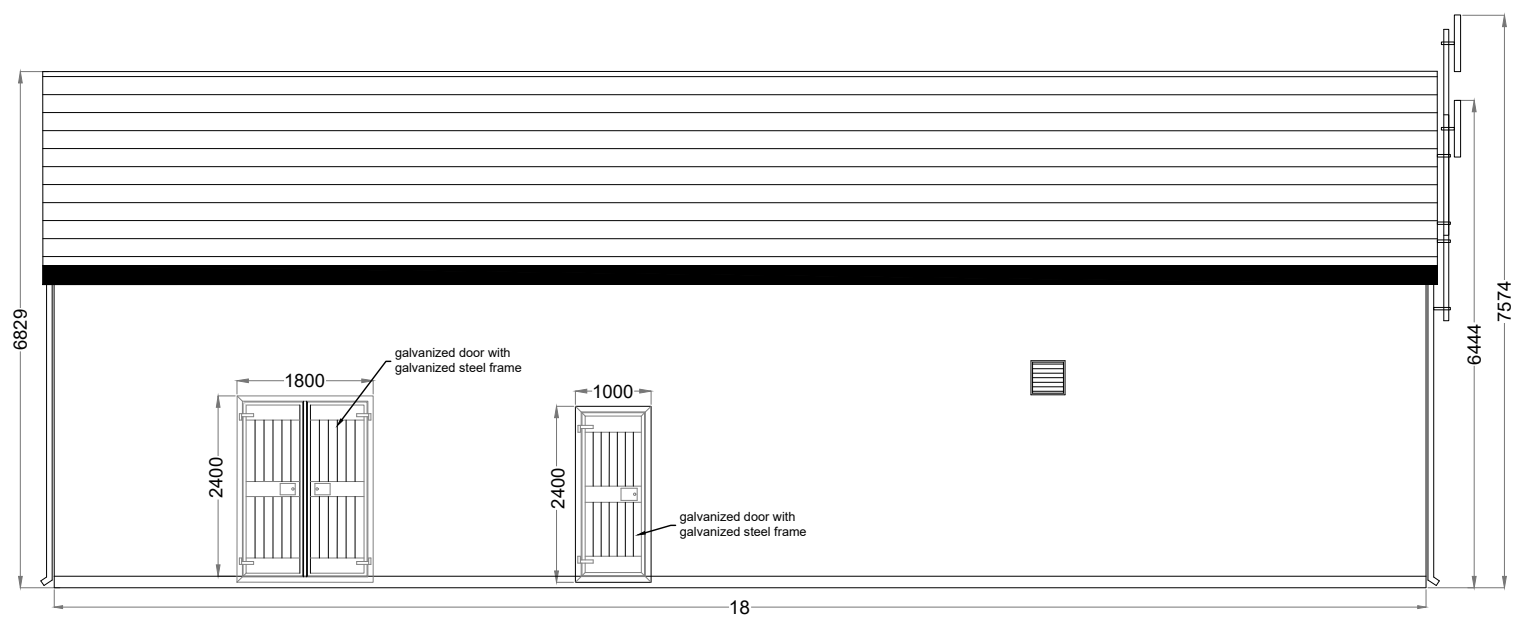
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| DRAWING TITLE: <b>Control Building 1 Elevations &amp; Section</b> |                                 |                          |                              |
| PROJECT No.: <b>190723</b>                                        | DRAWING No.: <b>190723 - 35</b> | SCALE: <b>1:100 @ A2</b> |                              |
| DRAWN BY: <b>JOB</b>                                              | CHECKED BY: <b>BT</b>           | DATE: <b>23.09.2025</b>  | REVISION: <b>Figure 4-16</b> |



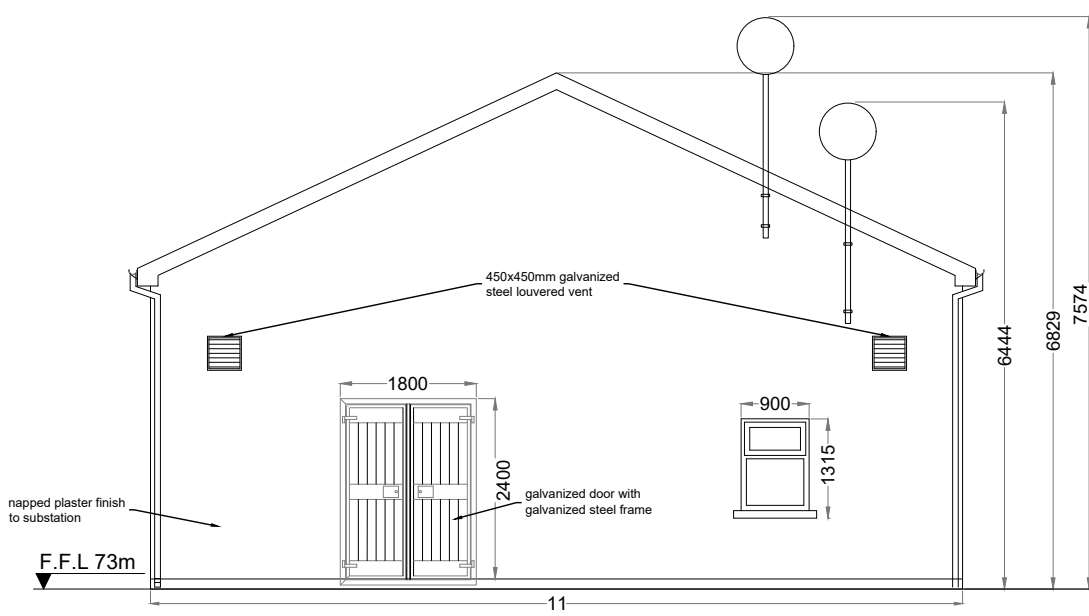




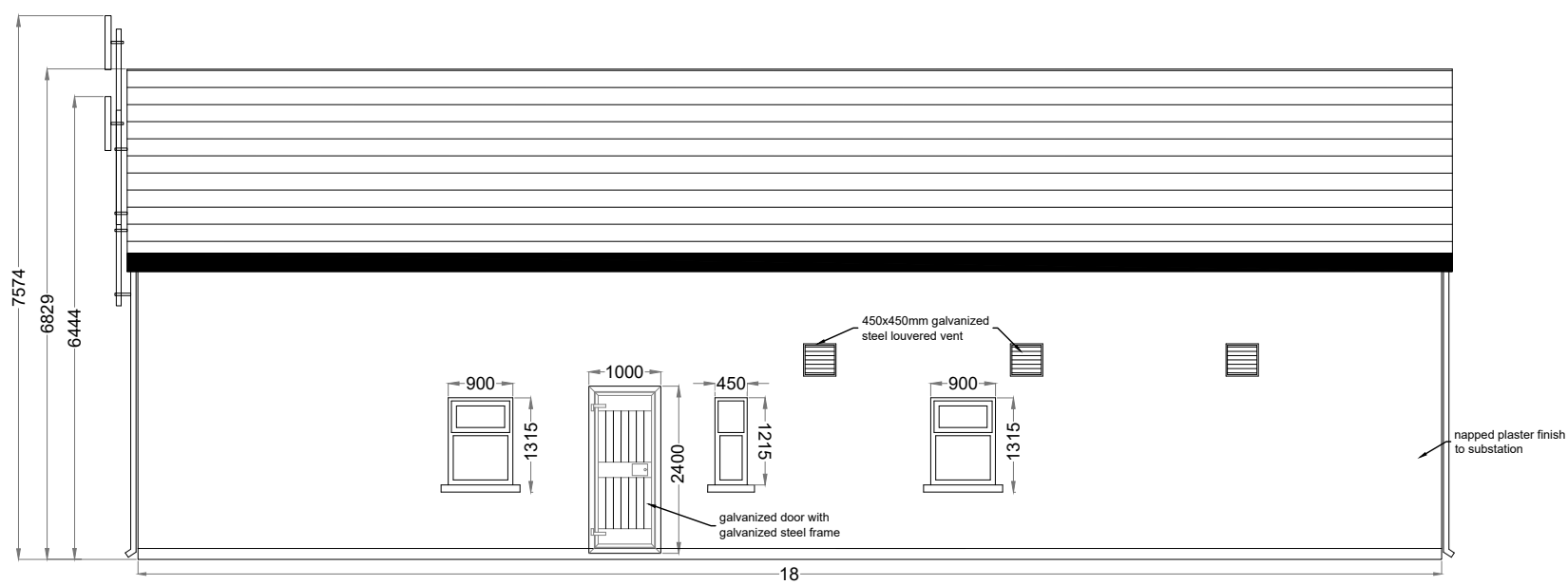
North Elevation



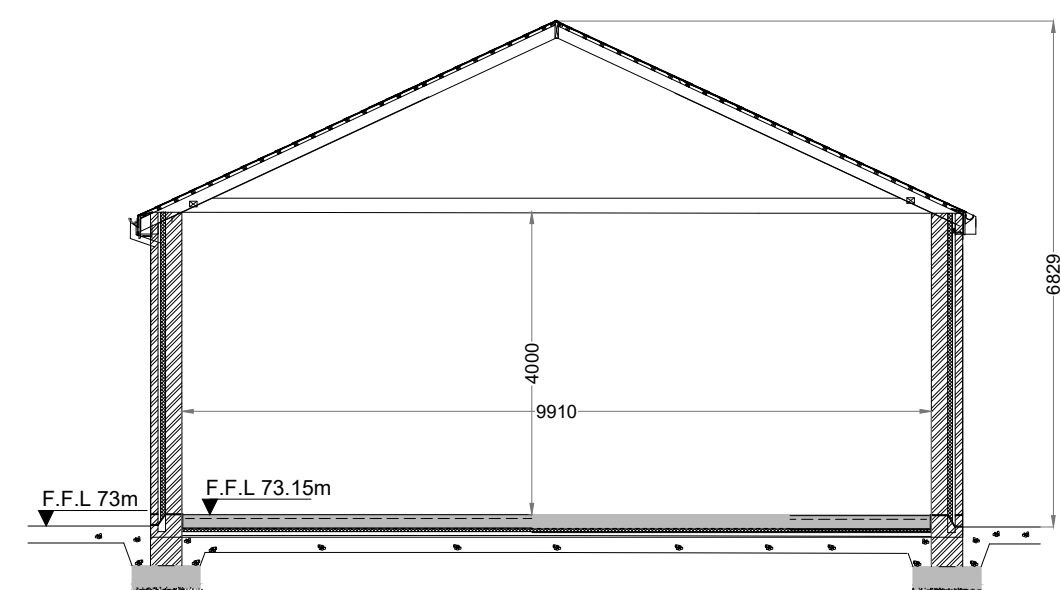
West Elevation



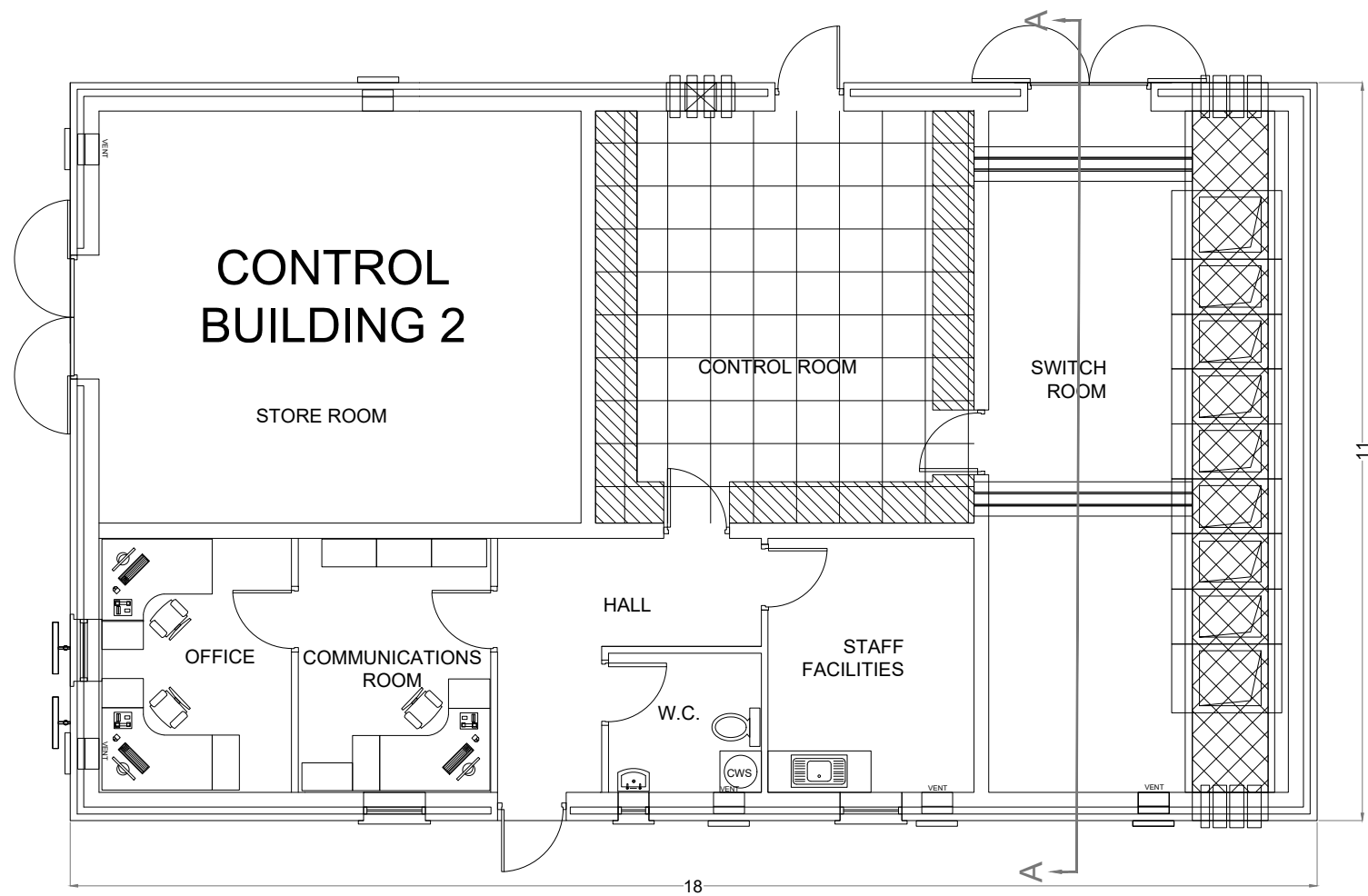
South Elevation



East Elevation

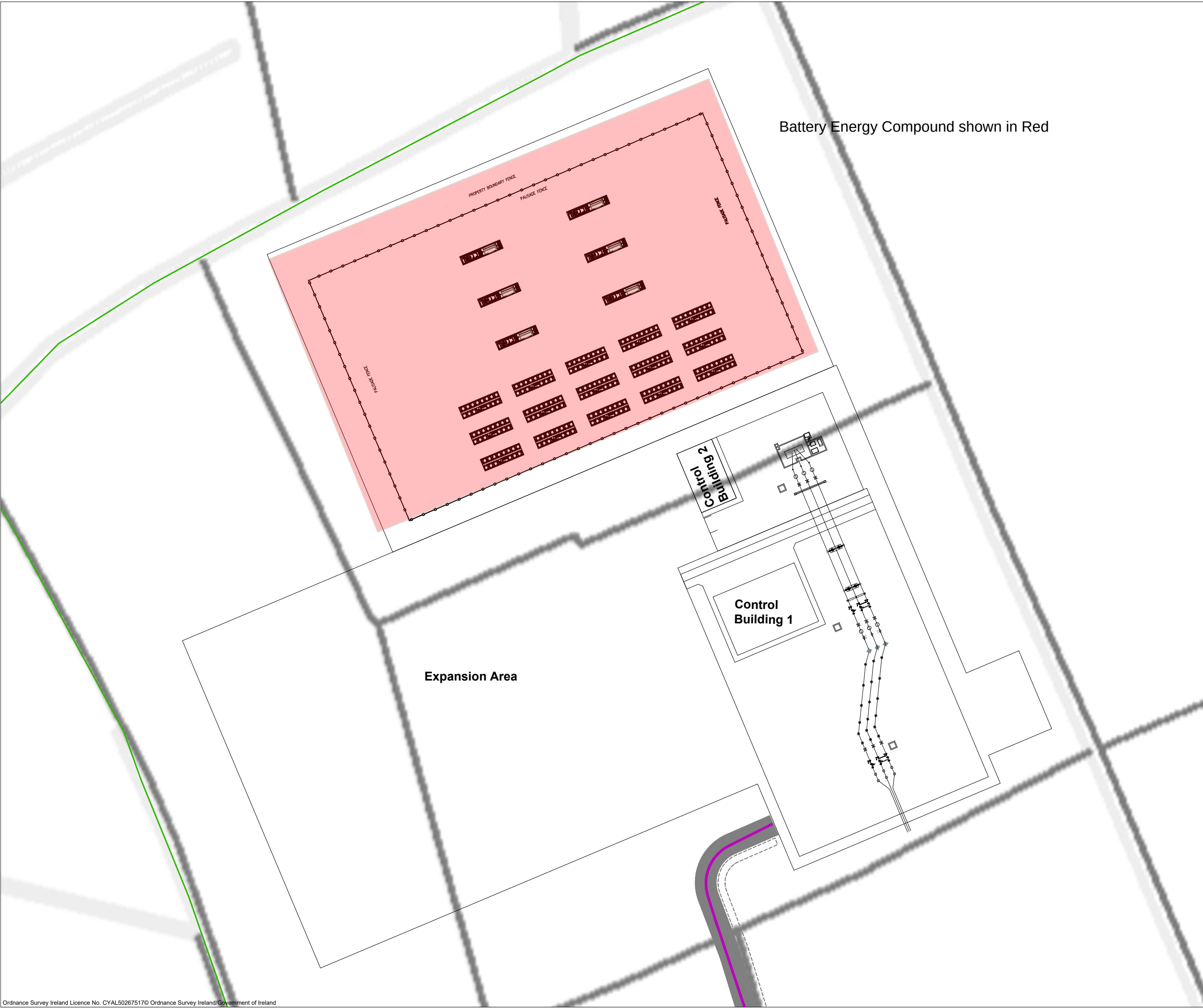


SECTION A-A



|                |              |            |                                            |  |  |
|----------------|--------------|------------|--------------------------------------------|--|--|
| PROJECT TITLE: |              |            | Cooloo Wind Farm,<br>Co. Galway            |  |  |
| DRAWING TITLE: |              |            | Control Building 2<br>Elevations & Section |  |  |
| PROJECT No.:   | DRAWING No.: | SCALE:     |                                            |  |  |
| 190723         | 190723 - 36  | 1:100 @ A2 |                                            |  |  |
| DRAWN BY:      | CHECKED BY:  | DATE:      | REVISION.:                                 |  |  |
| JOB            | BT           | 23.09.2025 | Figure 4-17                                |  |  |





Battery Energy Compound shown in Red

Expansion Area

Control Building 1

Control Building 2

- Project Design Drawing Notes**
1. Drawings issued are for planning application purposes only.
  2. Drawings not to be used for construction/contract conditions.
  3. Copyright, all rights reserved. No part here with may be copied or reproduced partially or wholly in any form whatsoever without the prior notice of the copyright owner McCarthy Keville O'Sullivan.
  4. Do not scale off this drawing. Figured metric dimensions only should be taken off this drawing.
  5. All contractors, whether main or sub-contractors, must visit the site and are responsible for taking and checking any and all dimensions and levels that relate to the works.
  6. The use of or reliance upon this drawing shall be deemed to be acceptance of these conditions of use unless otherwise agreed in writing, such written agreement to be sought from and issued by the copyright holder to the use or reliance upon these drawings.
  7. Exact location of cable/joint bay in the road curtilage to be subject to ESB/EirGrid specifications and agreement with Galway County Council.

**Drawing Legend**

- EIAR Site Boundary
- Underground Electrical Cabling Route
- S37 Infrastructure



|                                                                                                             |                                 |                            |                               |
|-------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------|-------------------------------|
| PROJECT TITLE: <b>Cooloo Wind Farm, Co. Galway</b>                                                          |                                 |                            |                               |
| DRAWING TITLE: <b>Onsite 110kV Substation Drawing Layout</b>                                                |                                 |                            |                               |
| PROJECT No.: <b>190723</b>                                                                                  | DRAWING No.: <b>190723 - 33</b> | SCALE: <b>1:1,000 @ A3</b> |                               |
| DRAWN BY: <b>JOB</b>                                                                                        | CHECKED BY: <b>BT</b>           | DATE: <b>23.09.2025</b>    | REVISION.: <b>Figure 4-18</b> |
| OS SHEET No: 2811, 2812, 2813, 2814, 2879, 2880, 2881, 2882, 2948, 2949, 2950, 2951, 3018, 3019, 3020, 3021 |                                 |                            |                               |



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#### 4.3.2.4 Underground Electrical Cabling Route

It is intended to connect the onsite 110kV substation to the existing 110kV Cloon substation in the townland of Cloonascragh, Co. Galway via 110kV underground electrical cabling. The exact connection node is to be confirmed by EirGrid and subject to change at their request. The underground electrical cabling route is illustrated in Figure 4-1, is approx. 20.9km in length and located primarily within the public road corridor, with approx. 2.6km located within the Proposed Wind Farm site.

The underground electrical cabling route will originate at the proposed onsite 110kV substation and run south for approx. 1.2km through a site road before turning west for a further 1.4km towards the R332 Regional Road. The underground cabling route will continue southeast along the R332 road network for approx. 2.2km. The underground cabling route then follows the N63 national road west for 4.2km before continuing northwest underground along the L6234 for approx. 2.4km, continuing straight for another 860m along the L2128. The proposed cable will then travel west 1.1km along the L2115 before turning north for 105m on the L2114 followed by an immediate turn west onto the L2125. The proposed cabling route will continue 2.9km on the L2125 before heading north onto the R347 regional road. The proposed cabling route will continue for 3.9km on the R347 before turning left onto the L6141 for 335m. From the L6141 the cable turns left and travels a final 150m into the existing 110kV Cloon Substation.

The methodology for construction of the Proposed Grid Connection underground electrical cabling is presented in Section 4.8.5 below. Cross sections of the 110kV underground cabling trench are shown in Figure 4-19.

#### 4.3.2.5 Joint Bays

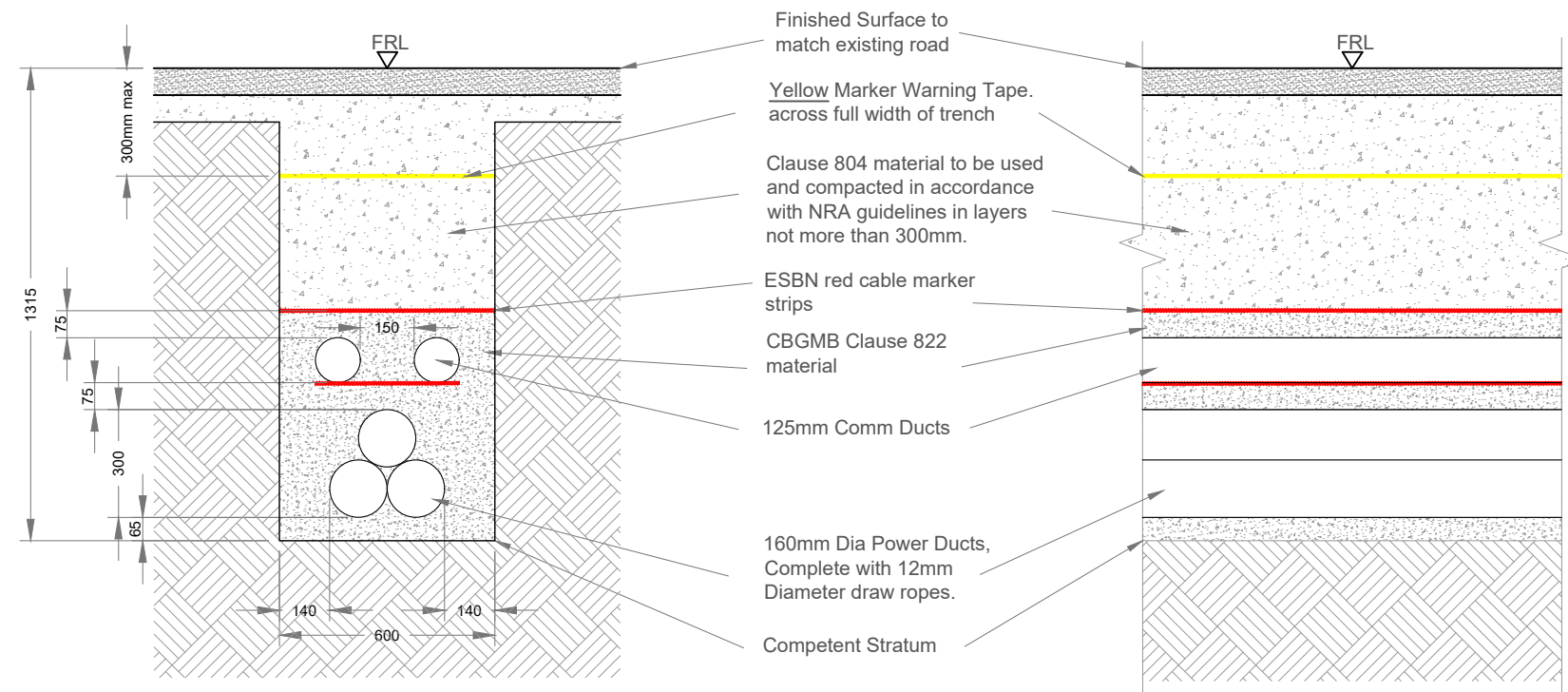
Joint bays are typically pre-cast concrete chambers where lengths of cable will be joined to form one continuous cable. They are typically 2.5m x 6m x 1.75m pre-cast concrete structures installed below finished ground level. Four joint bays, in groups of two are proposed along the proposed underground grid connection cable route, approx. 1000 metres apart or as otherwise required by ESB/EirGrid and electrical requirements.

During construction the joint bay locations will be completely fenced off once they have been constructed, they will be covered 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.

In association with joint bays, Communication Chambers are required at every joint bay location to facilitate jointing of the communication cabling. Earth Sheath Link Chambers are also required approx. every second joint bay along the cable route. Earth Sheath Links are used for earthing and bonding cable sheaths of underground electrical cabling, installed in a flat formation, so that the circulating currents and induced voltages are eliminated or reduced. Earth Sheath Link Chambers and Communication Chambers are located in proximity to Joint Bays. Earth Sheath Link Chambers and Communication Chambers will be pre-cast concrete structures with a steel access cover at finished surface level. The locations of the joint bays and chambers are shown on the Grid Connection Infrastructure drawings in Appendix 4-4.

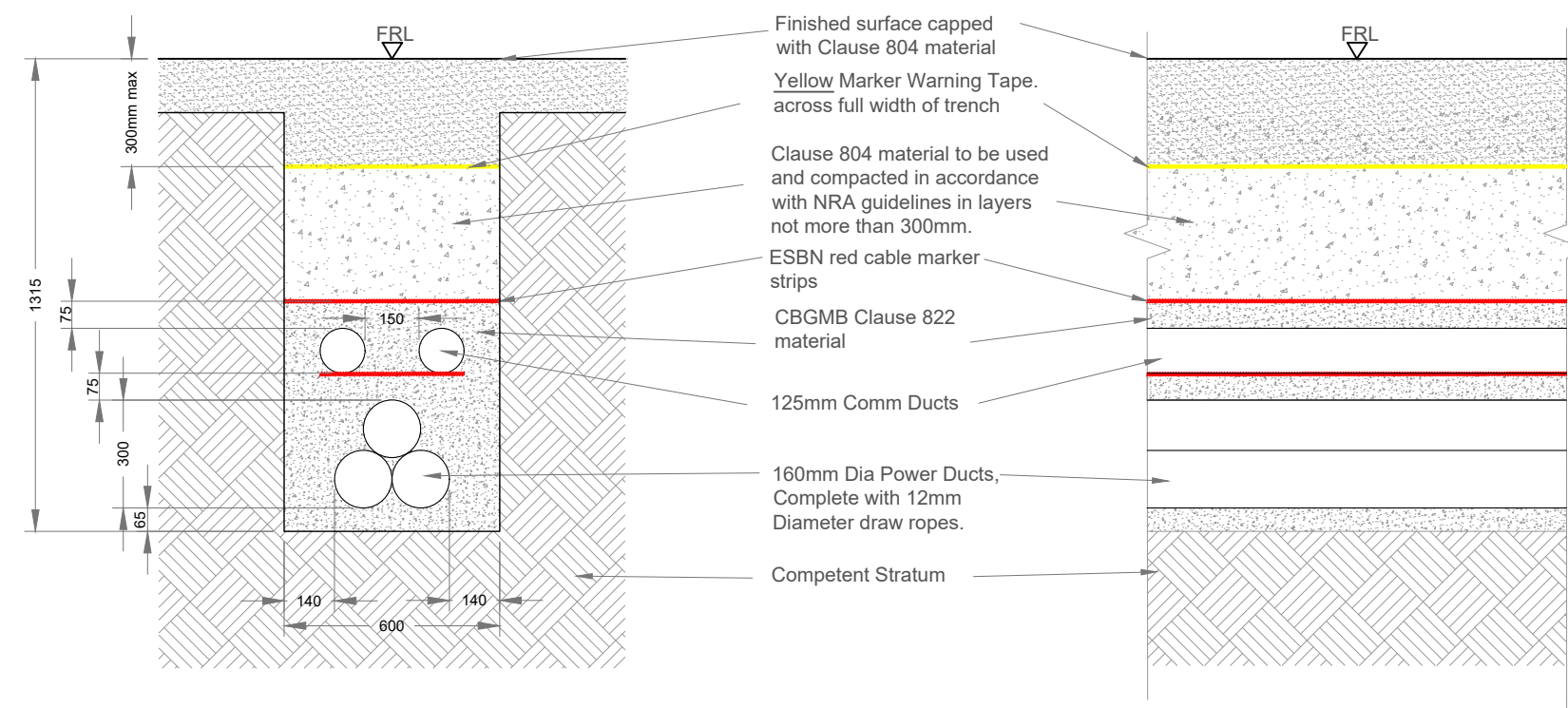
The precise siting of all Joint Bays, Earth Sheath Link Chambers and Communication Chambers within the underground cabling route corridor assessed is subject to approval by ESB and EirGrid.





### Option A - Standard 110kV Trench Detail in Road

SCALE 1:20



### Option A - Standard 110kV Trench Detail in Off-Road

SCALE 1:20

|                                                               |                                 |                         |                               |
|---------------------------------------------------------------|---------------------------------|-------------------------|-------------------------------|
| PROJECT TITLE: <b>Cooloo Wind Farm, Co. Galway</b>            |                                 |                         |                               |
| DRAWING TITLE: <b>Option A - 110kV Standard Trench detail</b> |                                 |                         |                               |
| PROJECT No.: <b>190723</b>                                    | DRAWING No.: <b>190723 - 31</b> | SCALE: <b>1:20 @ A3</b> |                               |
| DRAWN BY: <b>JOB</b>                                          | CHECKED BY: <b>BT</b>           | DATE: <b>23.09.2025</b> | REVISION.: <b>Figure 4-19</b> |



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### 4.3.3 Peat and Spoil Management Plan

#### 4.3.3.1.1 Quantities

The construction of the Proposed Wind Farm 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. These quantities were calculated by GDG as part of the *Peat Management Plan* in Appendix 4-2 of this EIAR.

Table 4-2 Peat and spoil volumes requiring management

| Development Component                         | Area (m2) (approx.) | Peat Volume (m <sup>3</sup> ) (approx.) | Spoil Volume(m <sup>3</sup> ) (approx.) |
|-----------------------------------------------|---------------------|-----------------------------------------|-----------------------------------------|
| New Access Roads (founded)                    | 60,150              | 15,490                                  | 11,380                                  |
| Upgraded Access Road (founded)                | 7,530               |                                         |                                         |
| Turbine Foundations                           | 4,420               | 2,480                                   | 14,270                                  |
| Crane Hardstandings                           | 26,100              | 17,450                                  | 28,970                                  |
| Substation and BESS Compound                  | 34,800              | 4,110                                   | 16,700                                  |
| Temporary Construction Compound               | 10,240              | 0                                       | 3,690                                   |
| Met Mast                                      | 320                 | 0                                       | 290                                     |
| Total Volumes of Peat and Spoil to be managed |                     | 39,530                                  | 75,300                                  |
| Total Volume Overall                          |                     | 114,830                                 |                                         |

Tree felling is proposed at various locations across the Proposed Wind Farm site; however, this will not involve the excavation of tree stumps and as such does not affect the excavation volumes. Where tree stumps are removed along proposed access roads, the excavation volume has been included in the above table.

#### 4.3.3.1.2 Peat and Spoil Management Areas

It is proposed to manage any excess overburden generated through construction activities locally within the Site, in identified 4 no. peat deposition areas and 5 no. spoil management areas, as shown in Figure 4-1. The total capacity of the peat repository areas within the Proposed Wind Farm site is 22,460m<sup>3</sup> and the total capacity of spoil repository areas within the Proposed Wind Farm site is 20,530m<sup>3</sup>. As stated in the Peat and Spoil Management Plan (Appendix 4-2), a conservative reinstatement volume of 50% (21,920m<sup>3</sup>) of the total peat excavation has been considered available for placement, reinstatement and re-use across the Proposed Wind Farm site. A conservative estimate of 20% (15,470m<sup>3</sup>) of the total spoil volumes has been considered as available for re-use in the construction of safety berms across the

Proposed Wind Farm site. This provides enough capacity for the total volume of peat and spoil requiring management for the Proposed Wind Farm as detailed in Table 4-2 above.

The following, outlined in the Peat and Spoil Management Plan (PSMP) in Appendix 4-2, particular recommendations/best practice guidelines for the placement of peat with respect to specific aspects of the wind farm will be considered and taken into account during construction.

### Access Roads, Hardstands and Other Infrastructure

- Controlled quantities of peat and spoil will be placed adjacent to access tracks, hardstands and other infrastructure only where it can be placed in a stable formation, i.e. where the topography and ground conditions allow.
- Placed peat material will consist of the acrotelm (upper layer) only, and it will be landscaped and shaped to aid in reinstating the construction into the surrounding environment.
- Peat and spoil will only be cast to safe heights and slope angles, considering the topography and the ground conditions. This height will be no more than 1m, and the slopes will be not greater than 1 (V): 3 (H) unless a site-specific assessment during detailed design indicates a greater height and angle is acceptable.
- The effect of drainage or water runoff will be considered when placing landscaping rising adjacent to access tracks. Landscaping material will not interfere with drainage, risk blocking of drainage systems or runoff into drainage systems.

### Peat Repository Areas

- Peat repository areas (PRAs) have been identified at locations where the topography (slope angle  $<5^\circ$ ), peat depth, resulting stability assessment (FoS of  $>1.3$  for 1m peat surcharge) and other environmental constraints (including 50m buffer from watercourses and 10m buffer from land drains) have allowed. These areas are designated for the permanent placement of up to 1m of peat material.
- A cell berm will be constructed similarly to the PRA details outlined in Appendix B of the PSMP (Appendix 4-2 of this EIAR). This cell berm will help to prevent the flow of saturated peat material. The stone cell berm will be constructed with a sufficiently coarse granular material or rock to enable the drainage of the placed peat material and prevent any instabilities within the repository area.
- The stone cell berm will require a geotextile separator. The stone cell berm will be constructed using low-ground pressure machinery working from bog mats where necessary. The founding stratum for each stone buttress will be inspected and approved by a competent Geotechnical Engineer.
- The height of the cell berm constructed will be greater than the height of the placed peat & spoil to prevent any surface peat runoff. Berms up to a maximum of 1.25m in height will be required, subject to detailed design.
- The cell berm is subject to the detail designer's specification; however, some peat excavation or installation of a shear key may be required to prevent instability of the stored material. The shear key will comprise an excavation below the existing ground level, beneath the cell berm to provide resistance against lateral forces. Where repositories are located on peat, the shear key must extend below the base of the in-situ peat.
- Where possible, the placed peat surface will be shaped to allow efficient runoff of surface water from the PRAs.
- As illustrated in Appendix B of the PSMP (Appendix 4-2 of this EIAR), a perimeter collector drain will be installed around each repository area.
- Silt ponds will be required at the repository area's lower side/outfall location. All water passing through the perimeter collector drains will be directed through the site drainage system, including silt fences, settlement ponds and other drainage measures.



as appropriate. These details are outlined in Chapter 9 (Hydrology and Hydrogeology), and will be outlined in the Contractor's Construction and Environmental Management Plan.

- Intermediate berms or buttresses of granular material may be installed within the PRA to aid in the placement and stability of the peat material. These berms will be shaped to align with the contours of the repository area.
- The Contractor shall make every reasonable effort to promote vegetation growth in the PRAs following the placement of peat and completion of construction stage activities. Upper acrotelm layers shall be placed on the surface the right way up to promote vegetation growth. This growth will aid in stabilising the placed peat material and help in preventing it from becoming saturated following heavy periods of rain. Two PRAs have been designated as Biodiversity Enhancement Areas (PRA 2 and PRA 4). The Contractor shall follow the methodologies outlined in the Biodiversity Enhancement and Management Plan (Appendix 6-4) to promote biodiversity enhancement in these locations.

### Spoil Repository Areas

Cohesive glacial tills considered unsuitable for reuse in the Proposed Project will require placement in separate spoil repository areas.

The spoil repository areas have been identified in locations where the topography (slope angle  $<5^\circ$ ), peat depth, resulting stability assessment (FoS of  $>1.3$  for 1m surcharge) and other environmental constraints (including 50m buffer from all mapped watercourses, and 10m from existing drains) have allowed. These areas are designated for permanently placing up to 1m of non-peat spoil material.

Side slopes of placed spoil material are to be no greater than 1(V):2(H).

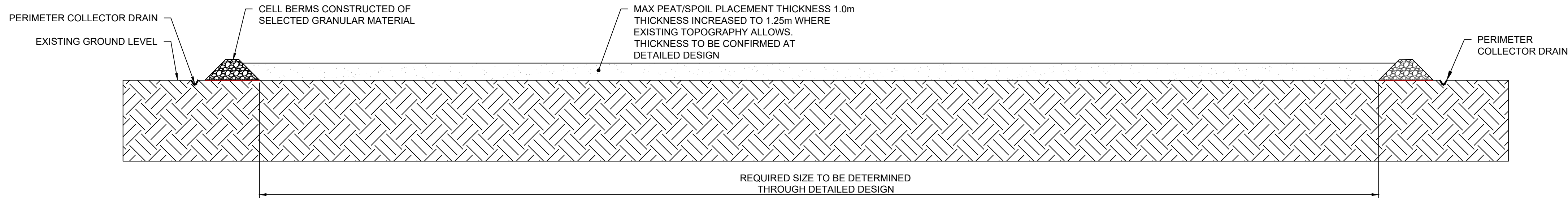
Where possible, the surface of the placed spoil will be shaped to allow efficient surface water runoff from the spoil placement areas.

Silt ponds will be required at the repository area's lower side/outfall location. All water passing through the perimeter collector drains will be directed through the site drainage system, including silt fences, settlement ponds and other drainage measures as appropriate. These details are outlined in Chapter 9 (Hydrology and Hydrogeology), and will be outlined in the Contractor's Construction and Environmental Management Plan.

Intermediate berms or buttresses of granular material may be installed within the spoil repository areas to aid in the placement and stability of the spoil material. These berms will be shaped to align with the contours of the repository area.

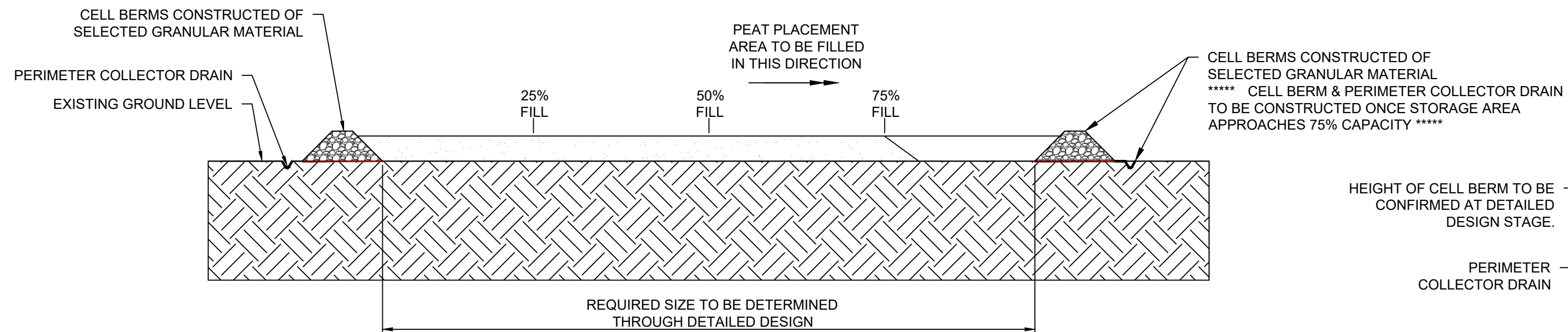
The standard drawing of a peat and spoil repository area is shown in Figure 4-20.

The peat and spoil volumes requiring management for the Proposed Grid Connection will be managed within the Site in the areas illustrated on Figure 4-1. However, some of the material (e.g. tar) excavated along the Proposed Grid Connection underground electrical cabling route will go to an appropriate licenced facility, as required.



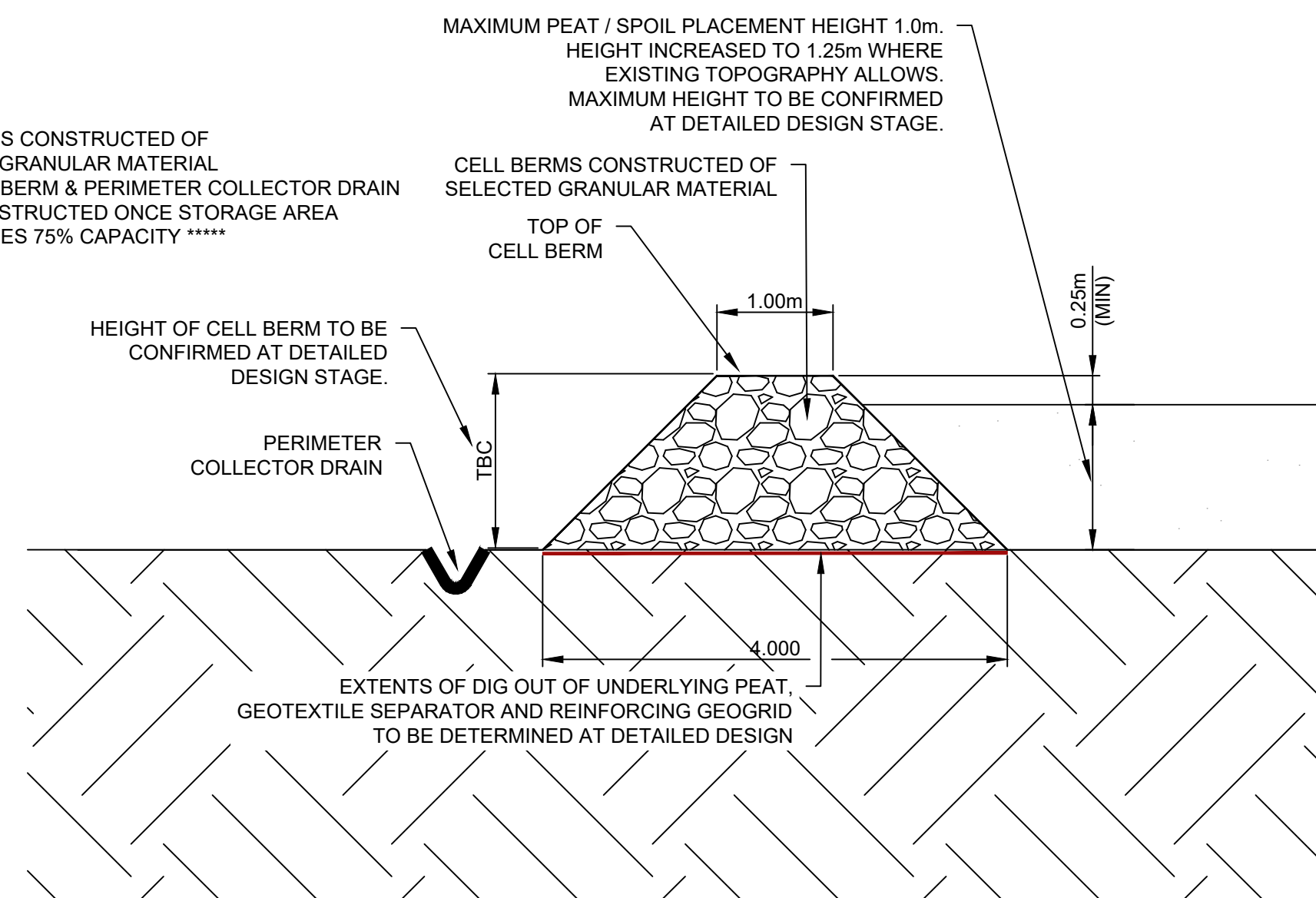
PEAT/SPOIL REPOSITORY AREA - TYPICAL SECTION A-A

SCALE 1:200



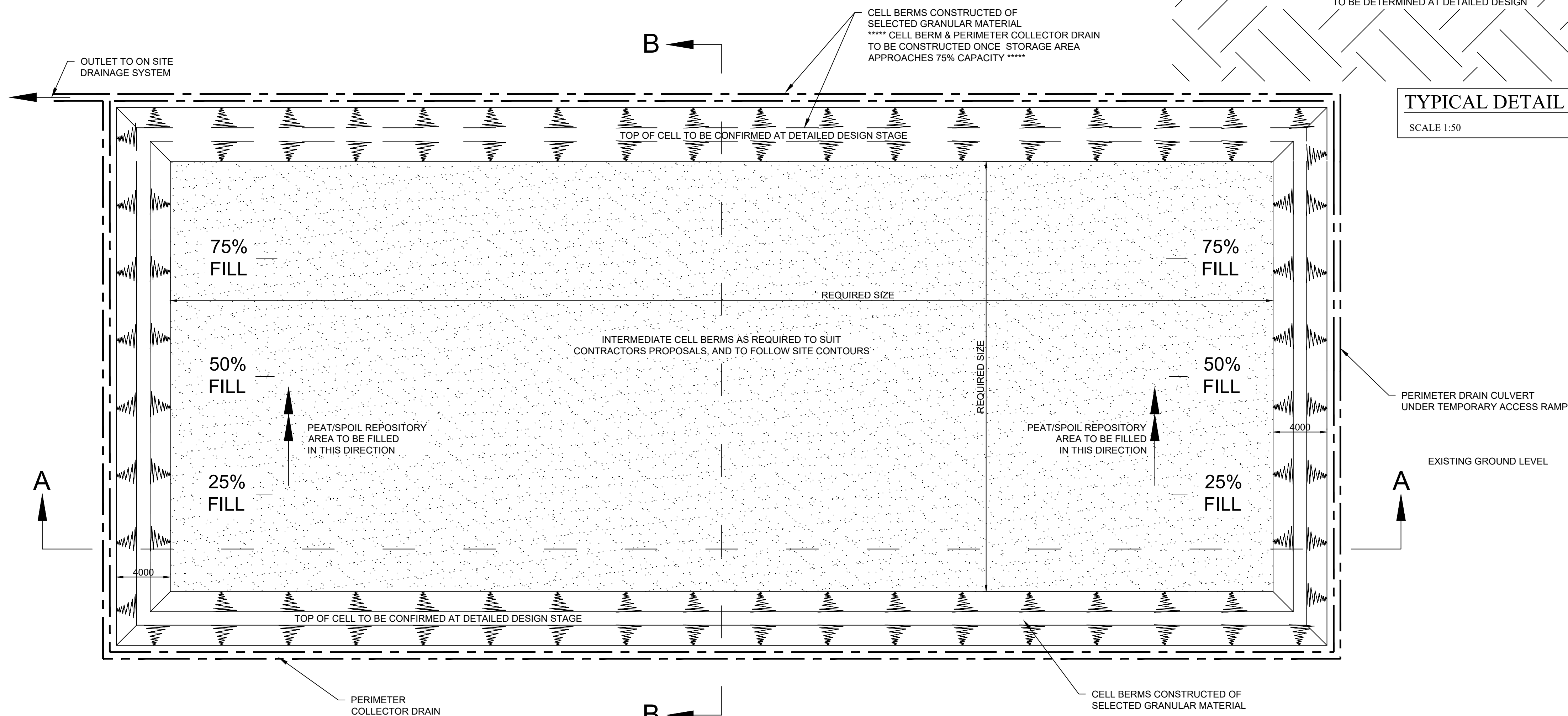
PEAT/SPOIL REPOSITORY AREA - TYPICAL SECTION B-B

SCALE 1:200



TYPICAL DETAIL - CELL BERM

SCALE 1:50



PEAT/ SPOIL REPOSITORY AREA

SCALE 1:200

NOTES:

1. THIS DRAWING IS FOR PLANNING AND ENVIRONMENTAL IMPACT ASSESSMENT PURPOSES AND SHOULD NOT BE USED AS DETAILED DESIGN OR FOR CONSTRUCTION.
2. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
3. DO NOT SCALE FROM THIS DRAWING.
4. ALL PLACED MATERIAL WILL BE ALLOWED TO REVEGETATE NATURALLY FROM THE EXTENSIVE SEED SOURCE OF THE PLANTS THAT HAVE ALREADY COLONISED IN THE AREA. ALTERNATIVELY AND POSSIBLY IN ADDITION, SEEDING OF THE PLACED SPOIL COULD BE CARRIED OUT WHICH WOULD AID IN STABILISING THE PLACED SPOIL IN THE LONG TERM.
5. WHERE POSSIBLE, THE AGROTELM SHALL BE STORED WITH THE VEGETATED PART OF THE SOD FACING THE RIGHT WAY UP TO ENCOURAGE GROWTH OF PLANTS AND VEGETATION AT THE SURFACE OF THE STORED PEAT WITHIN THE PEAT STORAGE AREAS.
6. BOG MATS TO BE PLACED PEAT WHERE NECESSARY TO FACILITATE PLANT & MACHINERY ACCESS OVER SOFT GROUND.

|              |                        |       |          |           |    |             |    |
|--------------|------------------------|-------|----------|-----------|----|-------------|----|
| REV:         | S2-P01                 | DATE: | 24/06/25 | DRAWN BY: | RR | CHECKED BY: | CE |
| DESCRIPTION: | ISSUED FOR INFORMATION |       |          |           |    |             |    |

**GDG**  
GAVIN & DOHERTY  
GEOSOLUTIONS

Unit A2,  
Nutgrove Office Park,  
Rathfarnham,  
Dublin 14, D14 X627  
Ireland.  
T +353 (0)1-2071000  
E info@gdgeo.com  
www.gdgeo.com

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**MKO**

|                |                           |
|----------------|---------------------------|
| PROJECT TITLE: | COOLOO<br>WIND FARM       |
| DRAWING No:    | 22098-GDG-ZZ-XX-DR-C-0101 |

|                |                                                      |
|----------------|------------------------------------------------------|
| Revision:      | Figure-4-20                                          |
| DRAWING TITLE: | PEAT AND SPOIL<br>REPOSITORY AREA<br>TYPICAL DETAILS |

|           |        |             |    |              |            |
|-----------|--------|-------------|----|--------------|------------|
| SCALE:    | N.T.S. | SHEET SIZE: | A1 | DATE:        | 24/06/2025 |
| DRAWN BY: | RR     | CHECKED BY: | CE | APPROVED BY: | AL         |

## 4.4 Project Site Activities

### 4.4.1 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.

### 4.4.2 Refuelling

Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles. Onsite refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site. Heavy plant and machinery will be refuelled onsite 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 onsite. Mobile measures such as drip trays and fuel absorbent mats will be 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.

### 4.4.3 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 onsite batching. Quarries that could potentially provide stone and ready-mix concrete for the Proposed Project are detailed below in Section 4.5.3.

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 4-5 and 4-6 below.





Plate 4-5 Concrete washout area



Plate 4-6 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 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.

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 complete in a single day per turbine.



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

- Concrete trucks 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 bases 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 onsite 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.

#### 4.4.3.1 Concrete Pouring

Given the scale of the turbine base concrete pours the pours will be planned approx. 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.
- Disposing of any potential, small surplus of concrete after completion of a pour in suitable locations away from any watercourse or sensitive habitats.

#### 4.4.4 Dust Suppression

In periods of extended dry weather, dust suppression may be necessary along haul roads 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.

#### 4.4.5 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 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.

#### 4.4.6 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<sup>4</sup>.

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 and demolition 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.

### 4.5 Access and Transportation

#### 4.5.1 Site Entrances

The location of construction phase and operational phase Site access points are shown in 4-21. 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. These access and egress points are shown on the site layout drawings in Appendix 4-1.

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<sup>4</sup> 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](https://www.epa.ie/publications/circular_economy/resources/CDWasteGuidelines.pdf)

The location of all Proposed Wind Farm site access is summarised in Table 4-3 and shown in Figure 4-21 below.

### Construction Site Entrance

As part of the Proposed Project, a new site entrance will be constructed from the R332 regional road in the southwest of the Proposed Wind Farm site. This entrance will be used during the construction phase of the Proposed Project. On completion of the construction phase, this entrance will be reduced in size and gated for security and will only be used for the delivery of abnormal loads (i.e., turbine component replacement) if required.

The proposed construction site entrance for the Proposed Project was subject to Autotrack assessment to identify the turning area required and to ensure the safe egress of traffic, as described in Section 15.1.10 of Chapter 15 of the EIAR.

### Operational Site Entrance

The Site will be accessible during the operational phase at 3 no. locations which are outlined in Table 4-3 below. This includes the upgrade of 1 no. existing access track running north from the R332 regional road, the construction of 2 no. new operational entrances at 2 no. locations along the L6301 local road within the centre of the Proposed Wind Farm site. The location of all site entrances is shown in Figure 4-21. These will be retained for the operational phase of the Proposed Project for use by maintenance staff travelling in Light Goods Vehicles (LGVs) who will visit the Site 1-2 times per month on average but on occasion may require daily access, if and when repairs are needed.

The new operational access east of the L6506 local road and the upgraded existing access track operational access points will also be used by EirGrid for maintenance access to the 110kV substation as part of the Proposed Grid Connection and by landowners for farming access.

### Access and Egress Points to Facilitate Crossing of Public Roads

It is proposed to construct 2 no. access and egress points in order to facilitate crossing of public roads within the Proposed Wind Farm site. From the proposed site entrance off the R332, construction traffic will access the Proposed Wind Farm site via 2 no. proposed access junctions on either side of L6506 local road for crossing in the townland of Dangan Eighter Co. Galway, before continuing through the operational site entrances on the L6301 local road. No construction traffic will access the Proposed Wind Farm site or exit onto the L6506 via these access and egress points.

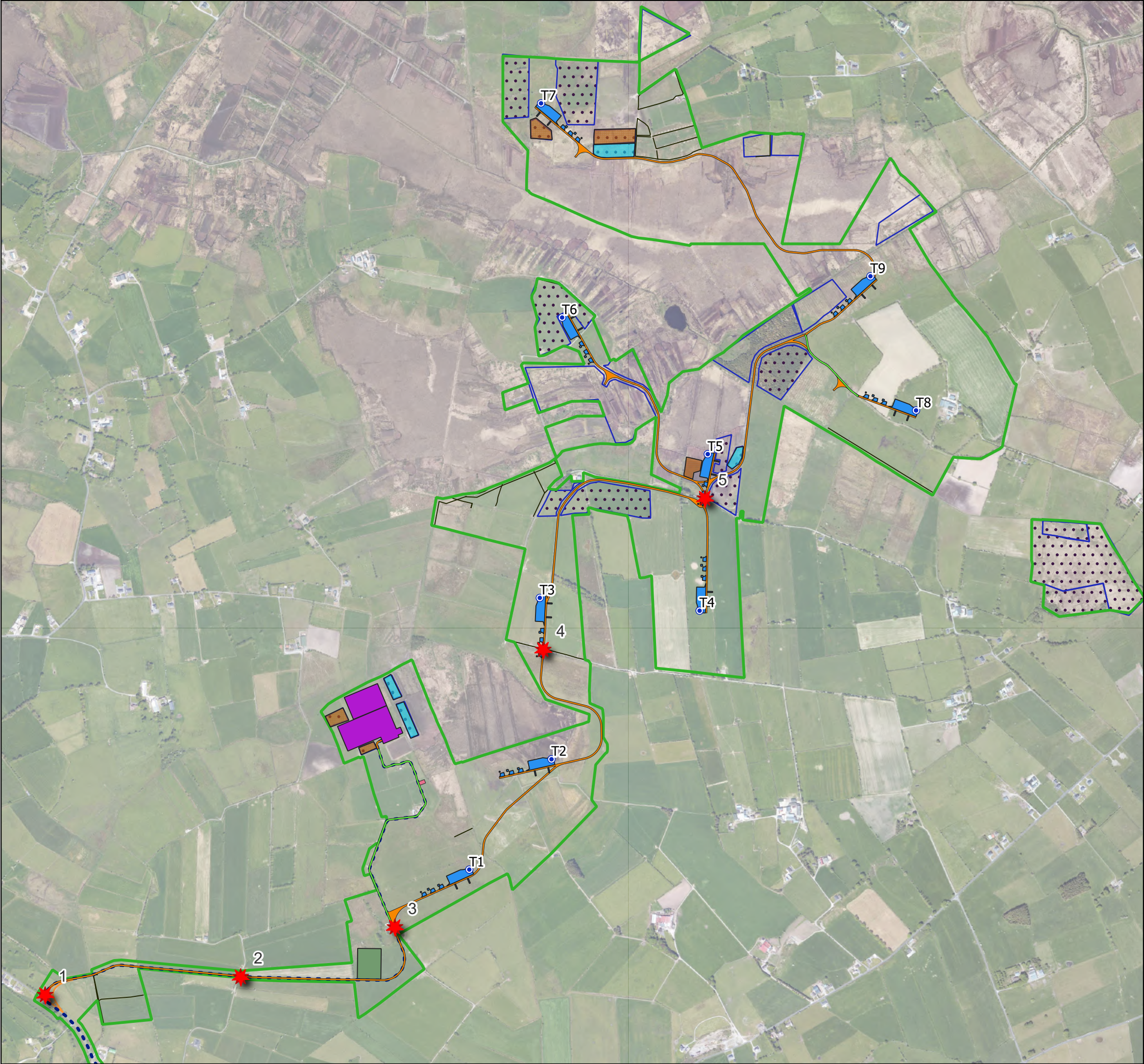
These access and egress points are shown on the site layout drawings in Appendix 4-1. These junctions are described in detail in Chapter 15, Section 15.1.10 of this EIAR. The location of Proposed Wind Farm site access is shown in Figure 4-21.



Table 4-3 Proposed Construction and Operational Phase Site Entrances

| Site Entrance No. | Description                                                                                                                                                     | Used for Turbine Delivery | Used during Construction Phase | Used During Operational Phase (maintenance and monitoring) | Existing Entrance | New Entrance | Security Gate |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------------|------------------------------------------------------------|-------------------|--------------|---------------|
| 1                 | Located along the R332 regional road on the southern boundary of the Proposed Wind Farm site. This is the construction site entrance of the Proposed Wind Farm. | ✓                         | ✓                              |                                                            |                   | ✓            | ✓             |
| 2                 | Located along the L6506 local road running in the south of the Proposed Wind Farm site                                                                          |                           | ✓                              |                                                            |                   | ✓            | ✓             |
| 3                 | Located along an existing access track running from the south of the Proposed Wind Farm and is located approx. 360m southwest of T1.                            |                           |                                | ✓                                                          | ✓                 |              | ✓             |
| 4                 | Located along the L6301 local road approx. 210m south of T3 on northern side road                                                                               |                           | ✓                              | ✓                                                          |                   | ✓            | ✓             |
| 5                 | Located along the L6301 local road approx. 175m south of T5 on northern side of road                                                                            |                           | ✓                              | ✓                                                          |                   | ✓            | ✓             |





### Map Legend

- EIAR Site Boundary
- Turbine Layout
- Turbine Crane Platform and Hardstanding
- Proposed New Roads
- Existing Roads to be Upgraded
- Proposed Met Mast
- Temporary Construction Compound
- Substation and BESS Compound
- Peat and Spoil Mangement Areas
  - Peat Mangement Areas
  - Spoil Magement Areas
- Biodiversity Enhancement Areas
- Linear Enhancement
- Grid Connection Route
- TDR Overrun Area
- Site Entrance/Access and Egress Points

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Drawing Title

Site Access

Project Title

Cooloo Wind Farm, Co. Galway

|             |          |             |             |
|-------------|----------|-------------|-------------|
| Drawn By    | CF       | Checked By  | EmcC        |
| Project No. | 190723   | Drawing No. | Figure 4-21 |
| Scale       | 1:14,000 | Date        | 2025-09-25  |

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



## 4.5.2 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 Galway has been selected and assessed to facilitate turbine delivery to the Site.

It is proposed that the large wind turbine components will be delivered from the Galway Port, north through Galway city via the L5048 Lough Atalia Road. After approx. 1.6km on the L5048 Lough Atalia Road, the turbine delivery vehicles will turn right onto the R338 Dublin Road and travel approx. 1.8km southeast before turning north onto the R865 Ballybane Road. After travelling north for 1.3km on the R865 Ballybane Road, the turbines will turn right onto the N6 National Road and travel east 6.6km before merging onto the M6 Motorway before exiting north at Junction 18 onto the M17 for 13.3km. After exiting the M17 at Junction 19 the turbine delivery vehicles will travel northeast for 12.7km along the N63 national road before turning north and traveling in a northwestern direction for along the R332 regional road. The turbines will continue straight on the R332 for approx. 2.1km before turning right into the Proposed Wind Farm site entrance. The proposed route is shown on Figure 4-22. All deliveries of turbine components to the Site will follow this route.

The proposed route described above will utilise the approx. 2.1km of new national secondary road along the N63 as proposed in the consented N63 Liss to Abbey Realignment Scheme (PI Ref: ABP 312877-22).

A turbine with the maximum blade length of 81 metres 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 92.7 metres, including the blade which overhangs the back of the vehicle. The total length of the tower transporter is 60 metres 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 for the Site, as detailed in Chapter 15: Material Assets of this EIAR.

### 4.5.2.1 Turbine Delivery Route Accommodation Works

Road and junction widening are sometimes required along proposed turbine transport routes to accommodate the large vehicles used to transport turbine components to proposed project 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 15.1.8 of this EIAR and summarised below. There are sections on the route 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 in Galway and the Proposed Wind Farm site. 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.

The locations of the accommodation areas are shown in Figure 4-23.

#### 4.5.2.1.1 **Proposed Accommodation Area**

The preliminary swept path analysis indicates that a temporary track is required in a field west of the N63/R332 junction, in the townland of Slievegorm, in order to facilitate the movement of wind turbine vehicles through this junction. It is noted that the standard road markings and visibility splays are not required at the access off the N63, or the exit onto the R332, as the temporary access road will only be used for the transportation of abnormally sized loads, which will be delivered with a Garda escort and transient traffic management vehicles operated by the haulage company. This road will not be available for any other traffic and will be closed off and opened only for the delivery of the abnormally sized loads.

Upon the completion of the construction phase, the temporary road will be covered with a layer of topsoil and reseeded and will only be used again in the unlikely event that an oversized delivery was required for wind turbine maintenance purposes. The boundary of this field and the public road corridor at either end of the temporary road will be reinstated to its current condition.

### 4.5.3 **Construction Materials Transport Route**

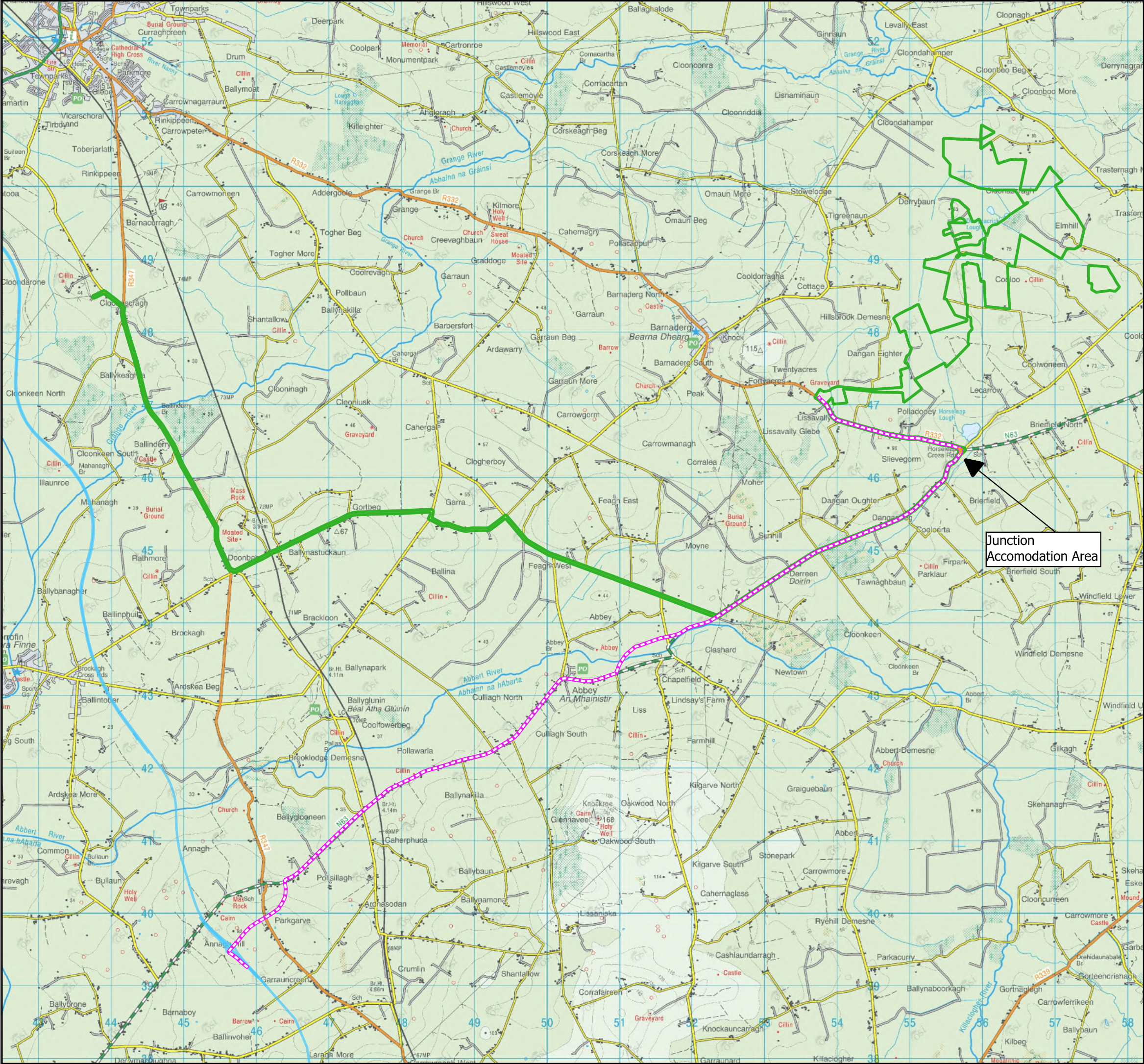
Construction materials will be delivered to the Site via selected haul routes that will be determined based on the source of the construction material. In order to facilitate the construction of the Proposed Project, all crushed stone, hardcore materials and ready-mix concrete that will be required during the construction phase will be sourced from local, appropriately authorised quarries. For the purposes of assessment within the EIAR, quarries within a 20km range of the Proposed Wind Farm site that could potentially provide stone and concrete have been assessed and are illustrated on Figure 4-24. Traffic movements generated by the Proposed Project are discussed in Section 15.1.4 of Chapter 15, Material Assets

For the purposes of assessment within the EIAR, 4 no. existing, authorised quarries, located within 20km of the Proposed Wind Farm site have been selected and are shown in Figure 4-24.

Due to the nature of the Proposed Grid Connection, the proposed works will be transient in nature along the public road network in which the Proposed Grid Connection is proposed. As such, deliveries of construction materials will utilise the surrounding road network along the Proposed Grid Connection as it moves along the public road network in which it's proposed.

It is also envisaged that general construction traffic (including materials and staff) will travel to the Site via the public road network to the proposed site entrance. The construction traffic that will be generated during the construction phase of the Proposed Project is outlined as part of the traffic and transport assessment in Chapter 15 of this EIAR.





Map Legend

- EIAR Site Boundary
- M17 Motorway
- Turbine Delivery Route



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Drawing Title

Turbine Delivery Route

Project Title

Cooloo Wind Farm, Co. Galway

Drawn By

CF

Checked By

EMcC

Project No.

190723

Drawing No.

Figure 4-22

Scale

1:51,000

Date

2025-09-25



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





Map Legend

-  EIAR Site Boundary
-  Turbine Delivery Route
-  Turbine Delivery Accommodation Area



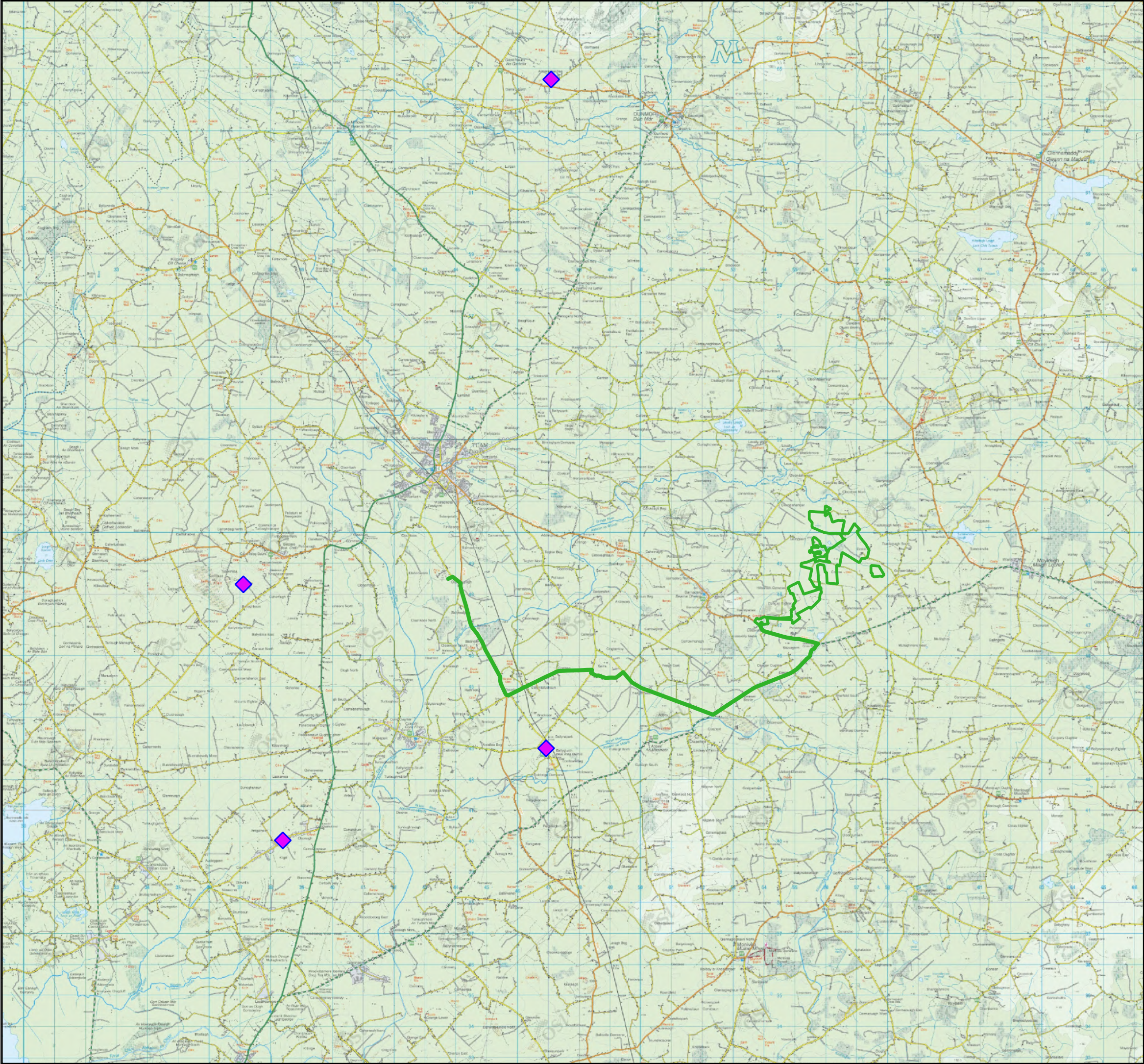
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|                                    |             |
|------------------------------------|-------------|
| Drawing Title                      |             |
| Turbine Delivery Accomodation Area |             |
| Project Title                      |             |
| Cooloo Wind Farm, Co. Galway       |             |
| Drawn By                           | Checked By  |
| CF                                 | EMcC        |
| Project No.                        | Drawing No. |
| 190723                             | Figure 4-23 |
| Scale                              | Date        |
| 1:1,500                            | 2025-09-25  |



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





Map Legend

- EIAR Site Boundary
- ◆ Quarries within 20km of the Proposed Wind Farm



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Drawing Title  
**Quarries within 20km of the Proposed Wind Farm**

Project Title  
**Cooloo Wind Farm, Co. Galway**

|                       |                            |
|-----------------------|----------------------------|
| Drawn By<br>CF        | Checked By<br>EMcC         |
| Project No.<br>190723 | Drawing No.<br>Figure 4-24 |
| Scale<br>1:120,000    | Date<br>2025-09-25         |



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



#### 4.5.4 Traffic Management

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. Escort vehicles, traffic management plans, test runs, road marshals and convoy escorts from the Garda Traffic Corps will be used to transport the components from the delivery port to the Site.

A detailed Traffic Management Plan (TMP) will be provided specifying details relating to traffic management and included in the Construction Environmental Management Plan (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 onsite. 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 will be made in convoys of three to five vehicles and mostly 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 local 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 construction of the Proposed Project a test run of the proposed transport operation along the proposed route will be completed using vehicles with attachments to simulate the dimensions of the turbine components. Following this test run, the TMP will be reviewed and updated with the haulage company when the final transport arrangements are known, delivery dates confirmed and escort proposals in place. The plan will then be submitted to Galway County Council for agreement in writing in advance of any abnormal loads using the local roads. The plan 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.

## 4.6 Site Drainage

### 4.6.1 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 on other wind farm sites and the 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 negative impact on the water quality of the Site and its associated rivers and lakes, 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: Water. 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, 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. Buffer zones around the existing natural drainage features have been used to inform the layout of the Proposed Project.

#### 4.6.2 Existing Drainage Features

The routes of any natural drainage features will not be altered as part of the Proposed Project. Turbine locations have been selected to avoid natural watercourses. It is proposed that 5 no. new clear span watercourse crossings are required for the Proposed Wind Farm site.

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 Proposed Wind Farm 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.

#### 4.6.3 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 onsite 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.

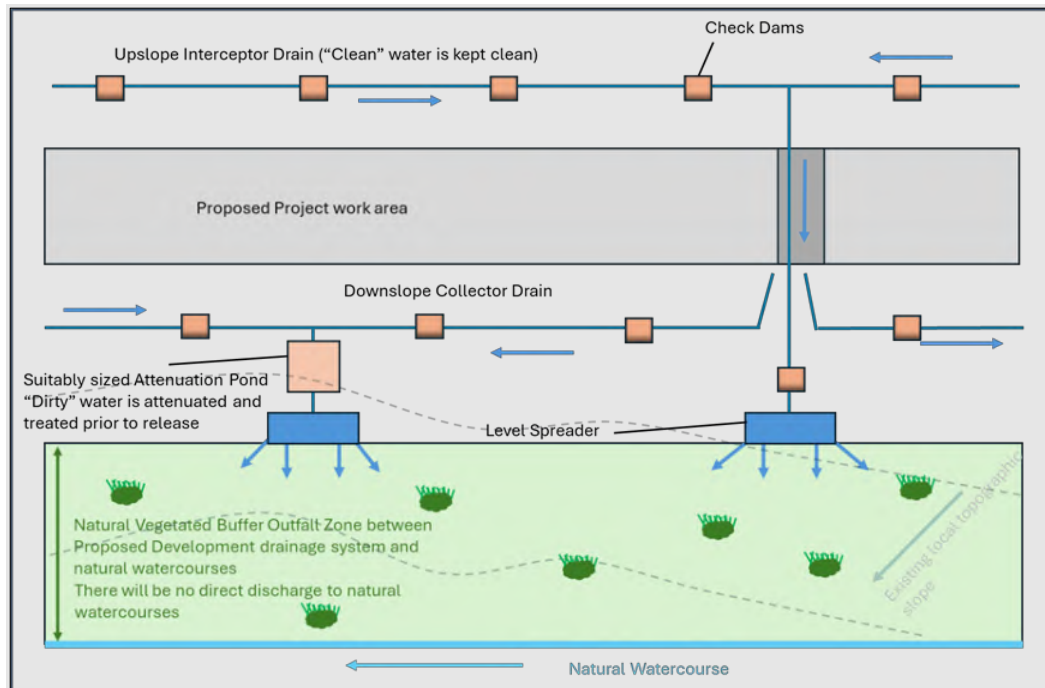


Drainage water from any works areas of the Site will not be directed to any natural watercourses within the Site. Two distinct methods will be employed to manage drainage water within the Site. The first method involves keeping clean water clean by avoiding disturbance to natural drainage features, minimising 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 line drawing of the proposed drainage design is presented in Figure 4-25 below.

Figure 4-25 Proposed Project Drainage Process Flow





## 4.6.4 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 4-5 to this EIAR. 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.

### 4.6.4.1 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 as 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 4-26 below shows an illustrative drawing of an interceptor drain.

The velocity of flow in the interceptor will be controlled by check dams (discussed further 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 (discussed 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.

#### 4.6.4.2 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 4-26 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.

#### 4.6.4.3 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 4-26, 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 approx. 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.

#### 4.6.4.4 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 level 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 4-26 below, 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 (discussed 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.

#### 4.6.4.5 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 approx. 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 4-26 below, 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 the drain at the top of the pipe will be repaired promptly.

#### 4.6.4.6 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.

#### 4.6.4.7 Stilling Ponds (Settlement Ponds)

Stilling ponds will be used to attenuate runoff from works areas of the Site 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 4-26, below, shows an illustrative example of a stilling pond system.

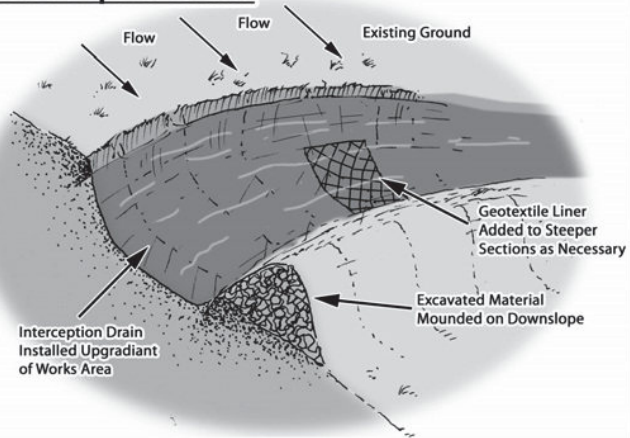
Water will flow by gravity through the stilling pond system. The stilling ponds will be sized according to the size of the area they will be receiving water from but will be sufficiently large to accommodate peak flows storm events. The stilling ponds will be dimensioned so that the length to width ratio 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.

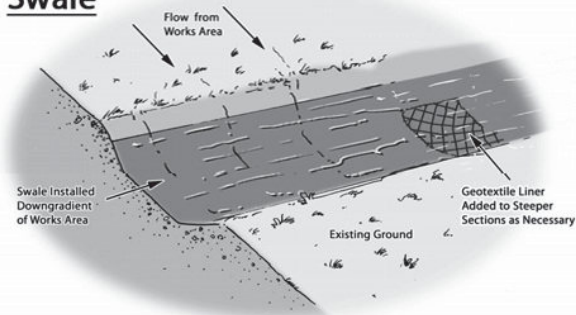
Stilling ponds will be located towards the end of swales, close to where the water will be reconverted to diffuse sheet flow. Upon exiting the stilling pond system, water will be immediately reconverted to diffuse flow via a fan-shaped rock apron if there is adequate space and ground conditions allow.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

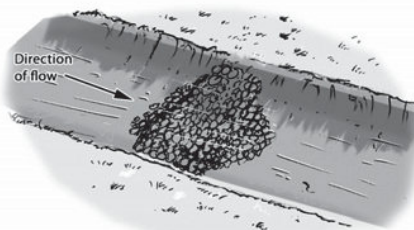
## Interceptor Drain



## Swale

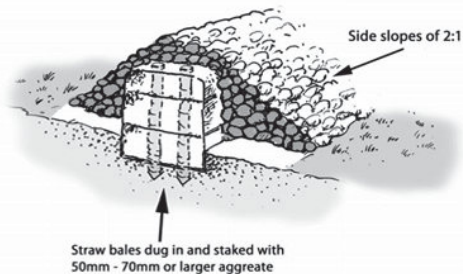


## Check Dam (Stone Dam in Drain)

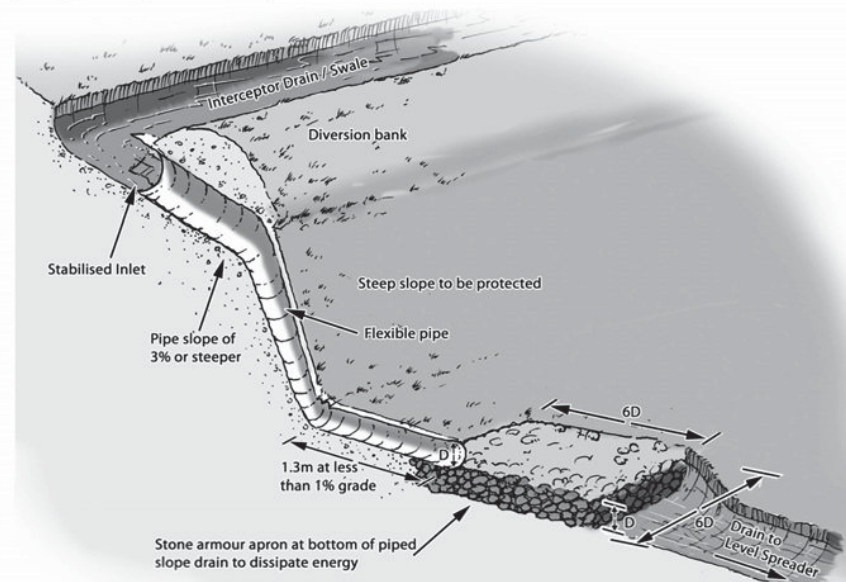


## Check Dam

(Straw Bale & Stone Dam - Cross Section)

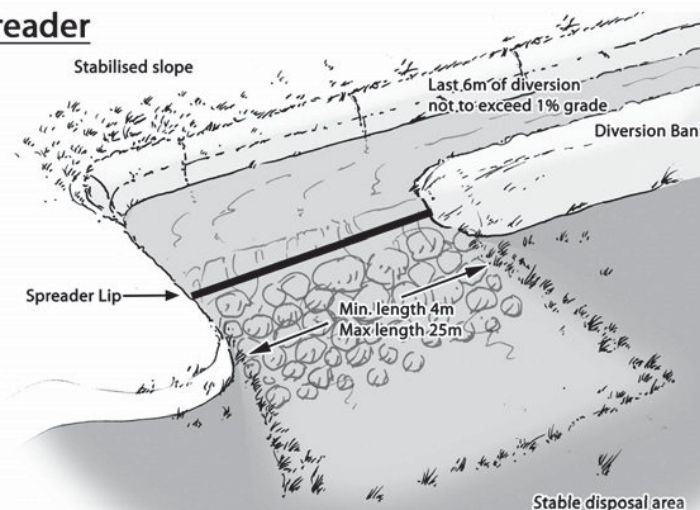


## Slope Pipe Drain



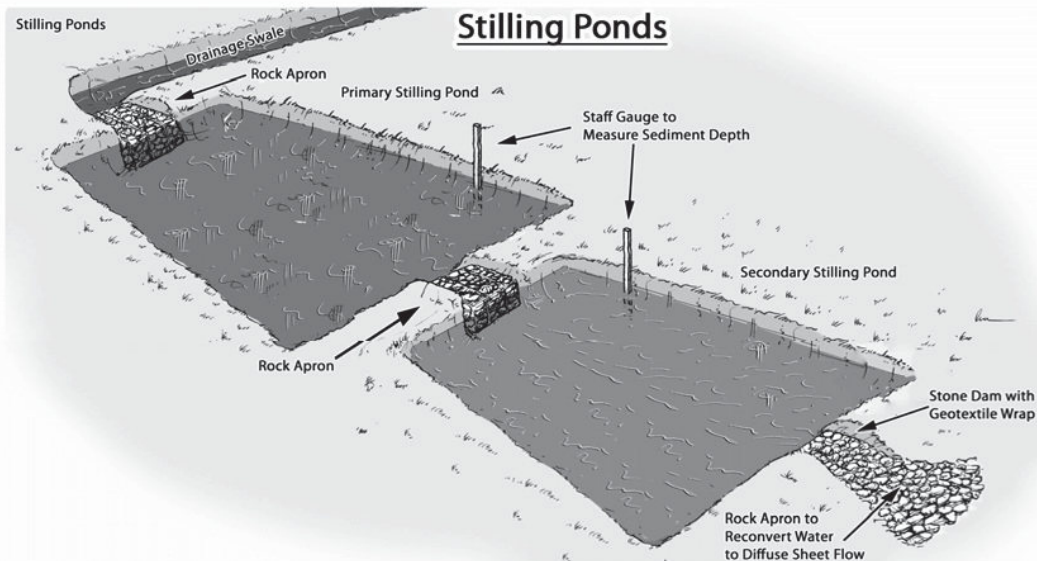
## Drainage Design Measures

## Level Spreader



## Stilling Ponds

## Stilling Ponds



|                                                                                                                                                         |                              |             |             |             |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------|-------------|-------------|--------|
| Drawing Title                                                                                                                                           | Drainage Design Measures     | Drawing No. | Figure 4-26 | Scale       | NTS    |
| Project Title                                                                                                                                           | Cooloo Wind Farm, Co. Galway | Date        | 27.08.2025  |             |        |
| Drawn By                                                                                                                                                | CF                           | Checked By  | EMcC        | Project No. | 190723 |
| MKO Planning and Environmental Consultants Tuam Road, Galway Ireland, H91 VW84 +353 (0) 91 735611 email:info@mkofireland.ie Website: www.mkofireland.ie |                              |             |             |             |        |



#### 4.6.4.8 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 4-27 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.

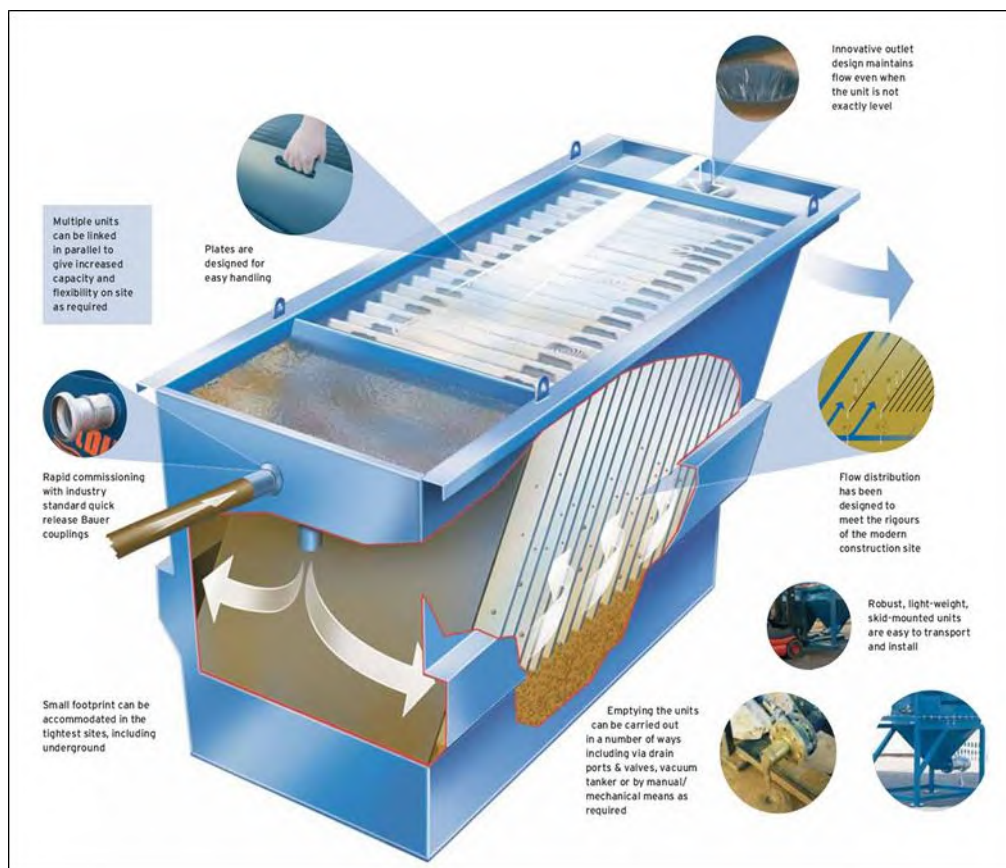


Figure 4-27 Siltbuster (Source: [https://www.siltbuster.co.uk/sb\\_prod/siltbuster-fb50-settlement-unit/](https://www.siltbuster.co.uk/sb_prod/siltbuster-fb50-settlement-unit/))

#### 4.6.4.9 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 silt into the stream.

The dewatering silt bag that will be used will be approx. 3 metres in width by 4.5 metres (see Plate 4-7 below) in length and will be capable of trapping approx. 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 under inspection



Plate 4-8 Silt Bag with water being pumped through

#### 4.6.4.10 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.

#### 4.6.4.11 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.

#### 4.6.4.12 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.

#### 4.6.4.13 Hydrocarbon Interceptor

A hydrocarbon (or petrol) interceptor is a trap used to filter out hydrocarbons from surface water runoff. A suitably sized hydrocarbon interceptor will be installed wherever it is intended to store hydrocarbons and oils (i.e., construction compounds and substation compound) or where it is proposed to park vehicles during the construction and operational phases of the Proposed Project (i.e., construction compounds and substation compound).

#### 4.6.4.14 Tree Felling Drainage

Tree felling will be required within and around Proposed Project footprint to allow for the construction of the turbine bases, access roads, underground cabling, and the other ancillary infrastructure. Some of the associated infrastructure (hardstand and access track) of Turbine 9 are located within an area of young conifer forestry. The felling will not be undertaken simultaneously with construction groundworks. Keyhole felling to facilitate construction works will take place prior to groundworks commencing.

During tree felling there is a potential to generate silts and sediments in surface water runoff due to tracking of machinery and disturbance of the ground surface etc, however mitigation is provided in Chapter 9 Water with regard to 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 onsite during the remainder of the forestry keyhole felling works.
- Prior to the commencement of works, review and agreement of 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 at suitable sampling locations.
- Sampling shall be taken from the stream / riverbank, 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.

To protect watercourses, the following measures will be adhered to during all keyhole/tree felling activities.

- All relevant measures, best practice methods and requirements set out in Chapter 9 of the EIAR will be adhered to including Forestry & Water Quality Guidelines, Forest Harvesting & the Environment Guidelines and the Forest Protection Guidelines.
- 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.

#### 4.6.5 Cable Trench Drainage

Cable trenches are typically constructed in short, controlled 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. This operation normally occurs over a period of 2-4 hours.

To efficiently control drainage runoff from cable trench works areas, excavated material is stored on the up-gradient side of the trench and is temporarily sealed/smoothed over, using the back of the excavator bucket. Should any rainfall cause runoff from the excavated material, the material is therefore collected and 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 one of the onsite designated spoil management areas or used for landscaping and reinstatement of other areas elsewhere onsite. Along sections of the Proposed Grid Connection that are further removed from the Proposed Wind Farm site it may be more practical to transport excess excavated material to a nearby licenced 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 runoff.

## 4.6.6 Site Drainage Management

### 4.6.6.1 Preparative Site Drainage Management

All materials and equipment necessary to implement the drainage measures detailed above, will be brought onsite in phases as they are required during the construction phase. A sufficient number of straw bales, clean drainage stone, terram, stakes, etc. will be kept onsite at all times to implement the drainage design measures as necessary. The drainage measures detailed in the above will be installed prior to, or at the same time as the works they are intended to drain.

### 4.6.6.2 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. 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.

### 4.6.6.3 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 onsite. 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 onsite. 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.

## 4.6.7 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 Project Hydrologist. The drainage inspection and maintenance plan are included in the CEMP in Appendix 4-5 of this EIAR.

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 Proposed 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 by 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.

## 4.7 Construction Management

### 4.7.1 Construction Timing

It is estimated that the construction phase of the Proposed Project will take approx. 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 occur outside the bird breeding season (1st of March to 31st of August) to avoid any potentially significant effects on nesting birds. Construction 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 period or at critical periods within the programme (i.e., concrete pours) or to accommodate delivery of large turbine components along public routes it could be necessary on occasion to work outside of these hours. Any such out of hours working will be agreed in advance with the Local Authority.

### 4.7.2 Construction Sequencing

The construction phase can be broken down into three main overlapping phases and will take approx. 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 entrances.
- Construct new Site roads to temporary compound.
- Clear and hardcore area for temporary Site offices. Install same.
- Construct bunded area for oil storage.
- Construct new Site roads and hard-standings and crane pads.
- Construct drainage ditches, culverts etc. integral to road construction.
- Excavate for turbine bases. Place blinding concrete to turbine bases. Fix reinforcing steel and anchorage system for tower section. Construct shuttering. Fix any ducts etc. to be cast in. Pour concrete bases. Cure concrete. Remove shutters after concrete cures.
- Excavate trenches for Site cables, lay cables and backfill. Provide ducts at road crossings.
- Backfill tower 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 bases/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.
- Grid connection.
- 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 5.10.2.1 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 onsite 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 1<sup>st</sup> 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 |
| 1  | Site Health and Safety          |        |    |    |    |        |    |
| 2  | Grid Connection                 |        |    |    |    |        |    |
| 3  | Site Compounds                  |        |    |    |    |        |    |
| 4  | Site Roads                      |        |    |    |    |        |    |
| 5  | Substation and Electrical Works |        |    |    |    |        |    |
| 6  | Turbine Hardstands              |        |    |    |    |        |    |
| 7  | Turbine Foundations             |        |    |    |    |        |    |
| 8  | Backfilling and Landscaping     |        |    |    |    |        |    |
| 9  | Turbine Delivery and Erection   |        |    |    |    |        |    |
| 10 | Substation Commissioning        |        |    |    |    |        |    |
| 11 | Turbine Commissioning           |        |    |    |    |        |    |

### 4.7.3 Construction Phase Monitoring and Oversight

The requirement for a CEMP to be prepared in advance of any construction works commencing on any development site and submitted for agreement to the Planning Authority is now well-established. The procedures for the implementation of the mitigation measures outlined in the CEMP and their completion is audited by way of a CEMP Audit Report.

The CEMP Audit Report 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 effectiveness of the mitigation measures has to 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, peat and spoil management, waste management etc, and describes how the above-mentioned audit will function and how the findings are 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 onsite construction staff will be responsible for implementing the mitigation measures specified in the EIAR and compiled in the Audit Report which is included in the CEMP. 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 ensures that the mitigation measures are maintained for the duration of the construction phase, and into the operational phase where necessary.

## 4.8 Construction Methodologies

This section of the chapter outlines the construction methodologies to be used for the various elements of the Proposed Wind Farm and Proposed Grid Connection. Further details in relation to construction methodologies is included in Section 2 of the CEMP, included as Appendix 4-2 of this EIAR.

### 4.8.1 Proposed Wind Farm

#### 4.8.1.1 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). Where the ground conditions do not have a competent stratum of sufficient load bearing capacity, piling method will be utilised. As detailed above in Section 4.2, numerous intrusive site investigations 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 2.3.3.11 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 and 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 and/or landscaping 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 approx. 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 the Proposed Wind Farm site in two 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.

## 4.8.2 Site Roads and Hardstand Areas

### 4.8.2.1 New Site Access Road

The construction methodology for the proposed new access roads is outlined, as stated in the Peat and Spoil Management Plan in Appendix 4-2, as follows:

1. Excavation of the new access road to competent strata (see Section 6 of the Peat and Spoil Management Plan for guidance on correctly handling and storing the different peat layers). Maximum excavation side slopes will be 1:1.5.
  - a. Drainage shall be installed to divert surface and groundwater from the construction areas.
2. A layer of geogrid/geotextile may be required at the base of the excavation. To be confirmed at detailed design stage.
3. Placement of granular fill-in layers following the designer's specification. The fill thickness is 200mm above the existing ground level, in addition to the fill thickness required to backfill the excavation to a suitable competent strata below the existing ground level.
4. Access roads are to be finished with a granular running surface across the full width of the road.

The general methodology to construct new floating roads (i.e. See Detail B of the road construction detail drawings presented in Appendix C of the Peat and Spoil Management Plan included as Appendix 4-2 of this EIAR) is presented below.

1. Placement of a geotextile or geogrid directly onto the peat surface following the designer's specification.
2. Placement of granular fill up to 800mm and reinforcing geogrids in layers following the designer's specification, with due regard to any settlement and deformation of peat anticipated at the access track.

- a. Cross-drains shall be installed within the road to divert surface and groundwater from upslope to downslope.
- b. Stone delivered to the floating road construction shall be end-tipped onto the constructed floating road in a manner that will avoid excessive impact loading on the peat due to concentrated end-tipping. Direct tipping of stone onto the peat shall not be carried out.
- c. Stone will be spread and placed from the constructed floating road onto the peat surface using a bulldozer.
3. Access roads are to be finished with a granular running surface across the full width of the road.

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

The presence of excavations can destabilise the road. Where required, for example for the installation of internal cabling offset from the footprint of the floated road, temporary excavations will be excavated in short lengths and backfilled as soon as practicable. These works will be designed and supervised by Project Geotechnical Engineer.

Spoil materials can be used for landscaping along the edge of access road sections to aid with the restoration of the peatland areas and embed the access roads into the surrounding environment where slope and ground conditions allow, limiting their ecological and environmental impact. Consideration needs to be given to the placement of excavated materials in areas of potential instability or additional mitigation requirements, as highlighted in the PSRA (GDG, 2025). Where permissible, excavated materials will be placed to a maximum height of 1m and stockpile widths of a minimum of 2 to 3m unless site-specific detail designs allow larger volumes to be placed. Large stockpiles of materials shall not be placed on or adjacent to floated access roads to avoid bearing failure of the underlying peat.

Peat placement or landscaping will be carried out only in areas where it is topographically contained and does not create a propagated landslide risk – see PSRA (GDG, 2025).

For this development, particular buffer areas including construction buffers have been highlighted in the PSRA (GDG, 2025) and are presented in Appendix A of the Peat and Spoil Management Plan.

#### 4.8.2.2 Upgrading of Existing Site Access Road

The general methodology to upgrade existing founded roads as presented in Appendix B of the PSMP (Appendix 4-2 of this EIAR)) is detailed below.

1. Excavation on one or both sides of the existing access road to competent strata.
2. Placement of granular fill up to 800mm and reinforcing geogrids in layers following the designer's specification, with due regard to any settlement and deformation of peat anticipated at the access track.
3. Overlay of the existing access road with selected granular fill following the designer's specification.
  - a. Where coarse granular fill has been used in the existing floated access road makeup, a layer of geogrid should be placed on top of the existing floated access road.
4. Access roads are to be finished with a granular running surface across the full width of the road.
  - a. A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer's specification.

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



1. Tree brush and/or a geotextile is placed on one or both sides of the existing access road directly onto the peat surface, following the designer's specification.
2. Benching of existing road and placement of granular fill and reinforcing geogrids in layers following the designer's specification, with due regard to any settlement of peat anticipated for the widened area.
  - a. It may be necessary to stage the widening to maintain peat stability – i.e. to reduce the rate of placement of fill to allow the peat layers to consolidate and increase in strength.
  - b. It may be necessary to anchor the geogrids into the existing roads, requiring significant benching of existing roads.
3. Overlay of the existing access road with selected granular fill following the designer's specification.
  - a. Where coarse granular fill has been used in the existing floated access road makeup, a layer of geogrid should be placed on top of the existing floated access road.
  - b. The surface of the existing access road should be graded/levelled before the placement of any geogrid/geotextile, where necessary (to prevent damaging the geogrid/geotextile).
4. Access roads are to be finished with a layer of capping across the full width of the road.
  - a. A layer of geogrid/geotextile may be required at the surface of the existing access road following the designer's specification.

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

### 4.8.3 Proposed Clear-Span Watercourse Crossing

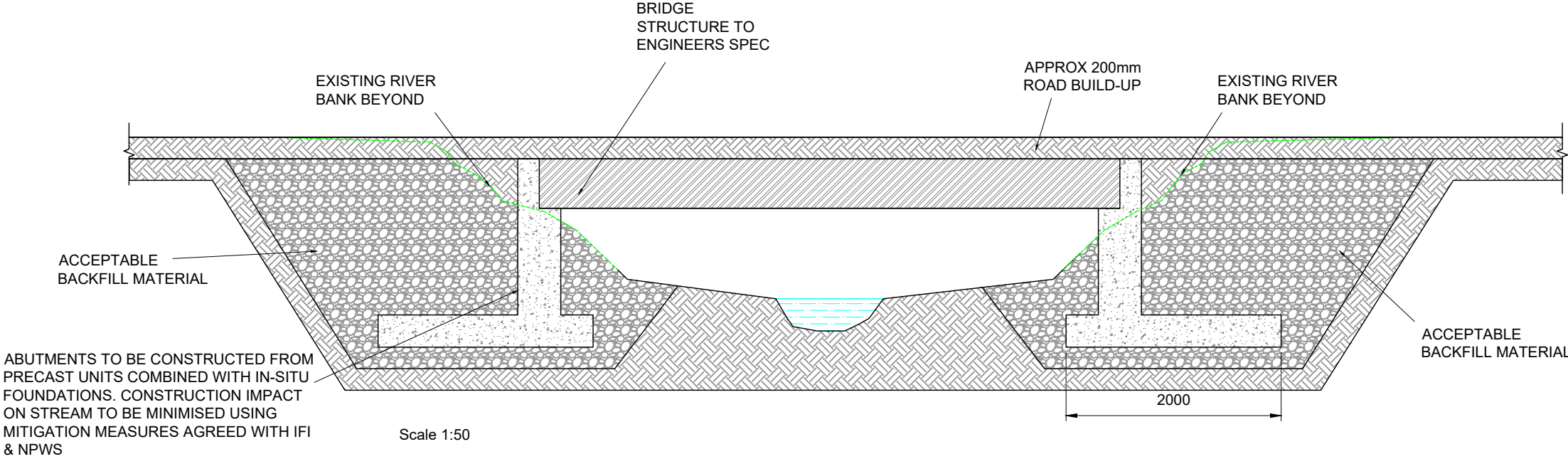
It is proposed to construct a clear-span watercourse crossing at 5 no. locations within the Proposed Wind Farm site where new or upgrades crossings are required. The locations of these crossings are shown on the layout drawings included in Appendix 4-1 of this EIAR. The clear-span watercourse crossing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

- 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.
- All drainage measures along the proposed road will be installed in advance of the works.
- 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.
- Access to the opposite side of the watercourse for excavation and foundation installation will require the installation of a temporary pre-cast concrete or metal bridge across the watercourse to provide temporary access for the excavator. Plant and equipment will not be permitted to track across the watercourse.
- Once the foundation base has been completed, the pre-cast concrete box 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.
- Where the box culvert is installed in sections, the joints will be sealed to prevent granular material entering the watercourse,
- Once the crossing is in position stone backfill will be placed and compacted against the structure up to the required level above the foundations.

A design drawing of a pre-cast concrete, clear span crossing is shown in Figure 4-28.

The watercourse crossings 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.



|                                                       |                                 |                         |                               |
|-------------------------------------------------------|---------------------------------|-------------------------|-------------------------------|
| PROJECT TITLE: <b>Cooloo Wind Farm, Co. Galway</b>    |                                 |                         |                               |
| DRAWING TITLE: <b>Clear Span Watercourse Crossing</b> |                                 |                         |                               |
| PROJECT No.: <b>190723</b>                            | DRAWING No.: <b>190723 - 35</b> | SCALE: <b>1:50 @ A3</b> |                               |
| DRAWN BY: <b>JOB</b>                                  | CHECKED BY: <b>RD</b>           | DATE: <b>24.09.2025</b> | REVISION.: <b>Figure 4-28</b> |





#### 4.8.4 Temporary Construction Compounds

The proposed temporary construction compound 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 will be established using a similar technique as the construction of the substation platform as discussed below in Section 4.8.6.1;
- A layer of geo-grid will be installed where deemed necessary by the designer 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;
- A limited amount of fuel will have to be stored in appropriately bunded containers and a designated area for oil storage will be constructed within the compound.
- A waste storage area will be provided within the compound;
- The compound 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.

#### 4.8.5 Underground Electrical (33kV) and Communication Cabling

The transformer in each turbine is connected to the onsite substation through a network of buried electrical cables. 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 will be bedded with suitable material. The cables will be laid at a depth of approx. 1.2m below ground level; a suitable marking tape is installed between the cables and the surface (see Plate 4-9 below illustrating an example of a single cable trench). On completion, the ground will be reinstated as previously described above. The route of the cable ducts will follow the access tracks as illustrated on the Wind Farm layout drawings included as Appendix 4-1 of the EIAR. The cabling may be located on either side of the road and/or within the road footprint.

#### 4.8.6 Proposed Grid Connection

##### 4.8.6.1 Onsite Electricity Substation and Control Buildings

The onsite 110kV substation will be constructed by the following methodology:

- The area of the onsite substation will be marked out using ranging rods or wooden posts and the soil and overburden stripped and removed to a nearby spoil management area for later use in landscaping. Any excess material will be sent to one of the designated spoil management areas.
- 2 no. control buildings will be built within the onsite 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 DPC 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 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 onsite conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather.
- The electrical equipment will be installed and commissioned.
- Perimeter fencing will be erected.
- The construction and components of the substation will be built to Eirgrid specifications.

#### 4.8.6.2 Underground Electrical (110kV) and Communication Cabling

The underground cabling works will consist of the installation of ducts in an excavated trench to accommodate electrical and fibre communications cables to facilitate a loop connection between the proposed 110kV onsite substation and the existing 110kV Cloon Substation.

The underground electrical cabling will be laid beneath the surface of private roads (existing and proposed) and the public road using the following methodology:

- Before works commence, updated surveying will take place along the proposed cable route, with all existing culverts and services identified. All relevant bodies i.e., ESNB, Galway County Council etc. will be contacted and all up to date information for all existing services sought.
- When the cable is located on public roads, a traffic management plan will be prepared 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.
- 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 (see Plate 4-9 below illustrating an example of a cable trench).
- The cable ducts will be concrete surrounded where they pass under the public road and under drains or culverts.
- 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 from 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.
- Four pre-cast concrete joint bay chambers typically 2.5m x 6m x 1.75m will be installed below finished ground level, approx. 1000 metres apart or as otherwise required by ESB/Eirgrid and electrical requirements.
- 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 cabling.



Plate 4-9 Typical Cable Trench View

#### 4.8.6.3 Existing Underground Services

Any underground services encountered along the cable route 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, with marker tape on the side of the trench. Back fill around any utility services will be with dead sand/pea shingle where appropriate, as detailed in Appendix 4-4: Grid Connection Drawings.



#### 4.8.6.4 **Underground Cable Watercourse/Culvert/Service Crossings**

There are 8 no. identified watercourse crossings along the Proposed Grid Connection underground electrical cabling route, 4 no. of which are referenced on EPA/OSI mapping. The construction methodology for the 8 no. identified watercourse crossings has been designed to eliminate the requirement for in-stream works on these locations requiring a crossing to be constructed to traverse the watercourse with the cabling ducts. The Proposed Grid Connection will also cross over the Athenry to Tuam railway no longer in use at 1 no. location, located entirely within the public road corridor.

A general description of the various construction methods employed at watercourse crossings are described in the following paragraphs below. An illustration of the proposed crossing methodologies are included in Appendix 4-4.

Inland Fisheries Ireland have published guidelines relating to construction works along water bodies entitled “*Requirements for the Protection of Fisheries Habitats during Construction and Development Works at River Sites*”, and these guidelines will be adhered to during the construction of the Proposed Project.

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

Where culverts require upgrading, the Applicant will commission a survey of culverts, the results of which will inform the exact details of the upgrade works which will be forwarded to the relevant Local 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.

##### 4.8.6.4.1 **Standard Formation Crossing over Culvert – Option A**

Where adequate cover exists above a culvert or service, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or water course. The cable trench will pass over the culvert in a standard trench as outlined in Figure 4-29.

Where no crossing currently exists, the cable will pass over the watercourse in a bottomless box culvert or pre-cast concrete slab in a standard trefoil arrangement. Where required existing culvert crossings will be extended using appropriately sized corrippe (see Section 4.6.4 above).

##### 4.8.6.4.2 **Standard Formation Crossing under Culvert – Option B**

Where the culvert or service crossing consists of a socketed concrete or sealed plastic pipe and sufficient depth is not available over the crossing, a trench will be excavated beneath the culvert and cable ducts will be installed in the standard formation 300mm below the existing pipe as outlined in Figure 4-30.

##### 4.8.6.4.3 **Shallow Formation Crossing over Culvert – Option C**

Where cable ducts are to be installed over an existing culvert or service crossing where sufficient cover cannot be achieved, the ducts will be laid in a much shallower trench, the depth of which will be determined by the cover available at the culvert crossing location. The ducts within the shallow formation trench will be encased in 6mm thick steel galvanized plates and backfilled with 35N concrete as outlined in Figure 4-31.

Where sufficient deck cover is not available to fully accommodate the required ducts, it may be necessary to locally raise the footpath level if present, or to locally raise the pavement level. Should the footpath or pavement level be increased, the parapet wall levels will also increase to facilitate the raise

in pavement level if required. Any addition of a new pavement will be tied back into the existing road pavement at grade.

#### 4.8.6.4.4 **Directional Drilling – Option D**

In the event that none of the above methods are appropriate, directional drilling (DD) will be utilised.

DD is a method of drilling under obstacles such as bridges, culverts, railways, water courses, etc. in order to install cable ducts under the obstacle. This method is employed where installing the ducts using standard installation methods is not possible.

The DD method of duct installation will be carried out using Vermeer D36 x 50 Directional Drill (approx. 22 tonnes), or similar plant, for the directional drilling at watercourse/culvert crossings listed in Table 4-5 below. The launch and reception pits will be approx. 0.55m wide, 2.5m long and 1.5m 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 shall 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 shall continue with the addition of 3.0m long drill rods, mechanically loaded and connected into position as outlined in Figure 4-32.

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 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 exists.

Table 4-5 Watercourse crossing types

| Crossing No.         | Watercourse Type | Width of Channel (m) | Cover from Road Level to Top of Bridge/Culvert (m) | Crossing Type Description | Watercourse Crossing Type | Extent of in-channel works        |
|----------------------|------------------|----------------------|----------------------------------------------------|---------------------------|---------------------------|-----------------------------------|
| WC 1 (EPA Mapped WC) | Open Channel     | 1.5                  |                                                    | Clear Span Bridge         |                           | None. No in-stream works required |

| Crossing No.            | Watercourse Type    | Width of Channel (m) | Cover from Road Level to Top of Bridge/Culvert (m) | Crossing Type Description                 | Watercourse Crossing Type | Extent of in-channel works        |
|-------------------------|---------------------|----------------------|----------------------------------------------------|-------------------------------------------|---------------------------|-----------------------------------|
| WC 2<br>(EPA Mapped WC) | Stone Culvert       | 2.5                  | 1.4                                                | Standard Formation Crossing under Culvert | Option B                  | None. No in-stream works required |
| WC 3<br>(EPA Mapped WC) | Stone Culvert       | 2.3                  | 1.3                                                | Standard Formation Crossing under Culvert | Option B                  | None. No in-stream works required |
| WC 4<br>(EPA Mapped WC) | Plastic Pipe        | 2.5                  | 2.0                                                | Standard Formation Crossing over Culvert  | Option A                  | None. No in-stream works required |
| WC 5                    | Stone Arch Bridge   | 1.5                  | 2.25                                               | Standard Formation Crossing over Culvert  | Option A                  | None. No in-stream works required |
| WC 6                    | Stone Culvert       | 0.7                  | 3.5                                                | HDD                                       | Option D                  | None. No in-stream works required |
| WC 7                    | Stone Arch Bridge   | 1.5                  | 2.6                                                | Standard Formation Crossing over Culvert  | Option A                  | None. No in-stream works required |
| WC 8<br>(EPA Mapped WC) | Concrete Clear Span | 8.0                  | 1.55                                               | HDD                                       | Option D                  | None. No in-stream works required |



Finished surface capped with  
clause 804 material

Clause 804 material to be used  
and compacted in accordance with  
NRA guidelines in layers not more  
than 300mm.

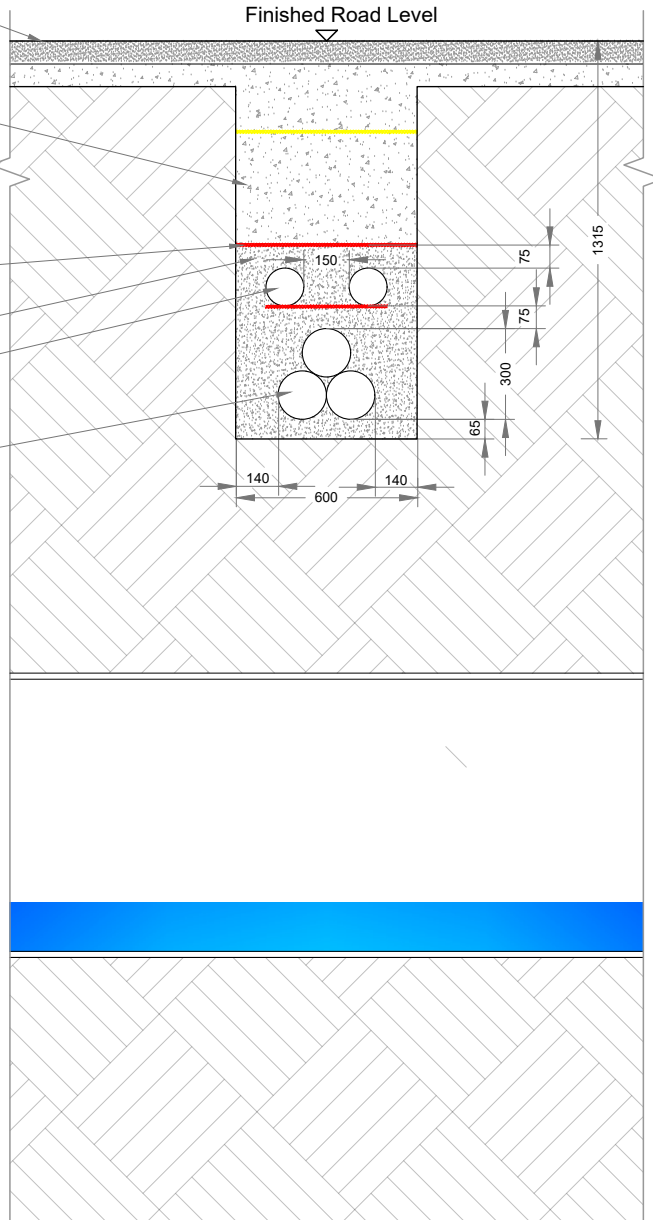
ESBN red cable marker strips

CBGMB Clause 822 material

125mm Comm Ducts

160mm Dia Power Ducts,  
Complete with 12mm Diameter  
draw ropes.

Finished Road Level



**Cross Section B-B**  
SCALE 1:25

Clause 804 material to be  
used and compacted in  
accordance with NRA  
guidelines in layers not more  
than 300mm.

ESBN red cable  
marker strips

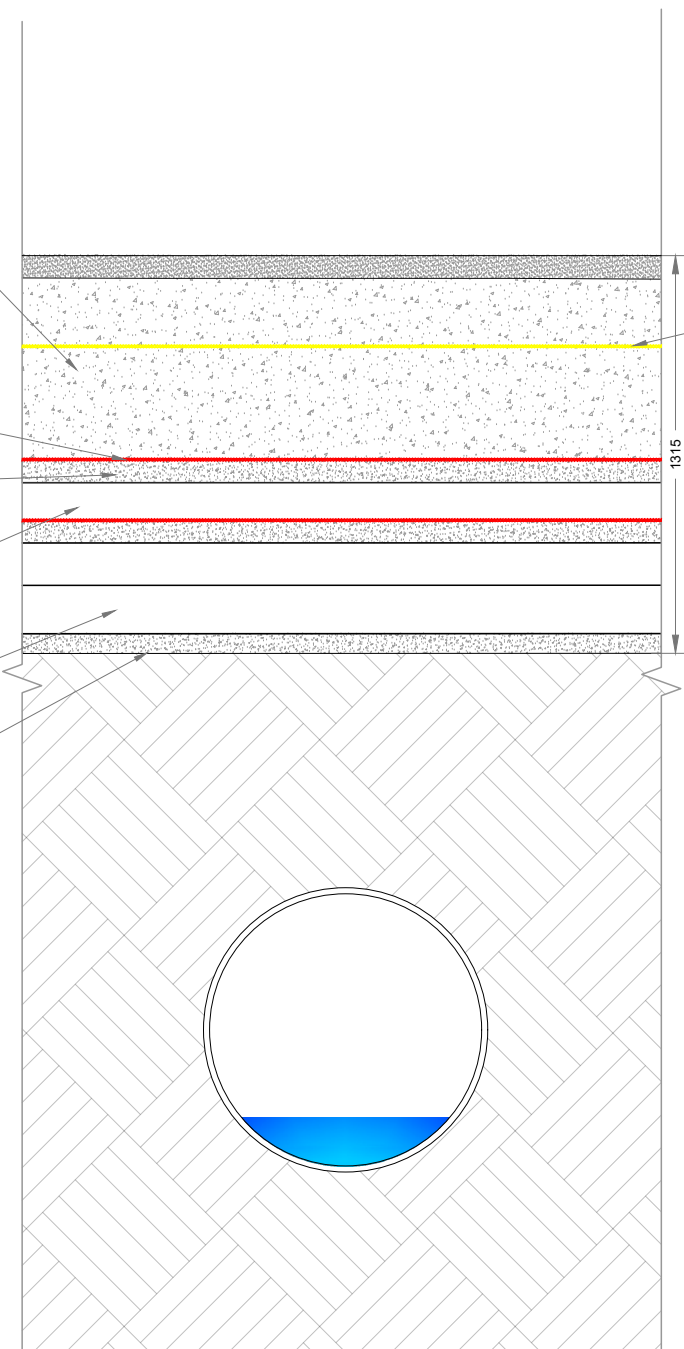
CBGMB Clause  
822 material

125mm Comm Ducts

160mm Dia Power Ducts,  
Complete with 12mm  
Diameter draw ropes.

Competent Stratum

Yellow Marker Warning  
Tape.  
across full width of trench



**Longitudinal  
Section A-A**  
SCALE 1:25

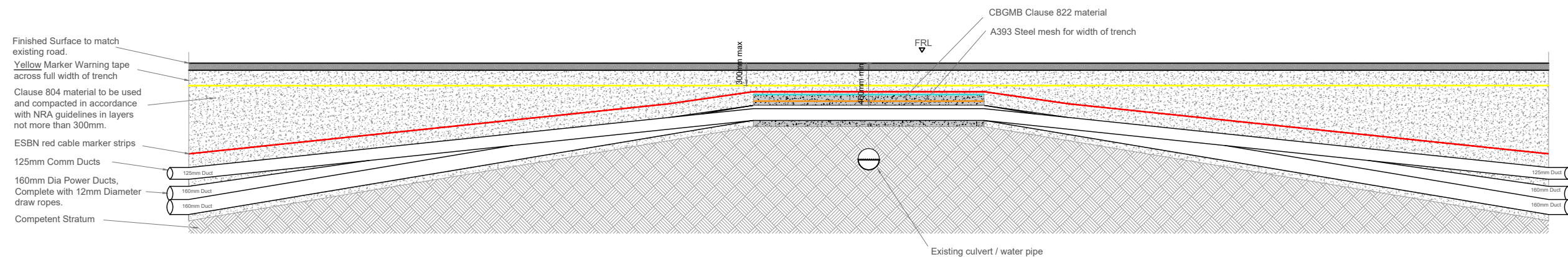
|                                                        |                                    |                             |                                  |
|--------------------------------------------------------|------------------------------------|-----------------------------|----------------------------------|
| PROJECT TITLE: <b>Cooloo Wind Farm,<br/>Co. Galway</b> |                                    |                             |                                  |
| DRAWING TITLE: <b>Water Crossing Option A</b>          |                                    |                             |                                  |
| PROJECT No.:<br><b>190723</b>                          | DRAWING No.:<br><b>190723 - 23</b> | SCALE:<br><b>1: 25 @ A3</b> |                                  |
| DRAWN<br>BY: <b>JOB</b>                                | CHECKED<br>BY: <b>BT</b>           | DATE:<br><b>25.09.2025</b>  | REVISION.:<br><b>Figure 4-29</b> |



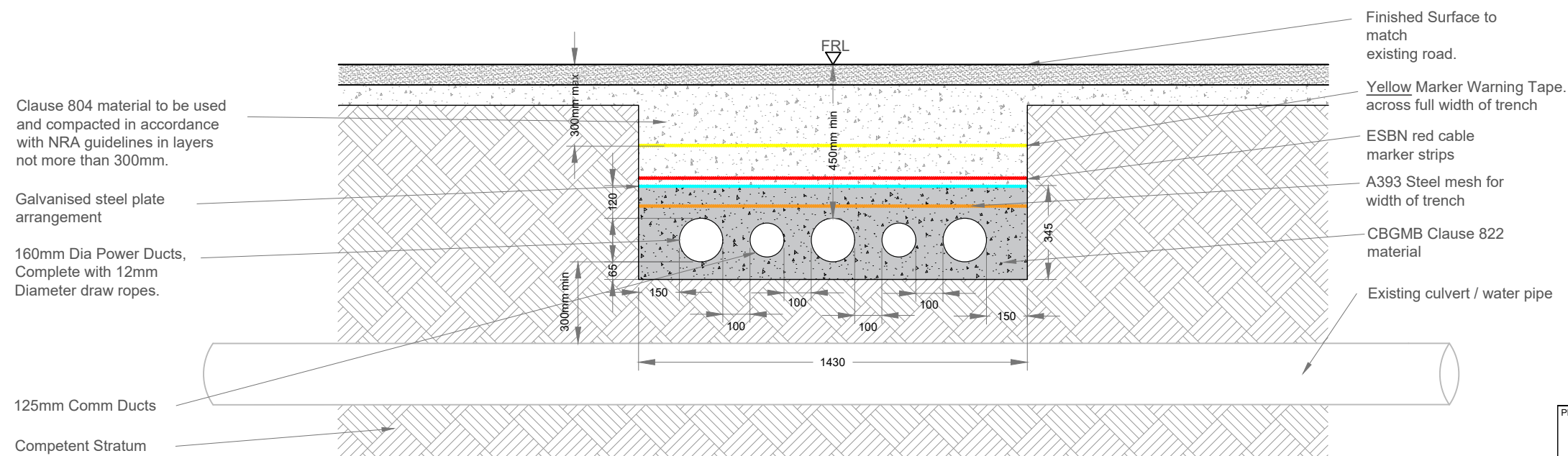
Email: [info@www.mkoireland.ie](mailto:info@www.mkoireland.ie) / Website: [www.mkoireland.ie](http://www.mkoireland.ie)



Email: [info@www.mkoireland.ie](mailto:info@www.mkoireland.ie) /Website: [www.mkoireland.ie](http://www.mkoireland.ie)



**Option C - Flat bed over existing pipe - 110kV**  
SCALE 1:50



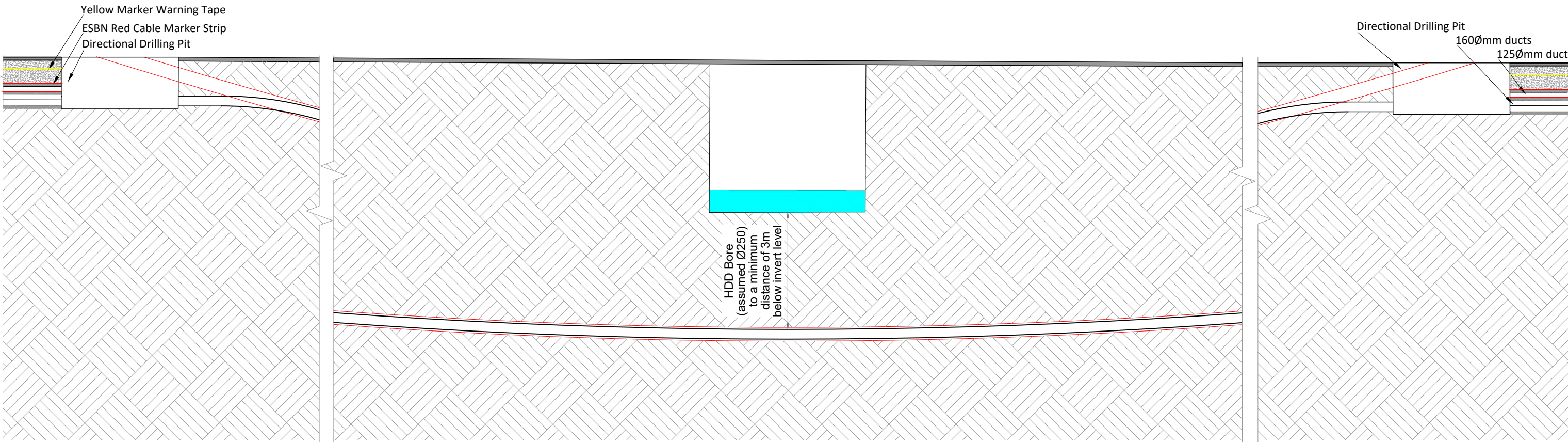
**Option C - Flat bed over existing pipe - 110kV**  
SCALE 1:20

|                                                                   |                                 |                               |
|-------------------------------------------------------------------|---------------------------------|-------------------------------|
| PROJECT TITLE: <b>Cooloo Wind Farm, Co. Galway</b>                |                                 |                               |
| DRAWING TITLE: <b>Option C - 110kV Cable Trench Flat Bed Over</b> |                                 |                               |
| PROJECT No.: <b>190723</b>                                        | DRAWING No.: <b>190723 - 28</b> | SCALE: <b>As shown@ A3</b>    |
| DRAWN BY: <b>JOB</b>                                              | CHECKED BY: <b>BT</b>           | DATE: <b>23.09.2025</b>       |
|                                                                   |                                 | REVISION.: <b>Figure 4-31</b> |



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**Standard Horizontal Directional Drill Under Exisitng Watercourse Crossing**

SCALE 1:100

|                                                           |                                    |                             |                                  |
|-----------------------------------------------------------|------------------------------------|-----------------------------|----------------------------------|
| PROJECT TITLE:<br><b>Cooloo Wind Farm,<br/>Co. Galway</b> |                                    |                             |                                  |
| DRAWING TITLE:<br><b>Option D - Directional Drill</b>     |                                    |                             |                                  |
| PROJECT No.:<br><b>190723</b>                             | DRAWING No.:<br><b>190723 - 29</b> | SCALE:<br><b>1: 100@ A3</b> |                                  |
| DRAWN BY:<br><b>JOB</b>                                   | CHECKED BY:<br><b>BT</b>           | DATE:<br><b>23.09.2025</b>  | REVISION.:<br><b>Figure 4-32</b> |



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## 4.9

## Operation

As part of the Proposed Wind Farm 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 onsite substation 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 onsite visual inspections will also be carried out by the wind farm operations management company.

## 4.9.1

### 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 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 electricity substation and site tracks will also require periodic maintenance. The onsite substation 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 works 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.

Although daily visits are unlikely required, the site will be accessible on a day-to-day basis 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 both the Site and Grid Connection infrastructure is minimal, the impacts associated with traffic volumes for this period are assessed in Chapter 15 Material Assets: Traffic and Transport.

## 4.9.2 Monitoring

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

- Monthly water sampling and laboratory analysis will be undertaken for the first 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 will be carried out in accordance with the Bird Monitoring Plan provided in Appendix 7-8.
- Post-construction bat monitoring will be carried out in accordance with the Bat Report recommendations in Appendix 6-2
- Post-construction linear habitat restoration monitoring following the main growing season (i.e., in September) in a given year for the first five years of growth.
- Monitoring for shadow flicker at properties where any exceedance of the shadow flicker limit has been predicted as outlined in Chapter 5.
- Post turbine commissioning noise monitoring.

## 4.9.3 Community Gain Proposal

### 4.9.3.1 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 Neoen (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 the 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 Wind Farm.

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, energy efficiency improvement works and direct payments could be made to nearby households.



### 4.9.3.2 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 the 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 RESS Terms and Conditions, published by the Department of Communications, Climate Action and Environment make some high-level provisions for how this type of benefit fund will work. Any project which wants to export electricity to the national grid must abide by these broad principles. These include the following:

1. *a minimum of €1,000 shall be paid to each household located within a distance of a 1 kilometre radius from the Project;*
2. *in respect of Onshore Wind RESS 2 Projects, a minimum of €1,000 shall be paid to each household located within a distance of a 1 kilometre radius from the Onshore Wind RESS3 Project. The 1 kilometre distance specified is measured from the base of the nearest turbine of the RESS 3 Project to the nearest part of the structure of the household, the location of which is identified in the An Post's GeoDirectory;*
3. *a minimum of 40% of the funds shall be paid to not-for-profit community enterprises whose primary focus or aim is the promotion of initiatives towards the delivery of the UN Sustainable Development Goals, in particular Goals 4, 7, 11 and 13, including education, energy efficiency, sustainable energy and climate action initiatives;*
4. *a maximum of 10% of the funds may be spent on administration. This is to ensure successful outcomes and good governance of the Community Benefit Fund. The Generator may supplement this spend on administration from its own funds should it be deemed necessary to do so; and*
5. *The balance of the funds shall be spent on: (i) initiatives successful in the annual application process, as proposed by clubs and societies and similar not-for-profit entities; and (ii) in respect of Onshore Wind RESS 3 Projects, on "near neighbour payments" for households located outside a distance of 1 kilometre from the RESS 3 Project but within a distance of 2 kilometres from such RESS 3 Project. The distance specified is from the base of the nearest turbine to the nearest part of the structure of the occupied residence, the location of which is identified in the An Post's GeoDirectory.*

### 4.9.3.3 Community Benefit Fund

Based on the current RESS guidelines it is expected that for each megawatt hour (MWh) of electricity produced by the wind farm, the Proposed Project will contribute €2 into a community fund for the first 15 years of operation of the Proposed Wind Farm. If this commitment is changed in upcoming Government Policy, the fund would be adjusted accordingly.

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. This group will then work on designing the governance and structure of a community entity that would administer the Community Benefit Fund.

The types of projects and initiatives that could be supported by such a Community Benefit Fund could include youth, sport and community facilities, schools, educational and training initiatives, and wider amenity, heritage, and environmental projects.

Should the Proposed Project be developed under RESS, it would attract a community contribution in the region of approx. €300,000/year for 15 years for the local community, totalling €4.5 million. The value of this fund would be directly proportional to the electricity generated by the wind farm. Under current T&C's of RESS, the following would be required for Proposed Wind Farm:

- **Direct payments** – to those living closest to the Site. A minimum €1,000 payment per annum for houses within 1km of the Proposed Project;
- **Energy Efficiency** – up to 40%/year would be available for the development of energy/sustainability initiatives to benefit people living in the local area. This is to be provided to not-for-profit community enterprises.
- **Administration costs** - a maximum of 10% of this fund to be made available for the administration and governance costs of the fund.
- **Support for local groups** – the remainder 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.

Should the Proposed Project not be developed under RESS, the Applicant commits to paying the above.

## 4.10 Decommissioning

The proposed wind turbines are expected to have a lifespan of approx. 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 Wind Farm may be decommissioned fully.

Upon decommissioning of the Proposed Wind Farm, the wind turbines and the meteorological mast would be disassembled. 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 therefore will be retained where requested post-decommissioning to facilitate these activities.

The underground electrical cabling connecting the turbines to the onsite 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 Grid Connection underground electrical cabling route and onsite substation will remain in place as it will be part of the Electricity Grid under the ownership and control of the ESB 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 Wind Farm 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 approx. 30 years in advance, so within the lifespan of the Proposed Wind Farm, 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”.*