3. DESCRIPTION OF THE SUBJECT DEVELOPMENT

3.1 Introduction

This section of the rEIAR describes the Subject Development and its component parts.

The development for which substitute consent is being sought consists of 25 no. deviations from the wind farm permitted under ABP-300460-17 (amended by ABP-303729-19). The deviations relate to wind farm roads and hardstand areas, peat storage and containment measures, borrow pits, environmental and water quality mitigation measures and all ancillary works.

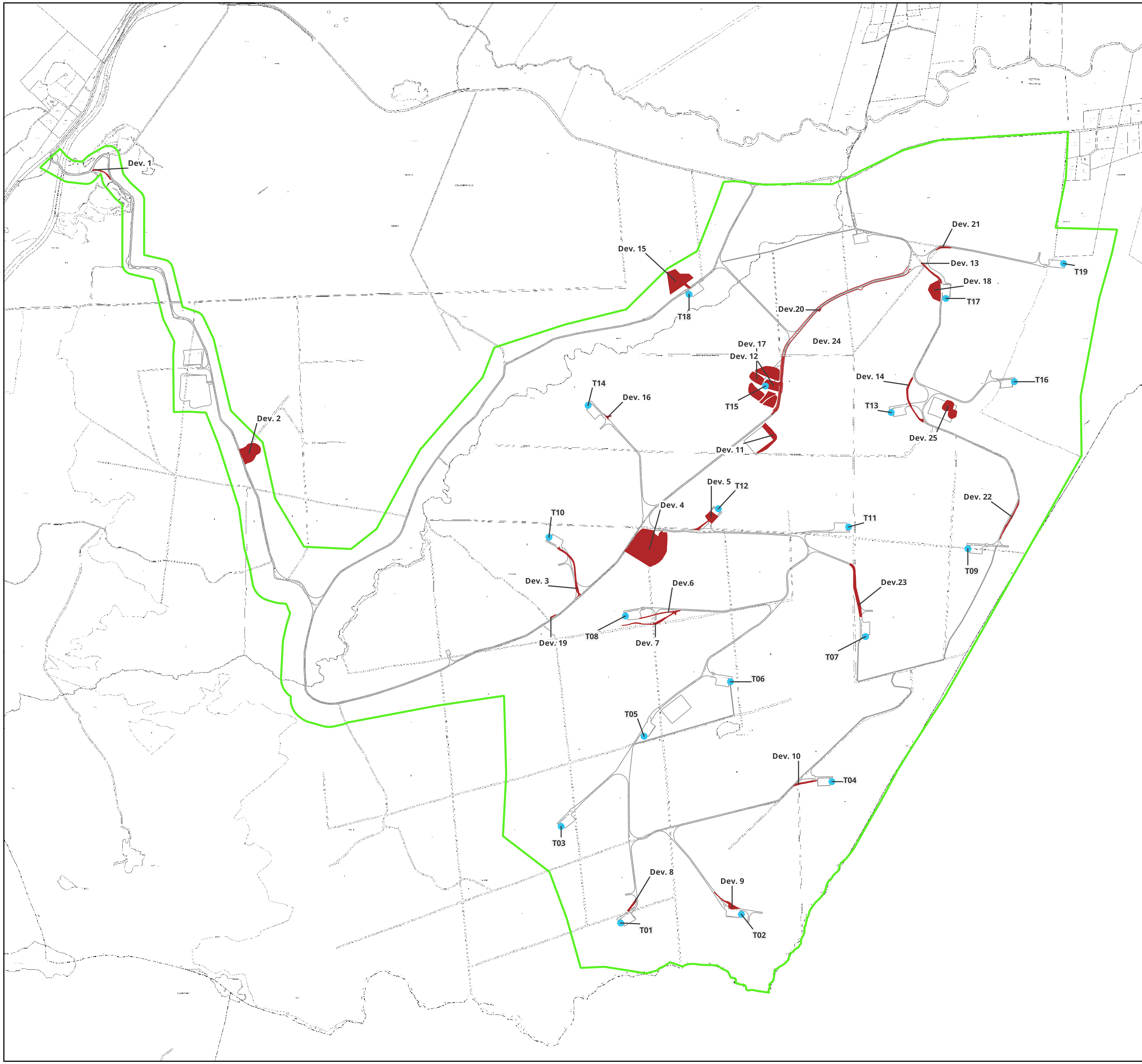
The Subject Development comprises of 25 no. deviations from the Permitted Development which are outlined in detail in Table 3-1 and illustrated in Figure 3-1.

3.2 Description of Site

The Site is approximately 903 hectares in extent. Current land-use on the Site is comprised of the partially constructed Meenbog Windfarm, areas of commercial forestry and blanket bog. Construction of the Meenbog Windfarm commenced in November 2019, with approximately 90% of the civil engineering works, including wind farm access roads, 110kVelectrical substation, turbine hardstands, turbine foundations, and ancillary works substantially completed over the following 12-month period up to November 2020 when a peat slide occurred.

3.3 Development Layout

The layout of the Subject Development is shown in Figure 3-1. This drawing shows the location of all elements of the Subject Development. Detailed site layout drawings of the Subject Development are included in Appendix 3-1 to this rEIAR.



Map Legend

- rEIAR Study Area
- Subject Development Footprint
- Permitted Development Footprint
- Permitted Development Turbine Locations

N

Drawing Title

Subject Development Layout

Project Title

Substitute Consent for Deviations at Meenbog Wind Farm, Co. Donegal

Drawn By	Checked By
MT	TB
Project No.	**Drawing No.**
220623	Figure 3-1
Scale	**Date**
1:17,000	2024-03-29

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

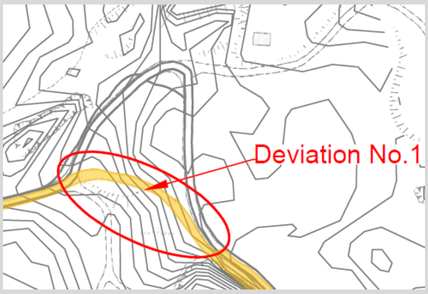
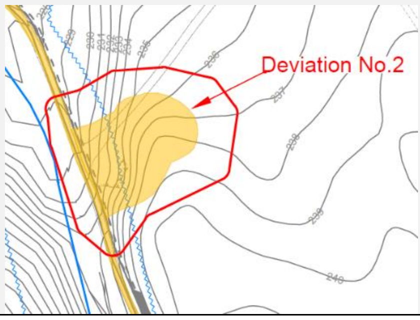
3.4 Components of the Subject Development

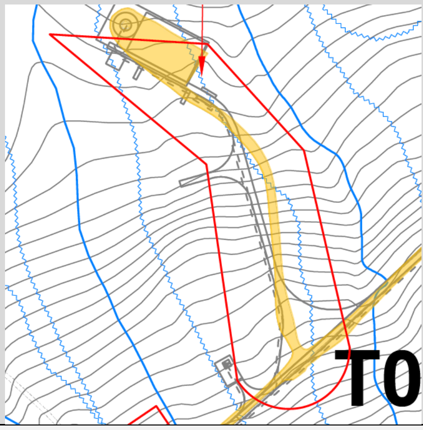
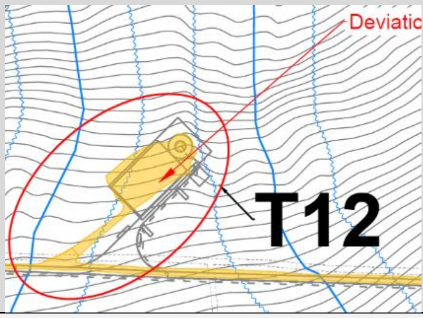
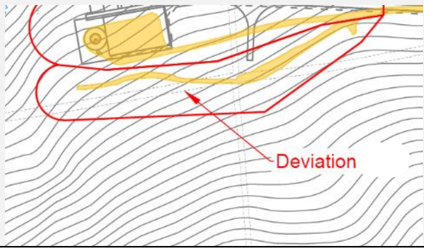
The Subject Development is comprised of 25 no. deviations from the Permitted Development as summarised in Section 3.1 of the rEIAR. The components of the Subject Development are discussed in detail in this section.

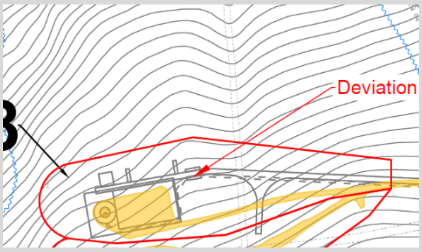
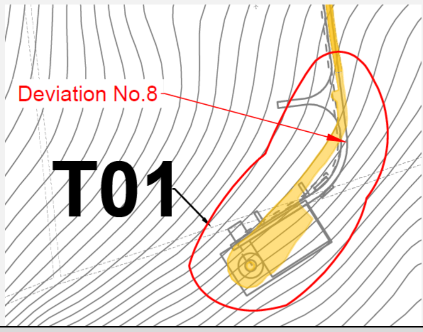
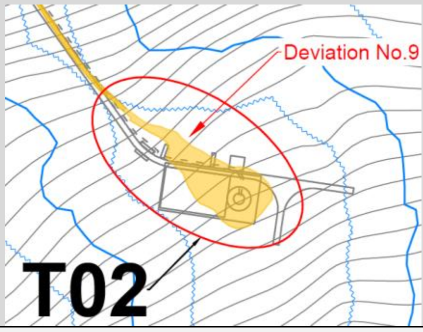
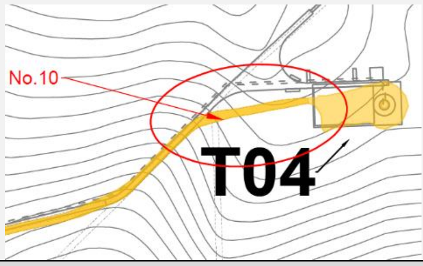
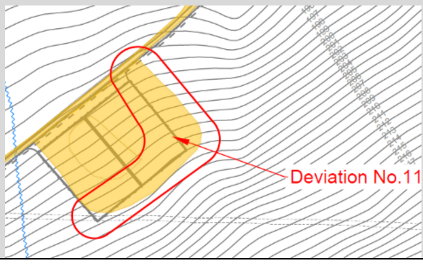
Table 3-1 provides a brief description of the 25 no. deviations together the reasons for the implementation of each deviation.

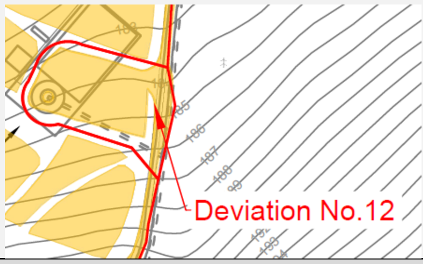
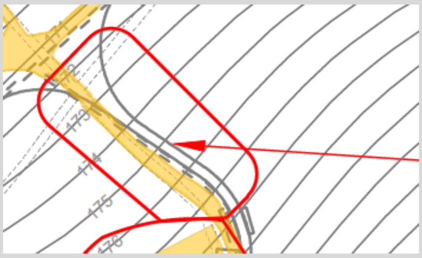
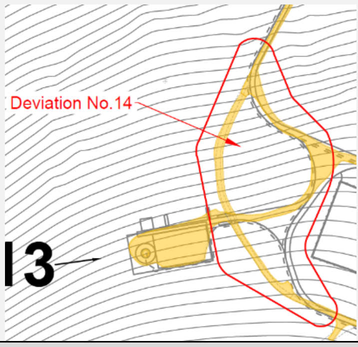
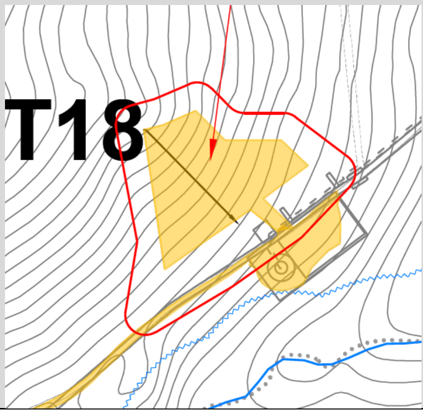
The location of the deviations are shown in Figure 3-1 and on planning drawings in Appendix 3-1.

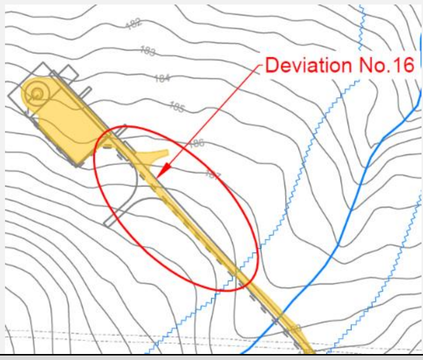
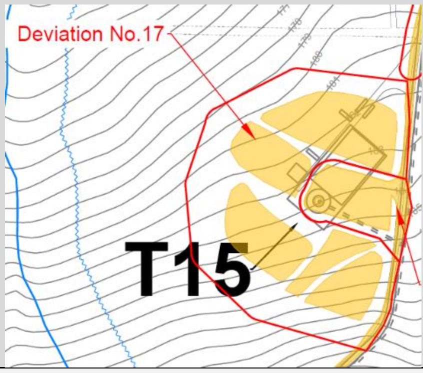
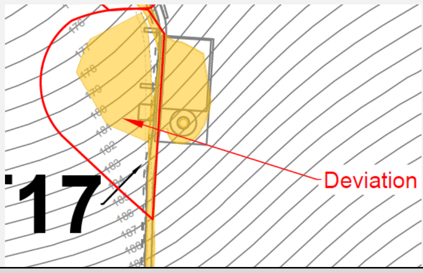
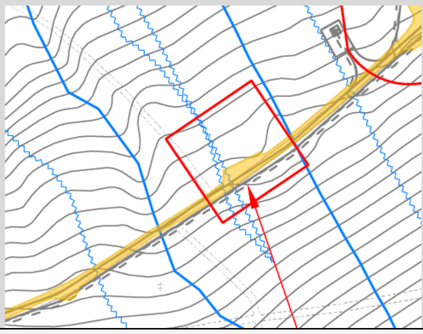
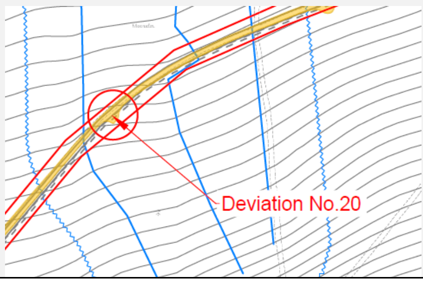
Table 3-1 Deviations forming the Subject Development.

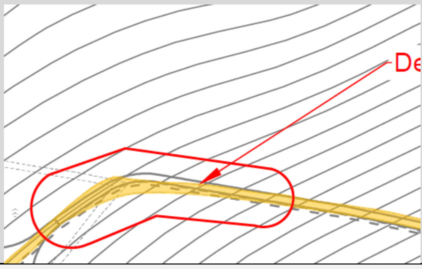
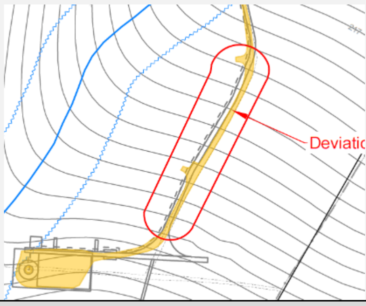
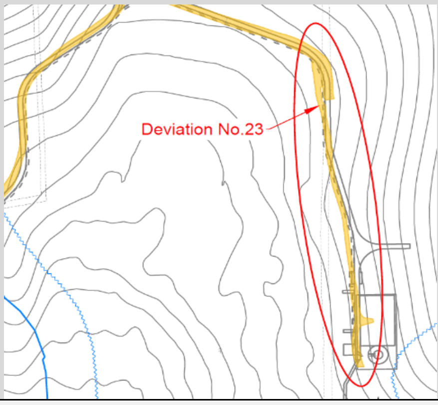
No.	Deviation Description	Location of Deviation	Reason for Deviation
1	Entrance road off N15 (the hairpin bend)		The existing hairpin bend was unsafe as it did not provide adequate line of sight for vehicles using the road. This was a safety concern that only came to light prior to construction and after it was established that the as-built route was feasible from a geotechnical perspective with the benefit of site investigations. Furthermore, the longer blades authorised by the S.146B process in June 2019 (See Section 2.4 of this rEIAR) can be more easily accommodated on the as-built road by eliminating the need to traverse the hairpin bend. The as-built alignment would have required a reduced construction footprint compared to the permitted.
2	Peat cell southeast of substation		Peat cells were created as part of the engineering plans for excess peat that was generated during the course of construction and required management, greater than the volumes estimated pre-construction.

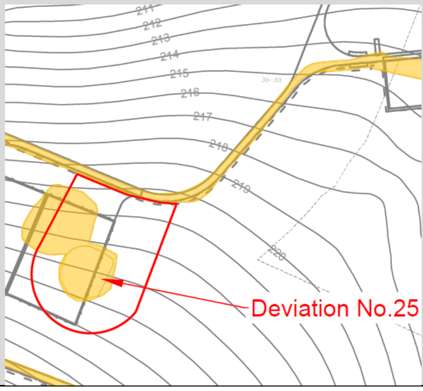
No.	Deviation Description	Location of Deviation	Reason for Deviation
3	T10 access road:		Realigned road was adjusted to follow more favourable ground conditions and topography.
4	Borrow Pit southwest of T12		Existing forestry borrow pit was expanded to win stone on-site ahead of gaining access to the wind farm borrow pits. Excavation of the existing forestry borrow pit continued in lieu of excavation at the permitted BP1 borrow pit.
5	T12 access road		The natural topography on site required a slight realignment of the approach to T12 due to rising ground to the east of the planned road. Moving the road approximately 30 metres to the west negated the need for excessive cut at this location.
6	Peat containment berm near T8		A berm was constructed to the south of T8 as a peat containment safety measure prior to constructing T8.

No.	Deviation Description	Location of Deviation	Reason for Deviation
7	T8 access road (see 6 further above for peat containment berm)		The access road to T8 was amended to approach the southern side of the turbine and align with the berm.
8	T1 access road		The approach to T1 was slightly amended to provide a more effective alignment for delivery vehicles based on detailed design of road alignment pre-construction.
9	T2 access road		The approach to T2 was slightly amended to provide a more effective alignment for delivery vehicles based on detailed design of road alignment pre-construction.
10	T4 access road		The approach to T4 was slightly amended to provide a more effective alignment for delivery vehicles based on detailed design of road alignment pre-construction.
11	Borrow pit (BP2) south of T15		Permitted borrow pit was expanded slightly to win more rock on-site.

No.	Deviation Description	Location of Deviation	Reason for Deviation
12	T15 hardstand and access road		The natural topography on site facilitated direct access to T15 off the main spine road at this location which negated the need for the proposed road to T15. This was achieved by rotating the hardstand by 90 degrees.
13	T17 access road		The permitted road followed the route of a pre-existing forestry firebreak, and the as-built road was constructed as intended, along that firebreak. The intent was clear, but a minor difference in alignment arose between the permitted road and as-built road.
14	T13 road alignment (upgrade of existing forestry track)		An existing road alignment was upgraded and used, thus preventing the need for the construction of the section of new permitted road based on detailed design of road alignment pre-construction.
15	Peat cells NW of T18		Peat cells were created as part of the engineering plans for excess peat that was generated during the course of construction and required management, greater than the volumes estimated pre-construction.

No.	Deviation Description	Location of Deviation	Reason for Deviation
16	T14 turning head		Position of turning head altered to suit the natural topography on the ground.
17	Peat cells near T15		Peat cells were created as part of the engineering plans for excess peat that was generated during the course of construction and required management, greater than the volumes estimated pre-construction.
18	Peat cells near T17		Peat cell was created as part of the engineering plans for excess peat that was generated during the course of construction and required management, greater than the volumes estimated pre-construction.
19	Layby south of T10 with welfare facilities		This was an existing forestry access for harvesting, which was repurposed for locating site office and welfare facilities, which will be removed upon completion of construction.
20	Layby northeast of T15		Layby in this area installed as a safety measure to allow construction traffic to pass. It is along the original permitted road alignment to T15. Passing bays were included in the planning drawings though actual location on the ground may have varied as conditions dictated.

No.	Deviation Description	Location of Deviation	Reason for Deviation
21	T19 access road		Slight widening and curve realignment to increase horizontal bend radius for turbine blade delivery.
22	T9 access road		The permitted road followed the route of a pre-existing forestry track, and the as-built road was constructed as intended, along that forestry track. The intent was clear, but a minor difference in alignment arose between the permitted road and as-built road.
23	Additional storage area and access road to T7		The realigned road served the dual purpose of acting as a peat containment berm following the November 2020 peat failure.
24	Roadside berms and settlement ponds		Small, low-level roadside berms were used to contain mud within the road corridor surface and prevent run-off into the wind farm drainage system or settlement ponds, check dams and silt fences. Settlement ponds are entirely consistent with the permitted wind farm's drainage design, but wouldn't have been shown on planning drawings and therefore may appear to have been outside the Permitted Development footprint.

No.	Deviation Description	Location of Deviation	Reason for Deviation
25	Assessment of additional excavated borrow pit and peat storage cell at T-13		Position of permitted borrow pit was repositioned to suit local topography.

3.4.1 Overview

The components of the Subject Development are broadly grouped into the following categories:

- Site Roads and Hardstand Areas
- Borrow Pits
- Peat and Spoil Management
- Environmental and Water Quality Mitigation Measures

3.4.2 Site Roads and Hardstand Areas

A total of 16 no. deviations relate to the realignment of consented site roads and hardstand areas, including laybys, hardstand orientations and turning heads. Deviation No. 1 relates to the realignment of the main wind farm access road near the main Site entrance from the N15 National Road. Deviations Nos. 3, 5, 7, 8, 9, 10, 13, 14, 21, 22, and 23 relate to the realignment of internal turbine access roads. Deviation No. 16 relates to the relocation of a turning head and deviation Nos. 19 and 20. relates to the provision of laybys. Deviation No. 12 relates to an alteration of the orientation of the consented hardstand at T15. The locations of these deviations are shown in Figure 3-1.

3.4.2.1 Main Site Access Road Realignment

Deviation No.1 concerns the entrance road off N15 (the hairpin bend). The ITM Coordinates are 604694.726 E, 887626.481N. Works were carried out to construct a bypass access link here in lieu of upgrading the existing hairpin bend access road. This provides a safer and more sensible approach to the Site by eliminating a sharp, blind bend in the main entrance road to the Site. The deviation added approximately 60m of new access road built to solid formation, instead of upgrading and significantly widening an existing road with a length of 190m on a more difficult alignment. Furthermore, the longer blades authorised by the S.146B process in June 2019 (See Section 2.4 of this rEIAR) can be more easily accommodated on the as-built road by eliminating the need to traverse the hairpin bend.

3.4.2.2 Turbine Access Road Realignment, Layby Provision and Turning Head Modifications.

Deviations Nos. 3, 5, 7, 8, 9, 10, 13, 14, 21, 22, and 23 relate to minor realignment of internal turbine access roads. Deviation No. 16 relates to the relocation of a turning head and deviation No. 20 relates to the provision of a layby. The realignment of the access roads and the relocation of the turning head was in response to conditions on the ground and detailed design of road alignment pre-construction. The layby in deviation 20 was installed as a safety measure to allow construction traffic to pass. Information on the location of each of these deviations is provided in Table 3-1.

Deviation No. 19 consists of an existing forestry access for harvesting, which was repurposed for locating site office and welfare facilities. These facilities will be removed upon completion of construction. The location of Deviation 19 is shown in Figure 3-1.

3.4.2.3 Reorientation of Hardstand

Deviation No. 12 relates to an alteration of the orientation of the consented hardstand at T15. The natural topography on Site facilitated direct access to T15 off the main spine road at this location which negated the need for the proposed access road to T15. This was achieved by rotating the hardstand by 90 degrees. The location of the Deviation No. 12 is shown on Figure 3-1.

3.4.3 Borrow Pits

Deviation Nos. 4, 11, and 25 relate to borrow pits that were constructed in either a different location than on planning drawings (Deviation No.4) or that extended beyond the consented boundary as shown in the planning drawings for the Permitted Development.

3.4.3.1 Borrow Pit South of Turbine 12

Deviation No. 4 concerns the borrow pit southwest of T12. The ITM Coordinates are 607214.436E, 885893.880N. An existing forestry borrow pit was expanded to win stone on-site ahead of gaining access to the wind farm borrow pits. Excavation of the existing forestry borrow pit continued in lieu of excavation at the permitted BP1 borrow pit which was not used due to peat stability concerns.

Following the completion of rock extraction, the borrow pit was subsequently partially restored by backfilling with peat from elsewhere on the Site. This was consistent with the consented construction methodology for borrow pits. Restoration was accomplished by creating a cell to store excavated peat with a berm constructed along the downslope (north-west) edge of the borrow pit. The borrow pit is bounded to the west and north by internal access roads which are constructed to solid formation. Detailed planning drawings of this borrow pit are provided in Appendix 3-1 to this rEIAR. A Cross section of the borrow pit is provided as figure 3.2 below and in Appendix 3-1.

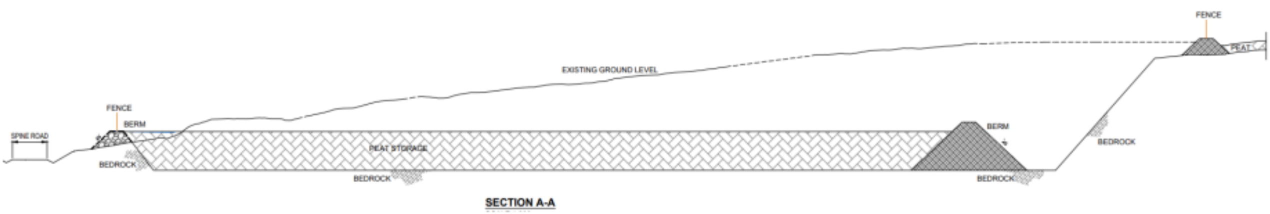


Figure 3-2 Cross Section of Borrow Pit South of Turbine 12

Since the cessation of peat deposition, the surface of the deposited peat has revegetated with peatland species including soft rush (*Juncus effusus*), bulbous rush (*Juncus bulbosus*), Yorkshire fog (*Holcus lanatus*) and tormentil (*Potentilla erecta*). Some ling (*Calluna vulgaris*), *Polytrichum* and *Sphagnum* species are also present. Upon the recommencement of work, the borrow pit area will be reinstated in accordance with the proposals set out in the Peat and Spoil Management Plan, included in Appendix 6-5 of the rEIAR, which also applied to borrow pits approved as part of the Permitted Development.

3.4.3.2 Borrow Pit South of Turbine 15

Deviation No. 11 concerns the consented borrow pit 2 south of T15. Borrow pit 2 (also referred to Borrow Pit A in the planning documents) is located south of T15 and adjacent to an internal wind farm access road. The borrow pit was excavated into existing ground, commencing at the southern end of the borrow pit.

This borrow pit was indicated on the planning drawings for the Permitted Development but has been expanded slightly beyond the originally illustrated footprint. Detailed planning drawings of this borrow pit are provided in Appendix 3-1 to this rEIAR. A Cross section of the borrow pit is provided as Figure 3-3 below.

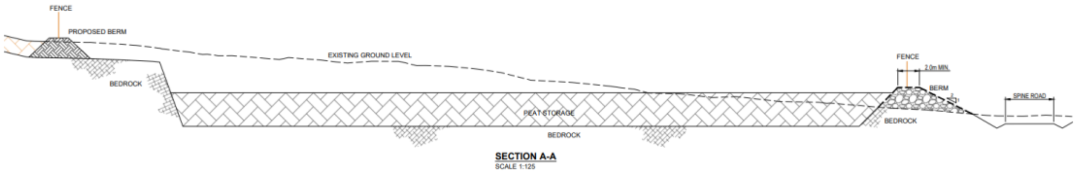


Figure 3-3 Cross Section of Borrow Pit South of Turbine 15).

Since the cessation of peat deposition in the borrow pit, the surface of the deposited peat has begun to revegetate with species including soft rush (*Juncus effusus*), Yorkshire fog (*Holcus lanatus*), creeping bent grass (*Agrostis stolonifera*) and tormentil (*Potentilla erecta*). Upon the recommencement of work, the borrow pit area will be reinstated in accordance with the proposals set out in the Peat and Spoil Management Plan, included in Appendix 6-5 of the rEIAR, which also applied to borrow pits approved as part of the Permitted Development.

3.4.3.3 Borrow Pit between Turbine 13 and Turbine 16

Deviation No. 25 concerns the consented borrow pit 3 and peat storage cells/ borrow pit backfilling. The consented borrow pit was slightly repositioned to suit local topography. Borrow pit 3 is located between T13 and T16. Two pits were excavated on the eastern side of the borrow pit area and these were subsequently used to store excavated peat in accordance with the approved construction methodology for borrow pits. The remainder of the consented borrow pit has not been completed to date, however will be completed in accordance with the plans for the Permitted Development. Detailed planning drawings of this borrow pit are provided in Appendix 3-1 to this rEIAR. A Cross section of the borrow pit is provided as Figure 3-4 below..

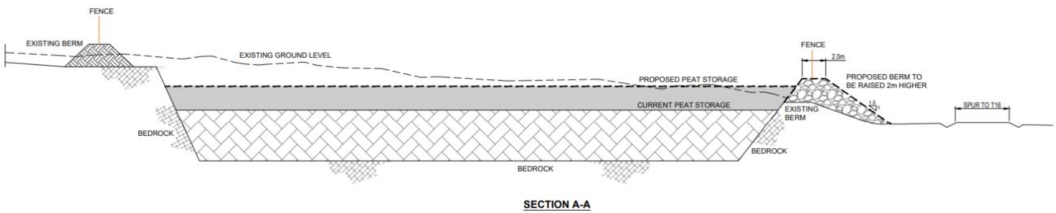


Figure 3-4 Cross Section of borrow pit between Turbine 13 and Turbine 16

Since the cessation of peat deposition at this partially constructed borrow pit, the surface of the deposited peat has revegetated with species including soft rush (*Juncus effusus*) and bulbous rush (*Juncus bulbosus*), which are dominant throughout. Upon the recommencement of work, the borrow pit area will be reinstated in accordance with the proposals set out in the Peat and Spoil Management Plan, included in Appendix 6-5 of the rEIAR, which also applied to borrow pits approved as part of the Permitted Development.

3.4.4 Peat and Spoil Management

3.4.4.1 Peat Storage Cells

Deviations Nos. 2, 15, 17 and 18 are comprised of engineered peat storage cells. The peat cell at Deviation No. 15 has not yet been backfilled with peat. Upon the recommencement of work, this peat cell will be reinstated in accordance with the proposals set out in the Peat and Spoil Management Plan, included in Appendix 6-5 of the rEIAR, which also applied to borrow pits approved as part of the

Permitted Development. Peat storage cells were excavated to a competent stratum and retaining berms constructed prior to being filled with peat. Detailed planning drawings of the peat cells are provided in Appendix 3-1 to this rEIAR. A crosssection of a peat cell retaining berm is provided as Figures 3.5, below.

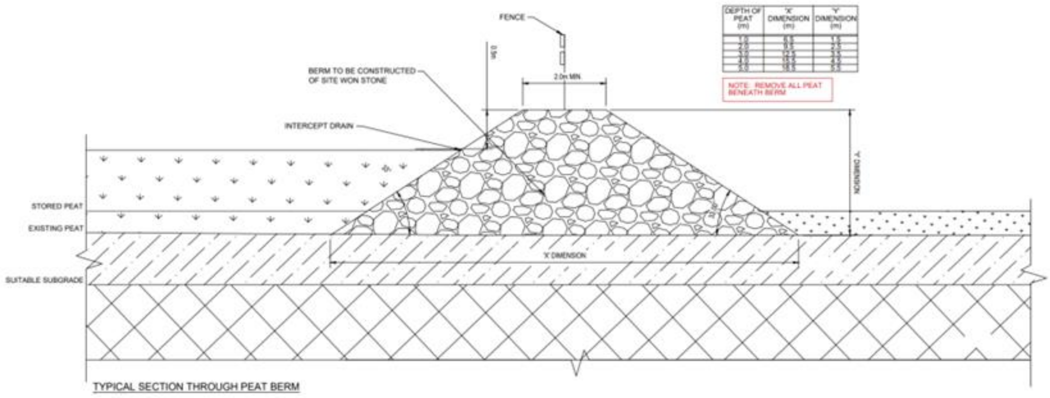


Figure 3-5 Cross-Section of a Peat Cell retaining Berm

3.4.4.2 Peat Containment Berm

Deviation No. 6 concerns a berm which was constructed to the south of T8 as a peat containment safety measure prior to constructing T8. The berm was extended from stable ground on the east side and continued to just beyond the turbine foundation at the west side. This berm is located on the uphill side of T8 spur road, hardstand and foundation. The containment berm was constructed in July 2020 in response to a peat movement that occurred upslope from T8, preventing further movement. The ITM coordinates of this deviation are 6072522E, 885562N Detailed planning drawings of Deviation 6 are provided in Appendix 3-1 to this rEIAR. A Cross section of Deviation 6 is provided as figure 3.6 below.

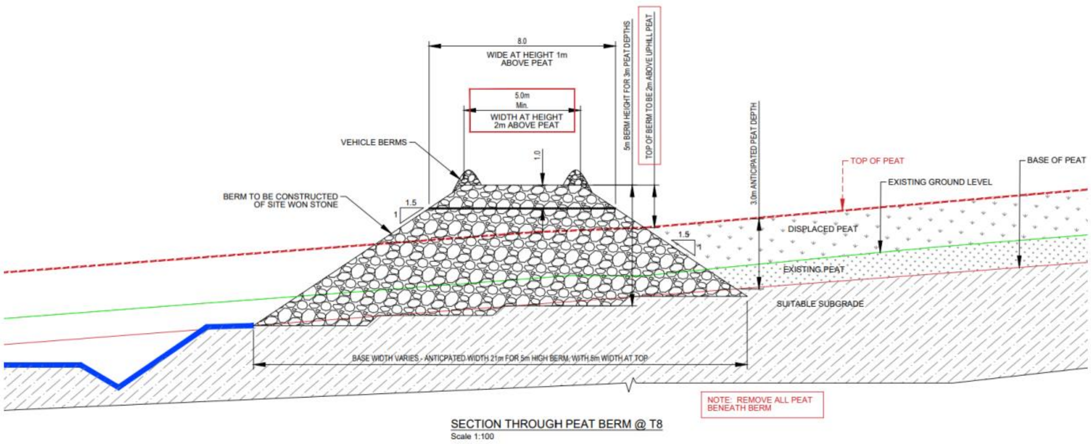


Figure 3-6 Cross Section of Peat Containment Berm

3.4.5 Water Quality Mitigation Measures

Deviation No. 24 consists of roadside berms and settlement ponds that were constructed as part of the Meenbog Windfarm's drainage design for the purpose of protecting water quality. The use of such measures is best practice for sediment and erosion control on construction projects.

3.4.5.1 Roadside Berms

Small, low-level roadside berms were used to contain sediment within the road corridor and prevent run-off into the wind farm drainage system at uncontrolled locations. The construction of these berms ensured that runoff was allowed to access the drainage system only via settlement ponds. The purpose of these measures was to protect water quality.

3.4.5.2 Stilling Ponds

Stilling ponds were constructed to capture silt laden runoff from roads and other wind farm infrastructure and prevent suspended solids from entering surface waters. Stilling ponds are entirely consistent with the Permitted Development's drainage design but the specific locations of the ponds were not shown on planning drawings. The purpose of the stilling ponds is to protect water quality.

Stilling ponds were used to attenuate runoff from works areas during the construction phase and will remain in place to handle runoff from roads and hardstanding areas during the operational phase of the wind farm. 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 downgradient of any works areas.

Stilling ponds were excavated/constructed on the advice of the project hydrologist as provided for in the CEMP.

3.5 Site Activities

3.5.1 Environmental Management

A Construction and Environmental Management Plan (CEMP) was prepared for the Permitted Development and is included in Appendix 3-2 of this rEIAR. The CEMP includes details of drainage, peat and overburden management and waste management. In accordance with best practice the peat and overburden management measures and drainage measures were regularly reviewed and updated on the advice of the project geotechnical engineer and project hydrologist.

3.5.2 Refuelling

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

3.5.3 Dust Suppression

In periods of extended dry weather, dust suppression was used along haul roads to ensure dust did not cause a nuisance. Water was taken from stilling ponds in the Site's drainage system and was 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 was not used for dust suppression.

3.5.4 Vehicle Washing

Wheels or vehicle underbodies are often washed before leaving sites to prevent the build-up of mud on public (and site) roads. Due to the length of surfaced site roads, vehicle or wheel washing facilities were not required as part of the construction phase of the Meenbog Windfarm. Site roads were formed before road-going trucks begin to make regular or frequent deliveries to the site (e.g. with steel or concrete). The site roads were well finished with compacted hardcore, and so the public road-going vehicles were not travelling over soft or muddy ground where they might pick up mud or dirt.

A road sweeper was available in the event that a section of the public roads was dirtied by trucks associated with the Subject Development.

3.5.5 Waste Management

The CEMP for the Meenbog Windfarm, Appendix 3-2 of this rEIAR, 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 windfarm. Disposal of waste is seen as a last resort. The WMP was updated in line with the EPA's 2021 document '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects' 2021*[1].

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 was appointed by the Contractor. The Construction Waste Manager was in charge of the implementation of the objectives of the plan, ensuring that all hired waste contractors had the necessary permits/licenses and authorisations and that the waste management hierarchy was adhered to. The Construction Waste Manager had the authority to ensure everyone working on the site adhered to the management plan.

3.6 Access and Transportation

3.6.1 Site Entrance

Access to the Site is from the west via an existing main site entrance off N15 approximately 8km southwest of Ballybofey. This Site entrance will be used for day-to-day maintenance and monitoring of the Meenbog Windfarm. Construction access for the Subject Development was also via the main Site entrance to the west. There is a secondary Site entrance from Dearg Line Road to the north of the Site. This entrance was used as a staff entrance for workers accessing the northern portion of the Site.

3.6.2 Construction Materials Transport Route

All deliveries of construction materials to the Subject Development were by way of the main Site entrance off the N15. The Subject Development did not result in any additional traffic beyond that assessed in the EIAR for the Permitted Development.

3.7 Site Drainage

The Site drains into five river sub-basins (Water Framework Directive, 2022). The first river sub-basin is drained from the Site by Mary Breen's Burn, which drains into the Mourne Beg River. The Mourne beg river flows east into River Finn Special Area of Conservation (SAC) and is also part of the Foyle and its Tributaries SAC (Northern Ireland). There are three deviations situated in this subbasin.

The second river sub-basin is drained by the Bunadaowen River, which flows into Mourne Beg River. There are several tributaries and forest drains that drain into Bunadaowen river from the Site. A total of 17 of the subject deviations are located within the Bunadaowen river sub-basin.

---

[1] *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*

The third river sub-basin is drained by the Shruhangarve Stream and a tributary. The Shruhangarve Stream also flows into Mourne Beg River and thus also has a hydrological connection to River Finn/Foyle SACs. There are two deviations located within this sub-basin.

The fourth river sub-basin is drained by a tributary of the Glendergan River, which drain southeast into River Derg in Northern Ireland. The Glendergan River is part of the Foyle and its Tributaries SAC (Northern Ireland). There are three deviations located within this sub-basin.

The fifth river sub-basin is Lowerymore. A tributary of Lowerymore river is adjacent to the Site boundary. Lowerymore ultimately flows into Lough Eske and Ardnamona Wood SAC. There is only one deviation located in this sub-basin.

Prior to the construction of the Meenbog Windfarm, the drainage within the Site comprised of numerous manmade drains that are in place predominately to drain the forestry plantations. This internal forestry drainage pattern is influenced by the local topography, peat cover, layout of the forest plantation and by the pre-existing forestry road network. The forestry plantations, which covered the majority of the Site are generally drained by a network of mound drains which typically run perpendicular to the topographic contours of the Site and feed into collector drains, which discharge to interceptor drains down-gradient of the plantation.

Mound drains and ploughed ribbon drains are generally spaced approximately every 15-20m and 2m respectively. Interceptor drains are generally located up-gradient (cut-off drains) and down-gradient of forestry plantations. Interceptor drains are also located up-gradient of existing forestry access roads. Culverts are located on existing access roads at stream and drain crossings and at low points under access roads which drain runoff onto down-gradient forest plantations.

Prior to the onset of construction works for the Meenbog Windfarm, the drainage management systems were inserted in accordance with the EIAR and CEMP. These drainage systems were inserted around work areas and were integrated with the pre-existing forestry site drainage network described above.

The wind farm development drainage system was designed to mitigate effects on surface watercourses by runoff control and drainage management:

- Firstly, 'clean water is kept 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, construction areas and temporary storage areas.
- Secondly, drainage waters from works areas that might carry silt or sediment, and nutrients, are collected and routed towards settlement ponds (or stilling ponds) prior to controlled diffuse release over vegetated surfaces.
- There was no direct discharge from the work areas or from infrastructure footprint to surface waters.
- All runoff from works areas (i.e. dirty water) was attenuated and treated to a high quality prior to being released.

During the construction of the Meenbog Windfarm the drainage management system was extended to encompass the Subject Development. Interceptor drains and stilling ponds were constructed around borrow pits in keeping with the drainage system for the Permitted development to ensure surface water quality was protected in accordance with the CEMP. As-Built drainage drawings for the entire Meenbog Windfarm Site are included in Appendix 3-3 of this rEIAR.

3.8 Construction Management

3.8.1 Construction Timing

Construction of the Subject Development began in November 2019 concurrently and in conjunction with the Permitted Development. Construction was timed to commence outside the bird breeding season (1st of March to 31st of August) to avoid any potentially significant effects on nesting birds. Having commenced outside the breeding bird season, construction activities were then ongoing by the time the next bird breeding season came around and continued throughout subsequent bird breeding seasons. Construction of the Meenbog Windfarm continued until November 2020 when all works other than emergency works were halted.

Construction activities relating to the Subject Development were carried out during normal daytime working hours (i.e., 0700 – 1900hrs Monday to Saturday).

3.8.2 Construction Sequencing

The construction phase of the Subject Development took place over an approximately 12-month period from November 2019 to November 2020. An approximate timeline for the construction of the various elements that comprise the Subject Development are outlined in Table 3-2 below.

Table 3-2 Indicative Construction Schedule

ID	Task Name	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20
1	Site Preparation Works	■	■											
2	Site Roads		■	■	■	■	■	■	■	■	■	■	■	■
3	Borrow Pits		■	■	■	■	■	■	■	■	■	■	■	■
4	Silt Ponds		■	■	■	■	■	■	■	■	■	■	■	■
5	Peat Storage Cells				■	■	■	■	■	■	■	■	■	■
6	Roadside Berms								■	■	■	■	■	■

3.8.3 Construction Phase Monitoring and Oversight

The requirement for a Construction and Environmental Management Plan (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 proposed procedures for the implementation of the mitigation measures outlined in such a CEMP and their effectiveness and completion was monitored by the Environmental Clerk of Works (ECoW) on behalf of Planree Ltd., in an objective manner. Mitigation measures and construction phase monitoring and oversight was set out in the CEMP for the Meenbog Windfarm and is presented in Appendix 3-2.

The provisions of the CEMP applied to the construction of the Subject Development which was constructed as part of the Meenbog Windfarm.

The Contractor, Mid Cork Electrical, was responsible for implementing the mitigation measures specified in the EIAR for the Permitted Development and consolidated in the CEMP. The Contractor was also responsible for ensuring that all construction staff understood the importance of implementing the mitigation measures. The implementation of the mitigation measures was overseen by the EcOW with the support of the supervising hydrogeologists, environmental scientists, ecologists or geotechnical engineers, depending on who is best placed to advise on specifical elements of the implementation.

3.9 Construction Methodologies

Construction of the Subject Development followed the same construction methodologies as the Permitted Development, the only difference being slight changes to the location of discreet pieces of infrastructure. The construction methodologies followed for the Subject Development are discussed in detail in the following sections.

3.9.1 Site Roads and Hardstand Areas

During the initial construction of the Permitted Development, existing forestry tracks were upgraded where possible and new access roads were constructed to provide access within the Site and to connect the wind turbines and associated infrastructure. Crane hardstands were constructed at the base of each of the turbine locations. The parts of the Subject Development that relate to site roads, hardstands, and laybys were constructed using the same methodology as that used for the Permitted Development. The construction methodology for site roads and hardstands at the Meenbog Windfarm is summarised below.

Site roads were constructed to each turbine base and at each base a crane hard standing was constructed to the turbine manufacturer's specifications. Once tree felling was completed, tracked excavators carried out excavation for roads with appropriate equipment attached. The excavations followed a logical route working away from the borrow pit locations. Excavated material was transported back to the borrow pits in haul trucks. Material excavated to create the working area was stored locally for later reuse in backfilling the working area around the turbine foundation. The excavated material was covered with polythene sheets and surrounded by silt fences to ensure sediment-laden run-off did not occur.

When the formation layer was reached, stone from the on-site borrow pit was placed to form the road foundation. The sub grade was compacted with the use of a roller. The final wearing course will not be provided until all bases have been poured. This prevents damage to the wearing course due to stone and concrete trucks movements. The road will be upgraded prior to the arrival of the first turbine. All roads will be maintained for the duration of the operation of the Meenbog Windfarm. Site roads and hardstand areas were constructed in accordance with the CEMP for the Meenbog Windfarm (Appendix 3-2)

The construction of deviation 1 included the alteration of an existing quarry water retention pond to the north of the realigned road. The excavation and alteration of the quarry pond followed the following methodology;

- The works were completed under favourable, dry weather conditions to avoid water flowing into and out of the pond during the operation.
- The pond was pumped dry with the pumped water being discharged to ground in the quarry void that was located to the southeast. The pumped water was not discharged to any watercourse and dissipated to ground.
- The peat was replaced by competent rock for stability of the road with the rock gained from the area immediately adjacent to the works.
- Material was excavated from the north to expand the footprint of the pond and restore the original pond dimensions,
- The peat material was removed via dump trucks to a peat repository on the site of the Permitted Development and the banks of the new pond were shaped using an excavator from the pond base.
- The seal at the bottom of the old pond, which had built up over many years of sediment deposits was recreated using a plastic liner.
- Finally, the original concrete overflow pipes were extended into the altered pond to reconnect the pond to the quarry drainage network.
- A 2m chain-link fence was installed around the pond for safety.

3.9.2 Borrow Pits

The following methodology applied to the construction of borrow pits comprised within the Subject Development:

- The areas to be used were marked out at the corners using ranging rods or timber posts. Drainage runs and associated stilling ponds were installed around the perimeter;
- Tree felling occurred, where necessary,
- The initial borrow pit excavation involved the removal of peat and overburden from the top of bedrock. These materials were used to form a berm on the downhill side of the borrow pit to provide screening of the borrow pit operations;
- Interceptor drainage ditches were excavated on all sides of the borrow pit to catch surface water runoff, and direct it to downstream re-distribution locations;
- The bedrock material was extracted from the borrow pit and stockpiled or used as required;
- The use of material won from the borrow pit was sequential with new road construction or turbine base formations;
- Temporary stockpiling of aggregates was required to accommodate the cut and fill operations within the borrow pit, and the progression of access roads and turbine excavations;
- As the borrow pit excavations progressed, surface water and groundwater ingress was removed via pumping to settlement ponds, and re-distribution locally across natural vegetated areas. Where required additional specialist treatment, including sediment bags and silt fences, was employed to ensure no deterioration in downstream water quality occurred;
- When extraction ceased within the borrow pit, the uphill face of the rock was stepped and deposits of soil were placed which assisted in the revegetation of the rock face.
- Following the cessation of rock extraction the borrow pits were back filled with peat removed from the permanent development footprint areas i.e. excavated roads, hard standing areas and turbine foundation areas; and
- Once the deposition of peat has been concluded the borrow pits will be permanently secured and a stock-proof fence to prevent access. Appropriate health and safety signage will also be installed.

3.9.3 Peat and Spoil Management Plan

3.9.3.1 Peat Storage Cells

While peat storage cells were not initially anticipated for the Permitted Development and therefore not included in the CEMP a methodology was developed for their construction and is described below. The peat storage cells were constructed in accordance with the environmental management measures set out in the CEMP (Appendix 3-2) Peat storage cells comprised with the Subject Development were constructed using the following methodology:

- The areas to be used were marked out at the corners using ranging rods or timber posts.
- Tree felling occurred, where necessary,
- Ground was prepared in the area to be occupied by the peat cell and, where necessary, material was removed in order to create the required void space.
- Soil/peat were stripped in order to construct the rock berm.
- Rock from the on-site borrow pit was deposited and then placed using excavator.
- The berm was constructed in a manner which prevented water retention within the storage area. This was in order to prevent a build-up of hydrostatic pressure at the base of the berm at a varying rate across the footprint which could have effectively placed a point load at a specific location.
- Large rocks were placed with an ‘open bond’ periodically to allow water to pass through the berm in a controlled manner.
- The berm was inspected and signed off by competent personnel.

The following methodology was utilized for the deposition of peat within the peat cells:

- Excavators removed the peat from the development footprint areas i.e. excavated roads, hard standing areas and turbine foundation areas.
- Temporary, sealed stockpiling areas, located adjacent to the hard standing areas and turbine foundation areas, were chosen following onsite discussions between the construction site manager, an ecologist, a geotechnical engineer and hydrologist.
- The excavators moved the excavated peat to the designated temporary stockpiling areas within the construction and soft levelled areas.
- The temporary stockpiling areas were surrounded by silt fences to ensure sediment-laden run-off did not occur.
- The excavated peat remained in these areas over a period of time until the volume of the peat has reduced as the water drains out of the mounded peat.
- The excavators then loaded the peat directly into dump trucks, to transport the peat to the nearest peat cell.
- The material was backfilled into the peat cells and spread evenly across the area.
- Once the deposition of peat has been concluded the peat cells will be permanently secured and a stock-proof fence to prevent access. Appropriate health and safety signage will also be installed.

3.9.3.2 Peat Containment Berm

The CEMP for the Meenbog Windfarm outlines emergency response procedures to be followed in the event a peat slide occurred at the site (Section 5.1.5). The berm was constructed after a minor peat slide and followed emergency response procedure for peat slide events as follows:

- On alert of a peat slide incident, all construction activities ceased, and all available resources were diverted to assist in the required mitigation procedures.
- Action was taken to prevent a peat slide reaching any watercourse. This took the form of the construction of a check barrage or berm on land.
- The localised peat slide did not represent an immediate risk to a watercourse and had essentially come to rest, the area was stabilised initially by rock infill, The failed area and surrounding area were then assessed by the engineering staff and stabilisation procedures implemented. The area was monitored until movements had ceased.

The berm was constructed as follows:

- Soil/peat were stripped in order to construct the rock berm. This peat was moved to the leeward side of the rock berm and spread to a depth of <500mm using a low ground pressure excavator.
- Articulated dump trucks drew rock from a borrow pit, this was deposited and then placed using excavator.
- Plant operators did not expose excessive amounts of the works area in front of the backfill material.
- The berm was constructed at a minimum of 6m in width at the beginning. It was widened further as construction continued so as to allow articulated dumpers and excavators to easily travel along the top.
- The berm was constructed in a manner which prevented water retention within the storage area. This was in order to prevent a build-up of hydrostatic pressure at the base of the berm at a varying rate across the footprint which could have effectively placed a point load at a specific location.
- Large rocks were placed with an ‘open bond’ periodically to allow water to pass through the berm in a controlled manner.
- The berm was inspected and signed off by competent personnel.

3.9.4 Water Quality Mitigation Measures

Water quality mitigation measures were installed on in accordance with the Drainage Management Plan set out in Section 4 of the CEMP for the Meenbog Windfarm (Appendix 3-2). Water quality mitigation measures in the vicinity of the Subject Development were developed in accordance with the Reactive Site Drainage and Management provisions set out in Section 3.2.4.3 of the CEMP and were designed to ensure the protection of watercourses on the site. As-Built drainage drawings for the entire Meenbog Windfarm Site are included as Appendix 3-3

3.9.4.1 Roadside Berms

A tracked excavator was used to create a low berm along the edges of the wind farm spine in key locations. The berms were constructed on the advice of the project hydrologist to a height of approximately 1m, bucket sealed, and allowed to revegetate naturally.

3.9.4.2 Stilling Ponds

A tracked excavator was used to excavate stilling ponds so that the length to width ratio was greater than 2:1, where the length is the distance between the inlet and the outlet. Stilling ponds were constructed in a wedge shape, with the inlet located at the narrow end of the wedge. Each stilling pond was a minimum of 1-1.5 metres in depth. The embankment that forms the sloped sides of the stilling were stabilised with vegetated turves. Stilling ponds were inspected weekly and following rainfall events. Inlet and outlets were checked for sediment accumulation and anything else that might interfere with flows. Sediment was cleaned out as necessary.

3.10 Operation

The rEIAR assesses the likely significant effects associated with the post construction phase of the Subject Development, referred to in the EIAR as the Operational Phase (and Decommissioning Phase, as described below). Given the nature of the Subject Development it has low potential for likely significant environmental effects post construction. The only activities associated with the Subject Development during the operation phase will be periodic maintenance of the site tracks which will be undertaken as part of the overall maintenance plan for the Meenbog Windfarm, and which was assessed in the EIAR for the Permitted Development. The borrow pits, peat cells and other deviations have been confirmed as stable, from an environmental perspective and safe from a Health & Safety perspective. The presence of the Subject Development will have no bearing on the operational phase of the Meenbog Windfarm.

3.11 Decommissioning

Given the nature of the Subject Development it will have no bearing on the decommissioning phase of the Meenbog Windfarm. The Subject Development will not alter the decommissioning plan for the Meenbog Windfarm and it is likely that the components of the Subject Development would remain in situ in the event of decommissioning of the Meenbog Windfarm.

An outline decommissioning plan is contained in the CEMP in Appendix 3.2. 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.

As noted in the Scottish Natural Heritage report (SNH) *Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms* (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the Proposed 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".*