

Proposed Gathabawn Windfarm Project

Environmental Impact Assessment Report

Chapter 5: Description of the Development

September 2026

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EIAR 5 Description of the Development

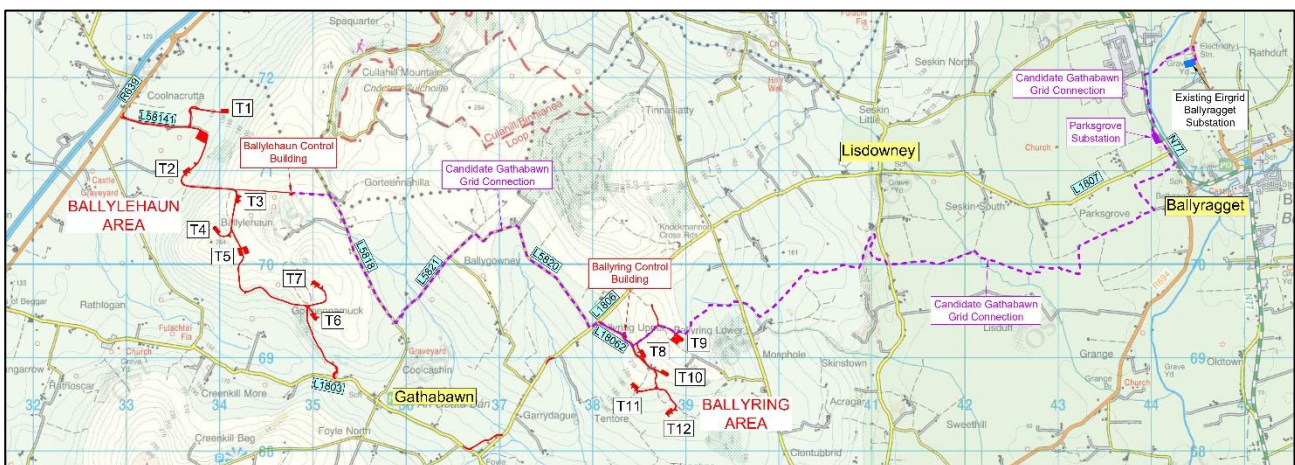
A description of the location, size and design of proposed Gathabawn Windfarm and the other elements of the whole project; payments of commercial rates and community benefit fund; the predicted use of natural resources, offsets of carbon emissions, other emissions and wastes associated with the project; the life-cycle stages - including construction, operation and decommissioning; other projects and activities which have been considered for cumulative effects; and a description of the environmental management of the project, is provided in this chapter.

EIAR 5.1 Overview of the Proposed Gathabawn Windfarm

The Proposed Development - Gathabawn Windfarm, the subject of this 2026 Planning Application, comprises 12 turbines which are proposed for 2 areas – Ballylehaun area (7) and Ballyring area (5). In addition to the turbines and their hardstanding areas, the windfarm development also includes site access roads, 2 Control Buildings; 1 met mast, underground cabling, temporary works to facilitate turbine deliveries, and other associated and ancillary works.

The Whole Gathabawn Windfarm Project also includes a connection to the national electricity grid. The grid connection is not included as part of this 2026 Planning Application, and it will be subject to a separate Planning Application, at a future date. While the ultimate grid connection point is subject to a separate process with Eirgrid, a candidate grid connection to the closest connection point at Eirgrid Ballyragget Substation, has been identified, and is examined in this 2026 EIA Report to facilitate the evaluation of the cumulative whole project impact.

The Candidate Gathabawn Grid Connection includes a new substation in Parksgrove townland (*Parksgrove Substation*) and underground cabling (UGC) from Ballylehaun Control Building to Ballyring Control Building (Ballylehaun-Ballyring UGC), from Ballyring Control Building to Parksgrove Substation (Ballyring-Parksgrove UGC), and from Parksgrove Substation to the existing Eirgrid Ballyragget Substation in Moatpark (Parksgrove-Moatpark UGC).



The relevant Figures are listed below and included at the end of this Chapter:

Figure 5.1.1: Whole Gathabawn Windfarm Project - Location on Discovery Mapping

Figure 5.1.2: Proposed Gathabawn Windfarm - Location on Discovery Mapping

ElAR 5.1.1 Purpose of the Gathabawn Windfarm project

The purpose of the Gathabawn Windfarm project is to generate renewable electricity from the wind.

The development of the proposed Gathabawn Windfarm is aligned with National and International policy to transition to a carbon neutral future, necessitated by an ever increasing imperative to ameliorate climate change. The generation of electricity from a clean, renewable source like the wind is a core component of these policies.

ElAR 5.2 Location of the Gathabawn Windfarm Project

ElAR 5.2.1 Location of the Proposed Gathabawn Windfarm

The proposed Gathabawn Windfarm is located entirely within County Kilkenny, with the wind turbines located on two areas of high ground – at Ballylehaun and at Ballyring. The nearest village is Gathabawn village which is 1km southeast from the nearest Ballylehaun turbine and 3km west from the nearest Ballyring turbine. Lisdowney village is also located 3km to the northeast of the nearest Ballyring turbine, and at least 6km from the Ballylehaun turbines. The town of Ballyragget is located 6km northeast of Ballyring and 10km east of Ballylehaun, while the town of Johnstown is located 6km from Ballylehaun and 9km from Ballyring. Freshford town is located 4km to the southeast of Ballyring, and 7km from Ballylehaun.

In neighbouring County Laois, Cullahill village is located 3km north of Ballylehaun and 6km northwest of Ballyring, while Durrow town is located 9km to the northeast of the proposed turbines.

The windfarm works locations are characterised as rural open countryside with lands enclosed by hedgerows or stone walls. There are farmsteads and one-off housing located along the local roads and generally the commercial, civic and community services are in the surrounding small towns and villages. Farming in the area is predominantly grassland supporting dairy and beef cattle and to a lesser degree sheep farming and tillage.

The locational context of the proposed Gathabawn Windfarm is outlined in the table below. Site photos of the various areas and parts of the proposed Gathabawn Windfarm are presented in [Appendix 5.1: Site Photos and Drone Captures of the Gathabawn Windfarm](#), which is included at the end of this Chapter.

Table 5-1: Location of the various parts of the Proposed Gathabawn Windfarm

Gathabawn Windfarm	Townland	Elevation (m)	Landuse /Land cover
Windfarm - Ballylehaun Site			
Turbine T1	Coolnacrutta	153	Agricultural grassland
Turbine T2	Glashare	143	Agricultural grassland
Turbine T3	Ballylehaun	224	Agricultural grassland
Turbine T4	Ballylehaun	246	Agricultural grassland
Turbine T5	Ballylehaun	236	Agricultural grassland
Turbine T6	Gorteennamuck	210	Agricultural grassland
Turbine T7	Gorteennamuck	231	Agricultural grassland
Met mast	Rathlogan	194	Agricultural grassland
Ballylehaun Control Building	Ballylehaun	199	Agricultural grassland
Windfarm - Ballyring Site			
Turbine T8	Ballyring Upper	222	Agricultural grassland
Turbine T9	Ballyring Lower	224	Agricultural grassland
Turbine T10	Ballyring Upper	208	Agricultural grassland

Gathabawn Windfarm	Townland	Elevation (m)	Landuse /Land cover
Turbine T11	Tentore	198	Agricultural grassland
Turbine T12	Ballyring Upper	178	Agricultural grassland
LiDAR unit	Ballyring Upper	226	Agricultural grassland
Ballyring Control Building	Ballyring Upper	202	Existing hardcore area
Turbine Delivery Facilitating Works			
Temporary Access Road and Temporary Road Widening	Foyle South, Coolcashin, Garrydague	130 - 160	Agricultural grassland

Site photos of the proposed windfarm are presented in [Appendix 5.1: Site Photos and Drone Captures of the Gathabawn Windfarm](#).

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.2.1 - Figure 5.2.4: Proposed Gathabawn Windfarm - Construction Phase Layout on Aerial Photography (4 Maps)

EIAR 5.2.2 Location of the Candidate Gathabawn Grid Connection

Similar to the proposed windfarm, the Candidate Gathabawn Grid Connection is also located in County Kilkenny. The Candidate Gathabawn Grid Connection is routed along public road between Ballylehaun and Ballyring, and across private lands between Ballyring and the existing Eirgrid Ballyragget Substation in Moatpark. A new substation is located beside the N77 national road in Parksgrove townland.

The locational context of the various parts of the candidate grid connection is outlined in the table below.

Table 5-2: Location of the various elements of the Candidate Grid Connection for Gathabawn Windfarm

Candidate Grid Connection	Townland	Elevation (m)	Landuse /Land cover
Parksgrove Substation	Parksgrove	70	Agricultural grassland
Ballylehaun – Ballyring UGC	Ballylehaun, Gorteennamuck, Ballygowney, Ballyring Upper	170 - 230	Existing Farm Track, Public Road, Agricultural grassland
Ballyring – Parksgrove UGC	Ballyring Lower, Lisdowney, Seskin South, Grange, Ballyconra, Parksgrove	70 - 220	Existing Farm Track, Public Road, Agricultural grassland
Parksgrove – Moatpark UGC	Parksgrove, Ballyconra, Moatpark	70 - 85	N77 road River Nore Agricultural grassland

Site photos of the candidate grid connection are presented in [Appendix 5.2: Site Photos of the Candidate Gathabawn Grid Connection](#).

ElAR 5.3 Size and Design of the Proposed Gathabawn Windfarm

ElAR 5.3.1 Predicted Electricity Production from the proposed Gathabawn Windfarm

The electricity production (energy yield) at a windfarm over a given period, is dependent on the wind regime at the site for that period. However, the average annual energy yield can be predicted based on the wind speeds and wind direction distribution measured on the site and then correlated to long-term weather data from Met Éireann and to satellite datasets.

Energy yield predictions are provided herein in order to offer a best estimate on the windfarm's greenhouse gas (GHG) emission offsets; the number of houses that can be supplied; and the value of the Community Benefit Fund.

Methodology: The energy yield of a windfarm is predicted using industry standard wind modelling software e.g. WindFarmer and WASP, which is input with the following data points:

- Long-term windspeed and direction data is sourced from the Global Wind Atlas carSite terrain data
- Landuse on-site and on adjacent lands e.g. forestry, grassland, buildings, adjacent turbines, to calculate yield losses through wake effect
- Turbine placement locations,
- Turbine hub heights, and turbine rotor diameter, to calculate m² of swept area, and turbine power curves. For the Gathabawn Windfarm, the Vestas V136 (4.5MW) turbine was used to model the production.

The wind modelling software can then predict the average energy yield from the windfarm site. This best estimate is considered by the wind energy industry as robust and has been the basis of financing wind energy developments for the past 30 years.

Predicted Electricity Production: For the Gathabawn site, the wind modelling software calculated an average annual production of c.150,000,000 Kilowatt hours (kWh) for the Gathabawn Windfarm site, depending on the turbine installed.

ElAR 5.3.2 Wind Turbines

Turbine technology continues to improve and be refined particularly in terms of power efficiency and controllability, and the turbines herein proposed represents the latest turbine technology available on the Irish market that is suitable for the Gathabawn Windfarm site.

In relation to extremes of temperature, the turbines to be installed at Gathabawn Windfarm will be designed in accordance with the IEC 61400 standard to ensure the structures are appropriately engineered against damage from hazards (including temperature) during the planned lifetime of the structures. The Gathabawn turbines will be designed to operate within temperature ranges between -20°C and +50°C.

In relation to extreme wind speeds; The Beaufort Scale classes a Force 12 storm with speeds in excess of 32m/s (or in excess of 117km/h) as Hurricane Force. The wind turbines which will be installed at the Gathabawn Windfarm site will be designed to withstand at least 60 m/s (215km/h).

The turbines will be fitted with a de-icing system which will thaw ice from the blades using fans installed inside each blade root.

ElAR 5.3.2.1 Description of the Turbines

The proposed turbines will have a rotor diameter of 136m.

Regarding hub heights, two hub heights are proposed – 82m for Turbine T6, T7 & T9, and 102m for all other turbines, thus giving an uppermost tip height of 150m for T6, T7 & T9, and 170m for all other turbines.

The turbines will be of generic three-bladed up-wind rotor, horizontal axis design with active pitch regulated variable speed operation. They will be light grey in colour, with no nacelle logo. The towers will be of tubular steel design, slightly tapering from the base to the top where the nacelle will be mounted. The nacelle at the top of each turbine tower will contain the generator, gearbox and the control unit which monitors and controls all the major functions of the turbine. The nacelle will have effective sound insulation which will ensure minimal noise emissions. The three blades will taper to tip and include serrated edges along the outside edge to reduce aerodynamic resistance (noise). The blades will be made of fiberglass reinforced epoxy and are affixed to the turbine at the nacelle.

Turbines of this size are a typical size of turbine currently being installed on-shore in Ireland and represents the optimal available turbine technology for the Gathabawn site in the context of the specific site constraints, current availability in the Irish market and compatibility with the latest Irish Grid Code compliance requirements.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.3: Wind Turbine - Elevation (2 hub heights and tip heights proposed)

ElAR 5.3.2.2 Turbine Foundations

The bottom section of the turbine tower is fixed to a steel unit which will be embedded in the foundation.

The wind turbine design proposed will require a reinforced concrete foundation of c.20m diameter and c.3.2m in depth. The foundations will be designed in accordance with the Original Equipment Manufacturers' (OEM) engineering specifications, once the turbine supplier is chosen prior to construction.

Based on the findings of the ground investigation across the site, gravity type foundations will be suitable for turbines of the size proposed and it is anticipated that a suitable load bearing stratum will be encountered within 4m of the ground surface.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.4: Turbine Foundation

ElAR 5.3.2.3 Turbine Hardstands

Each of the wind turbine designs will require a levelled and compacted hardcore area adjacent to the foundation, to provide a safe, level working area and to accommodate the large cranes used in the assembly and erection of turbines. The hardstanding areas will also be used to offload and store turbine components. The hardstands will be 77m by 35m, with a total area of 2700m².

The proposed hardstands will also include temporary 'blade finger' areas which will be used to lay the blades on profiles for set up after delivery to site and prior to erection of the blades, with temporary turning heads to facilitate the delivery vehicles.

This area is designed primarily for the construction phase works but will also provide safe access for maintenance works during operations and would also be used during the decommissioning of the turbines.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.5: Turbine Hardstand

EIAR 5.3.2.4 Turbine Spacing Design

Inter-turbine spacing was considered in the windfarm design within the context of the existing site constraints including site topography, distance from houses, landholdings and presence of designated sites. Neither the Wind Energy Guidelines 2006 nor the Draft 2019 Guidelines prescribe inter-turbine spacing values for windfarm designs.

Based on the turbine technology on the market today, for optimum performance, windfarms are designed spaced apart 2-3 rotor diameters at a minimum and 5-6 rotor diameters at a maximum. Additionally, the international engineering standards for wind turbine design IEC61400-1:2025 and DNVGL16, which do not prescribe rules for turbine spacing, require that turbine design conditions are not exceeded when operating the turbines to avoid undue mechanical damage. Before installation, turbine manufacturers also carry out computerised wind flow models of the windfarm site to ensure turbulence and fatigue loading is not exceeded.

The inter-turbine spacing at the proposed Gathabawn Windfarm are at least 3-rotor diameters apart in the Ballyring area and between 3 and 6 rotor diameters apart in the Ballylehaun area. These spacings are well within the parameters of international wind farm design standards.

The turbine spacing between the proposal turbines and the turbines in neighbouring Lisdowney Windfarm is detailed in [Section EIAR 5.6 Use of Natural Resources: EIAR 5.6.1 Windtake](#), below.

EIAR 5.3.3 Windfarm Site Roads

The site roads, 8.3km in total, will mainly comprise the construction of 6.5km of new roads and the upgrading and widening of 1.8km of existing private farm tracks.

The site roads will comprise crushed stone over a layer of geotextile material, capped with a layer of hardwearing stone such as limestone. The site roads will be completed to 4.5m in width. Widened bends will be provided to facilitate turbine component delivery.

The relevant Figure is listed below and included at the end of this Chapter:

[Figure 5.6: Windfarm Cabling & Windfarm Site Roads](#)

EIAR 5.3.4 Meteorological Mast & LiDAR unit

It is an EirGrid requirement that continuous site meteorological information, independent of the wind turbines, is made available to them. This will be provided at the Gathabawn Windfarm site using a met mast and a LiDAR unit.

At Ballylehaun, it is proposed to erect 1 no. met mast 30m in height with meteorological equipment attached. The Met Mast will be erected upon a 5m x 5m x 1m deep concrete foundation. At Ballyring, it is proposed to install a LiDAR unit which will also measure the wind and meteorological conditions. The LiDAR unit will be installed within a small 3m x 3m fenced hardcore area on a small concrete plinth.

The relevant Figure is listed below and included at the end of this Chapter:

[Figure 5.7: Met Mast Elevation and LiDAR Unit](#)

ElAR 5.3.5 Windfarm Control Buildings

Two electrical control buildings are proposed – one at Ballylehaun and one at Ballyring. The Control Buildings will gather and regulate the electricity from the wind turbine cable strings (Windfarm Cabling) at Ballylehaun and at Ballyring.

These Control Buildings will comprise a 600m² compound containing a control building, measuring 20m x 10m, with a height of 7m. The Control Buildings will contain electrical and communications equipment, along with a storage room, canteen and welfare facilities comprising a self-contained toilet with an integrated rainwater harvesting system.

See selected photos showing proposed location of the Control Buildings in [Appendix 5.1: Site Photos and Drone Captures of the Gathabawn Windfarm – Photos 29 & 36](#).

The relevant Figure is listed below and included at the end of this Chapter:

[Figure 5.8: Windfarm Control Buildings - Plan View and Elevations](#)

ElAR 5.3.6 Windfarm Cabling

Underground electrical cabling will link the turbines together into a turbine ‘string’ and ultimately connect these strings to the on-site electrical Control Buildings. The trenches for the Windfarm Cabling will be 1.3m deep while the width of the trench will vary between 0.6m wide for single cable string and 0.75m wide for a double cable string. In total, Windfarm Cabling will be 8km in length and will be installed under windfarm site roads (either upgraded existing farm tracks or new windfarm roads), crossing under the public road L58141 (*for 4m*) in the Ballylehaun area and installed in private lands under the widened section of the public road L18062 (*for 358m*) in the Ballyring area.

The relevant Figure is listed below and included at the end of this Chapter:

[Figure 5.6: Windfarm Cabling & Windfarm Site Roads](#)

EIAR 5.3.7 Site Entrances

It is proposed that the windfarm site will be accessed from the public road, through both existing and newly created entrances. These entrances are identified as Site Entrance No.1 to No.7 on **Figures 5.2** and described in the table below.

The entrances will be setback 2.4m from the road and existing trees and hedgerow on either side will be removed/pruned as required in order to provide sightlines in either direction. The size and design of the entrances is set out in the Table below, and illustrated on **Figure 5.9: Typical Details for Site Entrances**, See also **GWF-13.1 to GWF-13.8 in the Drawings Pack**.

It should be noted that site entrances of various widths will be required to facilitate the transport of large components, such as turbine blades and tower sections to the windfarm during the construction stage. The provision of temporary widened areas to facilitate turbine transport is described in EIAR 5.3.8 below.

Table 5-3: Site Entrances for the proposed Gathabawn Windfarm

Entrance #	Townland	Road	New / Existing Entrance	Permanent / Temporary	Project Element Accessed	Sight Lines (m)	Width of Splay (m)	Existing Roadside boundary to be removed(m)
1	Coolnacrutta	L-58141	New	Permanent	Turbine T1	East: n/a -ed of cul-de-sac West: 90m	38m	85m
2	Glashare	L-58141	Existing	Permanent	Turbine T2 Turbine T3 Turbine T4 Turbine T5 Turbine T6 Turbine T7 Construction Compound No. 1 Met Mast	East: n/a (end of cul-de-sac) West: 90m	25m	150m
3	Gorteennamuck	L-1803	Existing	Temporary	Turbine T6 Turbine T7	n/a. entrance only used during turbine haulage.		
4	Ballylehaun	L-5818	Existing	Permanent	Control Building	n/a - end of cul de sac	4.5m	n/a
5	Ballyring Upper	L-18062	Existing	Permanent	Control Building Temporary access for Construction Compound No.2	East: 90m West: 90m	10m	120m
6	Ballyring Upper	L-18062	Existing	Permanent	Turbine T8 Turbine T9 LiDAR	North: 46m* South: 90m	15m	110m
7	Ballyring Upper / Tentore	L-18062	Existing	Permanent	Turbine T8 Turbine T9 Turbine T10 Turbine T11 Turbine T12 Borrow Pit No.2 LiDAR	n/a – end of cul de sac	4.5m	n/a

**At Site Entrance No. 6 (looking north) only 46m sight lines can be achieved. It should be noted that Site Entrance No. 6 is an existing farm entrance and the Public Road L-18062 has very low existing traffic levels. Further, this entrance will be used very infrequently (once per month) during the operation phase.*

EIAR 5.3.8 Facilitating Works along the Turbine Delivery Route

The turbines will be delivered from the port of entry using the motorway network as far as Portlaoise. Some temporary street furniture removal will be required on the M7/N77 interchange at Portlaoise. These off-site activities do not form part of the subject application but are considered herein for in-combination effects.

From the Portlaoise M7/N77 interchange, the turbines will be transported down the N77, straight through Abbeyleix and Durrow towns, onto the R639 and straight through Cullahill village before turning left off the R639 onto the L58141 at Coolnacrutta. No works or activities are required in Abbeyleix, Durrow or Cullahill to facilitate the movement of the turbine components through these towns and village.

An assessment of the turbine delivery route has been carried out using site visits, topographical surveys and AutoTrack software. A number of pinch points were identified, and temporary works in the vicinity of the windfarm site are proposed to facilitate the transport of the large components to the turbine locations. These works include the construction of:

Access into the Ballylehaun site

- FW1: Temporary access road (630m²) in the townlands of Coolnacrutta and Glashare. This temporary road will provide access off the R639 road onto the L58141 local road;
- FW2: Permanent widening of 495m on the southern side of the L58141 by 0.5m to 2m. A new hedgerow will be planted along the new alignment of the roadside boundary; and Further down the L58141, permanent widening of 80m into the northern verge by 0.5m to 2m, and the removal of two trees.
- FW3 and FW4: Temporary widened site entrance at Site Entrance No. 1 (220m²), No.2 (35m²)
- FW5: Temporary site access roads before turbine T1.
- FW6: A temporary hardstanding area (4090m²) will be constructed in an agricultural grassland field at the Ballylehaun site, close to Site Entrance No.2 and the Temporary Construction Compound. This area will provide a temporary set down area for turbine blades for Turbines T1, T4 and T5 as no turbine set down areas are proposed at these turbine locations.

Access to the Ballyring site

- FW7: Temporary widening of Site Entrance No.3 in Gorteenamuck (2410m²), exiting the Ballylehaun site to turn onto the L1803 local road
- FW8: Temporary access road 2840m² in the townlands of Foyle South and Coolcashin. This temporary road will provide access from the L1804 to the L1806 local road.
- FW9: Temporary widening of 800m² of the L1806 local road into a grassland field in Garrydague
- FW10: Temporary hardcore area (610m²) in a grassland field at the junction of the L1806 and L18062 to facilitate turning into the Ballyring site.
- FW11: Permanent widening of 620m of the L18062 by up to 1m into a grassland field on the eastern boundary. Establishment of a new field drain and roadside boundary.
- FW12: Temporary site access roads to Turbine T8 coming from the south.

Most of the facilitating works are temporary and the land and road boundaries will be reinstated following the completion of the turbine transportation. However, the proposed widening of the public road will be permanent and will involve the permanent removal of roadside verge/boundary bank or hedge and underlying soils on one side of the existing road carriageway, and the laying of hardcore followed by surface

dressings along the excavated verges to create a suitable load-bearing surface. Any existing field drains will be reinstalled along the newly widened roadside boundaries.

See selected photos showing different settings of these temporary facilitating works in [Appendix 5.1: Site Photos and Drone Captures of the Gathabawn Windfarm – Photos 1, 27, 30, 32 & 32](#).

See [Appendix 5.3: Turbine Delivery Route Assessment](#).

The relevant Figure is listed below and included at the end of this Chapter:

[Figure 5.2.1 - Figure 5.2.4: Proposed Gathabawn Windfarm - Construction Phase Layout \(4 Maps\)](#)

[Figure 5.10: Turbine Delivery Route](#)

EIAR 5.3.9 Windfarm Site Drainage System

An integrated drainage system will be installed to manage surface water run-off during all phases of the proposed development.

The drainage system will follow standard best practice approaches to protect water quality, including;

- (i) the implementation of 50m buffer zones around EPA waterbodies;
- (ii) '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, construction areas and temporary storage areas; and
- (iii) collecting all drainage waters from works areas as these waters may carry silt or sediment, and/or nutrients, and routing these waters through in-line sediment controls and into settlement ponds prior to controlled diffuse release over vegetated natural surfaces within the site.

Drainage features which will be used to control and attenuate flow and to settle and capture suspended solids in site runoff, will include check dams, swales, level spreaders, settlement ponds, silt fences and silt curtains, silt bags/socks and Siltbuster (or similar) equipment. There will be no direct discharge to surface waters or drains; and surface waters from works areas will be released outside of hydrological buffer zones of 50m around waterbodies.

This drainage system will be implemented through the [Surface Water Management Plan](#), which is included with the [Environmental Management Plan 2026](#) (accompanies the planning application).

Following the completion of the construction works, the drainage at temporary infrastructure areas, such as borrow pits temporary compounds, blade fingers and turning heads, will be removed during post-construction reinstatement works, and settlement ponds will be partially infilled. The drainage system alongside permanent infrastructure will be left in place for the operational phase of the windfarm.

The relevant Drawings are listed in the table below

Drawings No.	Drawings Title	Location
GWF-03.2	Site Layout Map 1 of 6	Drawings Pack
GWF-03.3	Site Layout Map 2 of 6	Drawings Pack
GWF-03.4	Site Layout Map 3 of 6	Drawings Pack
GWF-03.5	Site Layout Map 4 of 6	Drawings Pack
GWF-03.6	Site Layout Map 5 of 6	Drawings Pack
GWF-03.7	Site Layout Map 6 of 6	Drawings Pack

See also [Surface Water Management Plan](#) in the [Construction Environmental Management Plan 2026](#).

ElAR 5.3.9.1 Existing Farm Drainage Channels

Manmade drainage ditches occur around the edges of some agricultural grassland fields, mainly at the Ballyring site. With the exception of a wet drainage channel on the most southeasterly section of the Ballyring site, the farm drains run dry for at least part of the year.

There are two existing drainage channels within the boundary of construction works in the Ballyring Area which cannot be avoided – D01 and D02:

D01 will be removed during public road widening works at FW11 and reinstated along the new public road boundary.

D02 will be realigned to divert this drain around the hardstanding works at Turbine T10. A new 90mm pipe culvert to facilitate the construction of the access road will be installed in this drain.

These drains will be incorporated into the ‘clean water’ drains which will form part of the windfarm drainage system.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.11.1: Existing Farm Drainage Networks at the Ballylehaun Area

Figure 5.11.2: Existing Farm Drainage Networks at the Ballyring Area

ElAR 5.3.10 Temporary Construction Compound

2 No. temporary construction compounds will be set up at the beginning of the construction stage – Ballylehaun Construction Compound (5410m²) in Glashare townland, accessed via Site Entrance No. 2, and Ballyring Construction Compound (1100m²) in Ballyring Upper townland, accessed via Site Entrance No. 5.

The compounds will be excavated and finished in stone. The compounds will accommodate:

- Staff and visitor parking;
- Site offices and canteen;
- Designated storage areas for construction materials;
- Designated storage area for construction waste, such as pallets, packaging, ducting offcuts etc.
- Bunded containment area for oils and fuels - bunded to 110% of the total volume; and
- Toilet block containing integrated sealed wastewater holding tanks.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.12: Temporary Construction Compounds

ElAR 5.3.11 Temporary Borrow Pits

In order to provide an on-site source for the majority of construction aggregate, it is proposed that stone will be won from 2 No. on-site borrow pits. Due to the characteristics of bedrock at the site (i.e. limestone and siltstone – See Chapter 7 Soils), rock will be extracted from the borrow pits using rock breaking methods. Blasting is not expected to be required. *See Appendix 5.1: Site Photos and Drone Captures of the Gathabawn Windfarm – Photos 20 & 41.*

Suitable rock won from the borrow pits will be used for constructing the Windfarm site roads and the hardstanding areas at turbines and compounds on the windfarm site.

The construction of Gathabawn Windfarm is expected to require the excavation of approximately 113,000m³ of soils (made up of topsoil, subsoil and rock), of which c.28,000m³ is expected to be excavated from the on-

site borrow pits. Approximately 26,000m³ of rock excavated from the borrow pits are expected to be suitable for use at the hardstand areas and windfarm site roads.

Table 5-4: Borrow Pit Plan Area and Expected Rock Removal

Borrow Pit #	Location (townland)	Rock Type	Plan Area (m ²)	Suitable Rock (m ³)
1	Ballylehaun	Limestone	3000	17,000
2	Ballyring Lower	Siltstone	3800	9,000

It is noted that suitable rock and fill material will also be extracted from turbine foundation and hardstanding locations and this suitable rock and fill material will be used to construct the base layers of windfarm road and hardstands. Therefore, the volumes of stone required to be won from the borrow pits may be lower than 26,000m³.

During the opening of the borrow pits, the upper soil layer will be stored locally in a designated temporary deposition area. Unsuitable aggregates extracted from the borrow pits and unsuitable rock along with some subsoil and topsoil excavated from the windfarm footprint will also be stored in the temporary deposition areas at the borrow pit locations.

Once the required rock has been extracted from each borrow pit, the borrow pits will be reinstated using the unsuitable material from the windfarm construction areas. The borrow pits will be reinstated to the same level as the surrounding ground level and a vegetative cover established through seeding and planting of native plant species.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.13.1: Temporary Borrow Pit No.1 in the Ballylehaun Area

Figure 5.13.2: Temporary Borrow Pit No.2 in the Ballyring Area

EIAR 5.3.12 Overburden Storage Berms

Overburden, mainly comprising topsoil and subsoil, will be stored in berms alongside the turbine hardstands and along some of the access roads. Both temporary and permanent storage will be required.

Most of the overburden storage will be temporary with subsoil and topsoil being used to reinstate the temporary construction works areas at the end of the construction phase.

Permanent berms will be sown with native grass and flowering plant species in order to provide pollinator corridors throughout the windfarm site. During decommissioning of the windfarm, the soil in these berms will be used to reinstate the turbine hardstand and foundation areas. The locations of the permanent overburden storage berms are identified on Figure 5.2.

EIAR 5.3.13 Fencing

During the construction phase, temporary livestock proof fencing will be installed ahead of construction works around the boundaries of construction works. The fencing will protect the adjoining lands in the vicinity of the construction works by preventing the encroachment of personnel, machinery, or materials onto lands outside of the construction works area boundary and will prevent livestock from entering the works areas. The construction works area boundary will be c.10m to 20m from the construction works, as illustrated on Figure 5.2.1 - Figure 5.2.4: Proposed Gathabawn Windfarm - Construction Phase Layout on Aerial Photography (4 Maps).

Following the completion of construction, a permanent livestock fence will be erected around the turbines and along the site access roads.

ElAR 5.3.14 Hedgerow and Tree Removal, Reinstatement and Enhancement

To provide bat buffer zones around the turbines, or to facilitate the delivery of the large turbine components, 3,700m of hedgerow and 10 trees will be removed during the construction works. 8 of these 10 trees relate to veteran solitary hawthorn trees on the Ballylehaun hill.

To replace the 3,700m of hedgerow and 10 mature trees which will be removed during construction works, new hedgerows and trees will be planted at the Gathabawn Windfarm site. The location of these hedgerows and trees has been agreed with the project ecologists, to provide alternative foraging habitat, restore habitat connectivity to bat species, and will enhance and create habitat for other faunal species.

The following hedgerow planting will be carried out within the windfarm site (but beyond the bat buffer zones imposed):

- 3,700m of new hedgerow will be planted. These new hedgerows will include 100 no. trees (i.e. a tree will be planted at 35-40m intervals in new hedges).
- 1,300m of existing hedgerow will be improved by interplanting new hedging into gaps in the existing field boundary.

A mix of native fruiting hedge species will be used for any new hedges and will predominantly comprise of hawthorn, along with blackthorn, holly, hazel, guelder rose, spindle, crab apple, and bird cherry. New trees will comprise a mix of native species such as oak, alder, birch, crab apple, bird cherry and rowan. Hedging and trees will be of Irish provenance. Hedging plants will be sourced from Department of Agriculture approved nurseries.

The location of these new /improved hedgerows, are identified on **Figure 5.14.1 - Figure 5.14.3: Biodiversity Areas (3 Maps)**.

ElAR 5.3.15 Biodiversity Areas – Protection, Creation, Enhancement

The total permanent hardstanding footprint of the windfarm will be 6.6ha, which previously comprised agricultural lands, hedgerows and other semi-natural habitats. It is proposed to provide new and enhanced Biodiversity Areas at the windfarm site through the protection, enhancement and creation of habitats for the benefit of local flora and fauna and to replace the habitat lost with at least the same amount of habitat.

To this end, Biodiversity Areas totalling 7ha form part of the proposed Gathabawn Windfarm development and will be protected and managed for the duration of the development. This comprises:

- **Planting 3,700m of new hedgerow** which include **100 no. native trees**, (as per ElAR 5.3.15 above)
- **Improving 1,300m of existing poor cover hedgerows** by interplanting into gaps (as above)
- **1.7ha of agricultural lands** and **5.3ha of hazel woodland** have been **secured for the operational lifetime** of the Gathabawn Windfarm under a long-term lease agreement with the landowners. These areas will be managed as follows in order to increase the biodiversity resource at the windfarm site:
 - At the Ballyring Area, two areas of agricultural land, 1ha in total, will also be planted with high biodiversity value native tree and plant species in order to **create pockets of higher value habitat at the Ballyring site**.
 - At the Ballylehaun site, a **Biodiversity Connectivity Corridor** will be created on 0.7ha of lands and will comprise a 15m wide and 500m long corridor **linking two areas of hazel woodland** – (i) the 5.3ha of hazel wood which will be leased for the lifetime of the windfarm, and (ii) the hazel woodland which is owned by the NPWS and forms part of the Gales Hill Nature Reserve.

- The 5.3ha **hazel wood will be protected for the lifetime of the windfarm to prevent any felling or removal of trees**;
- Protection of the existing **veteran hawthorn trees** at the site – no further felling of these trees;
- **Restoration of stone walls** at the windfarm by experienced dry stone wall builder;
- The Biodiversity Areas will be **fenced to ensure that they allow wildlife free passage while preventing access by livestock**;
- The Biodiversity Areas will be maintained through **regularly removing invasive species** and **managing tree densities and ground cover** within the wood and within the connectivity corridor.

See *Appendix 5.1: Site Photos and Drone Captures of the Gathabawn Windfarm – Photos 13, 14, 41 & 44*).

A **Habitat Management Plan** will be developed and implemented throughout the operational phase of the Gathabawn Windfarm, to ensure that these areas provide a functioning high level biodiversity resource for local flora and fauna communities. The management of the Biodiversity Area will be under the **supervision of an Ecologist**. The Habitat Management Plan is part of the Construction Environmental Management Plan for the Whole Gathabawn Windfarm Project.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.14.1 - Figure 5.14.3: Biodiversity Areas (3 Maps)

EIAR 5.3.16 Reinstatement Works

Following the completion of construction works, the construction facilities will be removed and, along with any temporary works areas, these lands will be reinstated with subsoil and topsoil from adjacent overburden storage berms. The drainage network around these temporary areas will be removed and the lands reinstated. The construction works area fencing will be left in place until the land has revegetated. The permanent operational phase fencing will be installed alongside the windfarm site roads and around the turbines. The operational phase footprint of the Gathabawn Windfarm is illustrated on **Figure 5.15**.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.15.1 - Figure 5.15.4: Proposed Gathabawn Windfarm - Operational Phase Layout on Aerial Photography (4 Maps)

EIAR 5.4 Size and Design of the Candidate Grid Connection for Gathabawn Windfarm

The Candidate Gathabawn Windfarm Grid Connection includes the construction of a new substation compound at Parksgrove, and 16km of underground cables to the Eirgrid Ballyragget Substation at Moatpark. These elements of the Candidate Gathabawn Grid Connection are described below.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.16: Layout of the Candidate Gathabawn Grid Connection

*See selected photos showing different settings of the candidate grid connection in **Appendix 5.2: Site Photos and Drone Captures of the Candidate Gathabawn Windfarm Grid Connection –Photos 17 & 18.***

EIAR 5.4.1 Parksgrove Substation

The electricity from the Gathabawn turbines will be cabled into a new substation at Parksgrove where it will be transformed, metered and regulated for export to the national electricity system at the EirGrid substation at Ballyragget, c.1.5km further to the east.

This new substation, referred to as Parksgrove Substation herein, is proposed for an area of scrubland/vacant land, and will comprise a hardcore compound yard containing control buildings, lightning protection monopoles 18m in height, underground cabling and overhead wire and other electrical equipment and apparatus. The compound yard will be 6450m² in plan area (111m x 58m), surrounded by a perimeter palisade security fencing (2.6m in height) with entrance gates. The compound will contain two control buildings – **1)** EirGrid control building 450m² in plan area (25m x 18m) and 8.69m in height and **2)** an IPP Control Building 217m² in plan area (20m x 10.7m) and 6.92m in height. The Control Buildings will be standard single storey concrete block buildings with nap plaster render and black slate roofs. The Control Buildings will contain electrical and metering equipment, along with welfare and storage facilities. Welfare facilities will be self-contained with wastewater being collected in tanks.

All outdoor apparatus within the compound yard which contain oils, will be adequately banded and connected to interceptors to prevent hydrocarbon leaking into the surrounding environment. The compound will be serviced by an integrated drainage system.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.17: Parksgrove Substation - Plan and Elevations

EIAR 5.4.2 Underground Cabling (UGC)

Ballylehaun-Ballyring UGC: Underground cabling, 5.6km in length, between Ballylehaun Control Building and Ballyring Control Building, where it then becomes part of the Ballyring-Parksgrove UGC. This cabling will be installed under the Windfarm Site Roads (160m); and under public roads (5.5km). The relevant public roads are the L5818, L5821, L5820 and L1806, and L18062.

Ballyring-Parksgrove UGC: From the Ballyring Control Building, underground cabling, 8.8km in length, will connect the Gathabawn Windfarm (via the Control Buildings) to Parksgrove Substation. To minimise impacts to the local road network and local road users, a cross-country route is the preferred option for the cabling. This cabling will be installed under agricultural lands (6.5km); hardcore areas including farm tracks (1.4km); hardcore area within the Ballyring site (600m); with just 200m along the public road corridor where the cable route crosses the L1808, L1811 and L1807 public roads.

At Parksgrove the electricity from the windfarm will be transformed up to 110kV.

Parksgrove-Moatpark UGC: The Parksgrove Substation will be connected to the Eirgrid Ballyragget Substation by underground 110kV cabling, c.1.5km in length, which will cross the N77 National Road and the River Nore and then go through agricultural lands and a short length of public road as far as the EirGrid Substation at Moatpark, north of Ballyragget town.

Site photos of the candidate grid connection are presented in [Appendix 5.2](#).

EIAR 5.4.2.1 Size and Design of Underground Cabling

Cable Trenches: The Underground Cabling (UGC) will comprise cables, ducts and other apparatus installed in a trench, 1.3m deep. The trench would be laid with 5 cable ducts through which the 3 electrical cables, communications cables, and copper cables (if required), would be pulled. The trenches will be 0.6m wide for single ducts, and 0.75m wide for double ducts.

Joint Bays along 33kV cable routes: It is expected that there will be 6 No. underground Joint Bay locations along the Ballylehaun-Ballyring UGC route, 11 No. along the Ballyring-Parksgrove UGC. These Joint Bays will comprise cable jointing chambers placed at c.800m intervals, and will facilitate cable installation, commissioning and maintenance. The electric cable jointing chambers will be 4.5m long x 2.5m wide and 2.25m deep. Smaller communication cable jointing chambers will be installed alongside the main jointing chambers. The chambers will be fitted with a manhole cover, to facilitate infrequent access during the operational phase. No new access roads are required to the jointing chambers between Ballylehaun and Parksgrove.

Joint Bays along 110kV UGC cable routes: 2 No. Joint Bay locations will be required along the route: the first Joint Bay in private agricultural land on the west side of the N77, and the second Joint Bay in a grassland field on the east side of the River Nore and beyond the boundary of the SAC designation along the river. Each Joint Bay would comprise 3 underground pre-cast concrete chambers – a joint bay chamber (6m long, 2.5m wide and 2.25m deep), along with two smaller communication link box chambers. To access the 110kV Joint Bays, a new access road would be constructed over the cable from the second Joint Bay as far as the public road in Moatpark townland. From there the cabling would be installed within the public road a short distance (155m) to the Eirgrid compound boundary, and into the existing GIS building within the compound. The first Joint Bay will be access from the Parksgrove Substation location and will require a short length of new access (60m) from the Parksgrove substation compound.

The design of underground cabling will comply with EirGrid specifications and technical and operational requirements.

See selected photos showing different settings of the UGC routes in [Appendix 5.2: Site Photos and Drone Captures of the Candidate Gathabawn Windfarm Grid Connection – Photos 6, 9, 13 & 15](#).

The relevant Figures are listed below and included at the end of this Chapter:

[Figure 5.18: Underground Cabling \(UGC\) - Cabling Cross Sections](#)

[Figure 5.21: Horizontal Directional Drilling under the N77 and under the River Nore \(W6\)](#)

EIAR 5.4.2.2 Facilitating Future Connection Needs

It should be noted that the design of the Parksgrove Substation will include additional bays for other generator connections, and the Promoter of the Gathabawn Windfarm Project commits to installing higher capacity cables (than required for the Gathabawn generation on its own) in the Parksgrove – Moatpark UGC to ensure that these cables will be capable of transporting both the Gathabawn project production and also additional electricity from other projects. These design features would make an alternative available to other project developers, which could avoid further connections crossing the River Nore to connect directly to the Eirgrid Ballyragget Substation.

EIAR 5.4.3 Ancillary Works for the Candidate Gathabawn Grid Connection

EIAR 5.4.3.1 Eirgrid Ballyragget Substation works

In the EirGrid Ballyragget Substation, cable trenches for cabling within the substation compound will be constructed and ducting for the cables installed, the additional electrical plant and apparatus will be installed in the compound yard and inside the existing GIS building according to EirGrid specifications.

EIAR 5.4.3.2 Site Entrances

One permanent site entrance is required to the Parksgrove Substation. This entrance will use the existing farm entrance off the L-1807 local road. Sightlines of 90m will be provided to the west and 40m sightlines provided to the east, requiring the removal of 65m of hedgerow in the west direction and 5m of hedgerow in the east direction. This site entrance is identified as Site Entrance No. 8 on the project mapping.

5 No. temporary entrances will also be required to gain access to agricultural fields along the Ballyring-Parksgrove UGC and the Parksgrove-Moatpark UGC. Two temporary entrances on the public roads L1808 and the L1811, one temporary entrance on the L1807 and one temporary entrance on the R432. All of these temporary entrances will be at existing farm/field entrances. The temporary entrances are identified on [Figure 5.22](#).

EIAR 5.4.3.3 Temporary Construction Compound

A temporary construction compound, 545m² in area, will be set up beside the Parksgrove Substation compound at beginning of the construction stage. This compound will be excavated and finished in stone, and will accommodate:

- Staff and visitor parking;
- Site offices and canteen;
- Designated storage areas for construction materials;
- Designated storage area for construction waste, such as pallets, packaging, ducting offcuts etc.
- Bunded containment area for oils and fuels - bunded to 110% of the total volume;
- Toilet block containing integrated sealed wastewater holding tanks.

The location of the temporary compound is shown on [Figure 5.22](#).

EIAR 5.4.3.4 Overburden Storage for the Candidate Gathabawn Grid Connection

During the construction of the cable trenches and the formation of the substation compound, soil will be stripped from the works area. This soil will be separated into topsoil and subsoil and stored in overburden storage berms beside the works area.

Overburden along the Ballyring-Parksgrove UGC route will be temporarily stored within the works area and reused to reinstate the top of the cable trench.

Overburden from the Parksgrove Substation compound area and from the Parksgrove-Moatpark UGC trenches will mainly be stored permanently in berms within the construction works area. These berms will be reseeded following their emplacement. The overburden storage area at the Parksgrove Substation is shown on [Figure 5.22](#).

Along the section of underground cabling within the boundary of the River Barrow and River Nore SAC, the top of the cable trench within the SAC boundary will be reinstated with the soils removed from the verge or

the agricultural field (in the vicinity of the drill pits) during the works. During the excavation of the trench within the SAC boundary, the top sod will be carefully separated to ensure a quick recovery of land cover in this sensitive area. There will be no permanent storage of overburden within the SAC boundary.

EIAR 5.4.3.5 Crossing Natural Watercourses

There are two EPA blue line watercourses along the Ballylehaun-Ballyring UGC route – the Gorteenamuck Stream (W1, existing pipe culvert) and Gorteenahilla Stream (W2, existing masonry bridge). With the exception of W2 (Masonry bridge over the Gorteenahilla Stream), which will be crossed by Horizontal Directional Drill (HDD), these channels will be crossed either under or over the existing structure, depending on the depth of cover available. Where the existing structure is damaged (e.g. collapsed) a new drainage pipe will be installed during the cable trenching works.

There are three EPA blue line watercourses along the Ballyring-Parksgrove UGC route – the Lismaine Stream, Lisdowney Stream, and Ballyconra Stream. All three streams will be crossed by trenching across the watercourse and the standard construction methodology of ‘dam and overpump’ will be used to isolate water from the works. Where the volume of water is too great at the time of the crossing works, a flume pipe(s) will be used to isolate the water from the works. These crossing works will only take place during July, August or September.

The River Nore is located on the route of the Parksgrove-Moatpark UGC. This river will be crossed by directional horizontal drilling technique with the cables drilled under the riverbed (several meters below the riverbed). This method of crossing the River Nore has been previously approved by a number of other grid connection applications in the area (e.g. Farranrory Windfarm Grid Connection). See [Figure 5.20: Watercourses W3, W4, W5 - Crossing Detail](#).

The relevant Figures are listed below and included at the end of this Chapter:

[Figure 5.19: Watercourses W1, W2 - Crossing Details](#)

[Figure 5.20: Watercourses W3, W4, W5 - Crossing Detail](#)

[Figure 5.21: Horizontal Directional Drilling under the N77 and under the River Nore \(W6\)](#)

EIAR 5.4.3.6 Crossing Drainage Channels

A number of drains occur under the public road along the Ballylehaun-Ballyring UGC route, and along agricultural field boundaries along the Ballyring-Parksgrove UGC route. The drains will be crossed by standard trenching technique, and should there be surface or groundwater present at the time of the crossing works – the standard construction methodology of ‘dam and overpump’ will be used to isolate water from the works. See [Figures 5.19: Watercourses W1, W2 - Crossing Details](#) and [5.20: Watercourses W3, W4, W5 - Crossing Detail](#).

EIAR 5.4.3.7 Crossing the N77 National Secondary Road

The ducting for the Parksgrove-Moatpark UGC will be installed under the N77 road using horizontal directional drilling technique. The launch drill pits will be located in private lands to the west of the N77 public road corridor, while the receptor pit will be in the eastern verge of the N77, to the east of the consented Briskalagh Wind Farm Grid Connection underground cabling route.

This method of crossing the N77 has been previously approved for other grid connection applications in the area (e.g. Farranrory Wind Farm Grid Connection, and more recently Briskalagh Wind Farm Grid Connection).

The relevant Figure is listed below and included at the end of this Chapter:

[Figure 5.21: Horizontal Directional Drilling under the N77 and under the River Nore \(W6\)](#)

[Figure 5.22: Layout of the Parksgrove-Moatpark UGC in relation to the N77 & River Nore](#)

EIAR 5.4.3.8 Crossing Existing Underground Services

Underground services relevant to the Ballyring to Parksgrove route include:

- Uisce Éireann water pipes - the cables will cross under a lateral line at one point in private lands and a main line in private lands on the south side of the L1807.
- Gas Networks Ireland, in private lands in the townland of Parksgrove and
- Eir communication cables present in the L1807 at Parksgrove;
- Farranrory Grid Connection, in the L1807 south of Lisdowney village and the L1807 at Parksgrove.

Underground services relevant to the Parksgrove to Moatpark route include:

- Uisce Éireann water pipes - the cable will cross under a lateral line at one point on the R432 in Moatpark.
- Eir communication cables present at two locations along the R432.

The Candidate Gathabawn Grid Connection Underground Cabling will be installed under these services, in accordance with current EirGrid specifications and Uisce Eireann, Eir and Gas Networks Ireland specifications.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.23: Existing Underground Services - Crossing Details

EIAR 5.4.3.9 Hedgerow and Tree Removal and Replacement

In total a 4m section of hedgerow will be removed from 20 no. hedgerows the Ballyring-Parksgrove UGC route, this hedgerow will be replanted following the works. At the Parksgrove Substation, 0.4ha of scrub will be cleared to facilitate the construction of the compound.

EIAR 5.4.3.10 Fencing

During the construction phase, temporary livestock proof fencing will be installed ahead of construction works around the boundaries of construction works in agricultural lands. The fencing will protect the adjoining lands in the vicinity of the construction works by preventing the encroachment of personnel, machinery, or materials onto lands outside of the construction works area boundary and will prevent livestock from entering the works areas. The construction works area boundary will be c.15m in width along the underground cable routes, as illustrated on **Figure 5.22**.

Following the completion of construction, construction works area fencing will be left in place until the land has revegetated following reinstatement works.

EIAR 5.4.4 Reinstatement Works

Following the completion of cable trenching works, and at jointing locations – following the completion of cable jointing and commissioning, the lands will be reinstated with subsoil and topsoil from adjacent overburden storage berms along the length of the cable trench in agricultural land.

ElAR 5.5 Annual Financial Contributions

ElAR 5.5.1 Payments – Commercial Rates to Kilkenny County Council

The basis of the Commercial Rates, paid to the Local Authority, are calculated by the Valuations Office taking into consideration the capacity factor of the windfarm and the electricity generation prediction per annum for the site. The Annual Rateable Valuation (ARV) set by Kilkenny County Council is then applied to the Valuation Office calculation and the annual commercial rates payable by the windfarm to Kilkenny County Council is set.

Based on current Valuations Office rates and Kilkenny County Council ARV, it is predicted that **commercial rates of c.€800,000 per annum** will be paid to **Kilkenny County Council** for the lifetime of the windfarm.

ElAR 5.5.2 Payments – Community Benefit Scheme

The Department of Environment, Climate and Communications currently operates the Renewable Electricity Support Scheme (RESS), to promote the generation of electricity from renewable sources. The Renewable Electricity Support Scheme (RESS) is a key policy initiative to deliver on the Government's Climate Action Plan renewable electricity (RE-E) commitments. All RE-E projects supported under RESS have to provide a Community Benefit Fund for the benefit of the local area, to the amount of €2 per megawatt hour of electricity exported to the grid. The Gathabawn Windfarm Community Benefit Fund (CBF) is estimated to be **circa €300,000 per annum**.

The Fund will be created irrespective of whether the Windfarm participates in RESS or other Government price support scheme or not and will operate for the lifetime of the windfarm.

The CBF will be established and distributed in accordance with the Rulebook for Community Benefit Funds under RESS (May 2025). In accordance with Rulebook, the Community that lives close to the RESS Project is the beneficiary of the CBF. A locally recruited CBF committee will be responsible for setting the direction of the Fund, the geographical area and making funding decisions. The CBF may define the Area of Benefit of the Fund, taking into consideration the Fund's resources and the number of households located in the vicinity of the windfarm.

Subject to final CBF Committee approval, it is proposed that a substantial amount of the Gathabawn CBF will be distributed within 5km of a turbine i.e to near neighbours within 1km and 2km, to community groups and NGOs in the nearest village of Gathabawn and in Lisdowney, Galmoy and Cullahill. The small towns of Freshford and Johnstown are also in the Area of Benefit, with Ballyragget and Durrow on the periphery.

The fund will be distributed as follows;

- payment to all households within 1km of a turbine base of €1,000 per annum. There are 66 houses within 1km.
- households located further than 1km but within a distance of 2km will receive an annual payment of an amount lower than €1,000 but higher than €500, depending on the actual distance from a turbine base.
- the total amounts allocated to direct payments to households will be limited to 50% of the total annual contributions from the CBF
- the balance of circa €140,000 will be distributed to local community organisations such as clubs, schools, tourism and community projects, sport and home energy efficiency programs. Successful projects will be in line with the UN Sustainable Development Goals of – Quality Education, Affordable and Clean Energy, Sustainable Cities and Communities and Climate Action

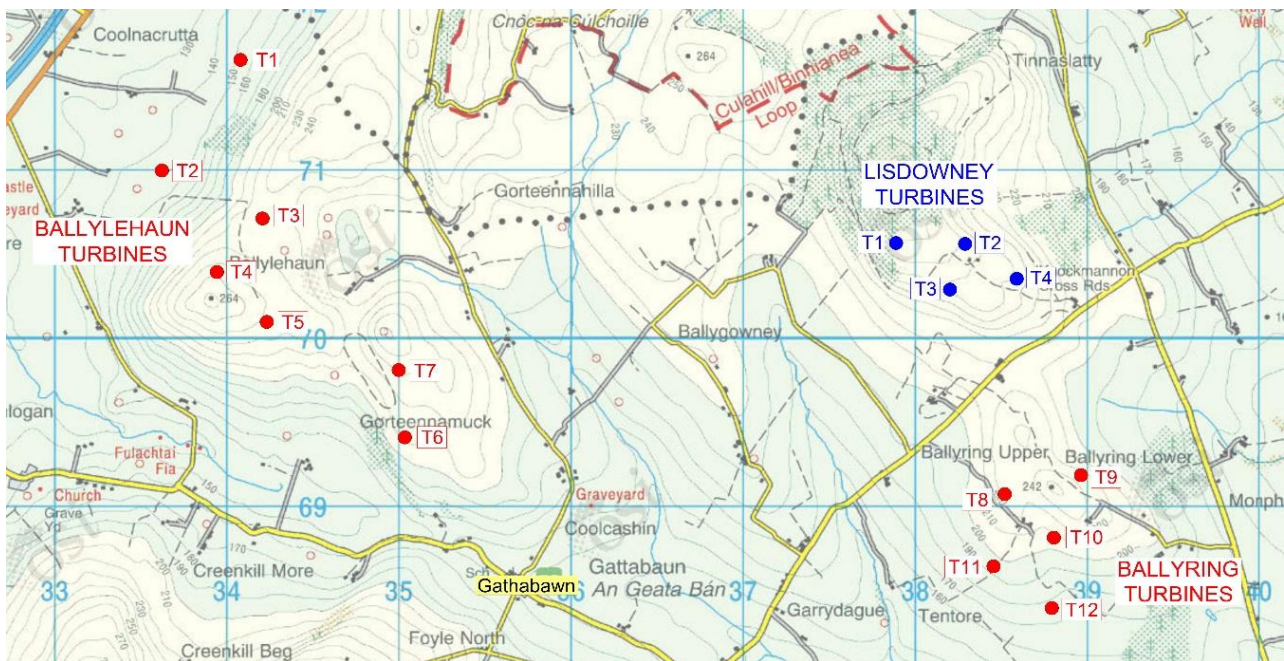
The Government is committed to holding RESS auctions at frequent intervals throughout the lifetime of the Scheme. Gathabawn Windfarm Project will apply to the Scheme once planning has been granted.

EIAR 5.6 Use of Natural Resources

EIAR 5.6.1 Windtake

Proposed Gathabawn Windfarm: The closest wind farm to the Proposed Gathabawn Windfarm is the existing Lisdowney Wind Farm, which is located to the north/northwest of the Ballyring turbines and to the east of the Ballylehaun turbines and to the north of the Ballyring Area.

The Lisdowney Wind Farm comprises 4 No. wind turbines with a hub height of 80m and a rotor diameter of 82m.



In general, to preserve optimal performance and to account for turbulence and wake effects a separation distance needs to be observed between any proposed turbines and any existing turbines on adjacent sites. The Wind Energy Development Guidelines (2006) and the Draft Revised Wind Energy Development Guidelines (December 2019) are in agreement requiring that the minimum separation distances between permitted and existing turbines are:

- 3 rotor diameters in a crosswind direction (i.e. $3 \times 136\text{m} = 408\text{m}$), and
- 7 rotor diameters in the downwind direction (i.e. $7 \times 136\text{m} = 952\text{m}$).

The rotor diameter for the Gathabawn turbines (136m) has been used to calculate wind take.

EIAR 5.6.1.1 Establishing the Prevailing and Crosswind Directions at Lisdowney Wind Farm

The Irish Wind Atlas illustrates the wind resource at 50m, 75m and 100m hub height in wind rose graphs. Lisdowney turbines have hub heights of 80m, while two hub heights are proposed for Gathabawn Windfarm – 82m and 102m. Therefore, Irish Wind Atlas data for both 75m and 100m above ground level are considered relevant in relation to the potential for wind take on the Lisdowney Windfarm. See Plate 1 and Plate 2 below.

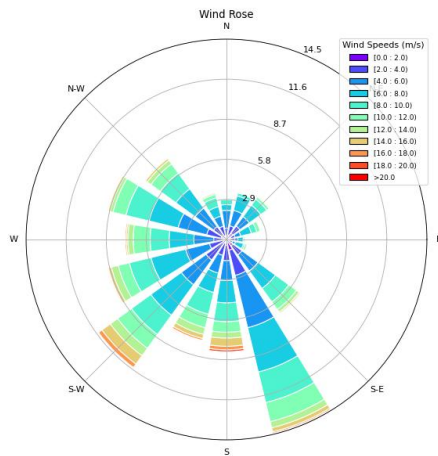


Plate 1: Irish Wind Atlas 75m (at Lisdowney Wind Farm)

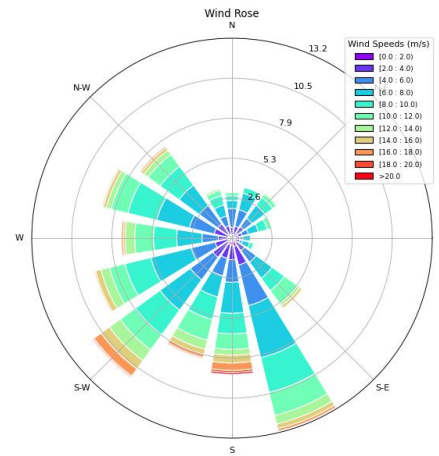


Plate 2: Irish Wind Atlas 100m

The Irish Wind Atlas 'Directional Wind Rose' graphs show that:

- the prevailing wind direction at Lisdowney Windfarm is from south-southeast, and so
- the crosswind directions are west-southwest and east-northeast.

EIAR 5.6.1.2 Windtake Examination for Gathabawn Windfarm turbines

The turbines in the Ballyring Area are the closest Gathabawn Windfarm turbines to the existing Lisdowney Wind Farm. The turbines in the Ballylehaun Area are at least 3km from the Lisdowney turbines. The potential for the Gathabawn turbines to cause windtake related production losses to the Lisdowney Wind Farm is examined below:

Prevailing Wind Direction at Lisdowney Windfarm (South-Southeast)

The Gathabawn Windfarm turbines at the Ballyring Area are proposed to the south-southeast of the Lisdowney turbines (i.e. in the prevailing wind direction), and therefore in accordance with the Wind Energy Development Guidelines, a minimum 7-rotor diameter separation distance applies – i.e. a minimum separation distance of 952m.

This minimum separation distance of 952m is achieved at the Gathabawn Windfarm – with c.1.25km separating the closest proposed Gathabawn turbine in the Ballyring Area from the closest Lisdowney Wind Farm turbine.

Crosswind Directions at Lisdowney Windfarm (West-Southwest and East-Northeast)

There are no Gathabawn Windfarm turbines to the East-Northeast of the Lisdowney turbines. However, the turbines in the Ballylehaun Area of the Gathabawn Windfarm are to the West of the Lisdowney turbines, and therefore in the crosswind direction, and a minimum 3-rotor separation distance applies – i.e. 408m.

This minimum separation distance of 408m is achieved at the Gathabawn Windfarm – with c.3km separating the closest proposed Gathabawn turbine in the Ballylehaun Area from the closest Lisdowney turbine.

EIAR 5.6.1.3 Conclusion to Windtake Examination

The proposed Gathabawn Windfarm turbines will be compliant with the Wind Energy Guidelines on Windtake, because the minimum separation distances between the proposed turbines and the nearest Lisdowney Windfarm turbines, will be greater than 7 rotor diameters in the Prevailing Wind Direction, and greater than 3 rotor diameters in a Crosswind Direction.

EIAR 5.6.2 Land

The Gathabawn Windfarm site is proposed for agricultural lands.

Proposed Gathabawn Windfarm: Within the Construction Works Area, 59ha are located on agricultural lands. The agricultural lands are predominantly comprised of permanent grassland (53.5ha), with one landholding under arable cropping (4.5ha), along with farm tracks (1ha). During operation, the works boundary of the operational windfarm on agricultural lands will comprise 18ha in total (17ha of land use change from agriculture – these are the lands within the operational fences) along with 1ha along existing farm tracks (which will be upgraded to windfarm site road). Within the 18ha, the permanent hardstanding footprint (including the turbines) will be 6.6ha.

Candidate Gathabawn Grid Connection: Within the Construction Works Area, 14ha are located on agricultural lands. The agricultural lands along the grid connection cabling routes are comprised of permanent grassland, along with farm tracks. The Parksgrove Substation is located on 0.6ha of scrubland/vacant land. Following the completion of construction works, the only above ground features will be the Parksgrove Substation and the new access road over the cabling in Moatpark, comprising a total landtake area of 0.8ha.

EIAR 5.6.3 Soils and Rock

EIAR 5.6.3.1 Excavations

Proposed Gathabawn Windfarm:

Borrow Pits: Stone will be won from 2 No. on-site borrow pits proposed for locations in Ballylehaun townland and Ballyring Lower townland. The excavated area of the borrow pits will be 3,000m² for Borrow Pit 1 in Ballylehaun and 3,800m² for Borrow Pit 2 in Ballyring Lower. Approximately 26,000m³ of suitable material will be won from the 2 No. borrow pits. The Borrow Pits will be reinstated at the end of construction.

Windfarm Excavations: Based on trial hole investigations, ground conditions and Geological Survey Ireland mapping for the Gathabawn windfarm site and taking into account the results of topographical surveys and the size and design of the turbine foundations, hardstanding areas, access roads and compound areas, the construction of Gathabawn Windfarm is expected to require the excavation of approximately 85,000m³ of soils (made up of topsoil, subsoil and rock) from the construction works areas. It is expected that most of the excavations will be suitable for reuse during the construction of the hardstand areas and windfarm site roads, and to reinstate construction works areas and the borrow pits. Excavated rock and subsoil unsuitable for use as construction material will also be used to reinstate the borrow pits.

Candidate Gathabawn Grid Connection: Based on Geological Survey Ireland mapping for the area and taking into account the size and design of the cable trenches and the compound areas, the construction of the Candidate Grid Connection for Gathabawn Windfarm is expected to require the excavation of approximately 14,200m³ of soils (made up of topsoil, subsoil and rock) from cable trenches and jointing chamber excavations along the cable routes and 6,800m³ of soils excavated at the Parksgrove Substation site.

EIAR 5.6.3.2 Imported Rock

Proposed Gathabawn Windfarm: Smaller amounts (c.8,000m³) of higher-grade hard-wearing rock will be required for road capping and surface finishing, which will be imported from local quarries such as Cemex in Dunmore, Wholesale Suppliers Limited Coolbawn, Castlecomer or Roadstone Bennettsbridge, all in County Kilkenny.

Candidate Gathabawn Grid Connection: Crushed stone will be imported to backfill cable trenches and for the Parksgrove Substation compound. In total, approximately c.4,000m³ of aggregate will be brought on-site.

ElAR 5.6.4 Water

Whole Gathabawn Windfarm Project:

Both the proposed Gathabawn Windfarm and the Candidate Gathabawn Grid Connection will manage water requirements during the various phases in a similar manner:

During construction non-potable water for welfare facilities will be imported from a local municipal supply and stored in water holding tanks at the welfare facilities at the temporary construction compounds, and within the portable welfare units which will be used at active works locations. Bottled drinking water will be stored in the canteens at the compounds.

During operation, non-potable water will be supplied from a rainwater harvesting system on the control buildings (at Ballylehaun and Ballyring and at Parksgrove). These rainwater harvesting systems will provide water for welfare facilities during the operational phase. Demand for potable water during the operational phase will be very low, and bottled drinking water will be brought onto the windfarm site or into the Parksgrove Substation by operation and maintenance personnel as required.

During decommissioning of the Gathabawn Windfarm, non-potable water for welfare facilities will be imported from a local municipal supply and stored in water holding tanks at the welfare facilities at the temporary compound (located at the Control Building locations), and within the portable welfare units which will be used at active works locations. Similar to the construction phase, bottled drinking water will be stored in the canteen units at the site.

ElAR 5.6.5 Biodiversity

The dominant habitat at the Whole Gathabawn Windfarm Project site is improved agricultural grasslands. These agricultural grasslands provide food and food byproducts to the agri-food sector and also provide habitat for various species of flora and fauna. Although, according to Chapter 13 Biodiversity, improved agricultural grassland is not of very high biodiversity value – being assigned an importance level of Local Importance (higher level). In contrast, the lands in the Cullahill Mountain SAC are classified as having Very High importance due to the presence of Annex I habitats, their protected status, and the conservation grazing that is being implemented to manage those lands.

Proposed Gathabawn Windfarm:

During construction, works will take place on 58ha of agricultural lands. In addition, 3,700m of hedgerows and 10 no. trees will be removed, while 3,700m of new hedgerow, including 100 no. immature trees will be planted to replace the hedgerow resource lost. In addition, in order to increase the biodiversity value of existing hedgerows at the windfarm site, hedgerow species will be planted into gaps along 1,300m of existing field boundaries at the windfarm site during construction works.

During operation, once the proposed development is constructed, the requirement for lands reduces and the permanent hardstanding footprint (including the turbines) will be 6.6ha on what was previously agricultural land. To offset this loss of habitat, 7ha of Biodiversity Areas have been identified at the windfarm site where high value habitat will be created, managed and protected. These Biodiversity Areas comprise:

- 1ha of agricultural/tillage land at the Ballyring Site, which will be planted up with native tree and plant species, protected from livestock and managed for the lifetime of the windfarm;
- 5.3ha of undesignated mature hazel woodland which will be leased for the lifetime of the windfarm, protected and managed for biodiversity, and the creation of a connectivity corridor (0.7ha in area), which will connect the undesignated hazel wood with the hazel/mixed wood which forms part of the neighbouring Gales Hill Nature Reserve. This connectivity corridor will be fenced to enable free passage of fauna while preventing livestock access, and the vegetative cover will be managed.

- Invasive plant species will be regularly removed from the Biodiversity Area.

See **Sections EIAR 5.3.14** and **EIAR 5.3.15**.

Candidate Gathabawn Grid Connection: The Ballylehaun-Ballyring UGC is routed along the public road network with no loss of land resources. Along the Ballyring-Parksgrove UGC and along the Parksgrove-Moatpark UGC, due to the cross-country location of the route of the underground cables, there will be a temporary loss of grassland habitat (14ha) along the works areas. However, this area will revegetate and return to agricultural use within 4-6 months of the works. Permanent change of landcover will occur at the Parksgrove Substation, this location is not used for productive agricultural use at the moment, and currently covered by scrub.

EIAR 5.7 Emissions

EIAR 5.7.1 Greenhouse Gases

The potential for greenhouse gas (GHG) emissions to air arises during the manufacturing, operation, service and ultimate decommissioning of the wind turbines (full life cycle), and also during the development of the project, in particular during the construction phase.

EIAR 5.7.1.1 Turbine Energy Payback (Full Life Cycle)

Energy Balance: The energy balance of a wind turbine is the relationship between the energy requirement over the full life cycle of the turbine (manufacture, operation and decommissioning) versus the energy generated by the wind turbine over its operating life. This is called the energy payback. The energy payback period is measured in ‘months to achieve payback’, which is when the energy requirement for the life cycle of the wind turbine equals the energy it has already generated. At this ‘payback’ point, a wind turbine becomes energy neutral. Based on Sustainability Reports available on the Vestas website, a turbine of the size of the turbines proposed for the Gathabawn Windfarm Project will be energy neutral within 6.1 months of operation (See [Chapter 12: Climate](#) for the basis for these calculations). By contrast, production of electricity from oil and coal consumes more energy during extraction and burning than is generated into electricity and therefore never pays back the energy used in the process.

Return on Energy: Alternatively, energy payback can be measured by ‘number of times payback’ meaning – the amount of energy paid back to society versus the energy needed in the lifetime of that generation source. For example, over the life cycle of a wind turbine the size of the turbines proposed, it will return c.40 times (depends on the wind resource on-site) more energy back to society than it consumed during its manufacture and operation. That means that when 1 kWh of energy is invested in a wind turbine, you get 40kWh in return. By contrast, the value for coal is that less than half (0.4%) of the energy expended in mining and burning is eventually returned as electricity. In this context, wind power generated electricity is a clean and sustainable alternative to fossil fuels for the generation of electricity for the national electricity system.

Full Life Cycle CO₂e emissions: According to Vestas’ Sustainability Reports for turbines of the size proposed, the carbon footprint will be 5.6g of CO₂e per kWh of electricity produced. (See [Chapter 12: Climate](#) for the basis of these calculations).

EIAR 5.7.1.2 Proposed Gathabawn Windfarm – Embodied Carbon Emissions and Vehicular Emissions

Greenhouse Gas emissions will also arise during the life cycle of the windfarm, mainly during the construction phase. Sources of Greenhouse Gases include embodied carbon and vehicular emissions.

Construction Phase: Embodied carbon will be emitted from c.113,000m³ of soils, subsoils and rock (including from borrow pits) which will be excavated during construction works, from 8,000m³ of stone imported onto the site, and from c.6,090m³ of concrete which will be required for the turbine foundations (c.5040m³), the windfarm control buildings, and the small volumes needed for the met mast and LiDAR foundations. The largest number of deliveries and greatest use of machinery, plant, equipment and vehicles is associated with the construction phase of the windfarm, with an estimated 430,000L of diesel to be used by the construction contractor. Nitrogen Dioxide and other GHGs will be emitted from vehicles on-site, in the worst-case scenario that no electric vehicles (Evs) are used.

Operational Phase: Soil excavations during the operational phase will be minimal, limited to drainage maintenance. It is expected that routine maintenance vehicles will be electric. However, if electric vehicles are not used, nitrogen dioxide and other greenhouse gas emissions will be emitted from vans/4WD vehicles

involved in operation & maintenance on-site, in addition to emissions from larger machinery used during major maintenance works.

Decommissioning Phase: It is expected that all machinery and vehicles will be electric by the time the windfarm is decommissioned. However, if electric vehicles are not used, nitrogen dioxide and other greenhouse gas emissions will be emitted from vans/4WD vehicles involved in decommissioning the windfarm and from larger machinery used to dismantle the turbines and reinstate the turbine hardcore areas. There will be no excavations required, the turbine bases will be left in situ, however there is potential for GHG emissions from the movement of soils (from overburden storage berms) onto the newly reinstated turbine hardstanding areas until the area has started to revegetate.

EIAR 5.7.1.3 Candidate Gathabawn Grid Connection – Embodied Carbon Emissions, Vehicular Emissions

Construction Phase: Embodied carbon will also be emitted from c.21,000m³ of soils, subsoils and rock which will be excavated during construction works, from 4,000m³ of imported stone, and from c.3,330m³ of concrete which will be required for the cable trenches and for the Parksgrove Substation foundations and blockwork. Nitrogen Dioxide and other GHGs will be emitted from vehicles on-site, with an estimated 130,000L of diesel to be used by the construction contractor in the worst-case scenario that no electric vehicles are used.

Operational Phase: GHG emissions will be negligible as no excavations or earthmoving will be required during the operation of the grid connection, and the very low level of maintenance and inspection works.

Decommissioning Phase: Decommissioning underground cables between Ballyring and Parksgrove would involve minimal interference with soils, with just the jointing chambers briefly exposed to facilitate the removal of the cables from the ducting. The ducting pipes would be left in place. The Parksgrove Substation and the cabling to Moatpark would likely be permanent infrastructure. Very low numbers of vans/4WD vehicles would be involved in decommissioning works.

EIAR 5.7.1.4 Offset of Greenhouse Gases Emissions During Operation

The 12 No. wind turbines at the Gathabawn Windfarm Project have the potential to generate c.150,000,000 Kilowatt hours (kWh) of electricity per annum. This renewable electricity will be generated without emitting greenhouse gases (GHG) or ash pollution and will avoid an equal amount of electricity being generated from gas, coal or oil, which do emit GHGs and in the case of coal – also emit ash to the atmosphere. The electricity produced at Gathabawn Windfarm will be enough to supply 33,237 homes in County Kilkenny and County Laois with clean, green electricity and will avoid emission of 38,250 tonnes of CO₂e.

Planting of forestry and switching to electric cars (Evs) are also part of Government policy to reduce GHG emissions, as part of our carbon neutral future. The following actions would be required to offset the equivalent amount of CO₂e as the potential offsets from Gathabawn Windfarm;

- Planting 3,102ha (31km²) of forestry to sequester 38,250 tonnes of CO₂e.
- Changing 22,238 diesel/petrol cars to Evs to avoid the emission of 38,250 tonnes of CO₂e.

Overall, the Whole Gathabawn Windfarm Project will have ‘paid back’ the Greenhouse Gases emitted during its construction, operation and decommissioning **after the first 6 months of operation**, through the offset of GHG emissions achieved from the production of renewable energy.

See [Appendix 12.2: Consistency of Gathabawn Windfarm with Section 15 of the Climate Act](#) for source details.

ElAR 5.7.2 Other Emissions to Air

ElAR 5.7.2.1 Dust

Proposed Gathabawn Windfarm:

The potential for dust emissions mainly relates to the Gathabawn Windfarm due to the scale of the works and the volume of vehicular and machinery movements at and onto the site. The potential for dust emissions is related to the weather conditions, stage of construction and the intensity of vehicular and machinery movement at the site.

Construction Phase: Dust will arise from the transportation of aggregate, movement of delivery vehicles and the movement of excavated materials and from bare soils at excavated areas and overburden storage areas.

Operational Phase: There will be minimal excavation required during operation – limited to civil works maintenance such as maintenance of roads and drainage system twice per year. As excavations will be limited, vehicular movements will be limited to c.6 No. visits per month, and the roads will be capped during construction with hardwearing stone, dust emissions will be negligible during the operational phase.

Decommissioning Phase: There is potential for some dust due to the movement of soils and the presence of bare soil (until revegetation commences) at the turbine foundation and hardstands areas. Dust may also arise from vehicular and machinery movement along roads.

Candidate Grid Connection: The potential for dust relates to the construction phase of the grid connection, arising from the transportation of aggregate, movement of delivery vehicles and the movement of excavated materials and from bare soils at excavated areas and overburden storage areas. However, due to the much smaller scale of works, the shorter duration and the linear nature of trenching works, the dust potential from grid connection works is much less than windfarm works.

Negligible levels of dust are expected during the operation or partial decommissioning of the grid connection due to the nature of the operational and decommissioning works.

ElAR 5.7.2.2 Noise

Proposed Gathabawn Windfarm:

Construction phase: Noise will be emitted from certain construction activities such as excavations, rock extraction and rock breaking at the construction works areas. Noise will also be emitted from heavy machinery, equipment and vehicles at works areas. Typical construction noise levels associated with the type of construction machinery at the Gathabawn Windfarm site are outlined in the table below:

Operational phase: The operating turbines will emit noise. Turbines of the size proposed for Gathabawn Windfarm have a typical sound power level of 103.9dB(A), with sound optimisation modes available to reduce the noise from the operating turbine if required. The Vestas V136 is a turbine model that fits the turbine dimensions for the proposed Gathabawn Windfarm. The sound power curve for the Vestas V136 is provided in the table below. The noise emissions from the turbines are represented in the figure following the table. Please see [Chapter 10: Noise & Vibration](#) for further information.

Decommissioning phase: Noise during the decommissioning phase will be limited to the operation of machinery and vehicles to dismantle and remove the turbines from the windfarm site over a 3-4 month period, with most works being carried out at turbine locations.

Candidate Gathabawn Grid Connection: During construction works, noise will be emitted by site machinery and vehicles, as outlined for the windfarm above. The operating windfarm substation will emit noise. The

noise emission level associated with the type of substation at Parksgrove is the order of 93 dB(A) L_{a90} at the substation boundary.

EIAR 5.7.2.3 Vibration

Proposed Gathabawn Windfarm

Construction phase: The use of heavy machinery and rock breaking equipment will cause very low levels of localised ground vibration in the immediate vicinity of active borrow pit extraction, heavy earthworks and ground compaction. No blasting is expected to be required at the works areas, including the borrow pits.

Operational phase: Once operational, the level of vibrations from wind turbines are so small that they are almost impossible to detect.

Decommissioning phase: Negligible vibrations from decommissioning works, which will be limited to the immediate vicinity of groundworks at turbine locations.

Candidate Gathabawn Grid Connection: During construction works, negligible levels of vibration are expected from cable trench excavations, and very low levels of localised vibration will arise from heavy groundworks, and compaction works at the Parksgrove Substation. No vibration is expected from the operational grid connection.

EIAR 5.7.2.4 Shadow Flicker

Shadow flicker relates to the **Proposed Gathabawn Windfarm** only

Construction & Decommissioning phases: There will be no source of shadow flicker during the construction or decommissioning phases.

Operational phase: Rotating wind turbine blades can cause brightness levels to vary periodically at locations where they obstruct the sun's rays. This can result in an annoyance indoors when the shadow is cast over the windows of a dwelling. Shadow flicker effect is dependent upon the proximity and relative position of the turbine(s) and the property window(s), in combination with weather conditions (i.e. presence of direct sunlight, adequate wind speed to turn the turbine blades and critical wind direction to turn the rotor towards the dwelling), the time of day and year (i.e. dawn and dusk or when the sun is low in the sky) and the absence of screening (e.g. treeline or forestry block) between the property and the turbine.

The predicted worst-case scenario shadow flicker from the turbines (based on always sunny and with windows towards turbine, wind direction blowing directly between the turbine and the house, and no screening provided by treelines or forestry blocks etc.) is represented in the figure below. Please see Chapter 11: Shadow Flicker for further information.

EIAR 5.7.2.4.1.1 Control of Shadow Flicker

Shadow Flicker from operating turbines can be predicted by a special module in the turbine software.

Each of the Gathabawn Windfarm turbines will be fitted with shadow flicker control modules, which will enable individual turbines to be turned off if the permitted shadow flicker limits are about to be exceeded at a local residence or as agreed with local residents.

EIAR 5.7.2.5 Light

Proposed Gathabawn Windfarm

Construction and decommissioning phase: Lighting will be used at the temporary construction compounds; these lights will be used for security and safety purposes and will be of a cowled design and will be fitted with motion sensors. Lights will not be left turned on overnight. Occasionally lights will be used at works areas if required to complete a work task.

Operational phase: For security purposes, external lighting will be used at the Ballylehaun and Ballyring Control Buildings. The lighting will be of a cowled design along with motion-sensor and timer-controlled lights which will not remain turned-on overnight. Selected turbines will also have aviation lights directed upwards and installed according to Irish Aviation Authority recommendations. Motion-sensor lights will also be fitted over the turbine doors.

Candidate Gathabawn Grid Connection: Similar to the windfarm, lighting will be used at the temporary compound at the Parksgrove Substation location during construction, and at the Parksgrove Substation during its operation. The lighting will be of a cowled design along with motion-sensor and timer-controlled lights which will not remain turned-on overnight.

EIAR 5.7.2.6 Electromagnetic Fields

Electrical objects and anything connected to them produce two types of fields – electric fields and magnetic fields. Electric and magnetic fields are produced in all residential and working environments as a result of nearby electrical wiring, appliances, power lines and telecommunication masts, among other things.

Construction and decommissioning phase: Negligible electromagnetic fields will be generated during the construction or decommissioning phase of the Whole Gathabawn Windfarm Project, limited to the use of tools and equipment, and the use of mobile generators.

Operational phase: Similar to all operating indoor and outdoor electrical equipment, the operational wind turbines, underground cabling and substation will be an additional source of electromagnetic fields in the environment. However, levels of EMF will rapidly reduce with distance from the equipment, and even directly over electrical equipment such as underground cables, the levels of EMF will be substantially below the recommended thresholds set out by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). The levels of EMF associated with various types of electrical equipment associated with the whole project are provided in [Appendix 18.3](#) of [Chapter 18: Human Health](#).

ElAR 5.8 Wastes

The greatest potential for waste arises during the construction phase of the project.

ElAR 5.8.1 Wastewater

Welfare facilities including self-contained toilets, with integrated wastewater storage tanks, will be provided for construction workers at the temporary construction compounds. In addition, self-contained portaloo or welfare units will be provided at works locations remote from the temporary compounds. The main wastewater tanks will be fitted with an alarm and emptied on a regular basis, while the smaller portaloo or welfare units will be emptied weekly, by a licenced waste contractor for disposal at a licenced wastewater treatment facility.

Following the completion of construction, welfare facilities for the Gathabawn Windfarm Project will be provided at the control buildings. These welfare facilities will be self-contained and will use a closed wastewater system. The wastewater storage tanks will be fitted with an alarm and emptied on a regular basis by a licensed operator who will remove the wastewater to a licensed wastewater treatment facility.

Proposed Gathabawn Windfarm: 2 no. wastewater tanks (one at Ballylehaun Construction Compound and one at Ballyring Construction Compound), in addition to up to 4 portaloo at various works locations. Total wastewater from windfarm construction activities is expected to be c.40,000L. During operation, welfare facilities will be provided at the Ballylehaun Control Building and at the Ballyring Control Building, and a portaloo or mobile welfare unit will be provided at a turbine during major maintenance works.

Candidate Gathabawn Grid Connection: 1 no. wastewater tank will be installed at the Parksgrove Construction Compound, along with up to 2 portaloo at various works locations along the cable routes. Total wastewater production during grid connection construction is expected to be c.40,000L. During operation, welfare facilities will be provided in the Control Buildings at the Parksgrove Substation.

ElAR 5.8.2 General and Chemical Waste

Whole Gathabawn Windfarm Project:

Construction phase: Materials such as pallets, packaging, excess construction and building materials and small quantities of chemical waste, such as solid waste oils and oily rags, and concrete washout solids will be generated at windfarm and grid connection works areas. All individual waste streams will be identified at source, separated into recyclable, non-recyclable and chemical waste and stored in a designated and secure area at the temporary construction compound. Chemical waste will be stored in secure, bunded and covered storage containers, in a designated part of the temporary construction compounds. All waste will be removed regularly, by appropriately licenced waste contractors for disposal at appropriately licenced waste facilities.

It is expected that approximately c.25 cubic metres of general landfill or construction and demolition waste will be generated at the Gathabawn Windfarm site and c.25 cubic metres will be generated by the Candidate Gathabawn Grid Connection works.

Operational phase: General and chemical waste will arise in small quantities during the operational phase, including empty containers, packaging, materials, oil and grease etc. All individual waste streams will be identified at source, separated into recyclable, landfill and chemical waste and stored in a designated and secure area at the Ballyring Control Building compound for windfarm waste, and at the Parksgrove Substation compound for grid connection waste. These wastes will be disposed in licensed facilities by licensed operators as part of the maintenance company's waste management.

Decommissioning phase: General and chemical waste will arise during decommissioning activities. At the Gathabawn Windfarm site, the turbines, electrical equipment and oils to be removed from the site will enter the reuse/recycle economy as described in the **Section EIAR 5.11** (Decommissioning the Windfarm) below. All waste oils will be removed offsite by an appropriately licenced waste contractor for disposal at an appropriately licenced waste facility. Decommissioning activities associated with the Candidate Gathabawn Grid Connection, if any, would likely only relate to the electrical and communications cables which may be removed from the ducts between Ballyring and Parksgrove. These cables would be reused or sent for recycling. It is expected that the Parksgrove Substation and connecting cables to the Eirgrid Ballyragget Substation will remain in place permanently, and therefore decommissioning does not apply.

EIAR 5.8.3 Materials excavated from Public Roads

No excavated materials will be removed from the Proposed Gathabawn Windfarm site.

However, at road works locations along the Underground Cabling for the Candidate Gathabawn Grid Connection, approximately 250m³ of subsoils and road surfacing will be removed to a licenced facility.

EIAR 5.8.4 Waste Management Plan

Any wastes which result from the construction of the Whole Gathabawn Windfarm Project will be managed under a Waste Management Plan (WMP). The WMP is included in the **Construction Environmental Management Plan (CEMP)** for the Project which accompanies the planning application.

See also Environmental Management of the Whole Gathabawn Windfarm Project, **Section EIAR 5.12**, below for more details on the EMP and WMP.

ElAR 5.9 Project Life Cycle – Construction Phase

ElAR 5.9.1 Construction Timeframe

The commencement of construction culminates from what can be a lengthy process typical of wind energy development in Ireland.

In that context, **the Applicant is seeking a 10-year duration of planning period during which the proposed Gathabawn Windfarm development can be constructed.**

ElAR 5.9.2 Construction Duration & Personnel

ElAR 5.9.2.1 Duration of Construction Works

Overall, the construction of the Whole Gathabawn Windfarm Project is expected to take 12 months:

- Gathabawn Windfarm will take approximately 12 -18 months to complete.
- The Candidate Gathabawn Grid Connection will also take approximately 12 months to complete (12 months for Parksgrove Substation, 6-8 months for the Underground Cabling elements).

It is planned to construct all elements of the Whole Gathabawn Windfarm Project concurrently using multiple specialist crews. The duration of works may be slightly shorter or longer, depending on the final number of crews used, weather conditions etc.

A formal programme of works will be prepared by the appointed Contractor prior to the commencement of construction activities.

ElAR 5.9.2.2 Construction Personnel

In total, c.120 people will be engaged in the civil, electrical, project management, legal and financial services, and material supply for the construction for the Whole Gathabawn Windfarm Project, broken down as follows:

- 80 people – Gathabawn Windfarm
- 40 people – Candidate Gathabawn Grid Connection.

ElAR 5.9.2.3 Construction Hours of Work

Normal construction times at both the proposed Gathabawn Windfarm and at the Candidate Gathabawn Grid Connection will be between 07:00 to 19:00hrs Monday to Friday and 08:00 to 16:00hrs on Saturdays.

ElAR 5.9.3 Construction Facilities

Facilities for the construction works will be provided at the temporary construction compounds: 2 at the windfarm (Ballylehaun Construction Compound and Ballyring Construction Compound) and 1 for the Candidate Gathabawn Grid Connection (Parksgrove Construction Compound). See **Figure 5.12: Temporary Construction Compounds** and **Figure 5.22 Layout of the Parksgrove – Moatpark UGC in relation to the N77 & River Nore**.

The following facilities will be provided at these compounds:

- Welfare facilities – toilets, washing facilities, drying rooms, canteens, Site offices,
- Designated area for material storage, waste storage, fuel and oil storage
- Staff parking.

ElAR 5.9.4 Imported Construction Materials

The construction materials, which will be brought onto the Gathabawn Windfarm and Candidate Gathabawn Grid Connection sites, are listed in the tables below. In total, c.2,719 HGV loads of materials and 124 specialised abnormal loads will be required for the Whole Project, broken down as follows:

Table 5-5: Materials and Quantities for the proposed Gathabawn Windfarm

Gathabawn Windfarm Materials	Approximate Quantities
Concrete for Turbine Foundations <i>(The majority of concrete at the windfarm site is for turbine foundations, and the maximum loads/day for concrete deliveries are associated with these foundation pours)</i>	5,040m ³ / 636 No. loads to the turbine location. - 53 loads per day, 1 day per week, over 12 weeks.
Site Compound Setup, Construction of Control Buildings & Compound Fencing, Temporary Fencing Panels, Waste Removal, Met Mast and Lidar plinth and fencing.	300 No. loads to the works location
Aggregate for windfarm	8,000m ³ / 800 No. loads to the works location
Reinforcing Steel and Anchor Cages	52 No. loads to the turbine location
Mast, LiDAR and Equipment	3 No. loads to the works location
Electrical Cabling, Communications Cabling	10 No. loads to the construction compound
Switchgear, Electrical Equipment, Apparatus and Plant	4 No. loads to the control buildings
HDPE Ducting	18 No. loads (split to the construction compounds)
Cable Protection Strips, Warning Tape; Marker posts, plates	2 No. load to the construction compound
General building and fencing materials	7 No. loads to the construction compound
Specialised Abnormal Load Deliveries – Gathabawn Windfarm (delivered to the turbine locations)	
Turbine Towers (4 sections per tower)	48 No. abnormal wide and long loads
Turbine Nacelle and Hub	24 No. abnormal wide Loads
Turbine Blades	36 No. abnormal wide and long loads
Crane components	15 No. abnormal wide loads, 2 No. normal loads

In total, c.1,832 HGV no. loads of materials and 123 no. specialised abnormal loads will be delivered to the Gathabawn Windfarm site, split approximately 60:40 between the Ballylehaun and Ballyring Areas.

Table 5-6: Materials and Quantities for the Candidate Gathabawn Grid Connection

Candidate Gathabawn Grid Connection Materials	Approximate Quantities
Concrete	4,000m ³ / 400 No. loads (to the works locations)
Aggregate	4,000m ³ / 400 No. loads (to the works locations)
Road Surfacing	45 No. loads (to road works locations)
Reinforcing Steel	1 No. load to the Parksgrove Substation compound
Electrical Apparatus	2 No. loads to the Parksgrove Substation compound
Electrical Cabling, Communications Cabling	5 No. loads to Parksgrove Construction Compound
Switchgear, Electrical Equipment, Apparatus and Plant	5 No. loads to the Parksgrove Substation compound
HDPE and HDPE Comms Ducting	22 No. loads to Parksgrove Construction Compound
Cable Protection Strips, Warning Tape; Marker posts, plates	1 No. loads to Parksgrove Construction Compound
General building and fencing materials	6 No. loads to Parksgrove Construction Compound
Specialised Abnormal Load Deliveries – Candidate Grid Connection	
Main Transformer (specialised abnormal load)	1 No. Load to the Parksgrove Substation compound

In total, c.887 no. HGV loads of materials will be delivered to Candidate Gathabawn Grid Connection, with aggregates and concrete delivered directly to works locations along cable routes and at the substation site.

ElAR 5.9.5 Haul Routes

ElAR 5.9.5.1 Haul Routes for Construction Materials – Concrete, Aggregates and Other Materials

Stone aggregates and concrete will be imported from local suppliers, such as Wholesale Suppliers Limited Coolbawn, Cemex Dunmore and Roadstone Bennettsbridge. Other materials and general building supplies will be sourced from the wider regional area and delivered by way of the national road network, before following the same routes as aggregates and concrete to the windfarm site and grid connection areas, as outline below:

Proposed Gathabawn Windfarm: (see [Figure 5.24: Construction Materials Haul Route for the Proposed Gathabawn Windfarm](#))

- Ballylehaun Area – from the R639, turning onto the L58141 local road at Coolnacrutta/Glashare,
- Ballyring Area – from the N77 road, turning onto the L1807 road at Parksgrove, through Lisdowney village and continuing along the L1806 and turning onto the L18062 at Ballyring Upper.

Candidate Gathabawn Grid Connection: (see [Figure 5.25: Construction Materials Haul Route for the Candidate Gathabawn Grid Connection](#))

- Parksgrove Substation/Construction Compound – from the N77 road, turning onto the L1807 road at Parksgrove, to Site Entrance No.8;
- Ballylehaun-Ballyring UGC works locations: from the L1806 and through Gathabawn village onto the L5818, L5821 and L5820, on the L1806 and L18062.
- Ballyring-Parksgrove UGC works locations: from the N77 road, turning onto the L1807 road at Parksgrove, travelling along the L1807 to the temporary site entrances on the L1807 at Parksgrove, L1811 at Lisdowney and the L1808 at Ballyring Lower and Lisdowney.
- Parksgrove-Moatpark UGC works locations: from the N77 road turning into the temporary site entrance on the eastern side of the N77, and from the N77 turning onto the L1807 to Site Entrance no.8; and from the N77 turning in Ballyragget onto the R432 as far as the temporary entrances at Moatpark.

The relevant Figure is listed below and included at the end of this Chapter:

[Figure 5.24: Construction Materials Haul Route for the Proposed Gathabawn Windfarm](#)

[Figure 5.25: Construction Materials Haul Route for the Candidate Gathabawn Grid Connection](#)

ElAR 5.9.5.2 Turbine Delivery Route

Proposed Gathabawn Windfarm: (see [Figure 5.10: Turbine Delivery Route](#))

Delivery of turbine components and large crane components will require abnormal (wide/long) loads. Special extendable flatbed semi-trailers are used to transport turbine components by road using the motorway, national and local road networks.

Delivery to the Ballylehaun Area: In relation to the Gathabawn Windfarm, the turbine component transportation vehicles will utilise the motorway network as far as Portlaoise, at which point they will leave the motorway and then travel along the N77 as far as Durrow, Co. Laois. The vehicles will then follow the R639 south before accessing the Ballylehaun Area via the local road L58141, using the temporary access road and accessing the turbine locations via Site Entrances No.1 and No.2.

Delivery to the Ballyring Area: The Ballyring turbines will first be delivered to the Temporary Blade Storage Area where they will be unloaded and stored. Once ready to be transported to the Ballyring Area, the blades will be lifted by crane onto a specialised blade-transporter trailer, and will travel along the Ballylehaun site

roads to Site Entrance No.3, turning onto the L1803, travelling through Gathabawn village and continuing on the L1804, and then turning left onto the L1806 via a new temporary access road, travelling along the L1806 as far as the junction with the L18062 in Ballyring Upper, utilising the temporary widening at the junction to turn onto the L18062, and accessing the Ballyring turbines from Site Entrance No.7 along the L18062 public road.

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.10: Turbine Delivery Route

Candidate Gathabawn Grid Connection:

Delivery of the main transformer for the Parksgrove Substation will require an abnormal (wide) load delivery. Access will be from the N77 national secondary road, turning onto the L1807 and accessing the Parksgrove Substation compound location via Site Entrance No.8.

EIAR 5.9.6 Construction Traffic Management

Delivery vehicles for construction materials will comprise standard 4-axle rigid HGV tipper units for aggregate and concrete deliveries, HGV tractor units with 2-4 axle articulated flat-beds or tautliner trailers for other material deliveries, and vans and 4WD vehicles towing single/double axle trailers for smaller parts.

Turbine Components will be delivered using specialist HGVs, semi-trailers and blade transport trailers.

The main transformer will be delivered using a specialist HGV truck and abnormal load trailer.

The maximum load per axle, for the delivery of all loads, including the turbine components, the main transformer, aggregates, concrete and other construction materials **will be confined to within legal limits**.

Advance Warning signage will be erected on approaches to site entrances.

A Traffic Management Plan will be implemented for the duration of the construction phase, and a preliminary Traffic Management Plan is included in Tab 6 of the Construction **Environmental Management Plan 2026 for Gathabawn Windfarm project** which accompanies the planning application.

EIAR 5.9.7 Construction Methodologies — Proposed Gathabawn Windfarm

EIAR 5.9.7.1 Overview of Main Construction Works and Activities

The main works and activities at the Proposed Gathabawn Windfarm will include:

- preparation of the site entrances and the temporary construction compounds;
- opening of the borrow pits;
- upgrade of the existing farm roads and construction of new roads;
- construction of the turbine hardstanding areas and excavation of the turbine foundations;
- construction of the temporary facilitating works for turbine deliveries;
- installation of structural steel, concrete pouring and backfilling of the turbine foundations;
- delivery of the turbine components and cranes;
- erection of the turbines;
- construction and installation of underground cable circuits;
- construction and erection of the meteorological mast & LiDAR unit hardstanding;
- construction of the control buildings and associated hardcore compounds;
- installation of electrical equipment and apparatus at the turbines and at the Control Buildings;
- commissioning the turbines and underground cabling;
- reinstatement of the borrow pits, and reinstatement of temporary works areas;
- removal of temporary construction and drainage works, and completion of the final drainage regime.

A brief description of these works and activities is provided hereunder.

EIAR 5.9.7.2 Site Entrances

Construction of the Site Entrances will involve excavations to remove the roadside boundary to achieve sightlines from both directions. The entrance splay will be excavated to provide adequate hardstanding to facilitate deliveries including large turbine components. The excavation of the splay area will involve vegetation, topsoil and subsoils being removed to formation level, surface water runoff controls will be installed, and a concealed roadside drain will be installed across the entrance where there is a risk of water runoff onto the public road. Geotextile matting will be laid out where necessary, a sub-base of crushed stone will be laid; then a surface layer of compacted granular to accommodate HGV traffic. A vibrating roller will compact the stone in layers. The surface of the new entrance will be finished with a 2.5% gradient to allow water run-off into the site drainage network. A temporary post and mesh fence and double access gates will be erected for safety and security purpose and to maintain the road boundary during the construction works.

EIAR 5.9.7.3 Temporary Construction Compounds

The construction of the temporary compounds will involve the excavation of vegetation, topsoil and subsoils from the area to formation level and the excavation of adjacent drainage channels and surface water controls. Geotextile matting will be laid out where necessary. A subbase will be laid and then the compound will be surfaced with Clause 804 material or similar. Steel container units comprising site offices, canteen, drying room and welfare units, along with a mobile solar powered unit, waste management skips and Control of Substances Hazardous to Health (COSHH) units will be delivered and installed at the site compound. Areas within the compound will be designated for waste storage, materials storage and car parking. Lighting will be installed.

EIAR 5.9.7.4 Borrow Pits

The vegetation, subsoil and topsoil will be excavated as far as suitable rock from the surface of the borrow pit and stored separately in the adjacent temporary deposition area for later use during reinstatement. The rock will then be extracted for by a rock breaker and transported by dumper truck for use on the windfarm site.

The borrow pits will be reinstated using the soils originally excavated from the borrow pits and using unsuitable construction material excavated from other locations within the windfarm site. Following the completion of construction works, the reinstated borrow pit will be graded by the excavator to match in with the surrounding topography. The area will be reseeded.

EIAR 5.9.7.5 Windfarm Site Roads

The site access roads will comprise the construction of new site access roads and the widening of existing local public roads and farm tracks to 4.5m (wider at bends). All organic material and soft subsoil will be removed to formation level and surface water controls including silt curtains, drainage channels, cross drains and berms will be installed. The excavated subsoil and topsoil will be placed adjacent to the works in overburden storage berms – which will be compacted to seal the surface and minimise erosion potential.

Geotextile matting will be laid along the excavated road area to provide extra bearing support, if required. A sub-base will be laid and compacted in layers. A surface consisting of hard-wearing granular fill will then be laid and compacted. The surface of the new road will be finished with a 2% gradient to allow water run-off. Before the delivery of concrete for turbine foundation pours, the access roads will be finished with a layer of hard-wearing capping stone across the full width of the road.

EIAR 5.9.7.5.1 Drainage Networks & Existing Drains

In order to isolate the construction works from the surrounding natural drainage regime – a ‘clean water’ drain will be excavated on the upslope side of the construction works, while a ‘dirty water’ drain will be excavated on the downslope side to capture all runoff from construction works areas. Sealed berms will also be used to manage and control water run-off. Cross drains to maintain the existing drainage regimes will be installed to enable the flow of clean water from the upslope to the downslope side of the construction works. Silt curtains will be installed along downslope preferential flow paths. Settlement ponds will be excavated and set up, and drainage features such as level spreaders, outfall weirs, check dams and silt fencing or curtains will be installed.

EIAR 5.9.7.5.2 Existing Drainage

The existing drainage regime where present will be maintained and isolated from works. Any existing drainage channels which will interact with the construction works area will be incorporated into ‘clean water’ drains of the windfarm works. However, there are two existing drainage channels within the boundary of construction works in the Ballyring Area which cannot be avoided – D01 and D02:

D01 will be removed during public road widening works and reinstated along the new public road boundary.

D02 will be realigned to divert this drain around the hardstanding works at Turbine T10. A new culvert to facilitate the construction of the access road will be installed in this drain.

Any water present in these drainage channels during the works will be isolated from the works by damming the drain and pumping any water present around the work to the downslope side. To protect water quality in these existing drains, a silt curtain will be installed between the windfarm works and this new drain to prevent dirty water from the adjacent works areas entering the drain.

EIAR 5.9.7.5.3 Temporary Facilitating Works

Temporary roads, widened areas and temporary set down areas will be provided using the same methodology as described above for the windfarm site roads and construction compounds.

EIAR 5.9.7.6 Wind Turbine Installations

EIAR 5.9.7.6.1 Turbine Hardstanding Areas

Hardstanding areas consisting of levelled and compacted hardcore, will be constructed at the location of each turbine. The hardstanding area at each turbine is extended to cover the turbine foundations once the foundation construction is completed.

The turbine hardstanding areas will be excavated to remove vegetation, topsoil and subsoils until competent strata such as rock or other suitable bearing stratum are reached. Excavations will include areas for the main crane, the support cranes, for blade set down and turning areas. Geotextile matting will be laid out on the excavated footprint. A sub-base of crushed stone, and then a hard-wearing surface layer consisting of compacted granular fill will be laid. It may be required to construct a thicker sub-base layer to achieve crane plate bearing test requirements ahead of turbine erection. This will depend on local ground conditions at the hardstands. A vibrating roller will compact the stone in layers. The surface of the new hardstanding area will be finished with a 2% gradient to allow water run-off.

Material for the hardstand will be sourced predominantly from the on-site borrow pits and from suitable excavations at the hardstands and turbine foundation excavations, with mainly just higher-grade hard wearing surfacing material to be imported from local quarries.

EIAR 5.9.7.6.2 Turbine Foundations

Construction of turbine foundations will involve excavations to remove vegetation, topsoil and subsoils to competent strata and excavations of rock to the required width and depth. Any rock excavated which is suitable for use as construction material will be reused for the construction of the hardstands. At the base of the turbine foundation, ducting for the internal windfarm cables is installed and a layer of structural up-fill (class 6N/6P - in accordance with TII requirements) will be laid and compacted and a blinding layer of concrete poured to provide a clean and level area to install the turbines bolt basket and reinforced steel anchor cage, which will be later encased in the concrete foundation.

The steel bolt basket of the turbine tower is installed and the anchor cage made up of reinforcing steel is then built up around the steel base and through the excavated area. The outside of the foundation is shuttered to allow the pouring of concrete. The concrete is delivered and poured into the turbine foundation (concrete required for the foundation is poured within the same day). The concrete foundation will be covered to protect it from the weather and left to cure for 28 days.

Once cured, the foundation will be backfilled to the top of the bolt basket, ready for turbine erection.

EIAR 5.9.7.6.3 Turbine Delivery

Component delivery is a highly controlled activity, and the transport delivery plan and schedule for the turbine components from port to site will be coordinated with Kilkenny County Council and An Garda Síochána. The delivery of the larger turbine components is expected to take place overnight or during off-peak hours due to the oversize nature of some of the components such as the blades and tower sections. The delivery will be fully escorted. One of the escorts will precede the convoy and request any oncoming traffic to pull into the nearest convenient passing locations.

Along the public road at the M7/N77 interchange at Portlaoise, street furniture, such as road signs and crash barriers, will be removed immediately prior to the passing of the turbine component convoy, and will be replaced to their original sockets/location once the delivery vehicles have passed through.

EIAR 5.9.7.6.3.1 Erection of the Turbines

Once the turbine components are delivered to the turbine locations, specialist crane crews will erect cranes (large crane and assist cranes) and associated equipment on the hardstanding areas. The cranes then lift the tower sections, nacelle and finally blades into place and these are affixed in position by specialist crews.

Following turbine erection, the turbine internal fittings and fixtures are installed, including cabling which is connected to the internal windfarm cable network, and commissioning works can commence.

EIAR 5.9.7.7 Windfarm Cabling

EIAR 5.9.7.7.1 Cable Trenches

The trenches will be excavated ahead of the ducting works in 50m sections, so that only 100m of trench is open per crew at any one time along the cable routes. A trenching crew will complete approximately 100 linear meters of trench per day depending on the site conditions.

A cable trench will be excavated to the required depth and width. In addition, at the road crossing on the cul-de-sac L58141 local road and along the cul-de-sac L18062 local public road, as standard best practice, before any excavation works begin, a surface check will be carried out for underground services with appropriate equipment. Service owners will also be contacted to confirm service locations. The road surface will be saw cut to the depth of existing asphalt/bitmac layers. Cabling works within the public road network will be carried out in co-ordination with Kilkenny County Council and in accordance with the “*Guidelines for Managing Openings in Public Roads*” (Department of Transport, Tourism & Sport, 2017).

Once excavated, the trench floor will be graded, smoothed and trimmed. The ducts, through which the electrical cables and fibre optic cables will be pulled, will be installed by hand, using profiles to attain the correct spacing between the ducts. The trench will be backfilled with material suitable for the location, and warning strips will be placed within the backfill layers over the cable ducts, with each backfill layer carefully compacted. The top of the trench will be reinstated according to the prevailing conditions: in agricultural lands the top of the trench will be reinstated with topsoil and reseeded with pasture grass species; under windfarm site roads the top of the trench will be reinstated with the same aggregate used for the site access road; and on the public road, the top of the trench will be reinstated with road surface dressing, in accordance with the conditions of the Road Opening Licence and the *Guidelines for Managing Openings in Public Roads* (Department of Transport, Tourism & Sport, 2017),

Contact with Local Residents and Landowners along the L58141 and L18062 cul-de-sac roads: Contact will be maintained with local residents and landowners on the day to day timing of the trenching works on the L58141 and L08062 local roads. A Community Liaison Officer (CLO) will be appointed as the point of contact between the Contractors and local residents and landowners. The CLO will keep active contact with local residents and landowners on the traffic arrangements around the works day to day.

EIAR 5.9.7.7.1.1 Jointing Chambers

Every c.0.8km along the cable routes, the ground will be excavated to accommodate the installation of the underground jointing chambers. These jointing chambers will be pre-cast concrete, and the trench will be excavated to the required depth and width to fit the chambers. Once in place, any gaps between the jointing chambers and the walls of the excavation will be backfilled and the adjacent cable trench ducting will be fitted into the chambers. The cover will be placed back over the jointing chamber as a period of time will elapse before there are further cable pulling and jointing works going on at the jointing chamber. Where the jointing chamber is located along the public road corridor – a temporary road surface will be laid over the jointing chamber.

EIAR 5.9.7.7.1.2 Cable Pulling, Jointing, Testing and Commissioning

Once the majority of cable ducting and jointing chambers are installed, the cover over the jointing chambers is removed, and the ducts are proved using a test mandrel to confirm that there are no crushed sections and that there is no dirt or water blocking the ducts. Cable pulling follows, with the cables pulled through each line of ducting from one jointing chamber to the next, using heavy duty cable rollers and pulling machines. The chambers are covered for a period once again while cabling is pulled through the other jointing chambers along the route. The cables are then joined together in the jointing chambers – the cover is once again removed, and a temporary climate-controlled clean room is lifted into place over the jointing chamber. The cables prepared and connected, the joint is covered with an insulation sleeve and the cables are sealed. The cover is replaced, with only a manhole cover visible at ground level. The cabling will also be connected to the internal turbine cabling and to the electrical equipment in the Control Buildings. Once all cables have been connected, testing and then commissioning can be carried out.

EIAR 5.9.7.8 Met Mast/LiDAR installation

LiDAR: Access to the LiDAR unit will be from the windfarm roads and existing farm access track. A small hardcore area and concrete plinth will be constructed; the LiDAR unit will be set up on this hardcore area with security fencing erected.

Met Mast: Access to the met mast site will be from the windfarm site road, with a short section of new access road (3m wide) to be excavated and overlaid with aggregate material. A small foundation will be constructed, and the meteorological mast base is set in concrete foundations and the area backfilled with aggregate. The mast will be delivered in sections, and erected and assembled using a small crane. Meteorological measuring equipment and communications equipment will be installed on the mast. Security fencing will be erected.

EIAR 5.9.7.9 Installation of Electrical Equipment and Commissioning

The equipment and apparatus will be installed in the Control Buildings; the internal power systems, communication system, switchgear and transformers will be installed in the wind turbines; The windfarm cables will be connected to the internal turbine cables and to the equipment in the control buildings.

Commissioning will involve de-energised testing, energisation testing and live testing and grid compliance testing. Commissioning comes to completion with the handover of the windfarm to the windfarm operator.

EIAR 5.9.7.10 Reinstatement

Following the completion of construction works and the commissioning of the turbines, reinstatement of the construction site will begin. The temporary areas at the windfarm site, such as the turning heads and blade set down areas, the temporary Blade Storage Area, temporary access roads or widened locations, and the temporary construction compounds will be levelled and the soils in overburden storage berms will be spread over these areas to tie back in with the surrounding agricultural lands. Pasture grass seed will be sown on the reinstated areas. The construction fencing will remain in place until these lands have revegetated and will then be removed. The operational phase windfarm fence will be erected around the turbine hardstand and along the site roads. Gates will be erected to maintain landowner access to fields.

EIAR 5.9.8 Construction Methodologies – Candidate Gathabawn Grid Connection

EIAR 5.9.8.1 Overview of Main Construction Works & Activities

The main works and activities at the Candidate Gathabawn Grid Connection will include:

Parksgrove Substation

- construction of temporary construction compound at Parksgrove, including site entrance works;
- excavation and construction of the compound footprint, including earthing, ducting and building, transformer bund and plinth foundation works;
- construction and fit out of control buildings, delivery and installation of the main transformer, installation of outdoor electrical equipment and apparatus;
- Electrical works and installation at the substation compound, testing and commissioning;

Underground Cabling (UGC);

- cable trenching and jointing chamber installations;
- installation of underground cable across watercourses and drainage networks along cable routes;
- construction of new access road in Parksgrove and Moatpark
- horizontal directional drilling under the N77 and under the River Nore;
- duct proofing, cable pulling and jointing, and commissioning.
- reinstatement of temporary works areas.

EIAR 5.9.8.2 Parksgrove Site Entrance

Construction of the Site Entrance at Parksgrove will involve excavations to remove the roadside boundary to achieve the sightlines in both directions. While there is a substantial hardstanding area already at this site entrance, some additional excavations will be required to provide an adequate area of hardstanding to facilitate the delivery of the main transformer. The excavation of the widened area will involve vegetation, topsoil and subsoils being removed to formation level, geotextile matting will be laid out where necessary, a sub-base of crushed stone and a surface layer of compacted granular fill will be laid to accommodate HGV traffic. A vibrating roller will compact the stone in layers. The surface of the new entrance will be finished with a 2.5% gradient to allow water run-off. A temporary post and mesh fence and double access gates will be erected for safety and security purpose and to maintain the road boundary during the construction works.

EIAR 5.9.8.3 Parksgrove Construction Compound

The construction of the temporary compounds will involve the excavation of vegetation, topsoil and subsoils from the area to formation level and the excavation of adjacent drainage channels and surface water controls. Geotextile matting will be laid out where necessary. A subbase will be laid and then the compound will be surfaced with Clause 804 material or similar. Steel container units comprising site offices, canteen, drying room and welfare units, along with mobile solar powered unit, waste management skips and COSHH units will be delivered and installed at the site compound. Areas within the compound will be designated for waste storage, materials storage and car parking. Lighting will be installed.

EIAR 5.9.8.4 Parksgrove Substation

A drainage system will be installed around the Parksgrove Substation compound area. Topsoil and subsoil (including rock) will be excavated from the footprint of the compound, and the excavated material will be permanently stored in an adjacent berm. A layer of geotextile material will be laid over the excavated footprint of the compound and then a sub-base layer of crushed stone will be laid on top of the geotextile followed by a capping stone layer which will provide the finished surface. Each layer will be compacted. The

foundations for the control buildings, transformer bund, and outdoor plinths will be excavated, reinforced steel will be laid out, shuttering erected and concrete poured to form the foundations for these structures. Excavations will also be carried out within the compound to install the earthing grid, drainage network and ducting for cables. The area for the rainwater harvesting system holding tank and the wastewater holding tank will be excavated, and these tanks installed. Blockwork, insulation, roofing and painting of the control buildings will get underway. The internal access roads within the compound will be constructed. The concrete bund for the transformer will be tested for leaks, and the transformer will be delivered and installed. The lightning protection monopoles will be installed. The outdoor and indoor electrical plant and apparatus and communication equipment and systems will be installed. Welfare facilities and site offices will be fitted out. A piped mains water supply will be installed from the local public mains.

EIAR 5.9.8.5 Underground Cabling (UGC) Works

EIAR 5.9.8.5.1 Cable Trench

The trenches will be excavated ahead of the ducting works in 50m sections, so that only 100m of trench is open per crew at any one time along the cable routes. A trenching crew will complete approximately 100 linear meters of trench per day depending on the site conditions.

A cable trench will be excavated to the required depth and width. In addition, along public road sections, before any excavation works begin, a surface check will be carried out for underground services with appropriate equipment. Service owners will also be contacted to confirm service locations. The road surface will be saw cut to the depth of existing asphalt/bitmac layers.

Once excavated, the trench floor will be graded, smoothed and trimmed. The ducts, through which the electrical cables and fibre optic cables will be pulled, will be installed by hand, using profiles to attain the correct spacing between the ducts. The trench will be backfilled with material suitable for the location, and warning strips will be placed within the backfill layers over the cable ducts, with each backfill layer carefully compacted. The top of the trench will be reinstated according to the prevailing conditions: in agricultural lands the top of the trench will be reinstated with topsoil and reseeded with pasture grass species; along the public road, the top of the trench will be reinstated with road surface dressing; and under windfarm site roads the top of the trench will be reinstated with the same aggregate used for the access road.

EIAR 5.9.8.5.2 Cable Trenches on the Public Road

Road Works: Cabling works within the public road network will be carried out in co-ordination with Kilkenny County Council and in accordance with the following: “*Requirements for the Reinstatement of Openings in National Roads*” (Transport Infrastructure Ireland, 2019), and “*Guidelines for Openings in Public Roads*” (Department of Transport, Tourism & Sport, 2017).

Traffic Management - Road Opening Licence: Traffic will be managed along the route of the Ballylehaun-Ballyring UGC according to a road opening license, which is expected to involve road closures on the L5818 (2 weeks), L5821 (2 weeks), L5820 (5 weeks), and a one lane closure on the L1806 local road (7 days) and a road closure on the L18062 (3 days). These lane closures will be managed through the Roads Management Office (RMO) in co-ordination with Kilkenny County Council. A stop-go system with flag men and convoy vehicle will be put in place at one-lane closures, and diversions around closures will be clearly signposted.

Public Road Reinstatement: The road pavements/built surfaces will be reinstated according to the conditions of the Road Opening Licence, and in accordance with the *Guidelines for Managing Openings in Public Roads* (Department of Transport, Tourism & Sport, 2017).

Contact with Local Residents and landowners: Contact will be maintained with local residents and landowners on the day to day timing of the works. A Community Liaison Officer (CLO) will be appointed as the point of

contact between the Contractors and local residents and landowners. The CLO will keep active contact with local residents on the traffic arrangements around the works day to day.

ElAR 5.9.8.5.2.1 Watercourse & Drainage Channel Crossing Works

Cable ducting across existing crossing structures: At watercourse crossing W1 on the L5818 (existing pipe culvert), and at existing drain crossings along the public road section of the Ballylehaun-Ballyring UGC, the ducting will be installed either under or over the existing crossing, and may also be laid in flat formation rather than trefoil formation, depending on the depth of cover over the existing culvert. During works, the location of the crossing point will be marked prior to trenching works in that section, and excavation of the trench will proceed carefully in close proximity to the crossing, with hand digging at the culvert location to expose the existing HDPE, concrete or masonry culvert. The ducting, warning tape and backfill materials will be installed, and the road built up around or over the existing culvert once again. Where a damaged or collapsed culvert is encountered during works, the entire culvert will be replaced in the drain under the road. Precast concrete or double skinned HDPE 90mm pipes will be used, with the pipe bedded into the drain. The ducting will be installed, and the trench backfilled using the standard construction methods described above.

ElAR 5.9.8.5.3 Horizontal Directional Drilling

At watercourse crossing W2 on the L5821 along the Ballylehaun-Ballyring UGC, and at W6 River Nore along the Parksgrove-Moatpark UGC the cables will be installed under the bed of the watercourse using horizontal directional drilling technique (HDD). This will avoid any interaction with the watercourses at this location.

The N77 national road will also be crossed using HDD technique to avoid trenching works in the road pavement.

The HDD will be carried out as follows; a launch pit and reception pit will be excavated within the public road, both kept a minimum 25m from the watercourse. An experience drilling operator will drill a pilot bore from the launch pit, below the watercourse and bridge, to the reception pit. A reamer will then be fitted and pulled back through the pilot hole to enlarge the hole to the required size. Bentonite will be used during drilling operations to lubricate and cool the cutting tool. Ducting will then be pulled through the bore and cables installed within. Drill pits will then be reinstated according to the road opening license conditions.

Dewatering of these pits will be required during drilling operations and will be pumped into a silt bag or suitable treatment train such as a siltbuster, depending on the amount of water coming into the drilling pits. All water will be passed through a silt sock or silt bag before being released to ground vegetation. Sediment from the pits will be removed off site to a licenced facility.

The horizontal directional drilling under the N77 road and under the River Nore will follow the same methodology as that outlined for W2 HDD in Section ElAR 5.9.8.5.3 above.

ElAR 5.9.8.5.4 Watercourse Crossing Works
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The Ballyring-Parksgrove UGC crosses three EPA watercourses, these are the Lismaine Stream at W3, the Lisdowney Stream at W4 and the Ballyconra Stream at W5. Instream works will be required at all three watercourses in order to install the ducting. This will be carried out in the months of July, August or September and will involve the following works: water in the stream will first be isolated from the construction works, should the water levels be very low it may be possible to install a dam and pump the water around the works to the downstream site. Otherwise, a flume pipe(s) will be set out on the bed of the watercourse, a dam constructed using sandbags so that all the flow is diverted through the flume pipe(s). A splash plate will be placed at the downstream end of the flume pipe where the water re-enters the watercourse in order to prevent erosion of the stream bed. Silt traps, such as geotextile membrane, will be placed downstream of the instream works location to minimise sedimentation. The works will be carried out

under/around the flume pipe(s). A cable trench will be excavated in the dry stream bed, under the flume, and cable ducts will be laid, and the trench backfilled with existing material.

If required, a temporary sump will be established and used to collect any additional water. This water will be removed by pumping to an infiltration trench or a water treatment train (such as a Siltbuster) and sediment allowed to settle before the water is released to vegetation via a silt sock or silt bag.

Following the completion of works at the watercourse, the dam and flume pipes will be removed and the watercourse reinstated. Watercourse reinstatement will involve: The reinstating of the bank slopes and character and stabilizing the banks using boulder armour or willow/brush bank protection, and reinstating instream flow features such as boulder substrates, pool / riffle sequences, or spawning cobbles; and planting will be carried out along the riparian margins. Then the flow will be reinstated by the removal of the dam and flume, followed by the removal of the deflector plate once flow is reestablished.

No new crossing structures will be required across any of these natural watercourses.

EIAR 5.9.8.5.5 Crossing Farm Drainage channels

Any water present in the existing farm drainage channels encountered during the works will be isolated from the works by damming the drain and pumping any water present around the work to the downslope side, or where larger flows are present, using the flume method as described for Instream Works above. There are no new permanent crossing structures required across any farm drains.

EIAR 5.9.8.5.5.1 Jointing Chambers

Every c.0.8km along the cable routes, the ground will be excavated to accommodate the installation of the underground jointing chambers. These jointing chambers will be pre-cast concrete, and the trench will be excavated to the required depth and width to fit the chambers. Once in place, any gaps between the jointing chambers and the walls of the excavation will be backfilled and the adjacent cable trench ducting will be fitted into the chambers. The cover will be placed back over the jointing chamber as a period of time will elapse before there are further cable pulling and jointing works going on at the jointing chamber. Where the jointing chamber is located along the public road corridor – a temporary road surface will be laid over the jointing chamber.

EIAR 5.9.8.5.5.2 Cable Pulling, Jointing, Testing and Commissioning

Once the majority of cable ducting and jointing chambers are installed, the cover over the jointing chambers is removed, and the ducts are proved using a test mandrel to confirm that there are no crushed sections and that there is no dirt or water blocking the ducts. Cable pulling follows, with the cables pulled through each line of ducting from one jointing chamber to the next, using heavy duty cable rollers and pulling machines. The chambers are covered for a period once again while cabling is pulled through the other jointing chambers along the route. The cables are then joined together in the jointing chambers – the cover is once again removed, and a temporary climate-controlled clean room is lifted into place over the jointing chamber. The cables prepared and connected, the joint is covered with an insulation sleeve and the cables are sealed. The cover is replaced, with only a manhole cover visible at ground level. The cabling will also be connected to the internal turbine cabling and to the electrical equipment in the Control Buildings. Once all cables have been connected, testing and then commissioning can be carried out.

ElAR 5.10 Project Life Cycle – Operational Phase

ElAR 5.10.1 Duration of Operational Phase

Proposed Gathabawn Windfarm is expected to have a lifespan of at least 35-40 years, and therefore planning permission is sought for a 35-year operational period. The lifespan of wind turbines has been increasing steadily in recent years and allowing this duration by planning condition will maximise the Greenhouse Gases (GHGs) offset potential of the windfarm. Leaving the wind turbines in-situ until the end of their useful lifespan would make the most sense from an environmental viewpoint. At that stage the windfarm could continue operating as is; be repowered using the latest wind turbine technology at the time; or the turbines and apparatus can be decommissioned and dismantled (*see Section 5.11*).

Candidate Gathabawn Grid Connection: The Parksgrove Substation and the Parksgrove-Moatpark UGC, will be taken over by EirGrid as part of the National Grid, following their construction and electrical commissioning and as such will remain permanently in place and will not be decommissioned. The Ballylehaun-Ballyring UGC and the Ballyring-Parksgrove UGC may remain in place permanently or may be decommissioned with the windfarm.

ElAR 5.10.2 Operational Works & Activities

ElAR 5.10.2.1 Operation of Gathabawn Windfarm

In the operational stage, wind turbines operate automatically, responding by means of anemometry equipment and control systems to changes in wind speed and direction. Turbine output, performance, wind speeds and fault alarms are monitored off-site continuously by the Windfarm Asset Manager who also co-ordinates the turbine, electrical plant and civil works maintenance programme.

ElAR 5.10.2.1.1 Routine Maintenance

Routine maintenance works will include regular scheduled inspection, testing and servicing and unscheduled repairs of the wind turbines; regular inspection and annual maintenance of the windfarm control buildings, inspection of the underground windfarm cabling; inspection and maintenance (half-yearly) of the windfarm site roads and windfarm drainage network; maintenance of the site entrances; and scheduled biodiversity related activities such as the fencing maintenance, vegetation density control and planting.

ElAR 5.10.2.1.2 Major Component Replacement

As the windfarm ages, component replacement becomes more common. The gearbox and generator are likely to be changed at least once during the operational lifetime of a turbine. Blade replacement is less common, conservatively worst case 1 No. blade per turbine during the operational life. Major component replacements will take place from the hardcore windfarm footprint.

ElAR 5.10.2.2 Operation of the Candidate Gathabawn Grid Connection

In the operational stage, the Gathabawn Grid Connection will require very little on-site maintenance or inspection activities, as outlined below.

ElAR 5.10.2.2.1 Parksgrove Substation

The EirGrid side of the new Parksgrove Substation and the new plant and electrical apparatus installed for the Gathabawn Grid Connection at the Ballyragget Substation will be operated and maintained as part of EirGrid's substation operation and maintenance programme. The substations are not permanently manned,

as the equipment is operated by remote computer link which is connected to the National Control Centre. Monthly Inspections by EirGrid personnel mainly involve the testing of the electrical equipment and apparatus and testing of the electrical, communications and control systems along with visual inspections of the substation itself. Annual maintenance involves testing of equipment, apparatus and systems, and may also involve the replacement of electrical parts within the compound.

EIAR 5.10.2.2.2 Underground Cabling

The electric cables will be inspected every 1 – 2 years. This will include checks, inspections and testing via the Joint Bay. The man-hole type cover over the jointing chambers, which is at ground level, will be removed to provide access to the link box within. Checks and testing of the electric cables will be carried out using handheld tools.

The minimum lifecycle of the electrical cables and electric plant is 80 – 100 years in accordance with EirGrid specifications. As the cables and electric plant will be factory tested to a high standard, sourced from approved suppliers and buried in a trench in accordance with EirGrid specifications, it is not likely or expected that there will be any requirements for unplanned repairs to the UGC's during their operational life.

EIAR 5.10.2.2.3 Unplanned repairs

In the unlikely event that repairs are required, for example if any particular cable or item of electrical plant or apparatus is found not to be performing to its specification, it will be scheduled for replacement. The replacement of electric plant is likely to be similar to the planned maintenance activities for Parksgrove Substation and within the Eirgrid Ballyragget Substation, as described above.

Replacement of cables is unlikely but if required, replacement involves excavation to remove the road/land cover and concrete covers from the top of the jointing chambers at each end of the cable to be replaced. The cable joints are opened, and the cable can then be pulled out of its duct using a cable winch. A new cable is then be pulled into the duct and jointed at both ends. The chamber covers are replaced and the road/land cover reinstated. Testing and commissioning in a similar manner to the construction phase will then be carried out.

EIAR 5.10.3 Operational Personnel

Proposed Gathabawn Windfarm: Operational windfarms require repair and maintenance and asset management, providing certainty of employment for skilled workers in communities across Ireland. Windfarms by their nature, are located in regional rural areas, and there are thriving wind farm operation and maintenance and asset management sectors in Ireland, working from regional hubs throughout the country.

Operation & Maintenance activities at Gathabawn Windfarm will require 3-4 skilled electrical and mechanical wind turbine and high voltage technicians. The Windfarm Control Buildings and Parksgrove Substation will be serviced by specialist electrical high voltage contractors. The civil works on-site i.e. roads and drains will be maintained twice yearly by a civil contractor, under the supervision of the windfarm site manager.

Candidate Gathabawn Grid Connection: Eirgrid will maintain part of the Parksgrove Substation and the additional equipment and apparatus in the Eirgrid Ballyragget substation. The windfarm operator will maintain the windfarm part of the substation. Testing of the Underground Cables will involve biennial testing carried out at the jointing chambers, likely to be carried out by the windfarm operator.

EIAR 5.10.3.1 Operational Works and Activities

Table 5-7: Operation & Maintenance activities

Operation Description	No. Personnel Required	Duration	Frequency
Proposed Gathabawn Windfarm			
Scheduled windfarm maintenance and inspection	2-3	one day per turbine	3 times per week – each turbine inspected/maintained on average once a month.
Unscheduled maintenance or repairs, fault call outs	2 – 6	1 – 3 days	1 per turbine per year during Years 1-10; 3 times per turbine per year during Years 11-40
Major Component Replacement	10	4 – 5 days	For the whole windfarm: 1 time every 3 years during years 1 – 10; 1 time every year during Years 11 – 40;
Control Buildings	2	Inspection: 2 hours Maintenance: 4 days	Inspection – 5 times per year Maintenance – 1 time per year
Met Mast	2	Inspection: 1 hour Maintenance: 1 day	Inspection – 1 time per year Maintenance – 1 time per year
Biodiversity Protection Area & Bat Buffer Zones	2	3 days	2 times per year
Candidate Gathabawn Grid Connection			
Parksgrove Substation (windfarm operator side)	2	Inspection: 1 hour Maintenance: 1 day	Inspection – 1 time per year Maintenance – 1 time per year
Parksgrove Substation (EirGrid side)	2-4 (carried out as part of EirGrid network inspection and maintenance)	Inspection: 2 hours Maintenance: 3 days	Inspection – monthly (12 times per year) Maintenance – 1 time per year
Underground Cabling (UGC)		Testing: 2 days	1 time per year/per two years
Additional Equipment in EirGrid Ballyragget Substation		Inspection: 1 hour Maintenance: 2 days	Inspection – monthly (12 times per year) Maintenance – 1 time per year

The operational phase of the Gathabawn Windfarm will also involve **Asset Managers** who will generally manage a portfolio of windfarms providing a variety of services to the windfarm including Site Manager, Health & Safety, Financial including landowner payments, Regulatory compliance, Energy sales and Community Benefit Fund management, payments and liaison. Gathabawn Windfarm asset management will require 1 No. full-time job equivalent.

ElAR 5.10.4 Imported Operational Materials

Proposed Gathabawn Windfarm: Minimal materials will be imported during the operation stage. The technical crews will bring all equipment and plant on-site including tools, spare/replacement parts or consumables (oils, greases etc).

The civil maintenance contractor will use approx. 1 load of aggregate and replacement silt fencing/traps per annum or as required to maintain the windfarm site roads, hardstands and drainage network.

Candidate Gathabawn Grid Connection: Minimal materials will be imported during the operation stage. The technical crews will bring all equipment and plant on-site including tools, spare/replacement parts or consumables (oils, greases etc).

ElAR 5.10.5 Operational Traffic and Transport Routes

Proposed Gathabawn Windfarm: The traffic generated during the operational phase of the project will be very low. Operational personnel will use service vans or four-wheel drive vehicles to service and maintain the wind turbines and the windfarm. A wheeled excavator will be used for road and drain maintenance.

Candidate Gathabawn Grid Connection: Vans and four-wheel drive vehicles are expected to be generally used by EirGrid personnel during operation and maintenance activities for the Gathabawn Grid Connection. Access to the Joint Bays and jointing chambers along the UGC routes will be from the public road, along the new site access roads in Parksgrove and Moatpark, and through existing farm access points, farm tracks and through agricultural lands along the Ballyring-Parksgrove cable route.

As outlined in the table below, routine windfarm maintenance and operation traffic will use the construction stage Site Entrances.

Table 5-8: Operational Traffic

Site Entrance No.	Townland	Road	Operational Access (Average movements per year)	Relevant Windfarm Infrastructure
Proposed Gathabawn Windfarm				
1	Coolnacrutta	L-58141	12	Turbine T1
2	Glashare	L-58141	62	Turbines T2, T3, T4, T5, Met Mast, T6, T7
3	Gorteennamuck	L-1803	12	Turbines T6, T7 (<i>roughly half of site visits to T6, T7</i>)
4	Ballylehaun	L-5818	12	Ballylehaun Control Building
5	Ballyring Upper	L-18062	12	Ballyring Control Building
6	Ballyring Upper	L-18062	26	Turbines T8, T9 and LiDAR
7	Ballyring Upper / Tentore	L-18062	36	Turbines T10, T11, T12
Candidate Gathabawn Grid Connection				
8	Parksgrove	L1807	12	Parksgrove Substation

EIAR 5.10.5.1 Gathabawn Windfarm – Major Maintenance Traffic

During the operational lifetime of the proposed Gathabawn Windfarm, it will be necessary, albeit infrequently, to change-out major turbine components i.e. gearbox, generator and blades. These are all positioned at the top of the tower and will require specialist lifting and ground crew and an 800-tonne crane and 200-tonne support crane on-site. Similarly, the blades will require very infrequent maintenance such as blade cleaning, during their operation. Lifting equipment, cranes, and major components will be delivered to site, on a just-in-time basis, by HGVs for use during blade maintenance and major component replacement works.

Access to the windfarm site will follow the same route as the construction phase Turbine Component Haul route. The gearbox and generator replacement deliveries and cranes can use the operational entrances without any remedial works. They will be delivered on long trailers with back-axle steering capabilities which makes the vehicle highly manoeuvrable. Replacement blades can be delivered on blade lifter trailers which will negate the need for reopening for temporary facilitating works. However, should a Ballyring turbine require blade replacement, the temporary access road in Foyle South and Coolcashin townlands would be constructed once again to facilitate the delivery, and will provide access from the L1804 to the L1806 local road, thereby avoiding the L1804/L1806 junction before Foyle Bridge.

ElAR 5.11 Changes to the Project – Decommissioning/Repowering

ElAR 5.11.1 Envisaged life of the Proposed Gathabawn Windfarm

According to the November 2020 Industry Guidance document from Wind Europe “Decommissioning of Onshore Wind Turbines”, the standard lifetime of modern turbines is now reaching up to 35-40 years. Major wind turbine components like gearboxes, generators and blades can be relatively easily replaced and are exchanged during the operational life of the windfarm under normal operation and maintenance programmes, thus extending the lifetime of the windfarm. All the electrical equipment – main transformer and individual turbine transformers, switching gear and control gear have a design life of 35-40 years and can also be readily replaced, if required.

The operational lifespan of windfarms in Ireland is currently limited by planning conditions to 35 years generally, after which the windfarm operation will either (1) decommission the windfarm at the end of the permitted period (i.e. after 35 years of operation); or (2) seek new planning permission to continue operating either the as-built windfarm or to repower the site with the latest renewable generation technology.

ElAR 5.11.2 Decommissioning the Windfarm

Where the windfarm is to be decommissioned, this would relate to the turbines, internal cables, windfarm control buildings, met mast, and LiDAR unit. The UGC between Ballylehaun and Parksgrove may be decommissioned. The EirGrid side of the Parksgrove Substation and the Parksgrove-Moatpark UGC will be taken over by EirGrid following its construction and will be operated permanently as assets within the national electricity system.

ElAR 5.11.2.1 Decommissioning Duration & Personnel

Decommissioning would take **c.4 to 6 months**, completed by multiple specialist crews working in tandem:

- 12 No. weeks, based on 1 week per turbine – mobilising the cranes, dismantling the turbine above ground, loading on HGVs for removal from site and de-mobilising crew and crane;
- 2 No. days for dismantling and removal of Met Mast unit;
- 1 No. week each for the windfarm Control Buildings – decommissioning, loading and removal of the electrical equipment from site;
- 6 No. weeks pulling internal windfarm cables and Ballylehaun-Parksgrove cables from ducting at jointing locations, loading and removal from site;
- 4 No. weeks reinstating the turbine hardstanding and foundation areas and adjacent drainage network.

There would be **16 No. personnel on-site** altogether including;

- 12 no. turbine dismantling personnel;
- 2 No. general operatives and 2 No. electrical personnel at the Windfarm Control Building site;
- 4 No. general operative personnel at the cable pulling sites;
- 2 No. excavator personnel at reinstatement works.

Plant and Machinery required would include;

- Large 800-tonne crane and smaller 200-tonne assist crane, HGVs and specialist extendable trailers;
- Small excavator, hoists, front loader;
- Cable pulling machine, small excavator, dump trucks, front loader;
- Large and small excavators, tractor and trailer, fencing machinery and equipment.

ElAR 5.11.2.2 Decommissioning Works & Activities

Works and activities to decommission the windfarm would take place predominantly from the hardcore windfarm footprint, and all works would take place within the bounds of the operational stage fences.

Compared to fossil fuel or nuclear power stations, the decommissioning of a windfarm is a relatively straightforward dismantling of structures and reinstatement of the land over subterranean structures. There are no toxic residues from the windfarm process and therefore there would be no requirement for site clean-up or rehabilitation and no legacy waste to be considered.

The decommissioning process would involve;

- Decommissioning and dismantling electrical plant and apparatus;
- Removal of underground cables;
- Dismantling the turbines;
- Removing equipment from the Windfarm Control Buildings
- Reinstatement and restoration of the windfarm site

ElAR 5.11.2.2.1 Decommissioning and Dismantling Electrical Plant and Apparatus

Most electrical plant and apparatus are composed of steel and cast iron with some metals for wiring and rare earths for magnets. All the electrical plant and apparatus in the turbines and in the Windfarm Control Buildings would be decommissioned, drained of hydrocarbon fluids, if present, and transported to be re-used as second-hand plant or to be segregated into materials and repurposed into other electrical plant or parts or recycled and recast in its original form.

The windfarm operator side of the Parksgrove Substation would be decommissioned, and electrical plant and apparatus removed. The EirGrid side of the Parksgrove Substation would remain in place as a permanent asset on the national electricity system.

ElAR 5.11.2.2.2 Removal of Underground Cables

The cables would be pulled from the underground ducts. The ducting itself, which is a stable plastic material, would be left in the ground. The cabling comprises aluminium, copper and steel cabling surrounded by polymers. Cables would either be re-used as second-hand or segregated into materials and re-purposed into other cabling or parts or recycled and recast in its composite-part original forms.

ElAR 5.11.2.2.3 Dismantling the turbines, met mast and LiDAR unit

Turbines would be dismantled by crane using the same process as erecting the turbines.

Dismantling would involve removal of the blade sets and rotor bearings, removal of the gearbox and generator from the nacelle, removal of the nacelle itself and finally, the removal of the tower sections.

The meteorological mast would be similarly dismantled by crane and either reused or recycled.

Dismantled wind turbines are a valuable source of resources which can be reused in the circular economy. Eighty-five to ninety per cent of a dismantled wind turbine can be recycled because the towers, generators and gearboxes are mostly made up of metals, mainly steel and iron, which is easy to recycle and for which there is an active circular economy market in Ireland and Europe.

Wind turbine blades are made of composite material of fibreglass and epoxy resins and cannot be reused in their original form but can be recycled. Three main methods of fibreglass recycling are:

1. **Grinding** – waste fibreglass is cut up and then mechanically shredded into even smaller pieces or powder. The process leaves little to no waste, but the process damages the glass fibres so they can't be used in

the same way as new glass fibre. The shredded fibreglass is reused as filler in cement, artificial wood or asphalt.

2. **Incineration** – burning or thermal oxidation uses the waste fibreglass to generate heat for other uses, generally creating steam to power turbines generating electricity or to heat cement kilns.
3. **Repurposed** - Blades are also being repurposed for street furniture, bicycle shelters, bridges and walkways on cycle paths; in playgrounds as ramps, slides and tunnels; and for reefs and motorway sound barriers. These uses will be expanded in the coming years as part of the turbine manufacturer's environmental, social, governance (ESG) and sustainability programmes.

Operating fluids or lubricants are used in turbines in the generator, converter, gearbox, hydraulic system, rotor bearings and transformer. During the preparatory work for dismantling, the operating fluids would be drained off by trained specialist personnel with the aid of special machines. The fluids would be collected in special containers for recycling, usually by refining and reconditioning as base oil.

The Met Mast is a mainly metal structure, which will be dismantled on-site. The tower can be reused at another site, or the metal components can be recycled. The LiDAR unit can be removed for use at another site.

EIAR 5.11.2.2.4 Transporting Turbine Components Off Site

During decommissioning it may be necessary to **transport turbine components** (at their full size for reuse) from the site, therefore the transportation of the tower sections and blades may require (depending on the transport size) the same temporary facilitating works which were put in place during the construction phase. Once all of the large loads have been transported off site, these temporary facilitating works would be permanently reinstated and any temporarily removed roadside boundaries would also be reinstated.

EIAR 5.11.2.2.5 Restoration of the Windfarm Site

The new and widened site roads would be left in place if they are of use to the agricultural landowners at the site. The windfarm control building would be decommissioned, and electrical plant and apparatus removed, however the building and hardstanding area would remain in place for farm use.

The subterranean concrete i.e. turbine foundations, would be left in situ because their removal would require extensive excavations and set and cured concrete is a stable material. Foundations have a cylindrical steel ring which incorporates the bolt basket protruding from the foundations slightly above ground level, onto which the turbine tower was bolted. This ring/upper bolt basket would be cut away and sent for recycling.

The site would be restored after all decommissioning works have been completed. All turbine areas would be restored, this would involve covering the turbine foundation and hardstanding areas with topsoil stored in the permanent overburden storage berms alongside the hardstands, filling in drainage channels at turbine locations, and reseeded the area with pasture grass species. All restored areas will be graded and landscaped sympathetically with the site contours. Restoration and revegetation of the site will be carried out under the supervision of a suitably qualified ecologist.

The works will be carried out in consultation with Kilkenny County Council. However, 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 and within the lifespan of the wind farm technological advances and preferred approaches to reinstatement are likely to change. According to the Scottish Natural Heritage guidance (2013) Research and guidance on restoration and decommissioning of onshore wind farms, 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".

EIAR 5.11.2.3 Decommissioning Costs

At present commodities prices, decommissioning costs are fully covered by the scrap value of the plant and equipment. There is also a market for second-hand turbines although this is very variable and would depend on condition and technology use. As a reference point for possible decommissioning costs in 35 years' time, examples of the main costs involved in decommissioning and the scrap value (only) of the infrastructure removed, is set out by 2025 values in the Table below.

Table 5-9: Decommissioning Costs

Decommissioning cost per Turbine			
Description	Decommission Cost €		
	Number	Rate €	Total
Crane Mobilisation & Demobilising (800 tonne lifting capacity) Days	2	20,000	40,000
Crane Mobilisation & Demobilising (200 tonne lifting capacity) Days	1	7,500	7,500
Blade Set Removal - Crane per day (800 tonne lifting capacity)	1	20,000	20,000
Blade Set Removal - Crane per day (200 tonne lifting capacity)	1	7,500	7,500
Blade Set Removal – Manhours	80	50	4,000
Blade Removal - Disposal/Recovery of Fiberglass (per tonne)	60	100	6,000
Nacelle and electrical plant removal - Crane per day (800 tonne lifting capacity)	0.5	20,000	10,000
Nacelle and electrical plant removal - Crane per day (200 tonne lifting capacity)	0.5	7,500	3,750
Nacelle and electrical plant removal – Manhours	40	50	2,000
Gear Oil Waste/Recovery (per collection)	1	500	500
Turbine Tower Removal - Crane (800 tonne lifting capacity)	0.5	15,000	7,500
Turbine Tower Removal - Crane (200 tonne lifting capacity)	0.5	5,000	2,500
Turbine Tower Removal - Manhours	40	50	2,000
Excavator and Driver (per day) - site reinstatement	2	550	1,100
Total Decommissioning Costs			€ 114,000
Salvage/Scrap Value € (present day value)	Tonnes	Value/ Tonne	Total
Steel Recovery (scrap value per tonne)	326	175	57,050
Aluminium Recovery (scrap value per tonne)	5	1,400	7,000
Copper Recovery (scrap value per tonne)	11	6,000	66,000
Total Salvage Value			€ 130,050
Balance			+ €15,700

At present commodities prices, the sale of the steel, aluminium and copper recovered from a dismantled turbine exceeds the cost of dismantling the turbine and reinstatement of the site – an excess of €15,700 of sales over costs per the table above.

EIAR 5.12 Environmental Management of the Whole Gathabawn Windfarm Project

EIAR 5.12.1 Mitigation and Monitoring

Mitigation measures to avoid, prevent or reduce or, if possible, offset any significant adverse effects on the environment which have potential to be caused by of the Proposed Gathabawn Windfarm and the Candidate Gathabawn Grid Connection, have been developed by the EIA Environmental Factor Topic competent experts in collaboration with the Project Design Team and the EIA Co-ordinator.

Best practice environmental protections measures (for Not Significant effects) have also been developed for the Whole Project.

Monitoring is also proposed in order to check that the project in practice conforms to the predictions made in the EIA and to record any unforeseen effects in order to undertake appropriate remedial action.

The mitigation and monitoring measures are proposed throughout the EIA topic chapters, and the full suite of mitigation measures and monitoring arrangements for the Gathabawn Windfarm Project are presented in **Chapter 20: Mitigation and Monitoring Arrangements**.

EIAR 5.12.2 Construction Environmental Management Plan (CEMP)

A Construction Environmental Management Plan (CEMP) has been prepared for the Whole Gathabawn Windfarm Project. The EMP describes the approach to environmental management during construction. The purpose of the EMP is to communicate environmental protection measures that apply during the various phases of the Gathabawn Windfarm Project development to those with responsibility for carrying out works.

The EMP is considered a dynamic document and as such will be reviewed and updated as required throughout each stage of the Gathabawn Windfarm development to ensure it contains the latest relevant information, environmental commitments, mitigation measures and monitoring arrangements.

EIAR 5.12.2.1 Environmental Clerk of Works

The Promoter of the Gathabawn Windfarm Project will employ a suitably competent Environmental Clerk of Works who will be independent of the Main Contractor. The Environmental Clerk of Works will be employed for the duration of the pre-construction, construction and for early (c.6 months) operational stage. The Environmental Clerk of Works will be adequately resourced and will manage an adequately staffed team of Environmental Managers and environmental specialists.

The Environmental Clerk of Works will monitor the compliance of the construction works with the EMP and all relevant planning conditions. If non-compliance is detected, then, prompt corrective action will be agreed with and committed to by the Contractor, with a view to the swift and effective resolution of any deviations from the EMP requirements. Furthermore, the Environmental Clerk of Works will have a 'stop-works' authority to temporarily stop works at a works location in order to avoid or react to an unforeseen adverse environmental event. Works will not be allowed to re-commence until the issue is resolved.

The EMP will be an important contract document for the main construction contractor (Contractor) who will be contractually obliged to comply with the EMP and the requirements of the Environmental Clerk of Works.

Following the completion of construction, the roles and responsibilities and the environmental commitments included in the EMP will be updated for the operational phase of the windfarm. Similarly, the EMP will be updated once again prior to decommissioning of the windfarm.

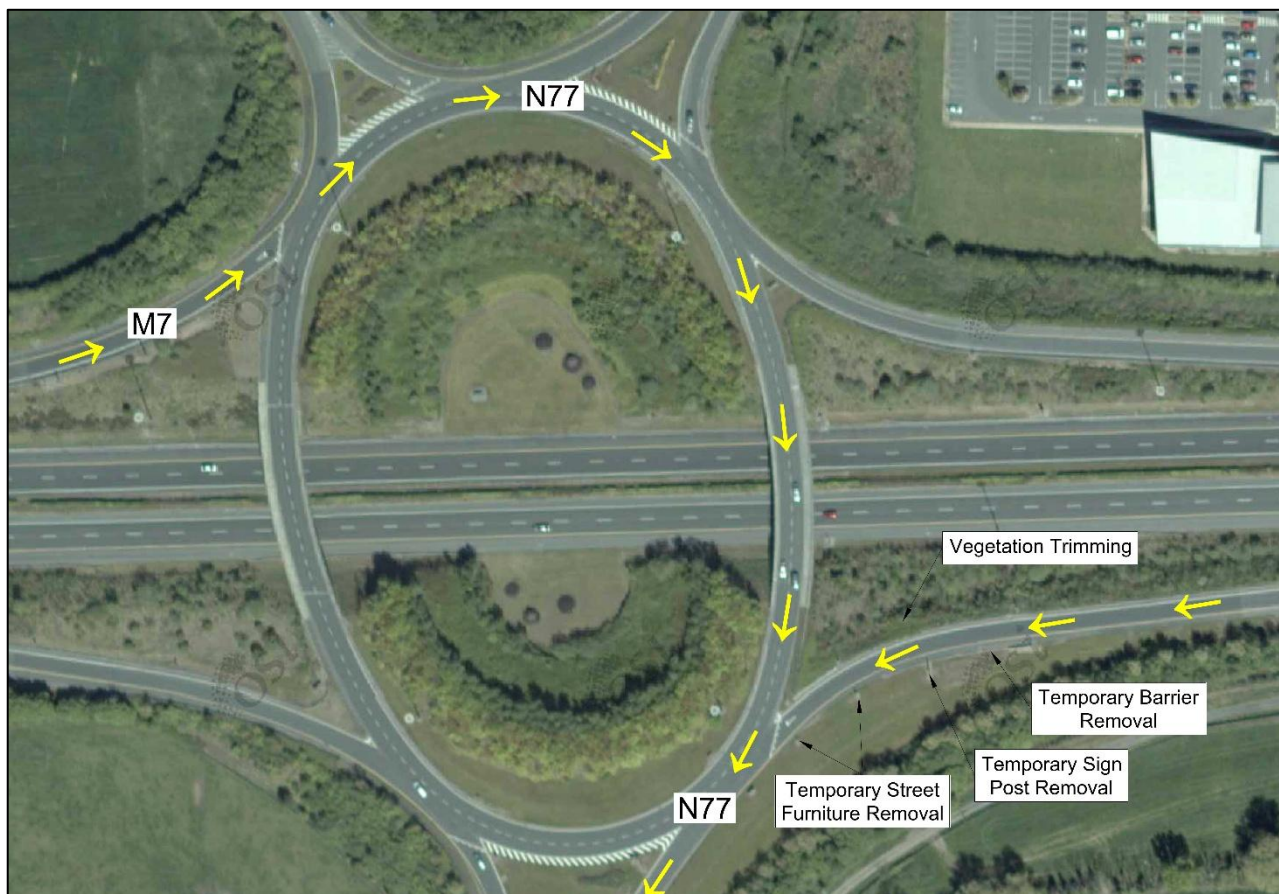
The EMP is included in the planning application documents.

EIAR 5.13 Projects included in the Cumulative Evaluation

EIAR 5.13.1 Off-Site Projects

Off-Site projects relate to separate physical works or facilities that are required by the main project and usually located outside the main project's site boundary. The Candidate Gathabawn Grid Connection is an offsite project and is included in the baseline descriptions and impact evaluations within this 2026 EIAR as part of the Whole Gathabawn Windfarm Project.

Street furniture removal along the turbine delivery haul route is another potential off-site activity. This activity is expected to involve the temporary removal of street furniture on the Portlaoise M7/N77 off-ramp and roundabout. The street furniture, comprising barriers and signposts, will be removed immediately before and reinstated immediately after each convoy of turbine component passes through. No street furniture removal or other works are expected to be required to facilitate the delivery of the components through Abbeyleix, Durrow or Cullahill. This off-site activity is considered the [Appendix 5.4: Scoping of Other Projects for Consideration of Cumulative Effects](#), and has been considered in each of the topic chapter scoping exercises.



No other projects are required in order to develop the main project (i.e. the Proposed Gathabawn Windfarm).

EIAR 5.13.2 Secondary Projects

Secondary projects are projects that may arise largely because of the existence of the principal project, though they are usually not carried out by the developer of the principal project.

Secondary projects relevant to the Gathabawn project relate to the Candidate Gathabawn Grid Connection.

EIAR 5.13.2.1 Connection of other energy projects into the Parksgrove Substation

The design of the Parksgrove Substation is in accordance with EirGrid specifications, and as such is future proofed to accommodate other potential energy projects in the area if necessary. Similarly, the size of the ducting between the Parksgrove Substation and the Ballyragget EirGrid Substation will also be sufficient to accommodate heavier cables which may be required to carry any extra electricity produced by other projects, avoiding further connections crossing beneath the River Nore.

The existence of the Parksgrove Substation and the Parksgrove-Moatpark UGC (*should they be permitted and constructed*) could result in other energy projects, such as solar farms, windfarms, and battery energy storage projects seeking to use the Parksgrove Substation to connect onto the national electricity system, some of these projects – such as solar or battery could occur in close proximity to the Parksgrove Substation. It is likely that, should secondary projects connect into the Parksgrove Substation that that connection would take place after the Parksgrove Substation and cabling into Moatpark was constructed and commissioned, thereby avoiding cumulative effects to the environment associated with construction works, noise and activities.

EIAR 5.13.3 Other Projects & Activities considered for Cumulative Evaluation

The identification of Other Projects and Activities, which due to their size and characteristics, were considered to have potential to cause cumulative impacts with the proposed Gathabawn Windfarm and the Candidate Gathabawn Grid Connection was carried out through research of planning records and databases including; An Coimisiún Pleanála, Kilkenny County Council, Tipperary County Council, Laois County Council, Carlow County Council, the EIA Planning Portal websites.

The research covered a ten-year period to August 2026 and encompassed an area 20km from the Gathabawn Windfarm turbines and the full extent of any hydrologically connected sub-catchments which extended the research area beyond 20km. Projects which were initially identified within this research area were subject to scoping by the EIA Coordinators and competent experts. This scoping exercise is included as **Appendix 5.4: Scoping of Other Projects for Consideration of Cumulative Effects**.

EIAR 5.13.3.1 Proposed Gathabawn Windfarm: Other Projects Scoped in for Cumulative Evaluation

In relation to the Proposed Gathabawn Windfarm, the following Other Projects were scoped in for cumulative evaluation in EIAR topic chapters:

Other Project	Status	Closest Gathabawn Turbine	Separation Distance
Lisdowney Windfarm	operational	T8	1.25km
Seskin Wind Farm	under appeal, ACP	T9	4.7km
Lisheen Wind Farm	operational	T2	8.8km
Bruckana Wind Farm	operational	T2	10.5km
Ballynalacken Wind Farm	consented	T9	10.6km
Ballybay Wind Farm	operational	T6	12.8km
Briskalagh Wind Farm	consented	T12	13.5km
Kyleballyoughter Wind Farm	under construction	T12	13.8km
Cnoc Wind Farm	operational	T6	14.2km
Foylatalure Wind Farm	operational	T12	14.2km
Pinewood Wind Farm	under construction	T9	15.9km
Littleton Wind Farm	in-planning	T5	16.5km
Farranrory Wind Farm	under construction	T12	17.6km
Potential Killoshulan Wind Farm	pre-planning	T6	2.4km
Potential Fassa Wind Farm	pre-planning	T9	14.5km

In relation to community benefit funds the following projects are included in the Population chapter:

Parksgrove Solar Farm	Bruckana Wind Farm
Ballynalacken Wind Farm	Keatingstown Solar Farm
Seskin Wind Farm	Moyne Solar Farm
Briskalagh Wind Farm	Potential Killoshulan Wind Farm (pre-planning)

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.26: Proposed Gathabawn Windfarm: Other Projects Scoped-In

EIAR 5.13.3.2 Candidate Gathabawn Grid Connection: Other Projects Scoped In

In relation to the Proposed Gathabawn Windfarm, the following Other Projects were scoped in for cumulative evaluation in EIAR topic chapters:

Other Project	Status	Closest Gathabawn UGC	Separation Distance
Lisdowney Wind Farm	operational	Ballylehaun-Ballyring UGC	0.7km
Seskin Wind Farm Project - Seskin Wind Farm - Seskin WF Grid Connection	under appeal, ACP	Parksgrove-Moatpark UGC	1.7km 4m at crossing point
Ballynalacken Wind Farm Project - Ballynalacken Wind Farm - Ballynalacken WF Grid Connection	consented	Parksgrove-Moatpark UGC	3.9km 4m at crossing point

Other Project	Status	Closest Gathabawn UGC	Separation Distance
Parksgrove SF Grid Connection	operational	Parksgrove-Moatpark UGC	4m at crossing point
Farranrory WF Grid Connection	under construction	Ballyring-Parksgrove UGC	4m at crossing point
Briskalagh WF Grid Connection	consented	Parksgrove-Moatpark UGC	4m at crossing point
Littleton WF Grid Connection	in-planning	Parksgrove-Moatpark UGC	4m at crossing point
Potential Killoshulan Wind Farm Project - Killoshulan Wind Farm - Killoshulan WF Grid Connection	pre-planning	Ballylehaun-Ballyring UGC	2.1km 4m at crossing point
Battery Energy Storage Development 1 at Moatpark	consented	Parksgrove-Moatpark UGC	4m
Battery Energy Storage Development 2 at Moatpark	consented	Parksgrove-Moatpark UGC	13m

The relevant Figure is listed below and included at the end of this Chapter:

Figure 5.27.1: Candidate Gathabawn Grid Connection: Other Projects Scoped-In

Figure 5.27.2: Candidate Gathabawn Grid Connection: Other Projects Scoped-In

EIAR 5.14 Glossary, List of Abbreviations

Glossary of Terms

Term	Definition
CO ₂ e Also, CO ₂ eq	This is defined as the 'carbon dioxide equivalent'. It is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO ₂ e signifies the amount of CO ₂ which would have the equivalent global warming impact.
EIA Directive	European Union Directive 2011/92/EU (as amended by Directive 2014/52/EU)
Gathabawn Windfarm	Twelve wind turbines are proposed for two areas – seven turbines in the Ballylehaun area and five turbines in the Ballyring area. In addition to the turbines and their hardstanding areas, the windfarm also includes site access roads, two Control Buildings; a met mast, underground cabling, temporary works to facilitate turbine deliveries, and other associated and ancillary works.
Candidate Gathabawn Grid Connection	Underground cabling between the Ballylehaun and Ballyring Areas (Ballylehaun-Ballyring UGC), underground cabling from the Ballyring Area (from Ballyring Control Building) to a new substation at Parksgrove (Ballyring-Parksgrove UGC), the Parksgrove Substation, and underground cabling from the substation to the existing Eirgrid Ballyragget Substation in Moatpark (Parksgrove-Moatpark UGC). The Candidate Gathabawn Grid Connection is not included as part of this Planning Application, it will be subject of a separate Planning Application, at a future date. The Candidate Gathabawn Grid Connection is considered in this EIA Report in order to facilitate the cumulative evaluation of the Whole Project.
Whole Gathabawn Windfarm Project	The Whole Gathabawn Windfarm Project comprises the Proposed Gathabawn Windfarm and the Candidate Gathabawn Grid Connection. Brief removal (and subsequent replacement) of a set of traffic lights in Durrow town may also be required to facilitate turbine deliveries – this Off-Site activity is taken into consideration in the cumulative scoping appendices as detailed in Chapter 5, Section EIAR 5.13.

EIAR 5.15 Reference List

Vestas Life Cycle Assessment of Electricity Production from an onshore V136-4.2 MW Wind Plan (March 2022); available at: [LIFE CYCLE ASSESSMENT OF ELECTRICITY PRODUCTION FROM AN ONSHORE V112-3.3 MW WIND PLANT](#)

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Figure 5.1.1 - Whole Gathabawn Windfarm Project - Location on Discovery Mapping

Legend:

- Proposed Gathabawn Windfarm
- - - Candidate Gathabawn Grid Connection
- Parksgrove Substation
- Existing EirGrid Ballyragget Substation
- T6 Turbine Identification Number
- L1806 Public Road Identification Number
- Cullahill Towns/Villages

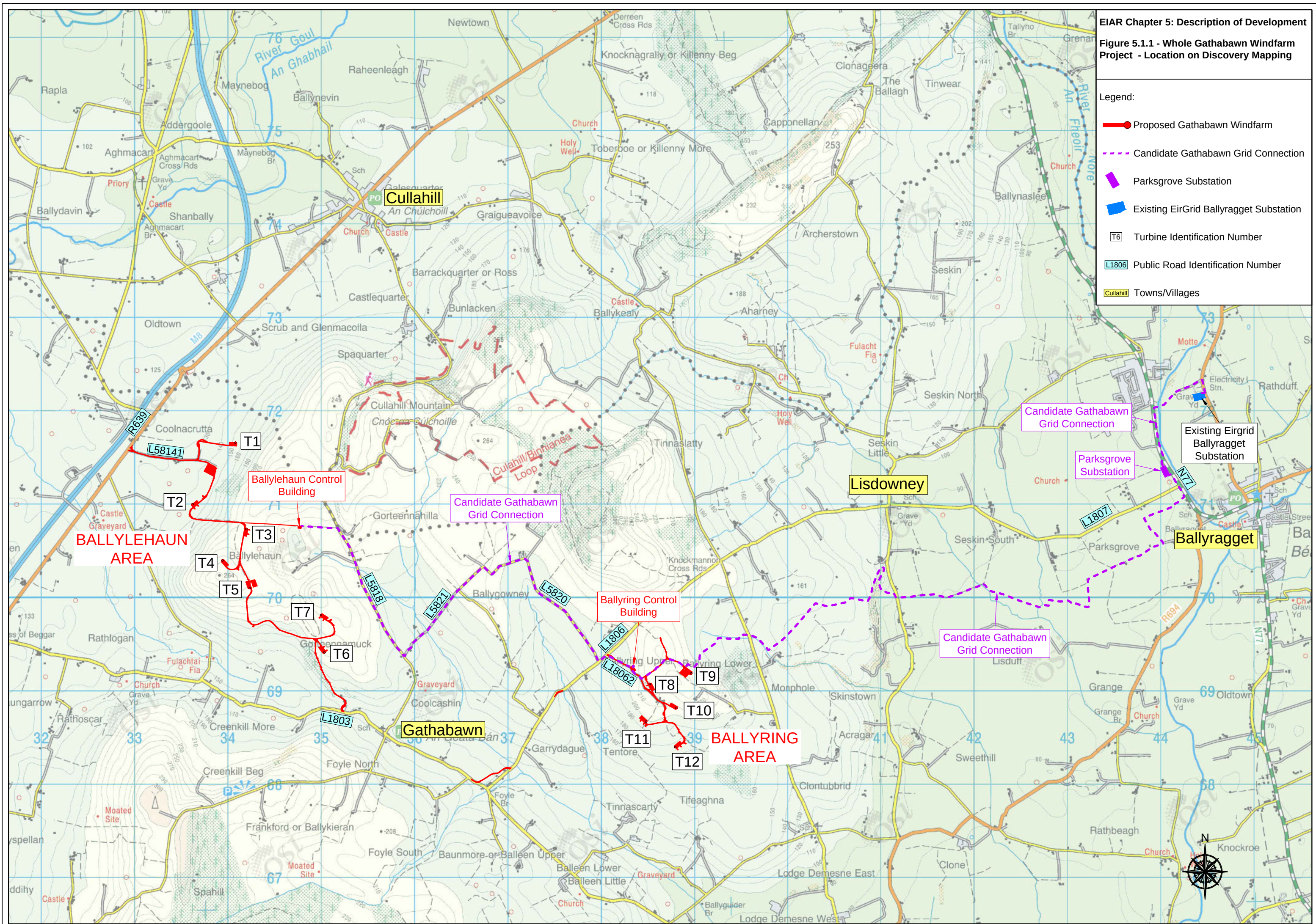


Figure 5.1.2 - Proposed Gathabawn Windfarm
- Location on Discovery Mapping

Legend:

Proposed Gathabawn Windfarm

T6 Turbine Identification Number

L1806 Public Road Identification Number

Cullahill Towns/Villages



Figure 5.2.1 - Proposed Gathabawn Windfarm - Construction Phase Layout on Aerial Photography (Map 1 of 4)

Legend:

- Turbine Foundation
- Turbine Hardstanding Area
- Ballylehaun Control Building
- New Windfarm Site Road
- Upgraded Existing Private Roads
- Public Road Widening Works
- Public Road
- Existing Private Road
- Windfarm Cabling
- Temporary Borrow Pit
- Ballylehaun Construction Compound
- Temporary Deposition Area
- Temporary Blade Set Down Area
- Biodiversity Area: New Connectivity Corridor
- Biodiversity Area: Protection of Existing Hazel Wood
- Construction Works Area Boundary
- EPA Watercourse
- FW6 Facilitating Works Identification Number
- L-5818 Public Road Identification Number

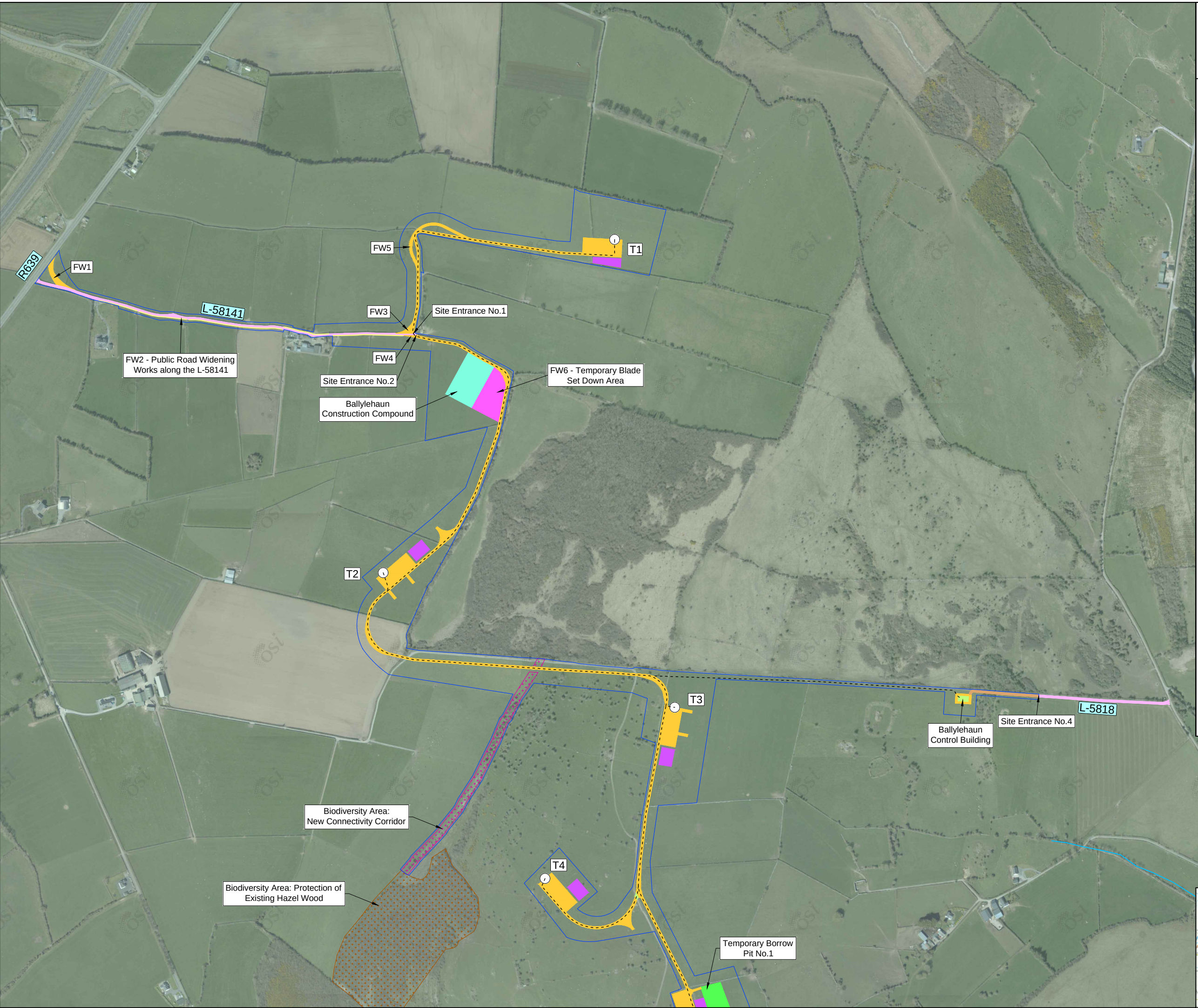


Figure 5.2.2 - Proposed Gathabawn Windfarm - Construction Phase Layout on Aerial Photography (Map 2 of 4)

Legend:

- Turbine Foundation
- Turbine Hardstanding Area
- New Windfarm Site Road
- Upgraded Existing Private Roads
- Public Road
- Windfarm Cabling
- Met Mast
- Temporary Borrow Pit
- Temporary Deposition Area
- Biodiversity Area: New Connectivity Corridor
- Biodiversity Area: Protection of Existing Hazel Wood
- Construction Works Area Boundary
- EPA Watercourse
- FW6 Facilitating Works Identification Number
- L-5818 Public Road Identification Number

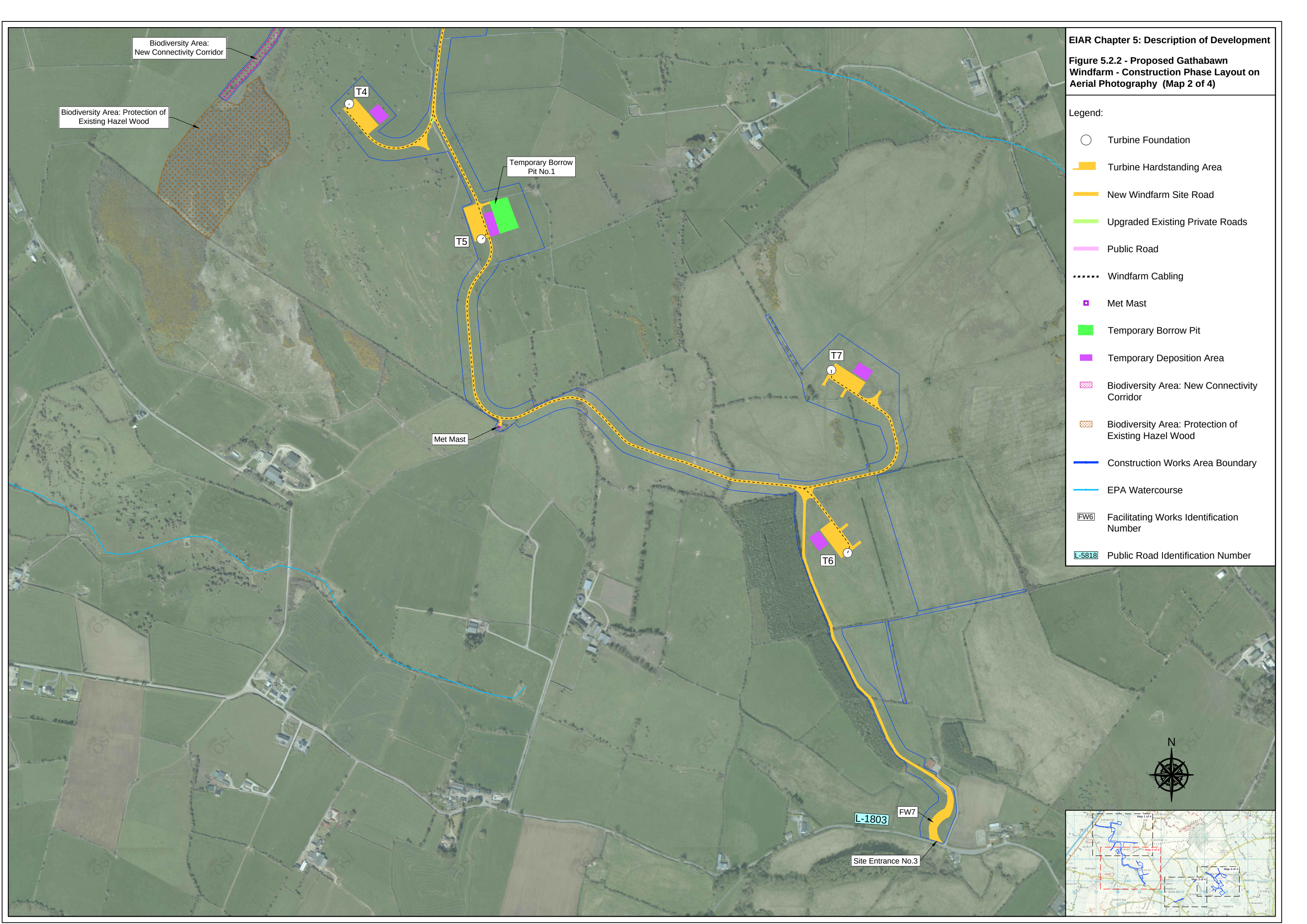


Figure 5.2.3 - Proposed Gathabawn Windfarm - Construction Phase Layout on Aerial Photography (Map 3 of 4)

Legend:

-  New Windfarm Site Road
-  Construction Works Area Boundary
-  EPA Watercourse
-  Facilitating Works Identification Number
-  Public Road Identification Number

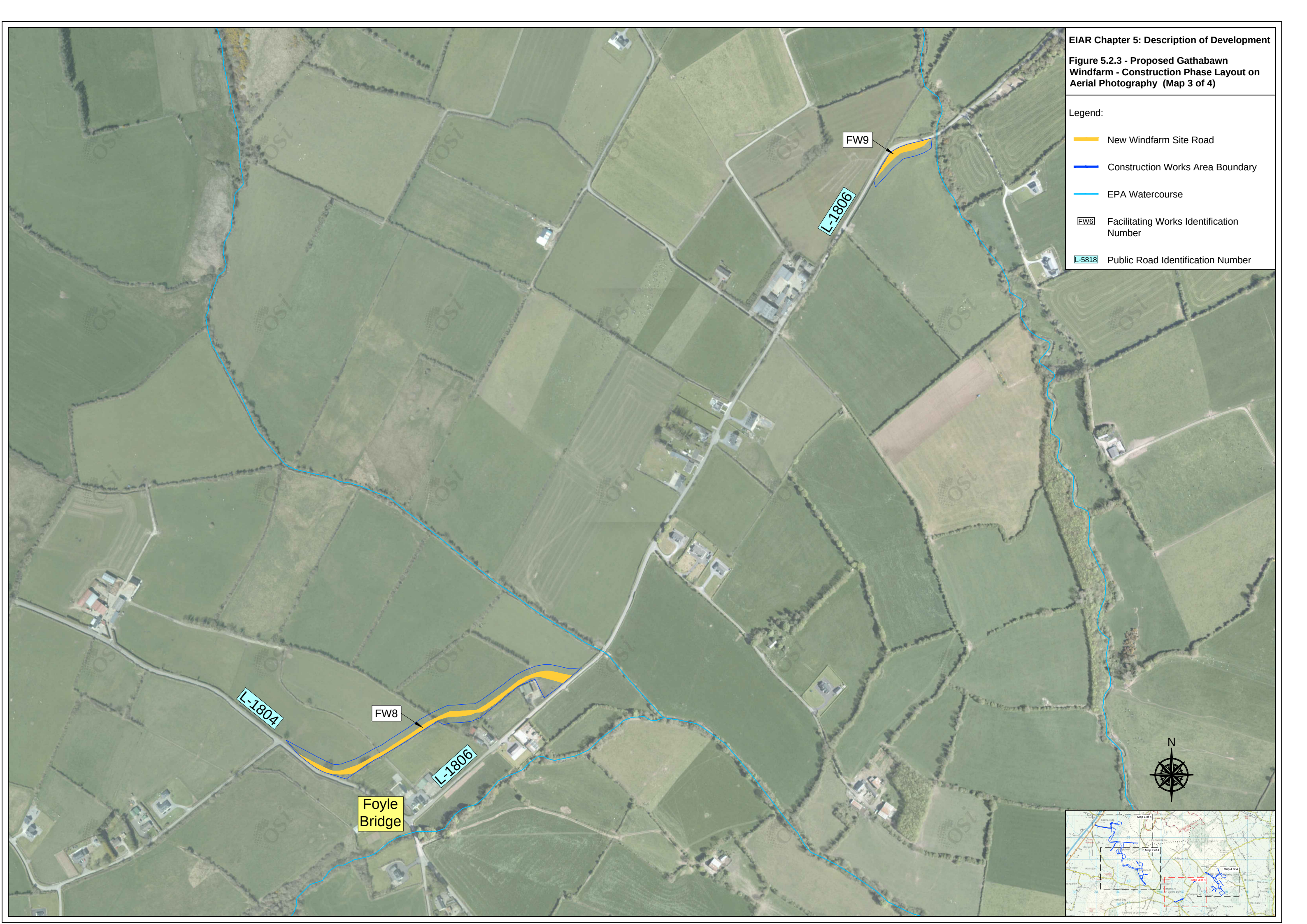


Figure 5.2.4 - Proposed Gathabawn Windfarm - Construction Phase Layout on Aerial Photography (Map 4 of 4)

Legend:

-  Turbine Foundation
-  Turbine Hardstanding Area
-  Ballyring Control Building
-  New Windfarm Site Road
-  Upgraded Existing Private Roads
-  Public Road Widening Works
-  Public Road
-  Windfarm Cabling
-  Diverted Wet Drainage Channel
-  LiDAR
-  Temporary Borrow Pit
-  Ballyring Construction Compound
-  Temporary Deposition Area
-  Biodiversity Area: Habitat Creation
-  Construction Works Area Boundary
-  EPA Watercourse
-  Facilitating Works Identification Number
-  Public Road Identification Number

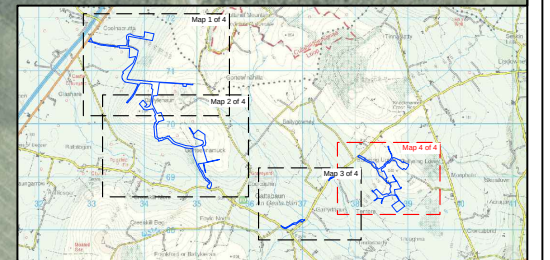
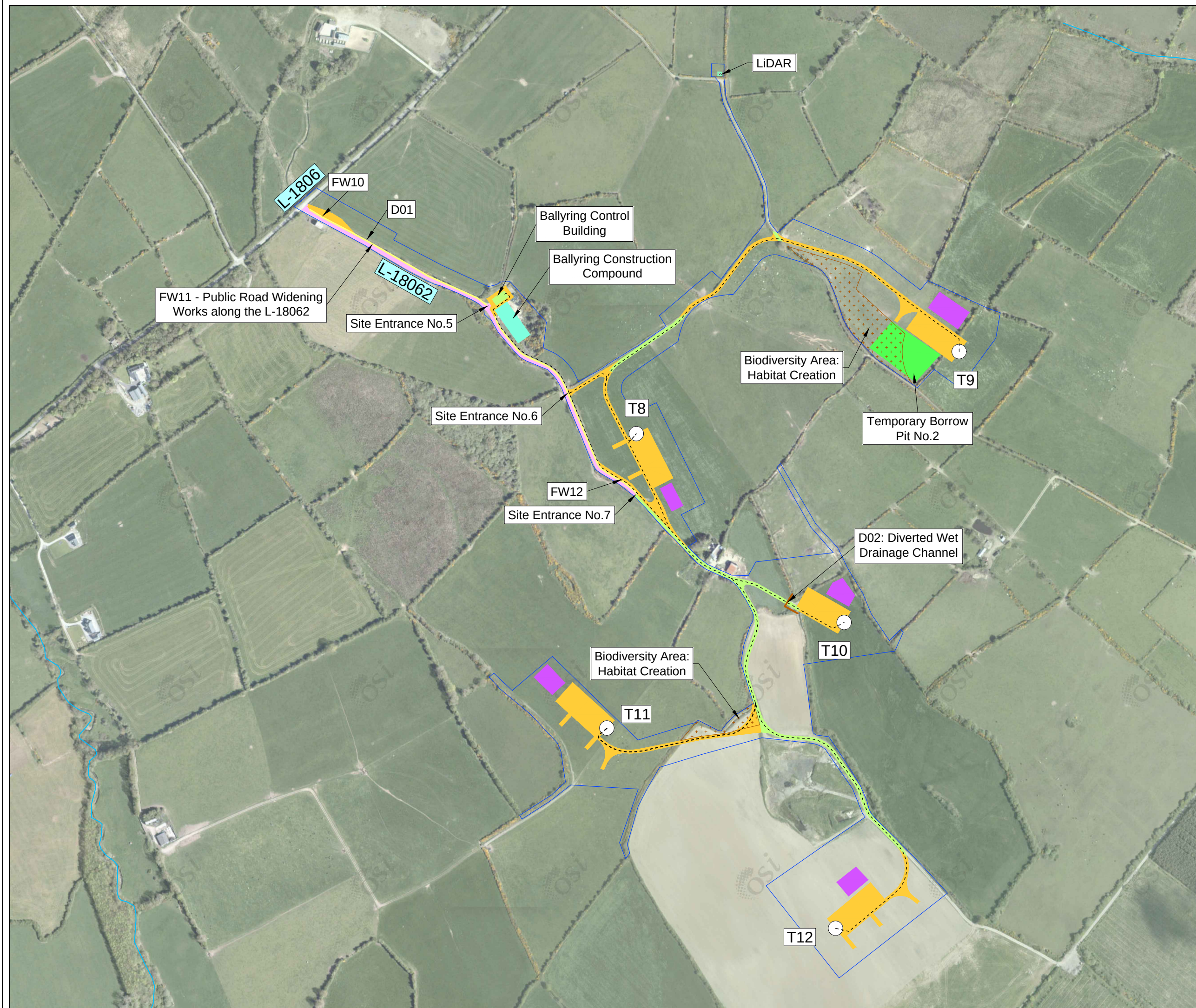
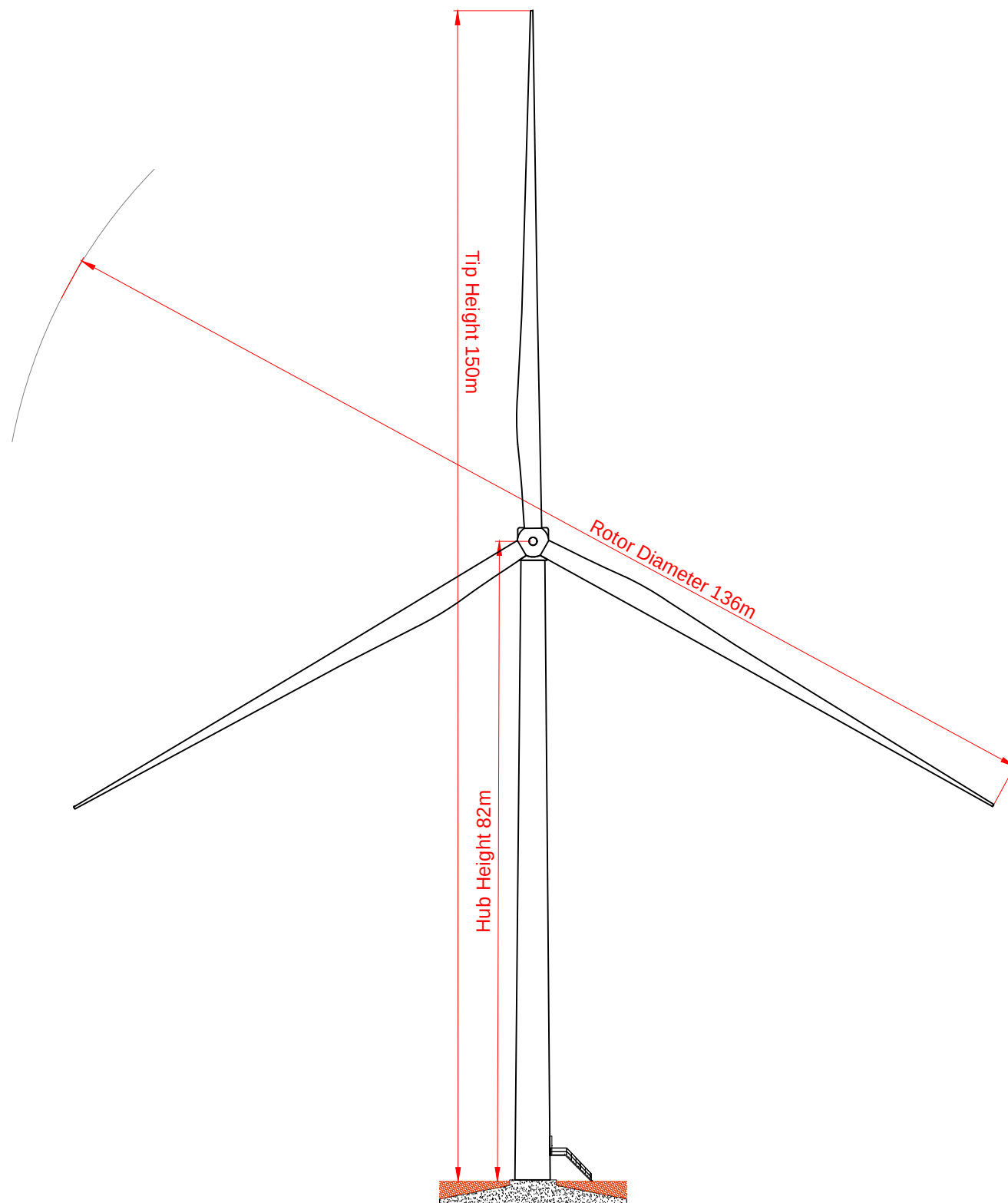
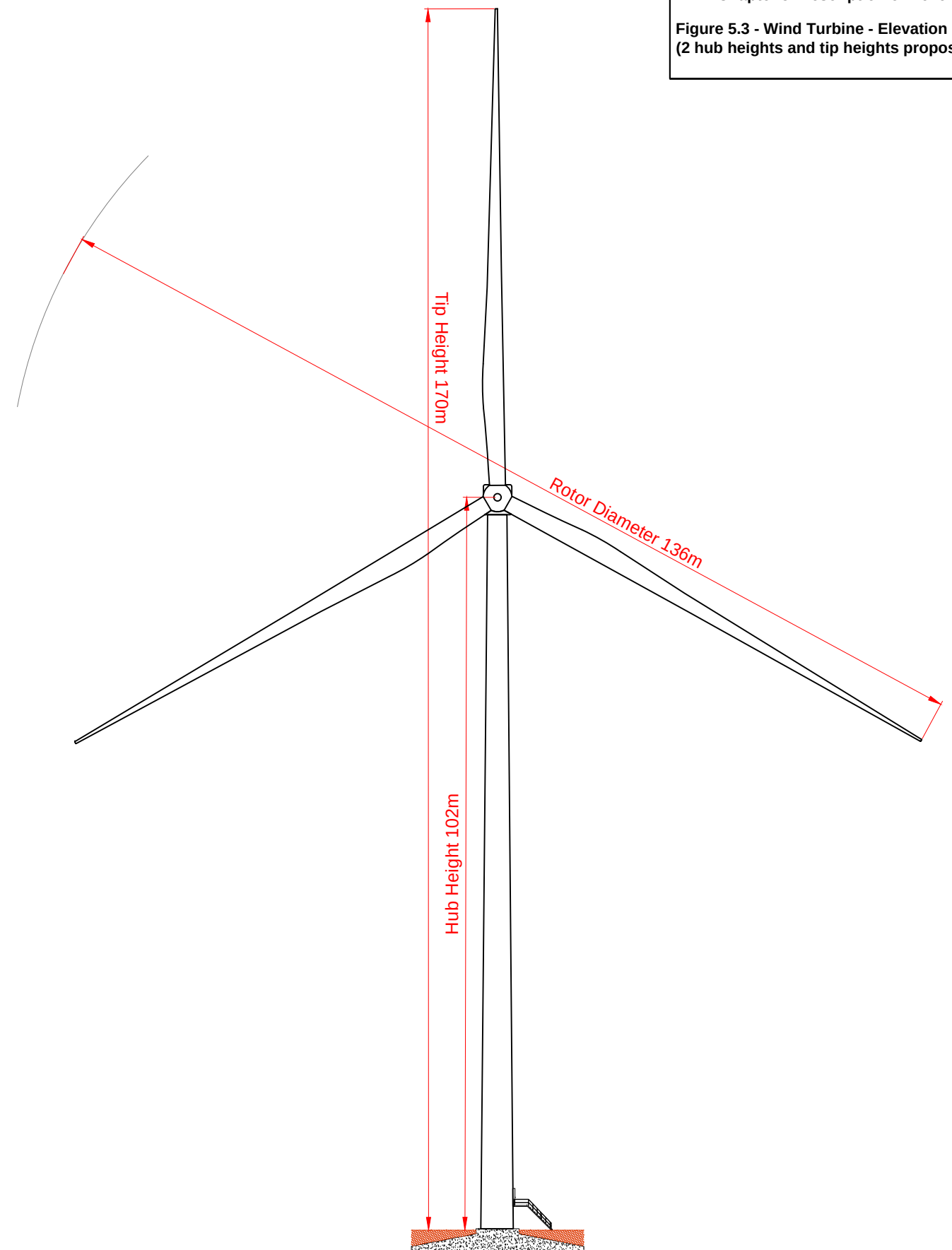


Figure 5.3 - Wind Turbine - Elevation
(2 hub heights and tip heights proposed)



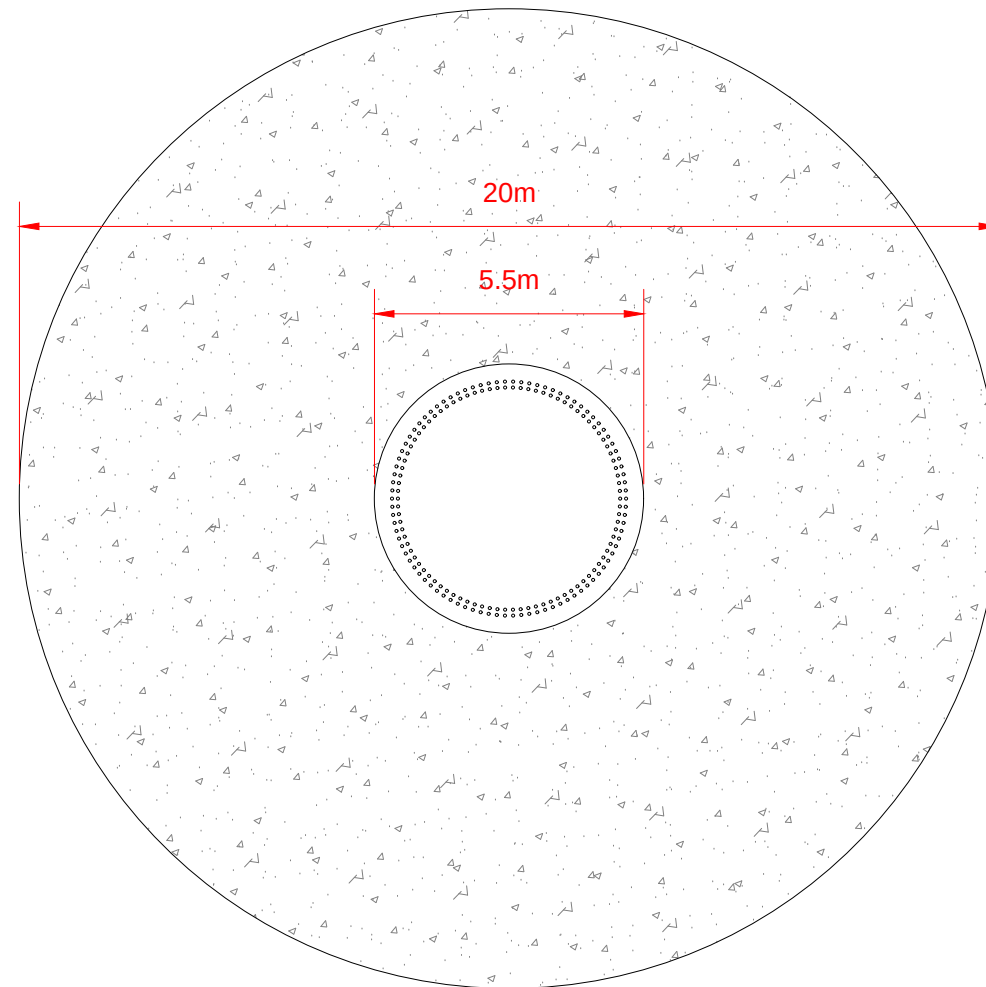
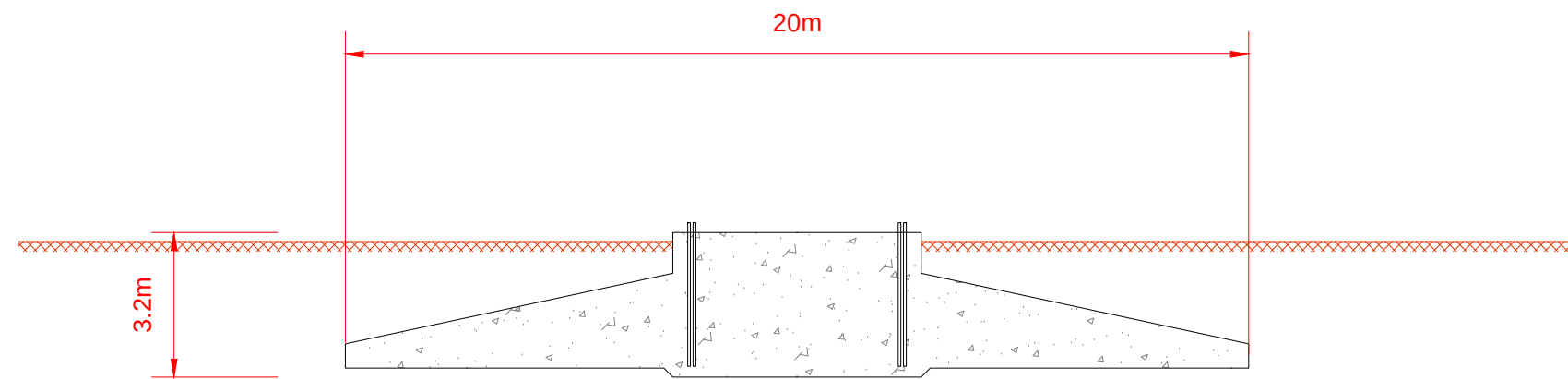
Wind Turbine with a rotor diameter of 136m and hub height of 82m, giving an overall height of 150m.

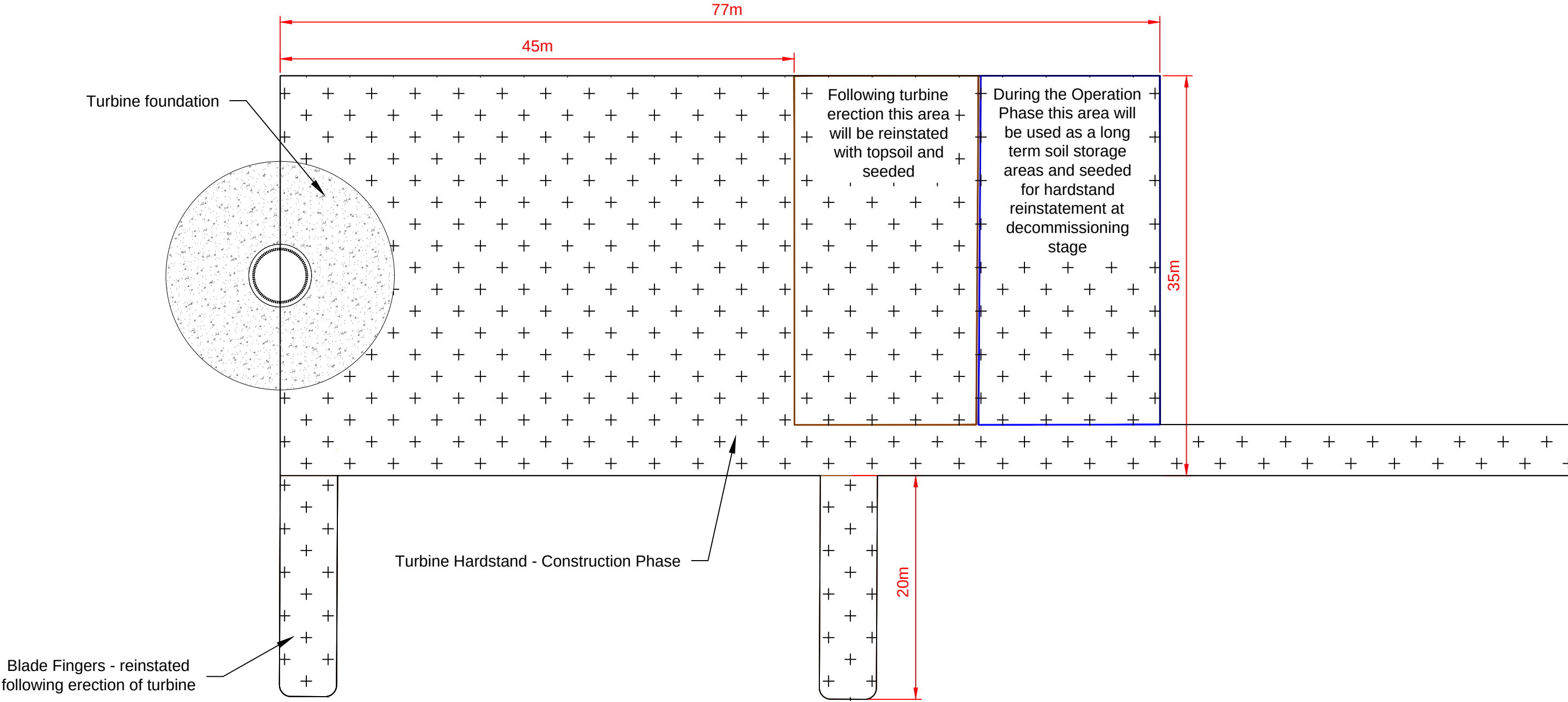
Turbine T6, T7 & T9



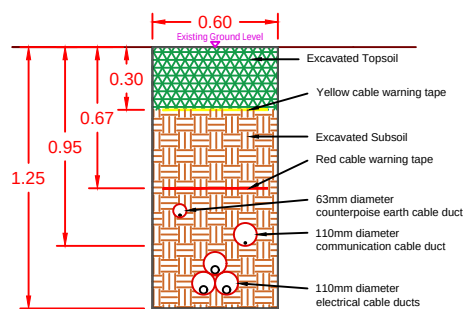
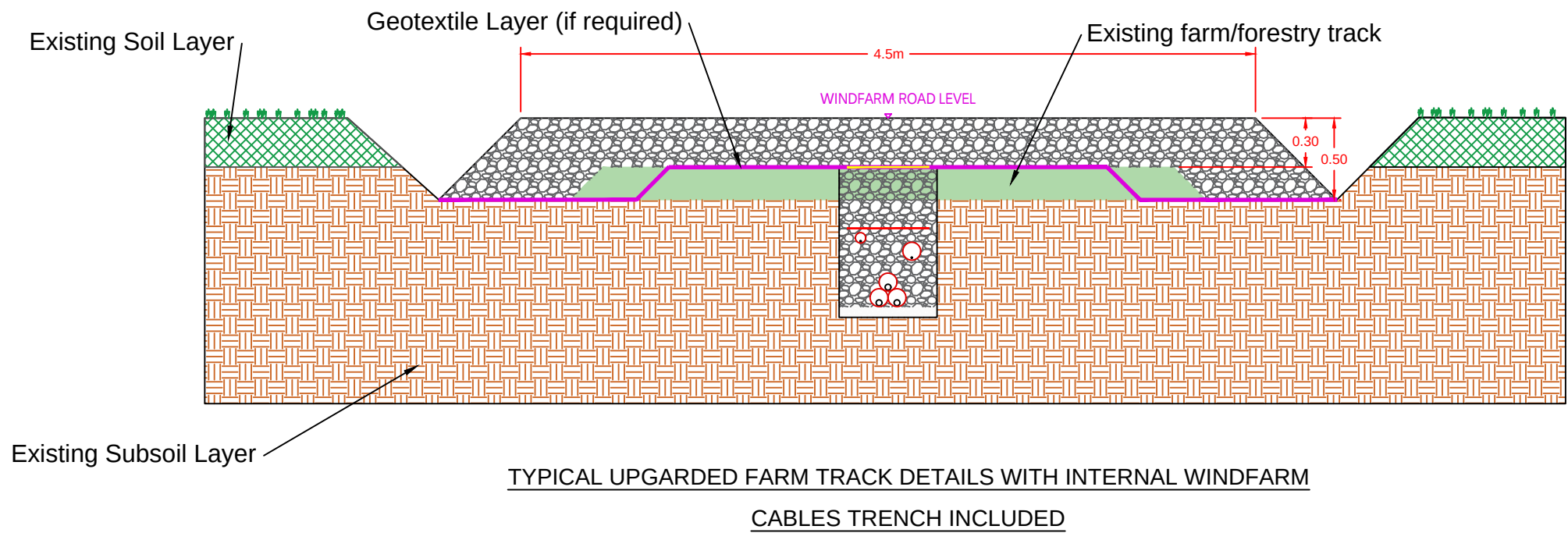
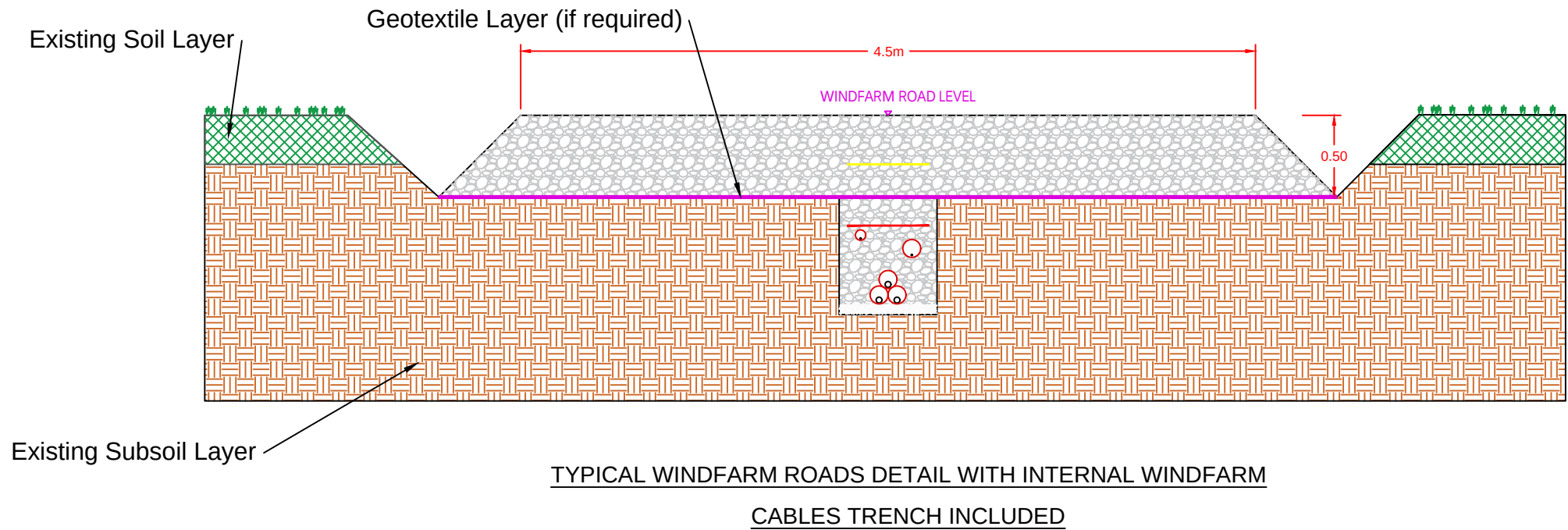
Wind Turbine with a rotor diameter of 136m and hub height of 102m, giving an overall height of 170m.

Turbine T1, T2, T3, T4, T5, T8, T10, T11 & T12

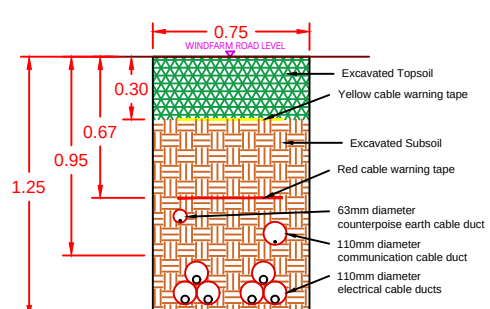




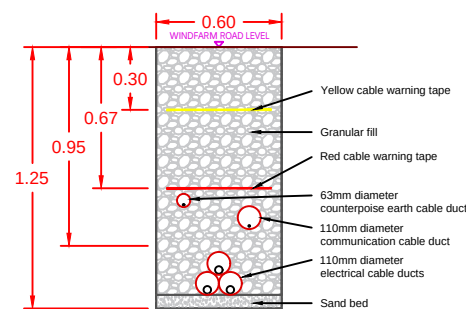
Turbine Hardstand - Plan view



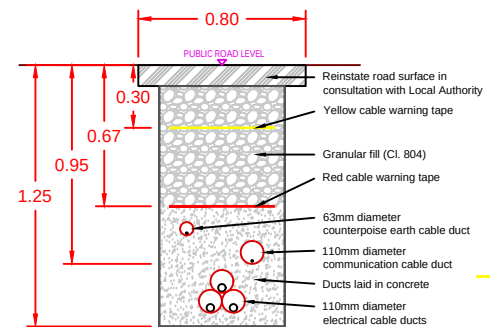
CABLES TRENCH - TYPICAL SINGLE CIRCUIT TRENCH SECTION THROUGH AGRICULTURAL LANDS



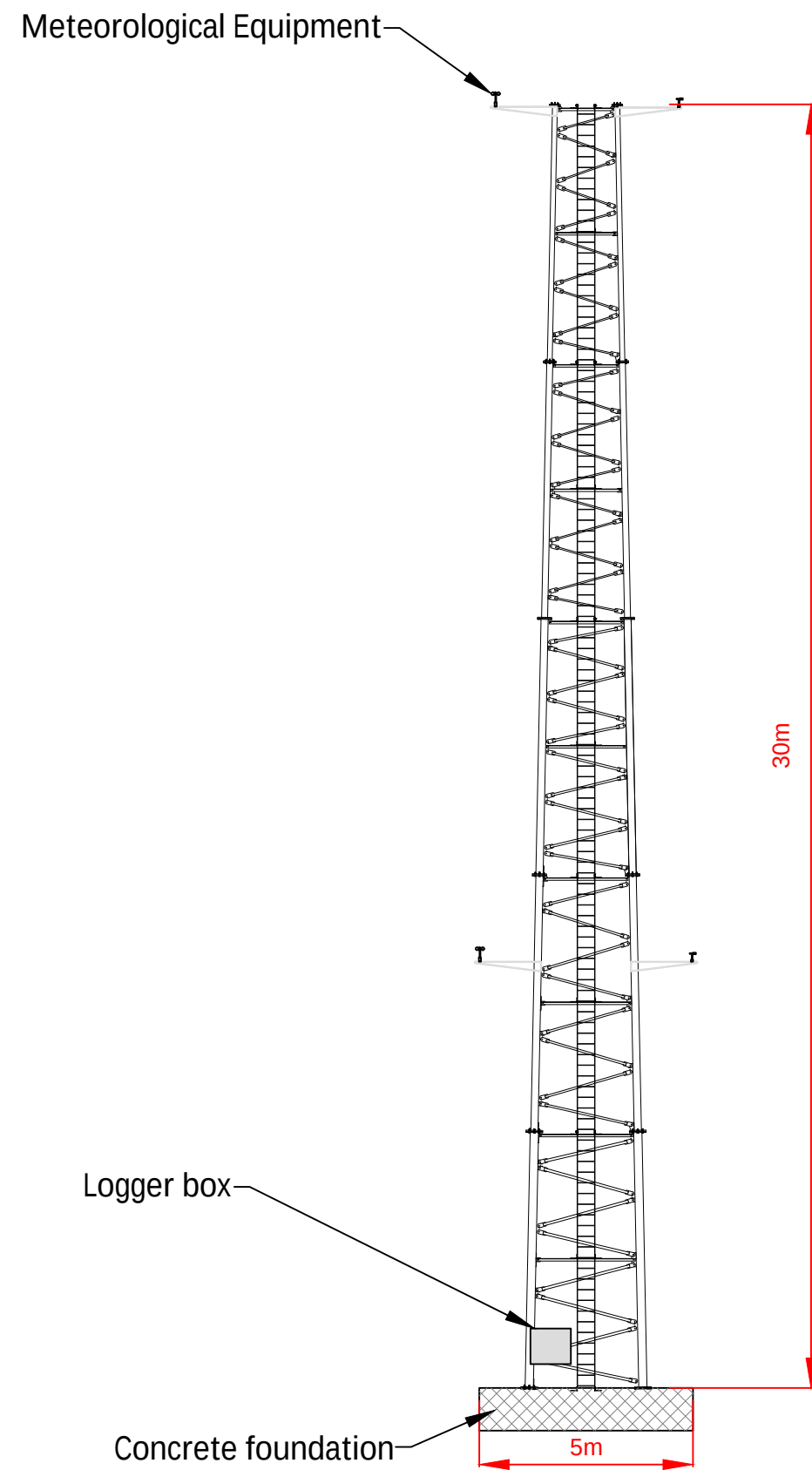
CABLES TRENCH - TYPICAL DOUBLE CIRCUIT TRENCH SECTION THROUGH AGRICULTURAL LANDS



CABLES TRENCH - TYPICAL SINGLE CIRCUIT TRENCH SECTION THROUGH WINDFARM ROADS

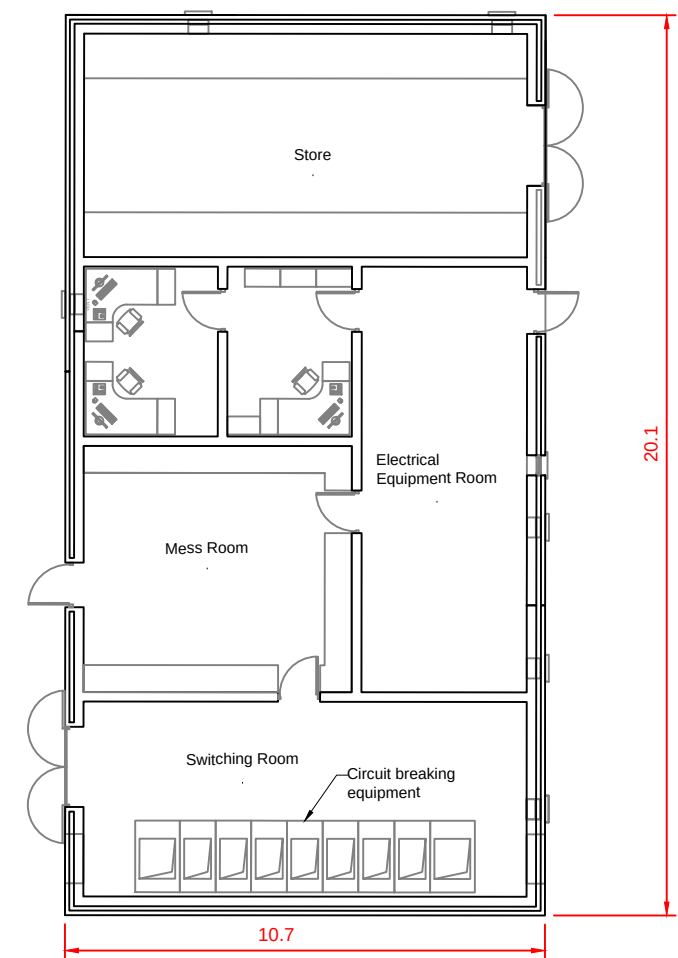
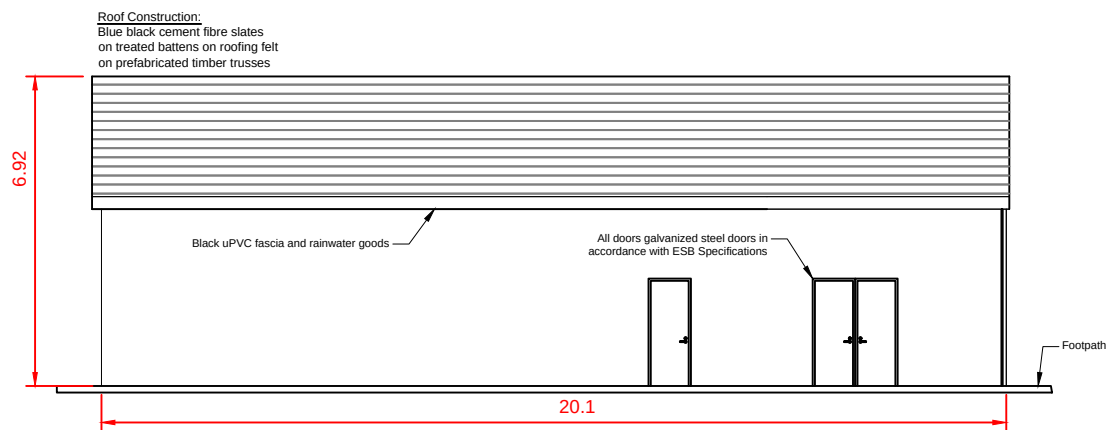
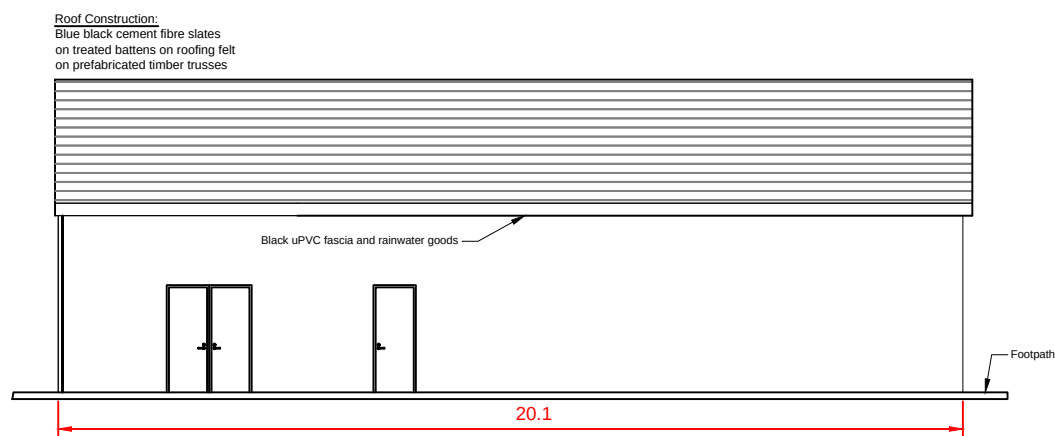
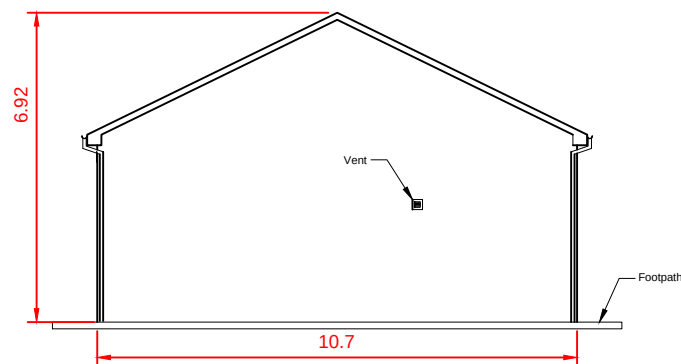
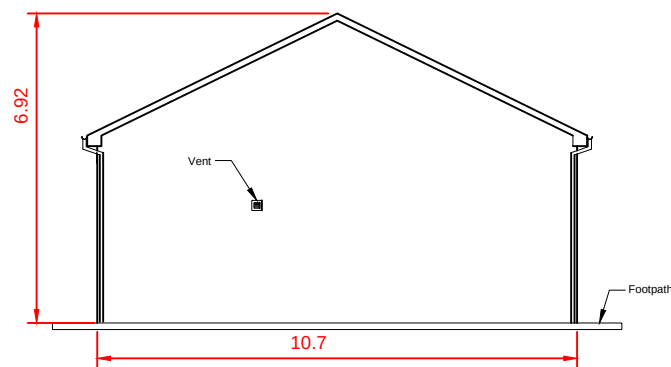


CABLES TRENCH - TYPICAL SINGLE CIRCUIT TRENCH SECTION THROUGH PUBLIC ROADS

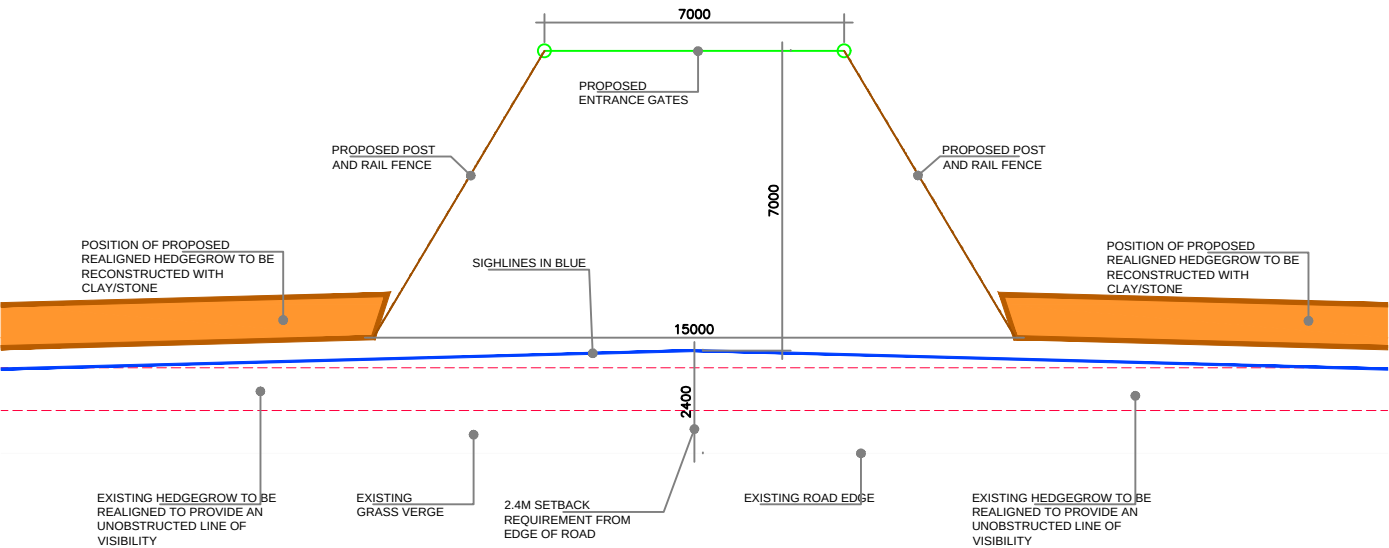


Lidar Unit

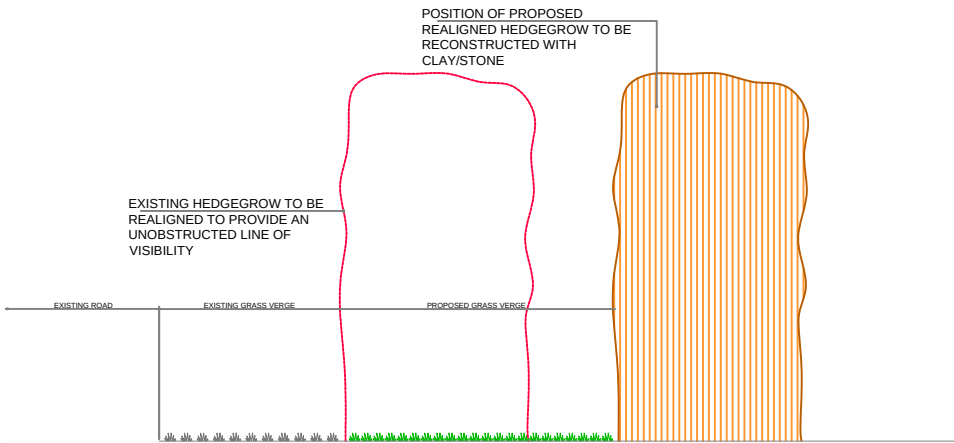




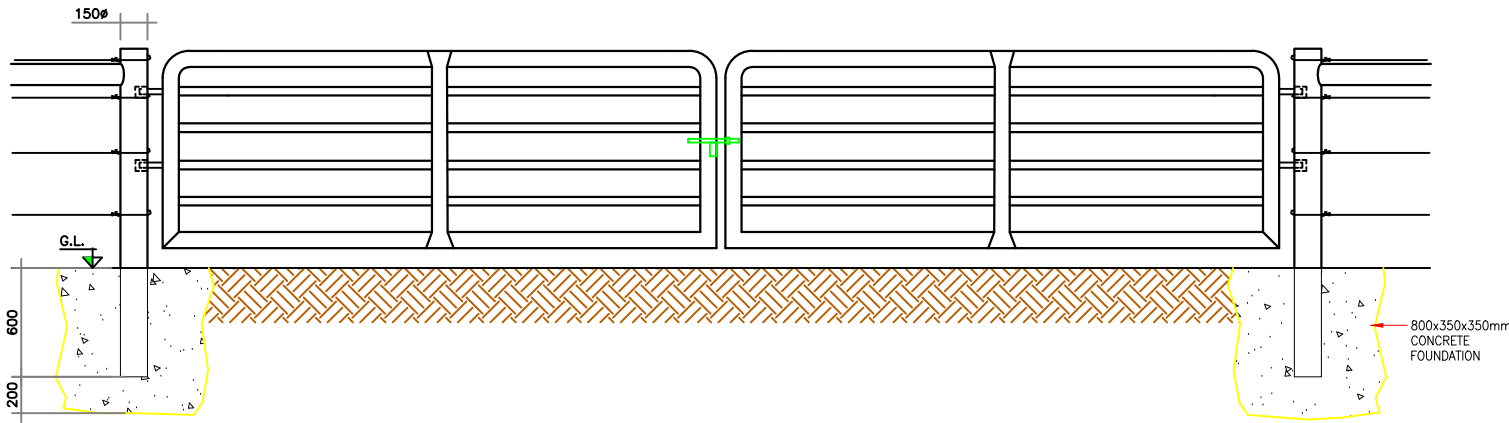
Plan View



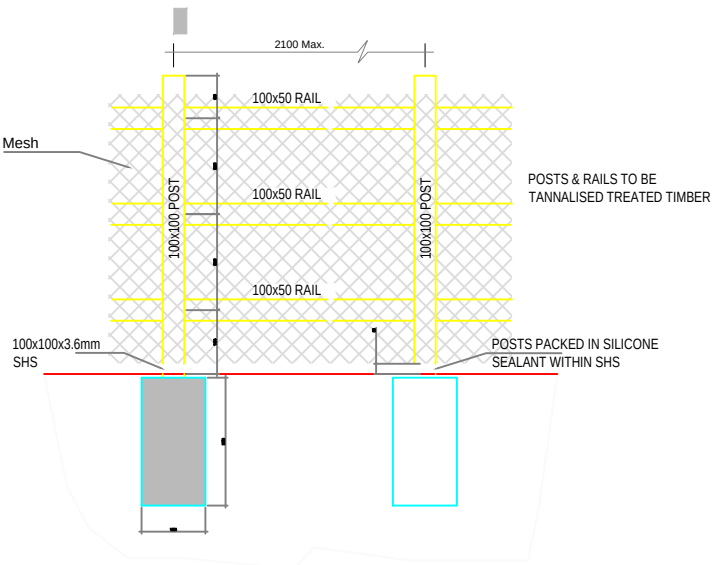
TYPICAL ENTRANCE LAYOUT



TYPICAL BOUNDARY REALIGNMENT



TYPICAL DOUBLE GALVANIZED STEEL GATE ELVATION



TYPICAL POST AND RAIL DETAIL

Figure 5.10 - Turbine Delivery Route

Legend:

Proposed Gathabawn Windfarm

Turbine Delivery Route

FW6 Facilitating Works Identification Number

L1806 Public Road Identification Number

Cullahill Towns/Villages

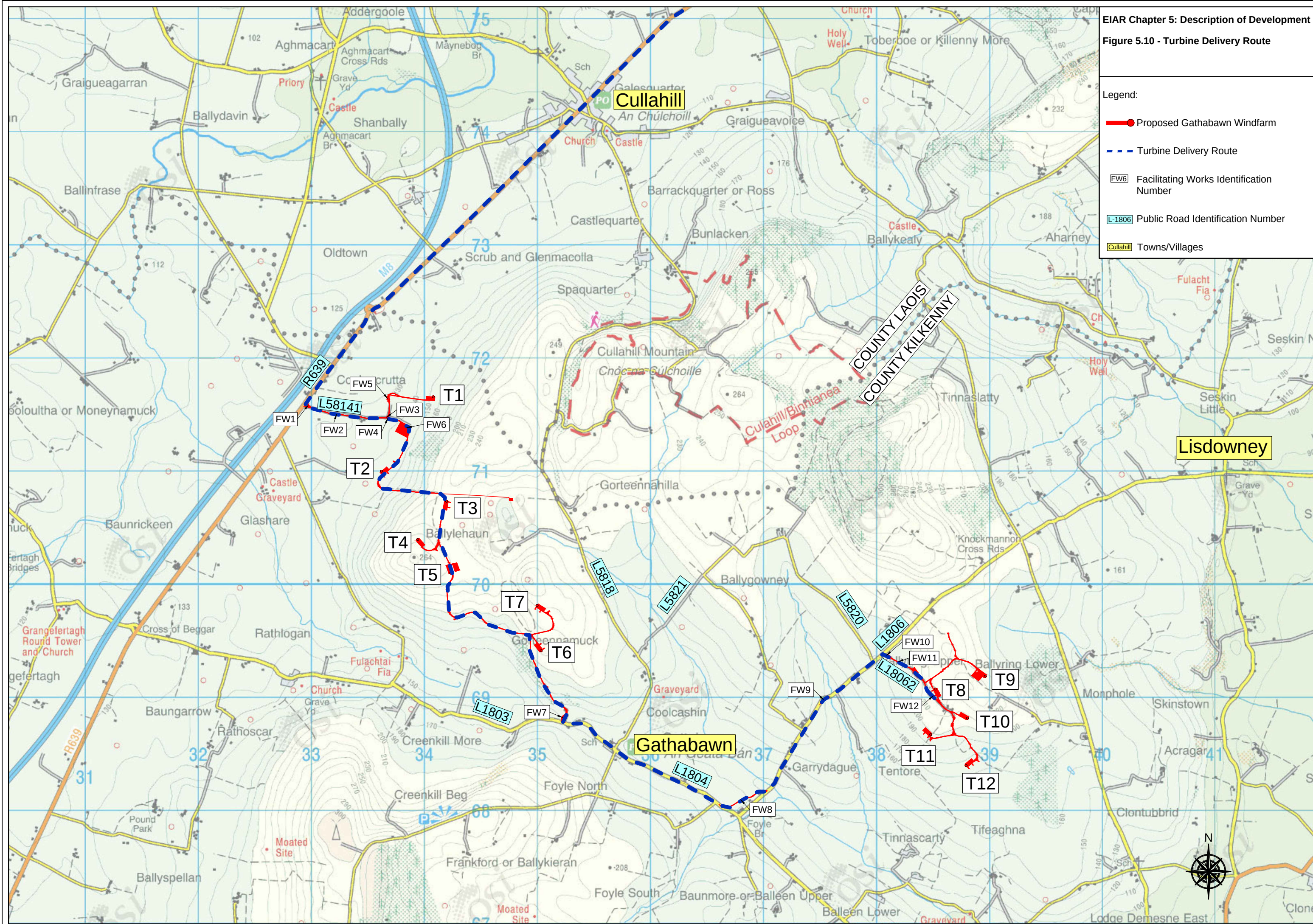


Figure 5.11.1 - Existing Farm Drainage Networks at the Ballylehaun Area

Legend:

- Proposed Gathabawn Windfarm
- EPA Waterbody
- Drainage channel, including direction of flow

BALLYLEHAUN
AREA

T1

T2

T3

T4

T5

T7

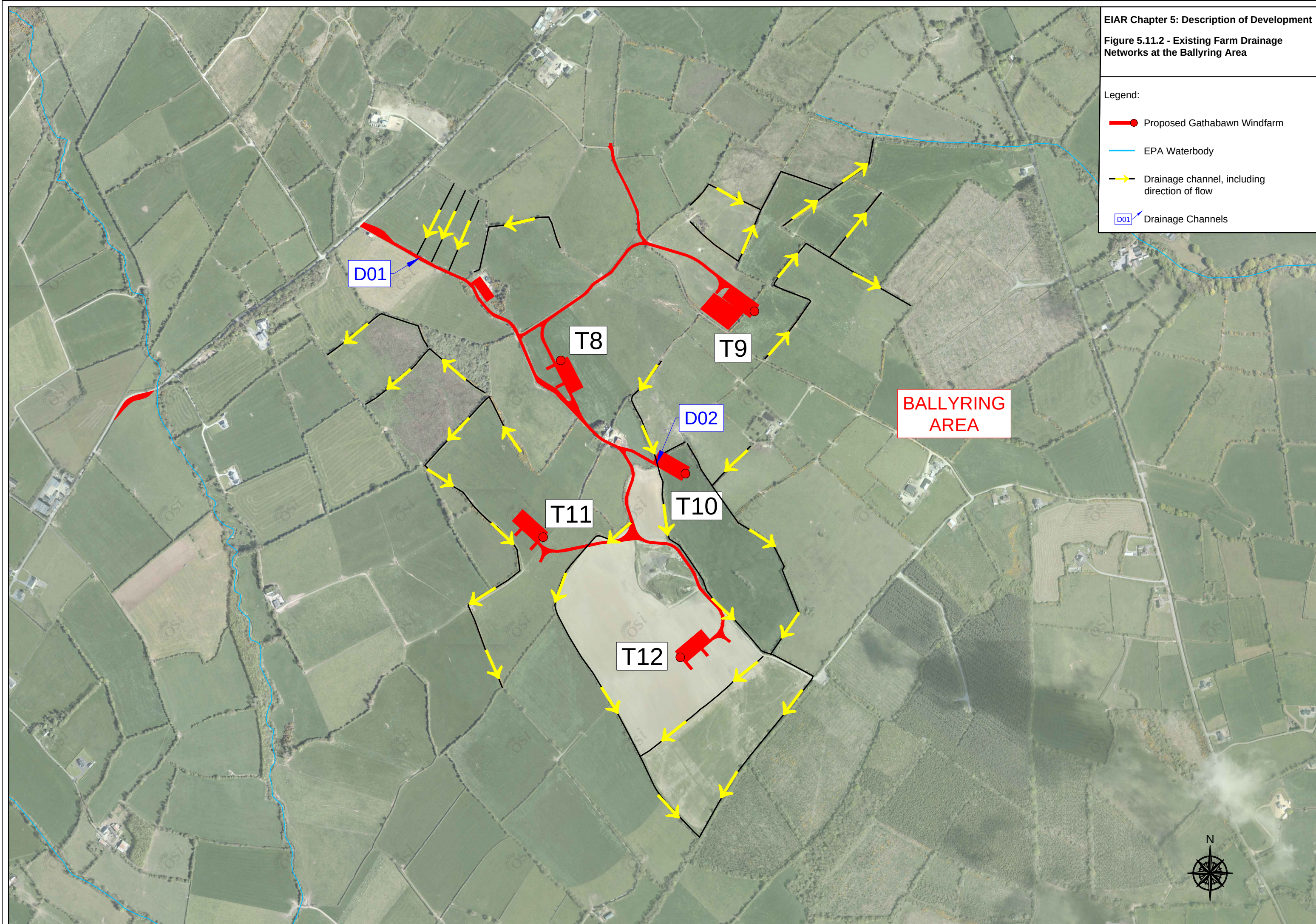
T6

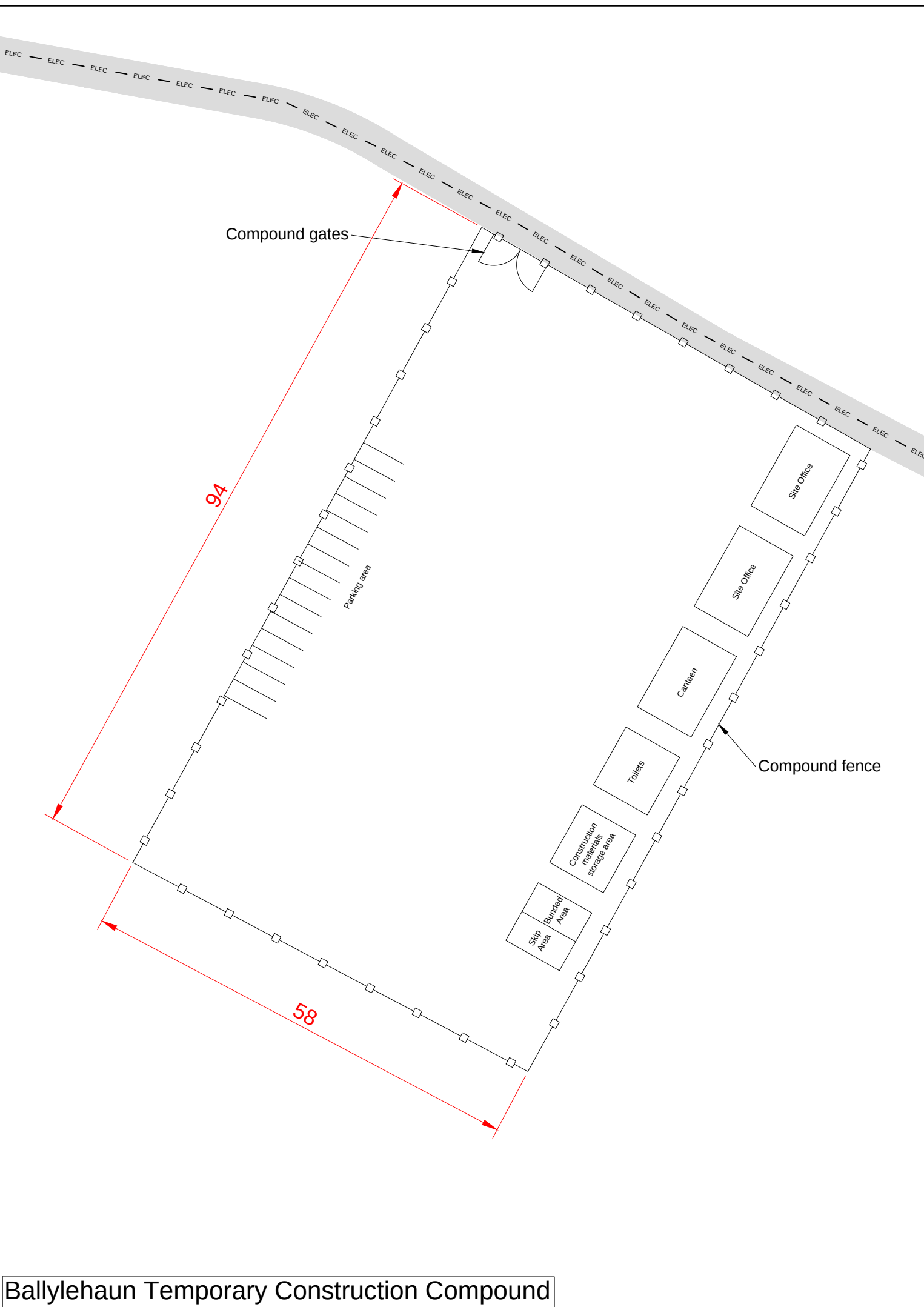


Figure 5.11.2 - Existing Farm Drainage Networks at the Ballyring Area

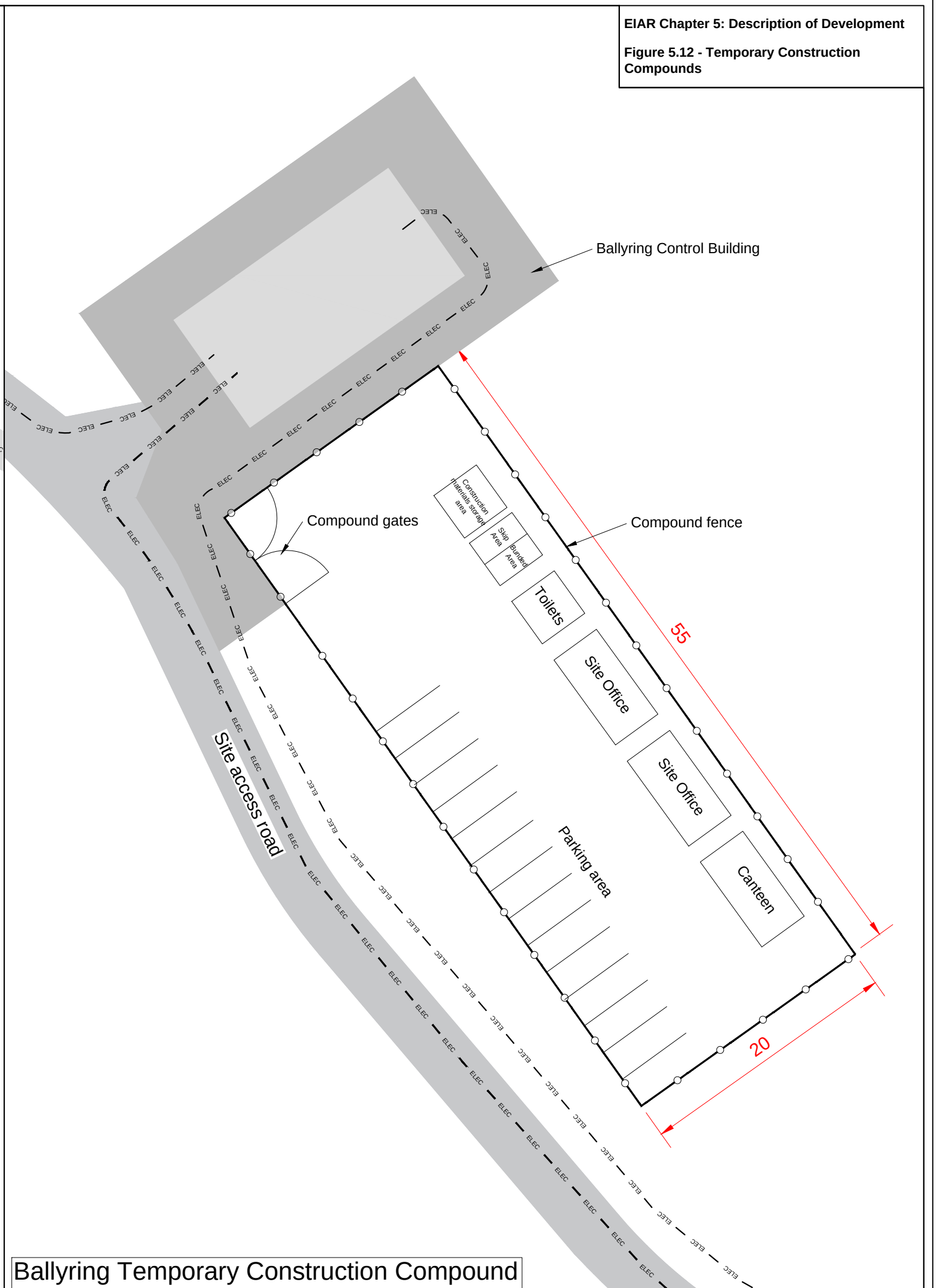
Legend:

- Proposed Gathabawn Windfarm
- EPA Waterbody
- Drainage channel, including direction of flow
- Drainage Channels



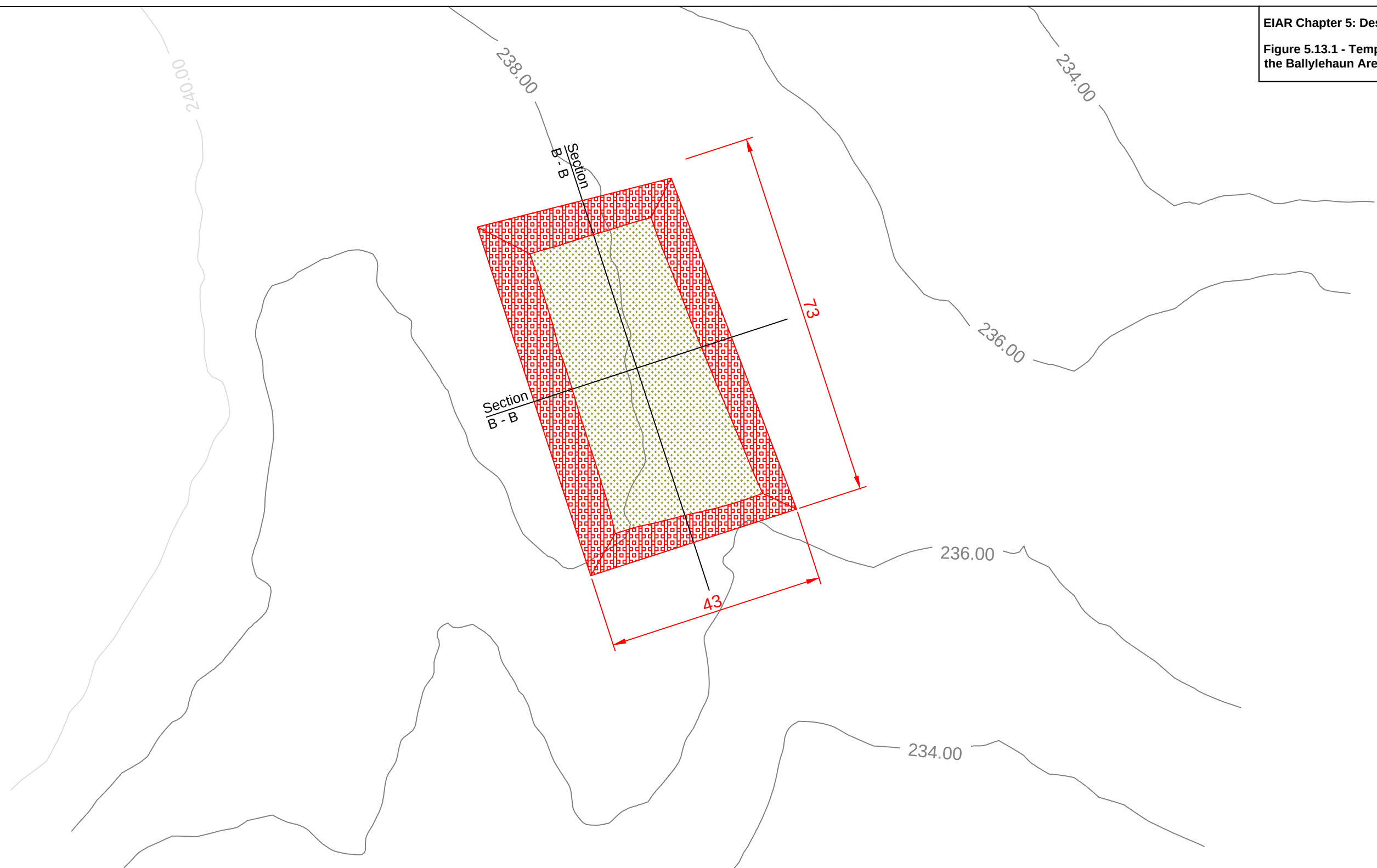


Ballylehaun Temporary Construction Compound

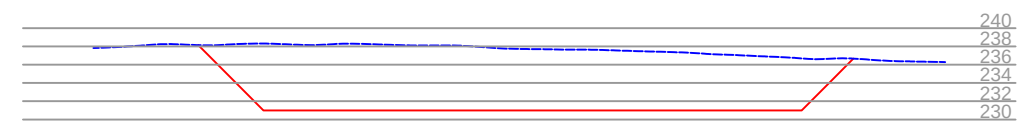


Ballyring Temporary Construction Compound

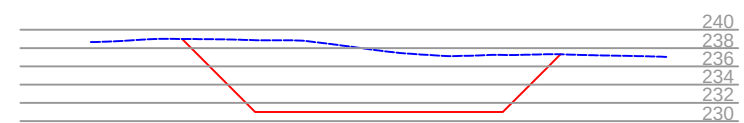
Figure 5.13.1 - Temporary Borrow Pit No.1 in the Ballylehaun Area



Borrow Pit No.1 in the Ballylehaun Area
Plan View



Borrow Pit No.1
Cross Section A - A



Borrow Pit No.1
Cross Section B - B

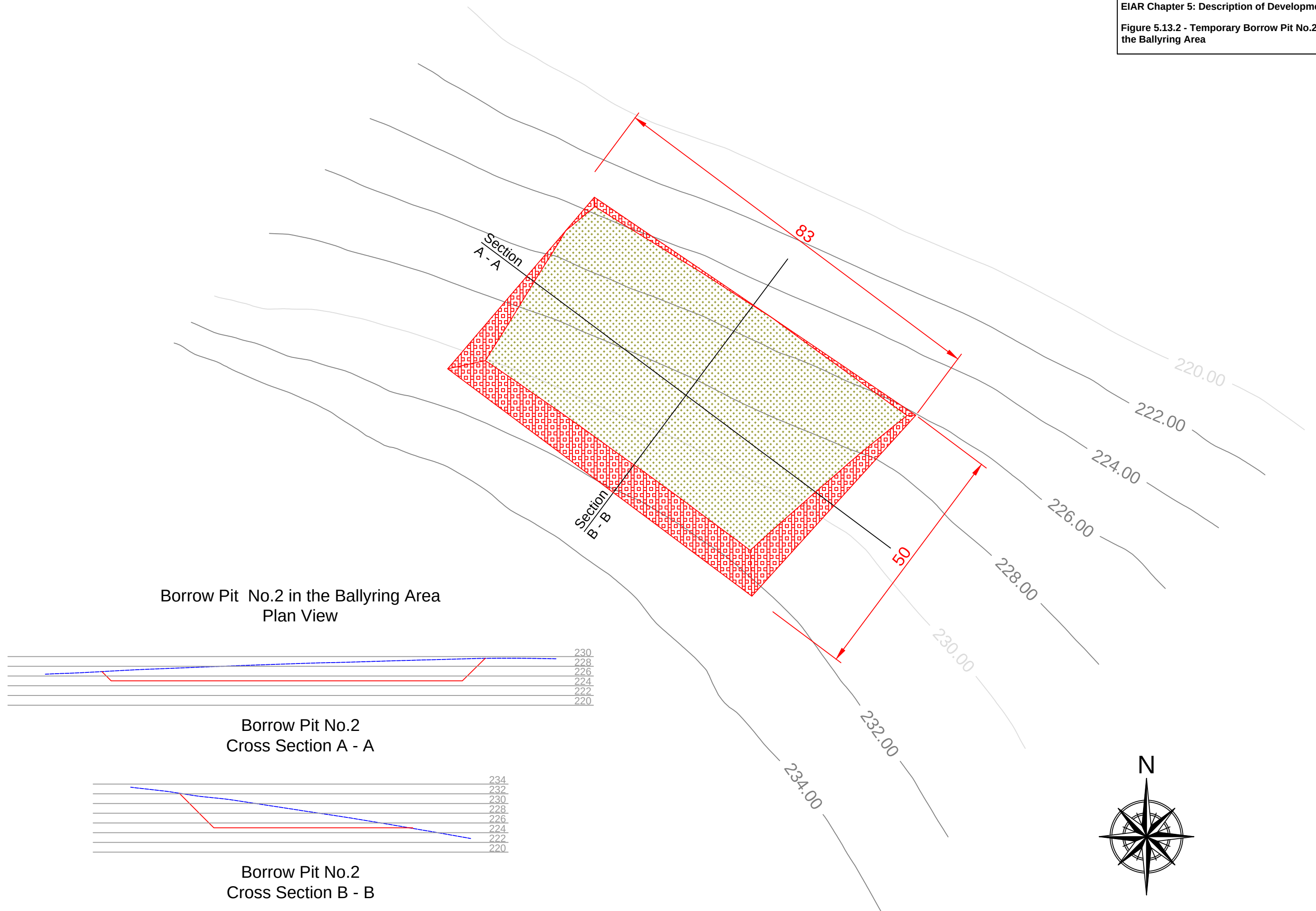


Figure 5.14.1 - Biodiversity Areas
 (Map 1 of 3)

Legend:

-  Turbine
-  Hardcore Area
-  Ballylehaun Control Building
-  Hedgerow Removal
-  Hedgerow Replant
-  Hedgerow Improvement
-  Bat Buffer Area
-  Biodiversity Area: New Connectivity Corridor
-  Biodiversity Area: Protection of Existing Hazel Wood
-  Cullahill Mountain SAC and pNHA
-  Gales Hill Nature Reserve

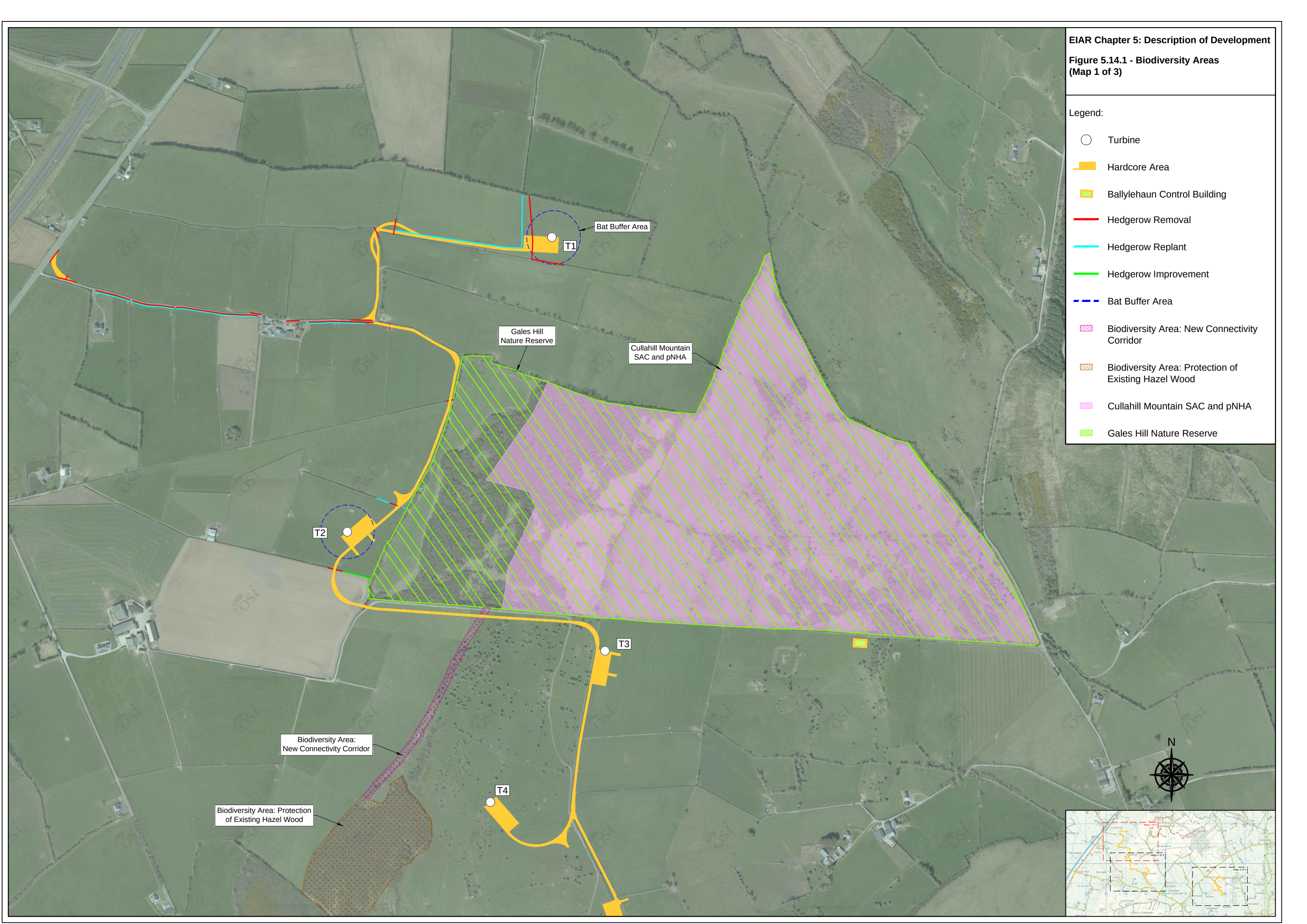


Figure 5.14.2 - Biodiversity Areas
(Map 2 of 3)

Legend:

- Turbine
- Hardcore Area
- Hedgerow Removal
- Hedgerow Replant
- Hedgerow Improvement
- Bat Buffer Area
- Biodiversity Area: New Connectivity Corridor
- Biodiversity Area: Protection of Existing Hazel Wood



Figure 5.14.2 - Biodiversity Areas
 (Map 3 of 3)

Legend:

-  Turbine
-  Hardcore Area
-  Ballyring Control Building
-  Hedgerow Removal
-  Hedgerow Replant
-  Hedgerow Improvement
-  Bat Buffer Area
-  Biodiversity Area: Habitat Creation



Figure 5.15.1 - Proposed Gathabawn Windfarm - Operational Phase Layout on Aerial Photography (Map 1 of 4)

Legend:

-  Turbine Foundation
-  Hardcore Area
-  Concealed Hardcore Area at Turbine Hardstand
-  Long Term Storage Berm
-  Ballylehaun Control Building
-  Windfarm Cabling
-  New Windfarm Site Road
-  Concealed Windfarm Site Road
-  Public Road
-  Existing Private Road
-  Bat Buffer Area
-  Biodiversity Area: New Connectivity Corridor
-  Biodiversity Area: Protection of Existing Hazel Wood
-  Operational Works Area Boundary
-  EPA Watercourse
-  Public Road Identification Number

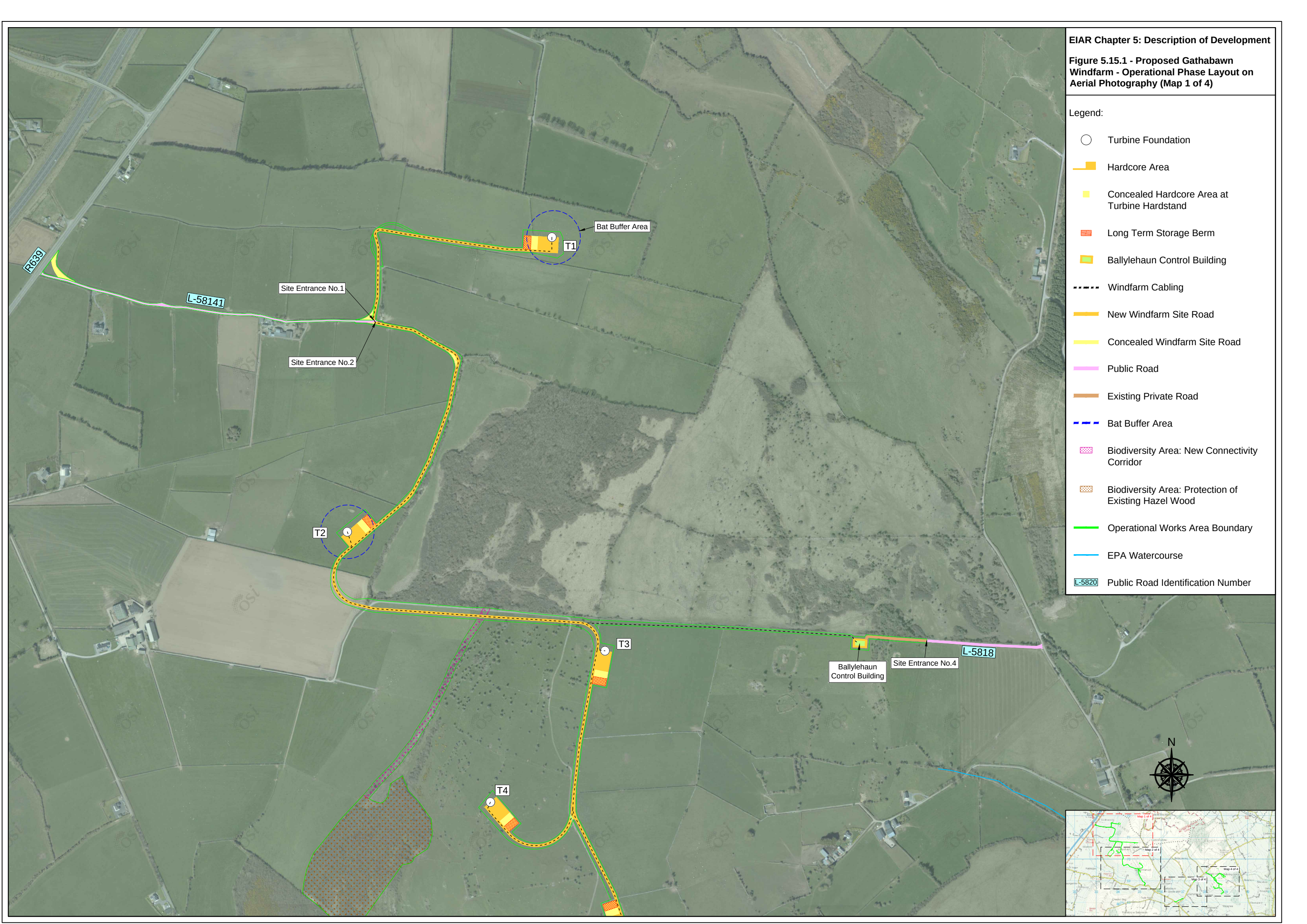


Figure 5.15.2 - Proposed Gathabawn Windfarm - Operational Phase Layout on Aerial Photography (Map 2 of 4)

Legend:

- Turbine Foundation
- Hardcore Area
- Concealed Hardcore Area at Turbine Hardstand
- Long Term Storage Berm
- Windfarm Cabling
- New Windfarm Site Road
- Concealed Windfarm Site Road
- Upgraded Existing Private Roads
- Met Mast
- Bat Buffer Area
- Biodiversity Area: New Connectivity Corridor
- Biodiversity Area: Protection of Existing Hazel Wood
- Operational Works Area Boundary
- EPA Watercourse
- L-5820 Public Road Identification Number



Figure 5.15.3 - Proposed Gathabawn Windfarm - Operational Phase Layout on Aerial Photography (Map 3 of 4)

Legend:

- Concealed Hardcore Area
- Operational Works Area Boundary
- EPA Watercourse
- Public Road Identification Number



Figure 5.15.4 - Proposed Gathabawn Windfarm - Operational Phase Layout on Aerial Photography (Map 4 of 4)

Legend:

-  Turbine Foundation
-  Hardcore Area
-  Concealed Hardcore Area at Turbine Hardstand
-  Long Term Storage Berm
-  Windfarm Cabling
-  New Windfarm Site Road
-  Concealed Windfarm Site Road
-  Upgraded Existing Private Roads
-  LiDAR
-  Public Road
-  Bat Buffer Area
-  Biodiversity Area: Habitat Creation
-  Operational Works Area Boundary
-  EPA Watercourse
-  Public Road Identification Number



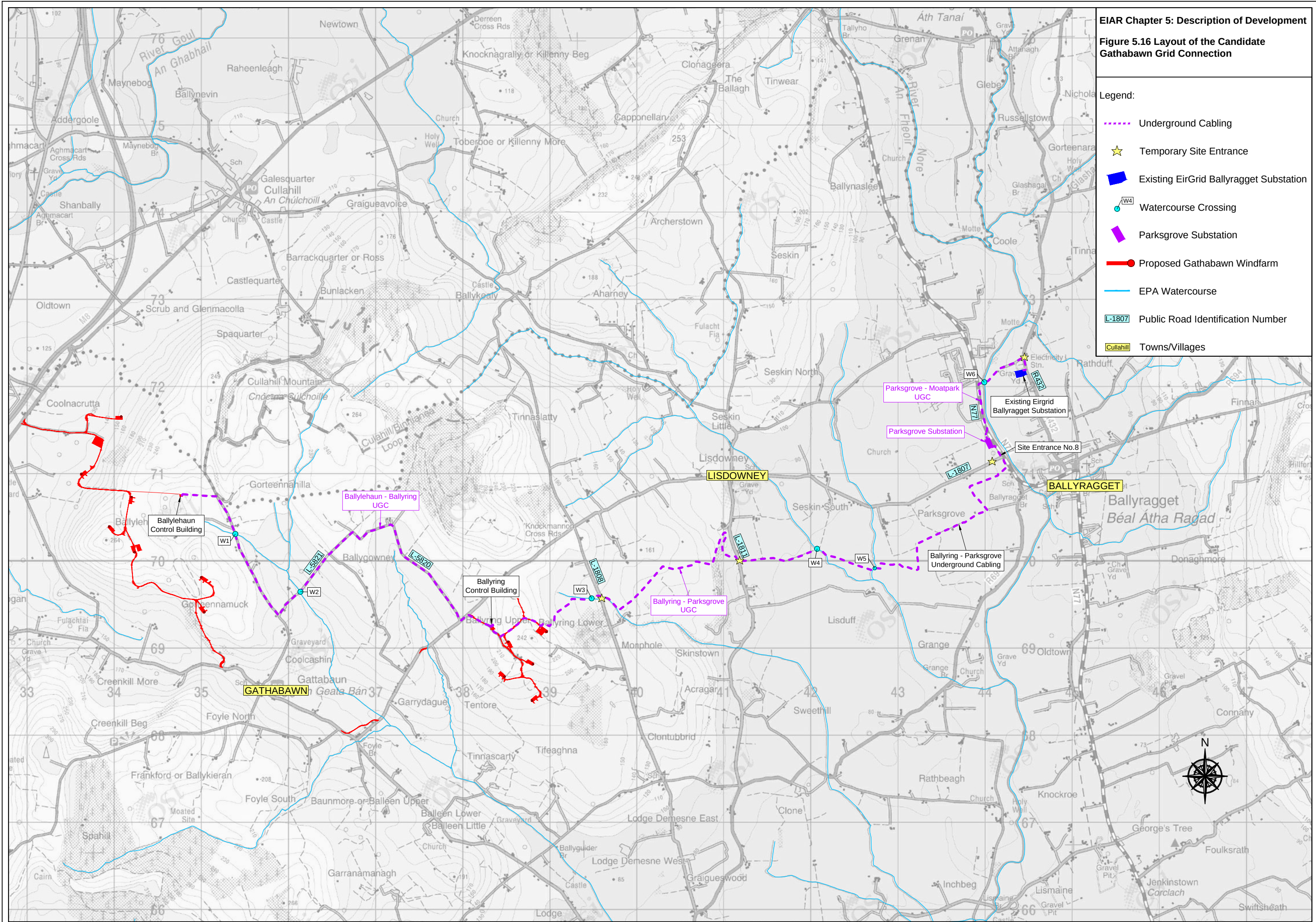


Figure 5.17 - Parksgrove Substation - Plan and Elevations

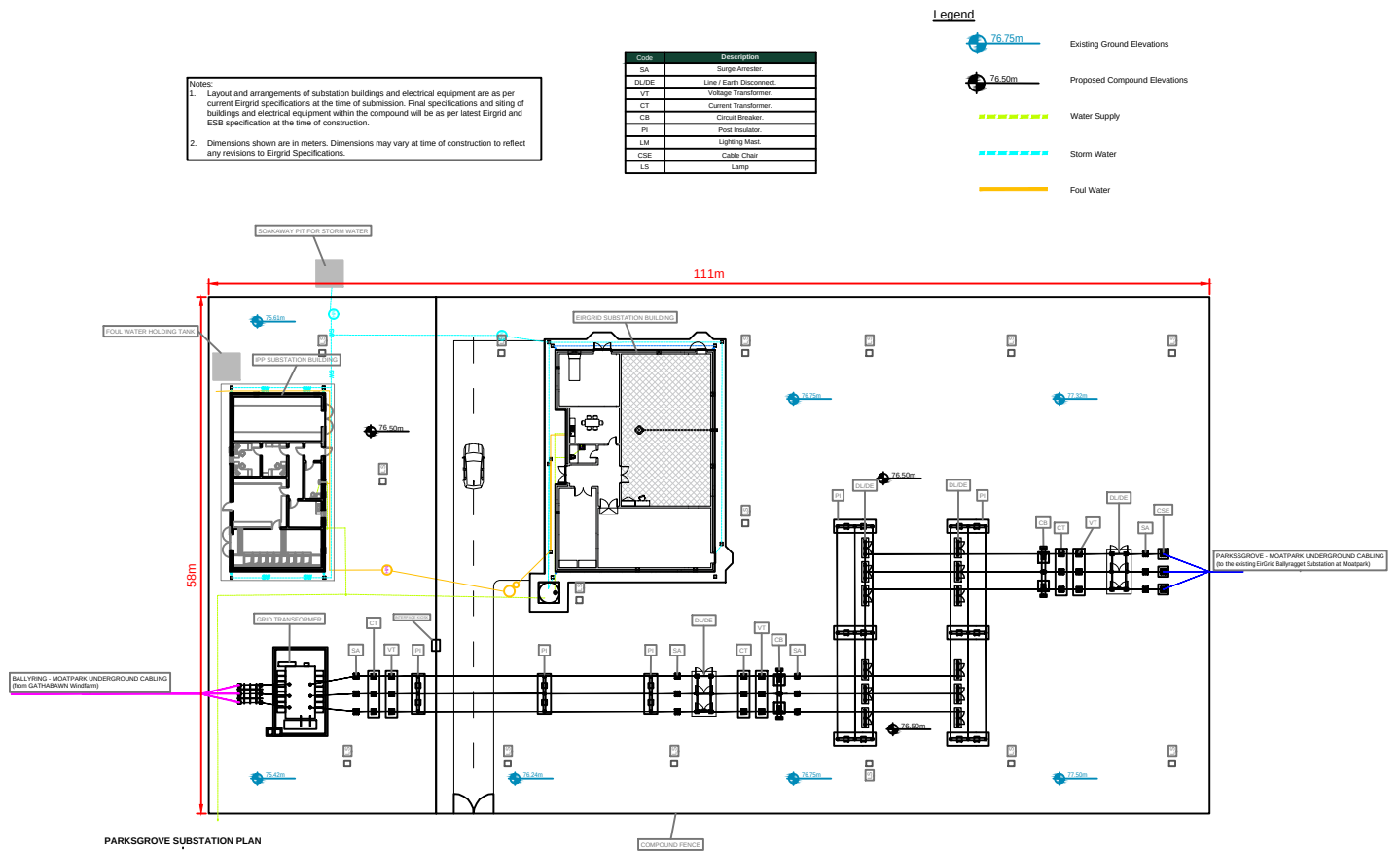
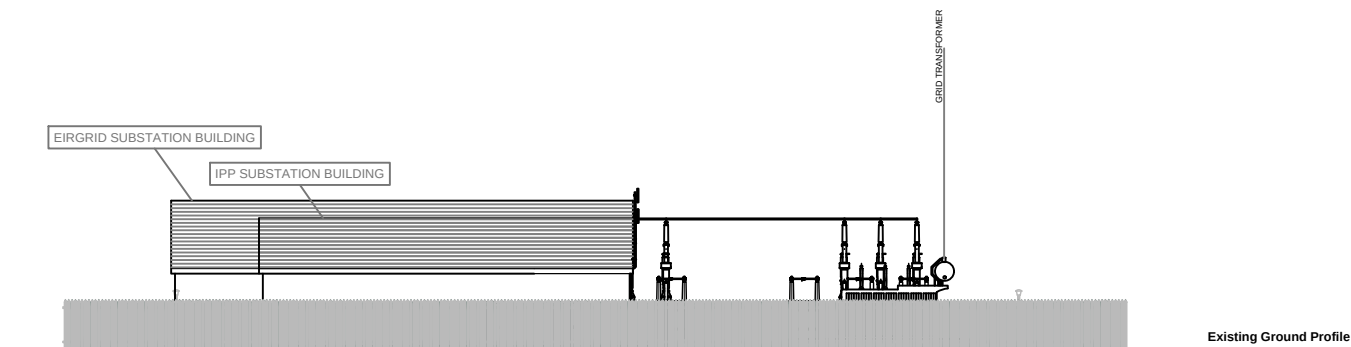
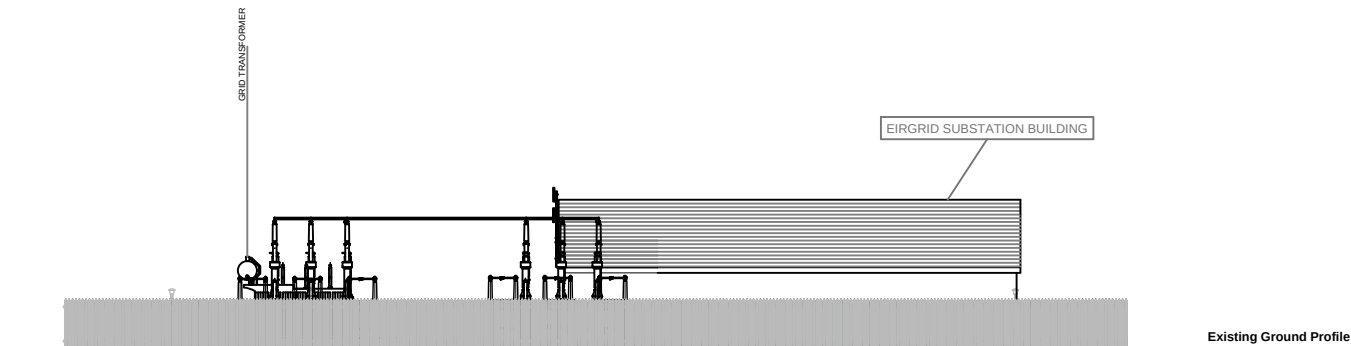
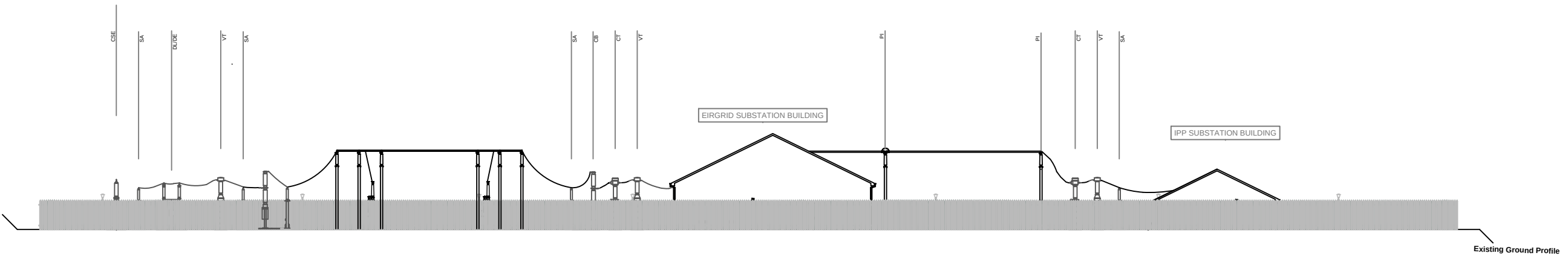
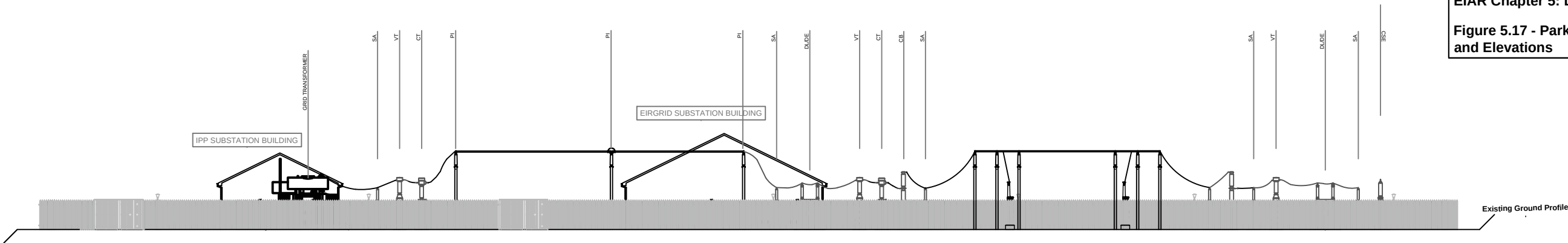
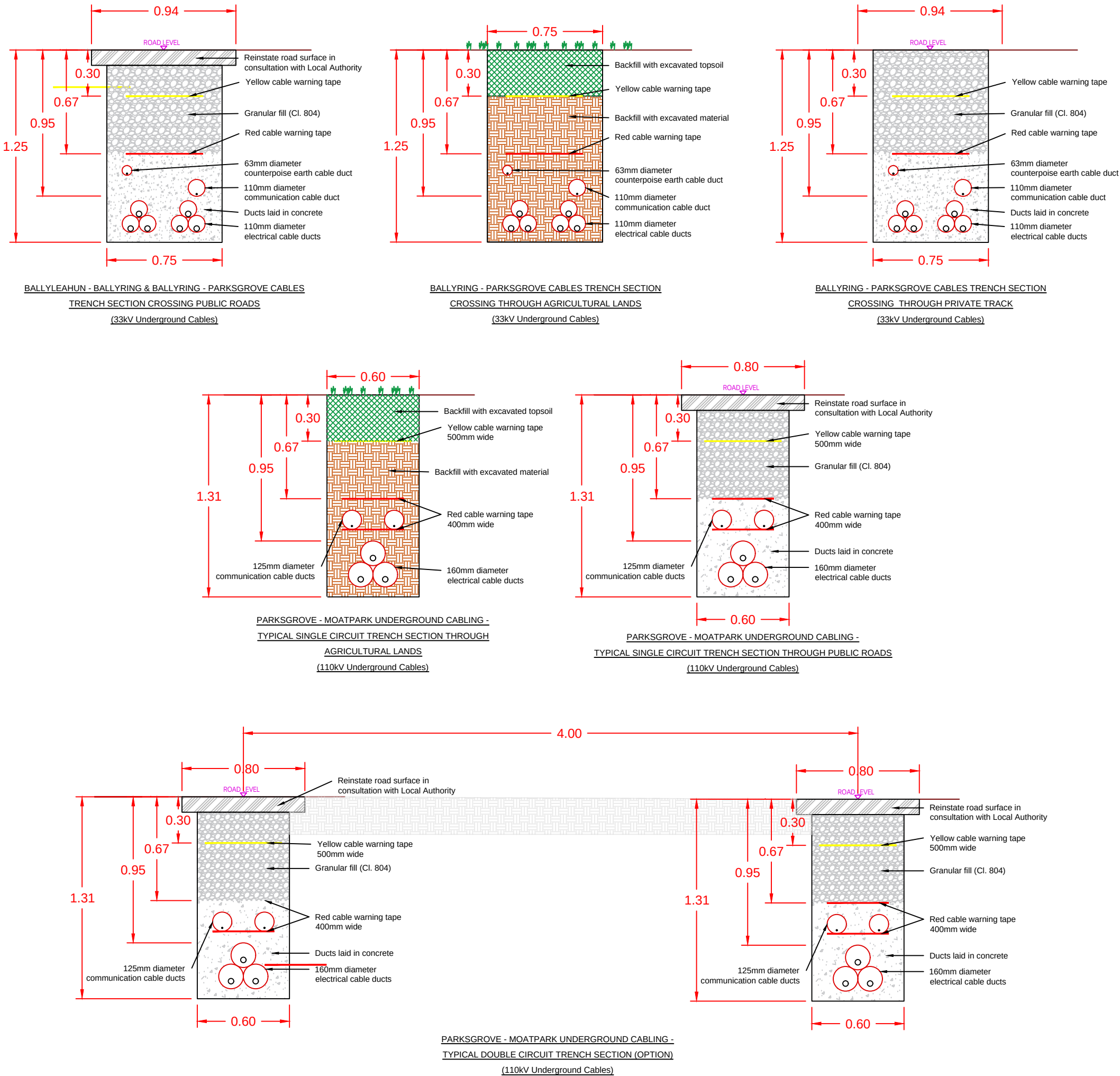
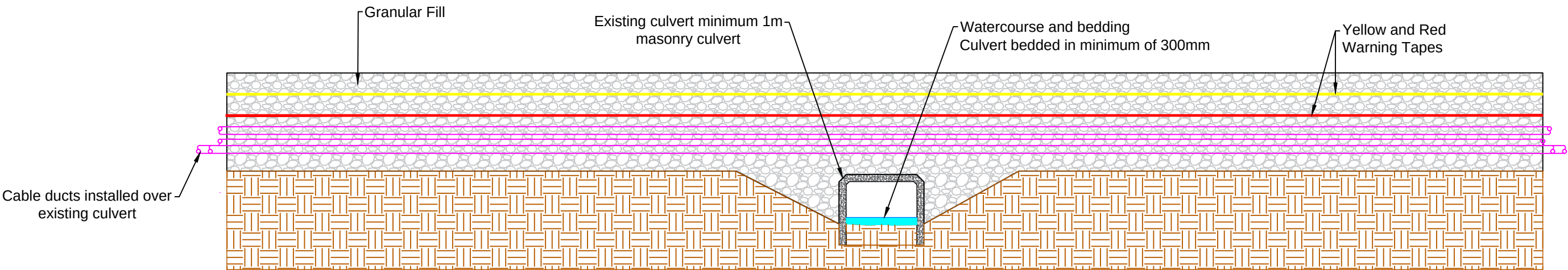


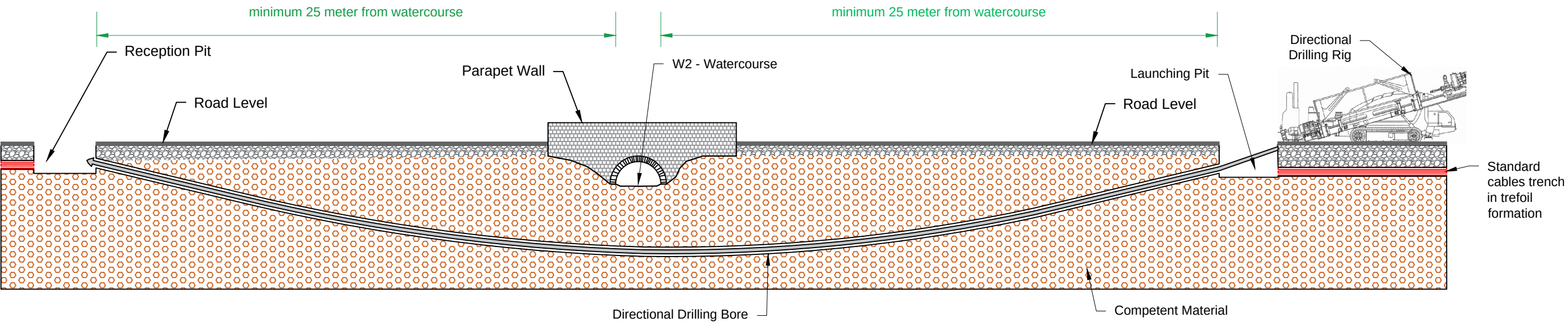
Figure 5.18 - Underground Cabling (UGC) - Cabling Cross Sections

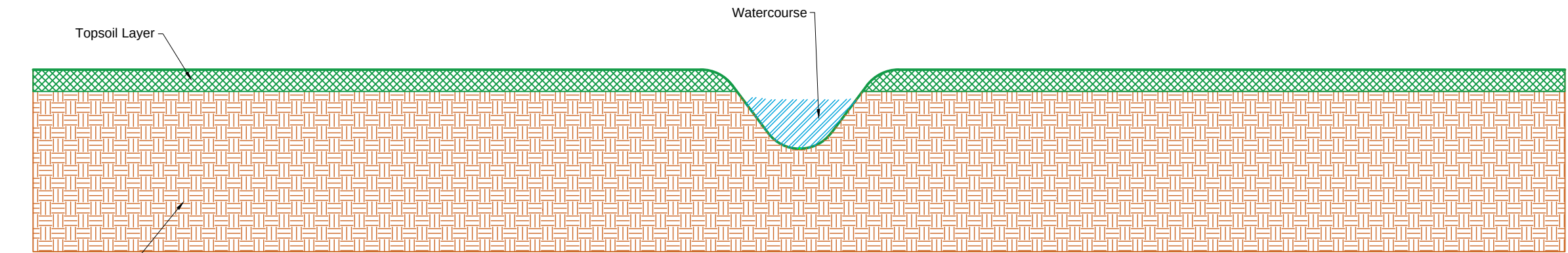


Cross section of cables to be installed in the public road above the existing culvert at W1. No instream works

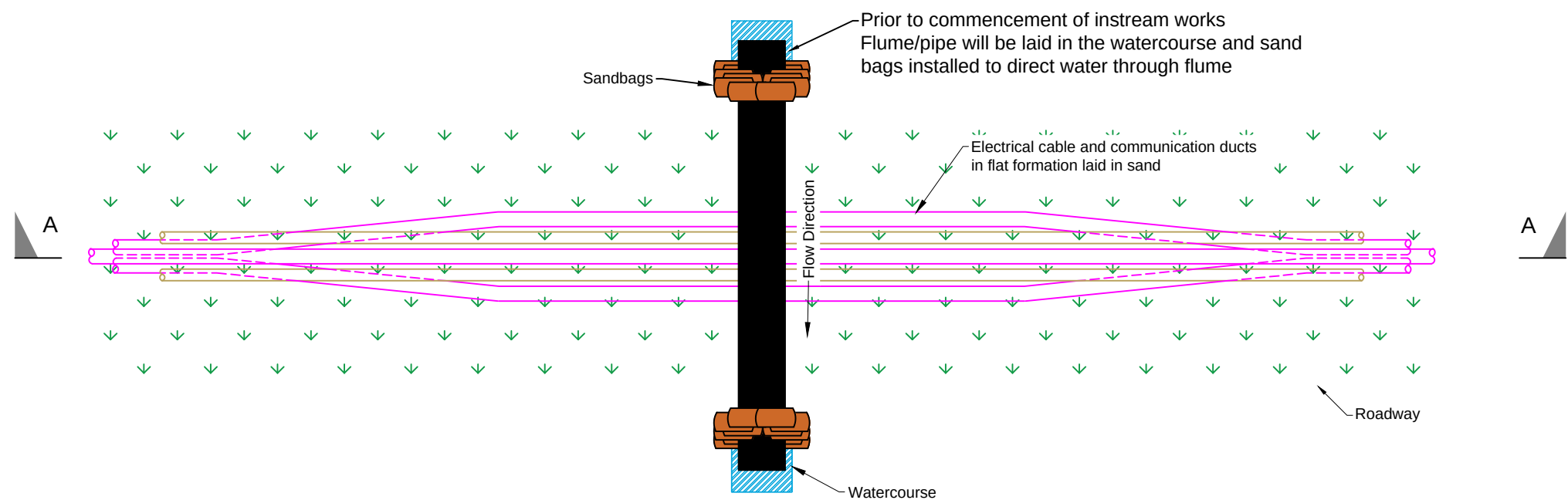


Cross section view of directional drilling at the W2 - Gorteenahilla Stream

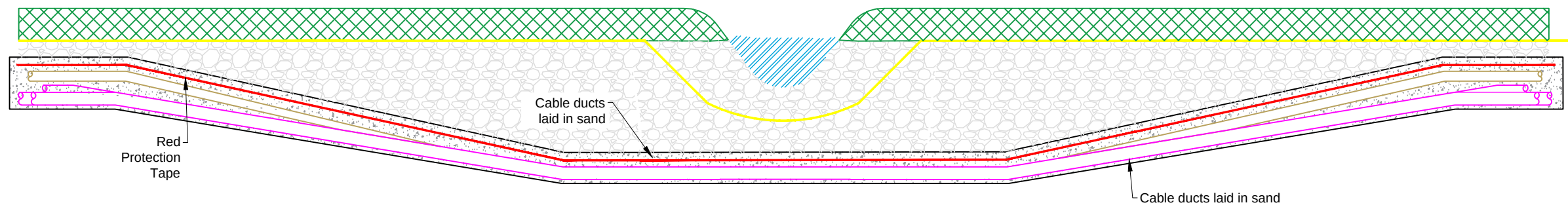




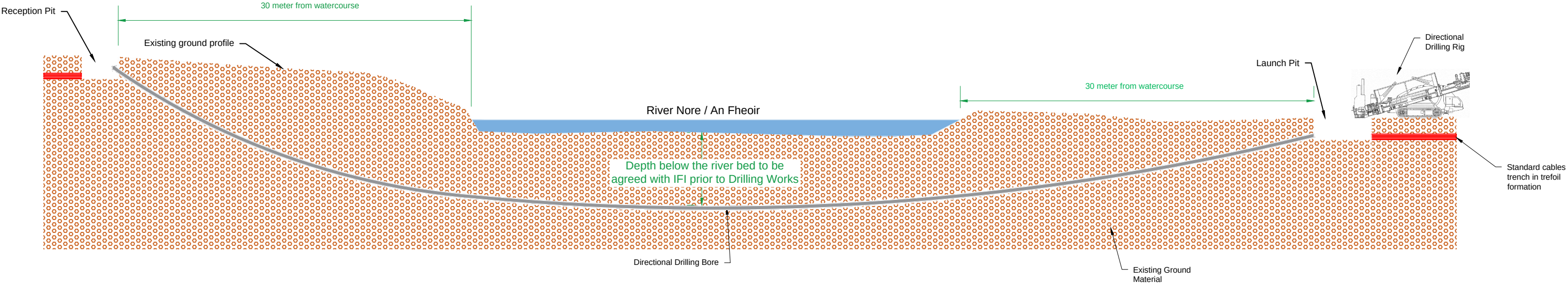
Cross Section View A - A of watercourse type crossing - Existing view



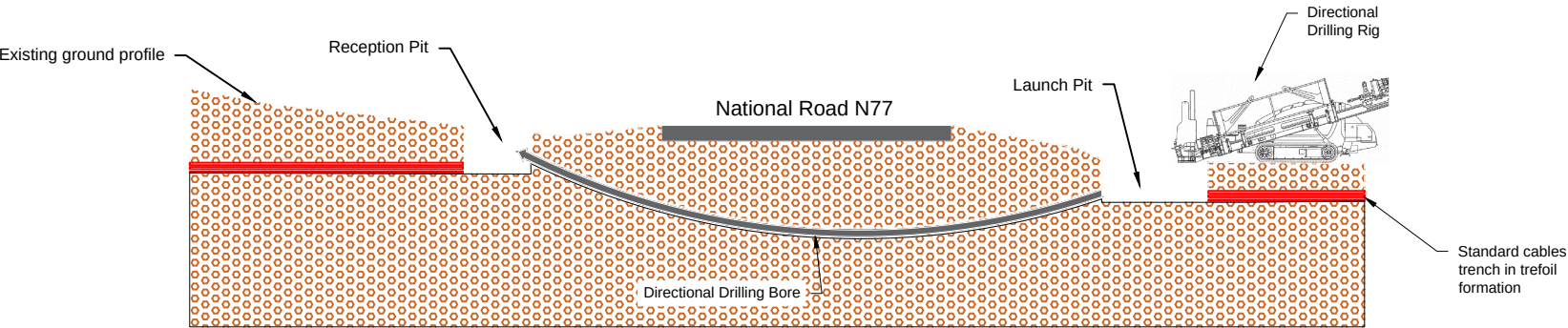
Plan View of watercourse crossing type - Cables trench under watercourse



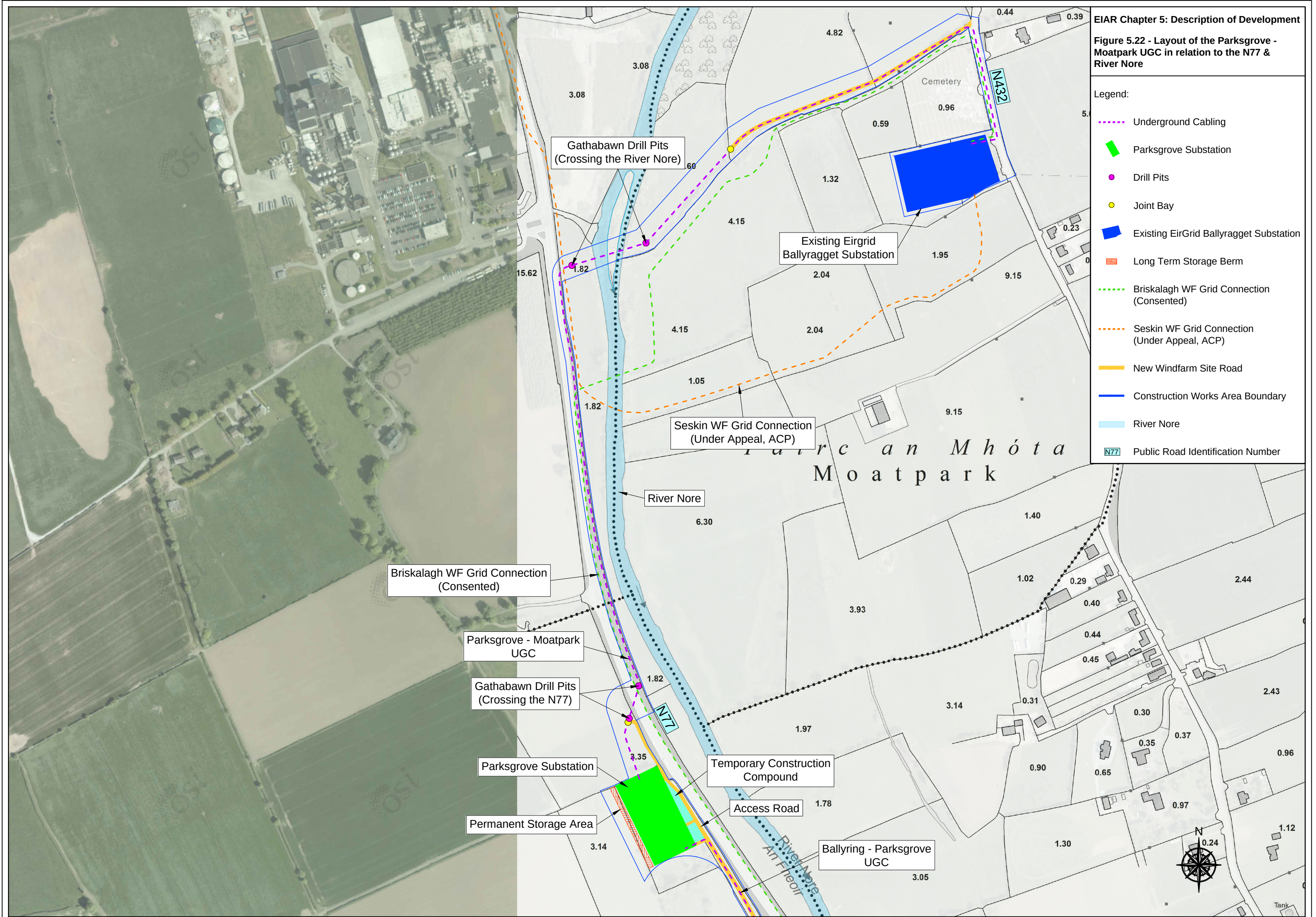
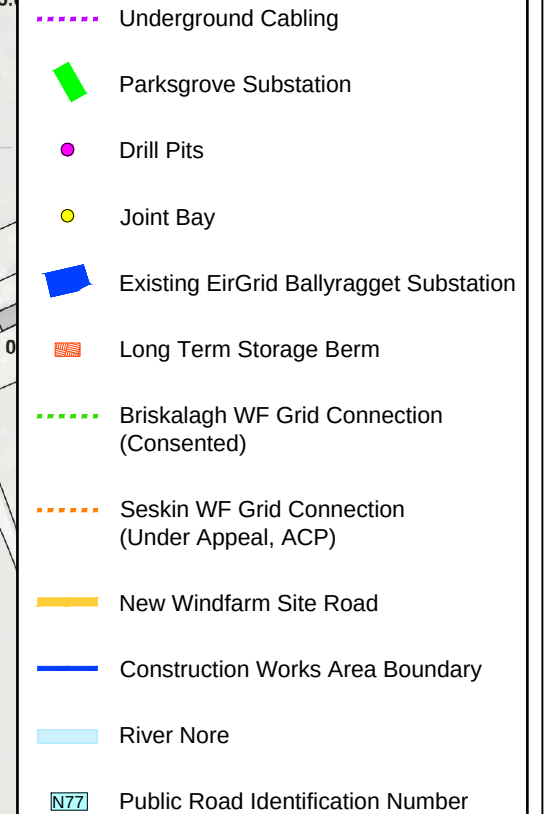
Cross Section A - A of watercourse crossing type - Cables trench under watercourse

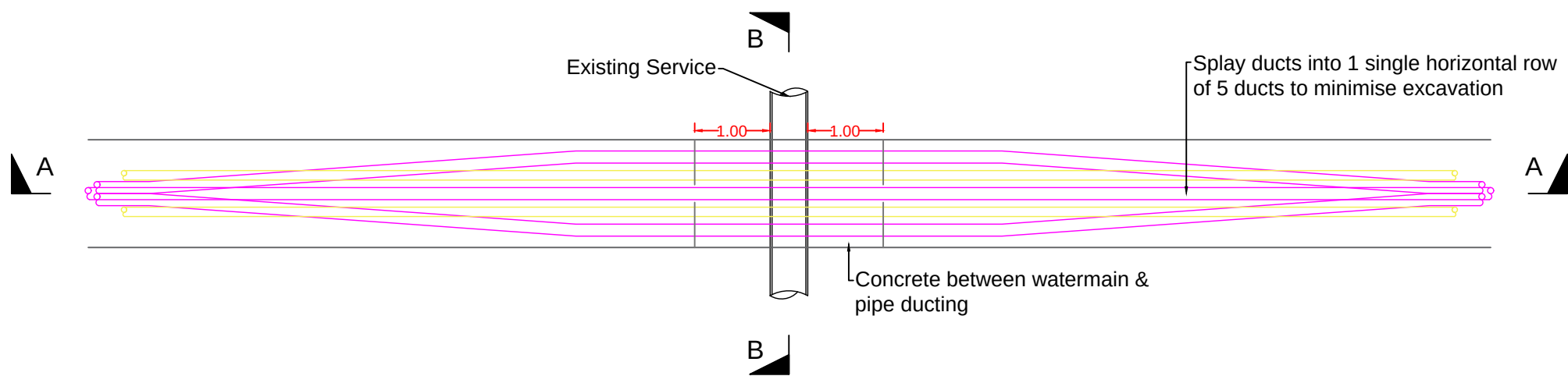


Cross section view of directional drilling at the W3 - Rathduff Stream

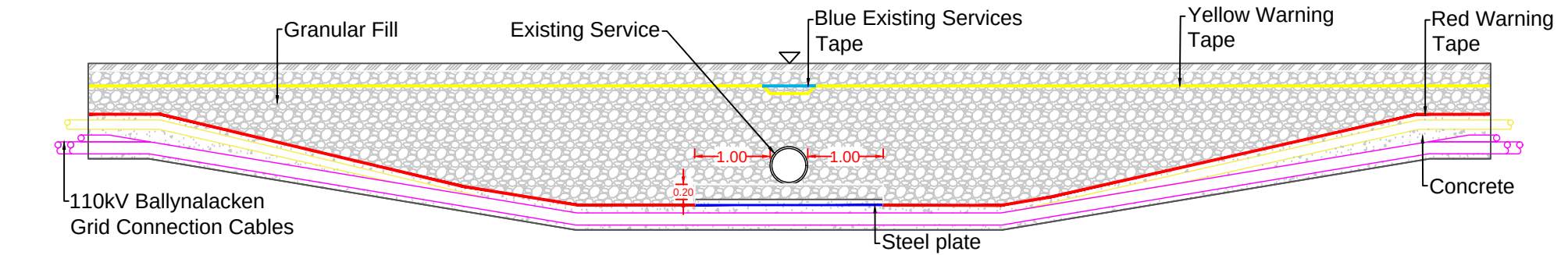


Cross section view of directional drilling at the W3 - Rathduff Stream



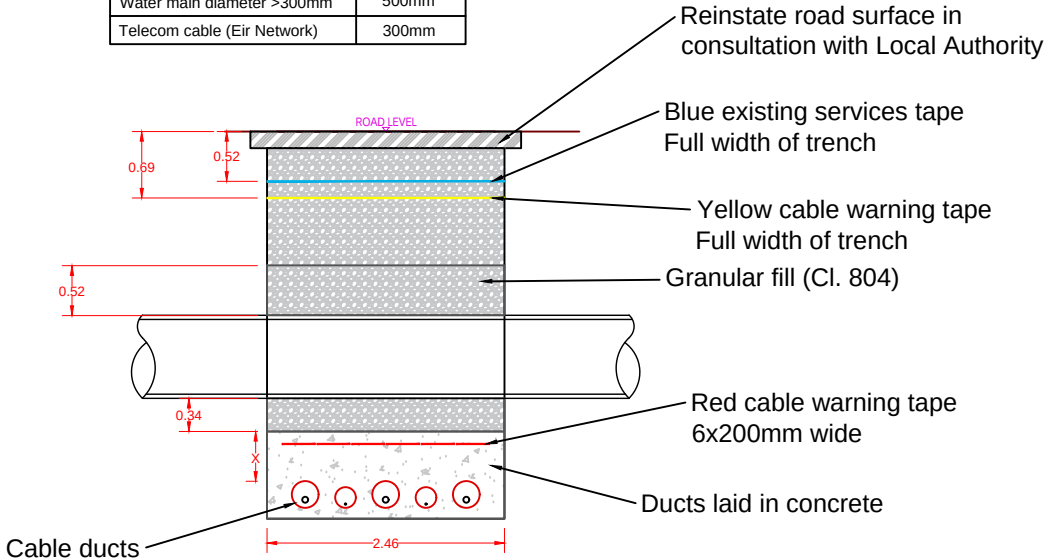


TYPICAL CROSS SECTION UNDER EXISTING UNDERGROUND SERVICE



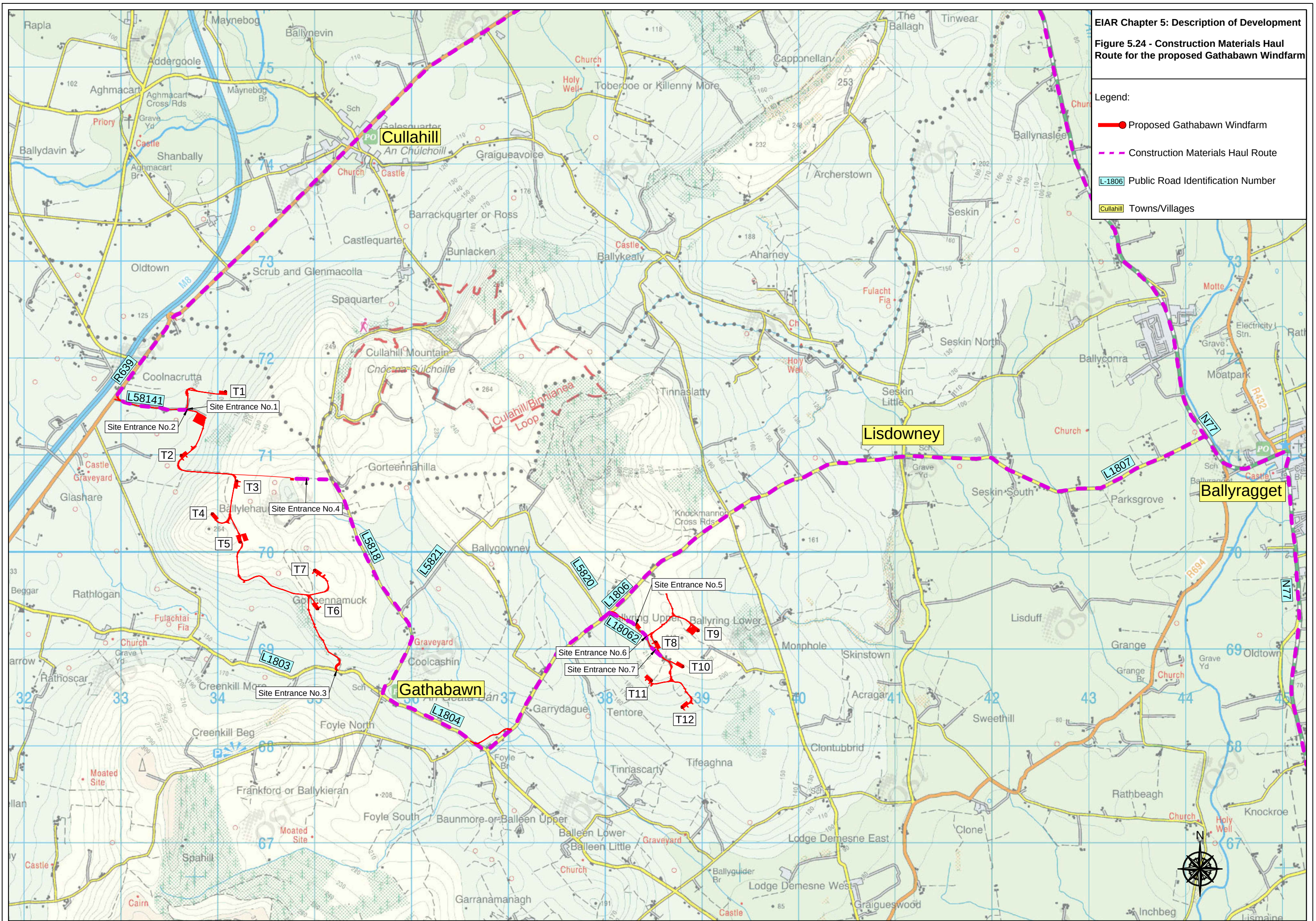
TYPICAL CROSS SECTION UNDER EXISTING UNDERGROUND SERVICE - SECTION A-A

Existing Service	X
Water main diameter <=300mm	300mm
Water main diameter >300mm	500mm
Telecom cable (Eir Network)	300mm



TYPICAL CROSS SECTION UNDER EXISTING UNDERGROUND SERVICE - SECTION B-B

 Proposed Gathabawn Windfarm
 Construction Materials Haul Route
 L-1806 Public Road Identification Number
 Cullahill Towns/Villages



ElAR Chapter 5: Description of Development

Figure 5.25 - Construction Materials Haul Route for the Candidate Gathabawn Grid Connection

Legend:

- Proposed Gathabawn Windfarm
- Candidate Gathabawn Grid Connection
- Parksgrove Substation
- Existing EirGrid Ballyragget Substation
- Construction Materials Haul Route
- Public Road Identification Number
- Towns/Villages

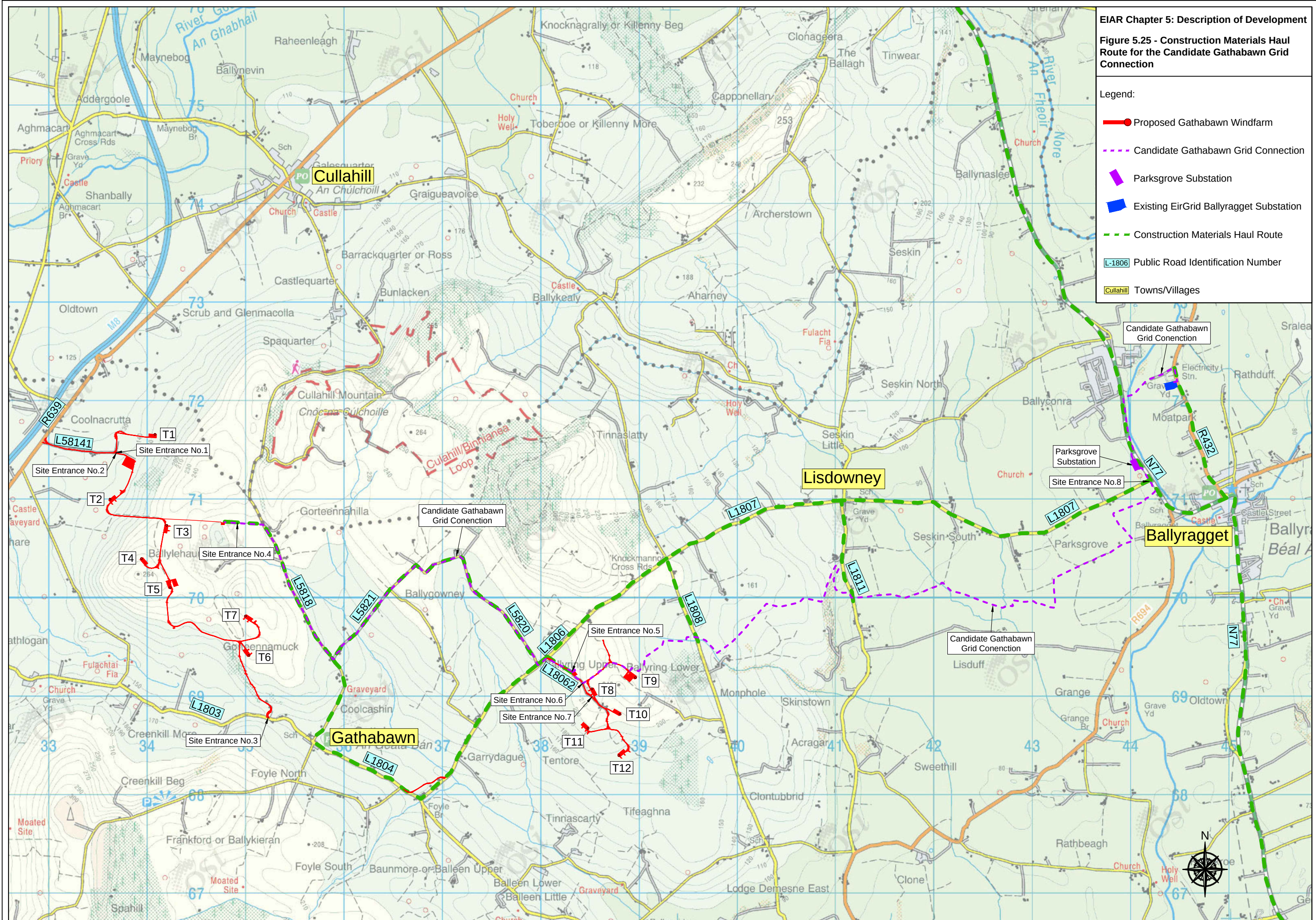


Figure 5.26: Proposed Gathabawn Windfarm: Other Projects Scoped-In

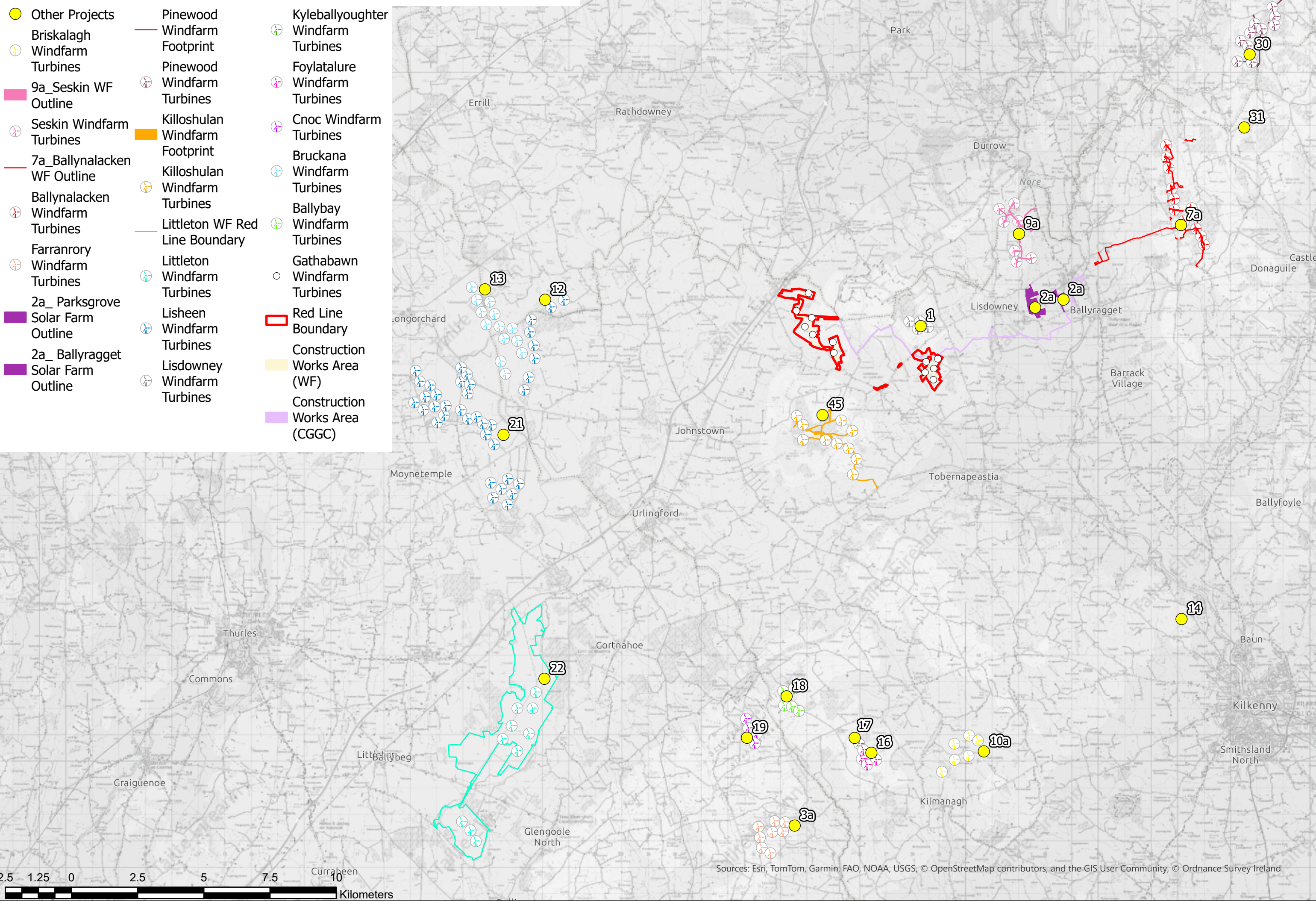


Figure 5.27.1: Candidate Gathabawn Grid Connection: Other Projects Scoped-In

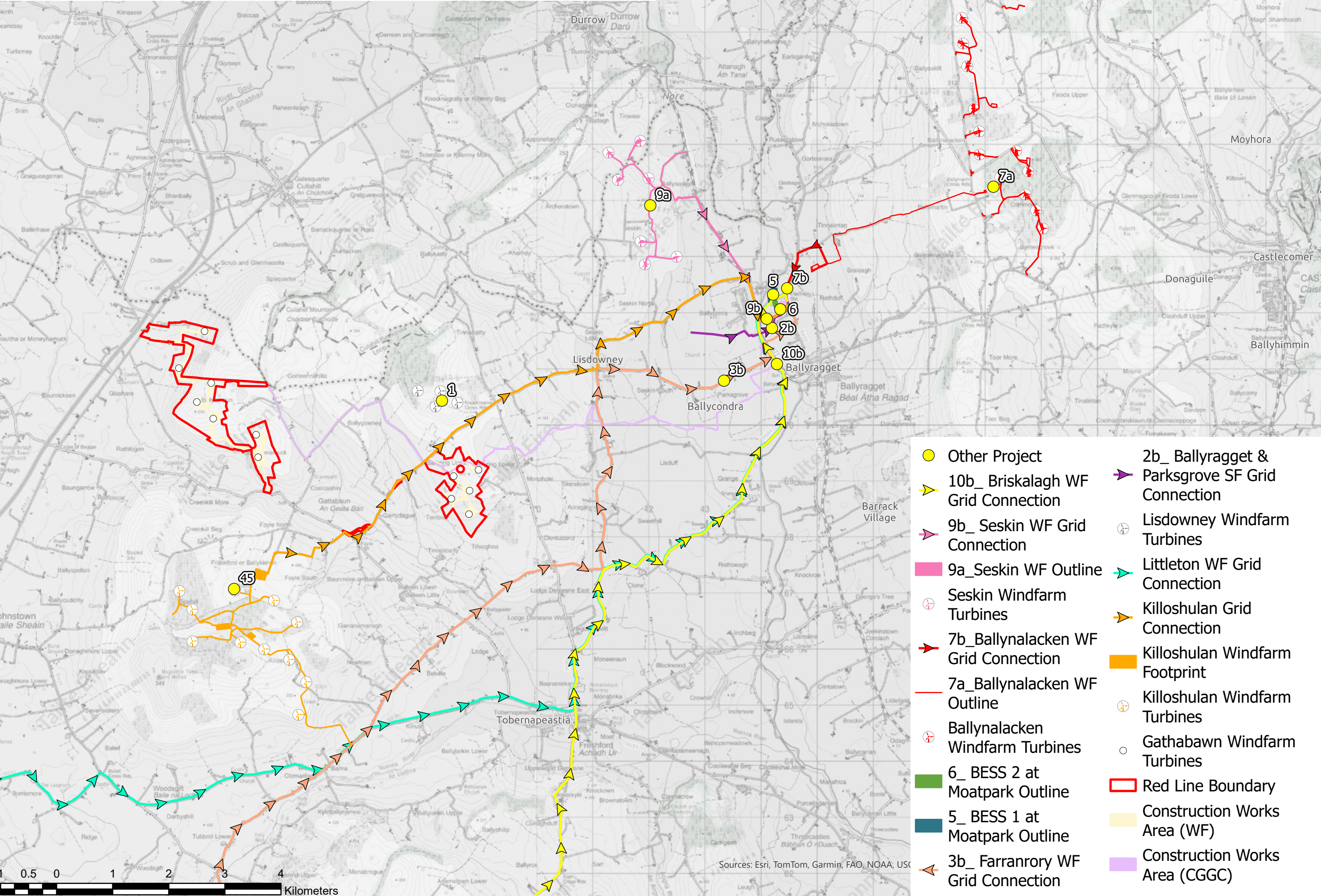
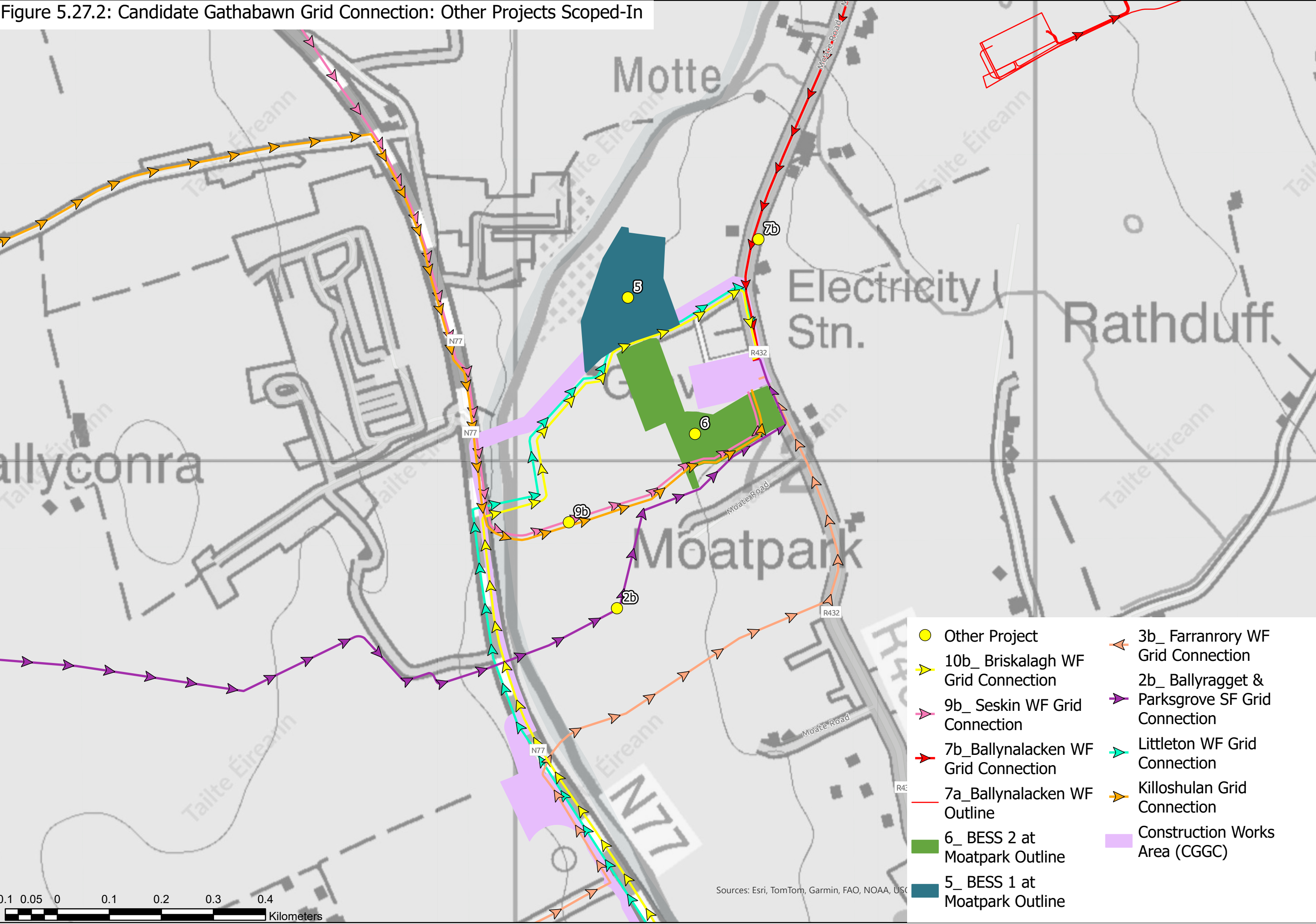


Figure 5.27.2: Candidate Gathabawn Grid Connection: Other Projects Scoped-In



Appendix to Chapter 5: Description of the Development

Appendix 5.1: Site Photos and Drone Captures of the Gathabawn Windfarm



Photo 1 – Facilitating Works FW1 in agricultural grassland



Photo 2 – Section of the local road L58141 subject to widening on the south (right) side (FW2)



Photo 3 – Section of the local road L58141 subject to widening on the north (left) side (FW2)



Photo 4 – Section of the local road L58141 subject to widening on the south (right) side (FW2)



Photo 5 - Site Entrance 1 looking north and Location of Facilitating Works FW3 and FW4



Photo 6 – Access road to T1 and Location of Facilitating Works FW5



Photo 7 - Location of Turbine T1



Photo 8 - Site Entrance 2 looking east and Location of Facilitating Works FW3 and FW4



Photo 9 – Location of Construction Compound No. 1 and Blade Set Down Area (FW6)



Photo 10 – Access road to T2



Photo 11 - Location of Turbine T2



Photo 12 – Access road to T3



Photo 13 – Location of Biodiversity Connectivity Corridor



Photo 14 – Location of Biodiversity Connectivity Corridor



Photo 15 – Biodiversity Enhancement Area



Photo 16 - Location of Turbine T3



Photo 17 – Access road to T4



Photo 18 - Location of Turbine T4



Photo 19 – Access road to T5



Photo 20 - Location of Turbine T5 and Borrow Pit No. 1



Photo 21 – Access road to T6



Photo 22 – Access road to T6



Photo 23 – Location of Turbine T6



Photo 24 – Access road to T7



Photo 25 - Location of Turbine T7



Photo 26 – Site Entrance 3 looking north



Photo 27 – Facilitating Works FW7 in agricultural grassland



Photo 28 – Site Entrance 4 looking west



Photo 29 – Location of Ballylehaun Control Building



Photo 30 – Facilitating Works FW8 in agricultural grassland



Photo 31 – Facilitating Works FW9 in agricultural grassland



Photo 32 – Location of Facilitating Works FW10 in agricultural grassland



Photo 33 – Section of the local road L18062 subject to widening on the north (left) side (FW11)



Photo 34 – Section of the local road L18062 subject to widening on the north (left) side (FW11)



Photo 35 – Drainage channel D01



Photo 36 - Location of Site Entrance No.5, Construction Compound No. 2 and Ballyring Control Building



Photo 37 – Site Entrance 6 looking northeast



Photo 38 – Site Entrance 7 looking southeast and Facilitating Works location FW12



Photo 39 - Location of Turbine T8



Photo 40 – Access road to T9



Photo 41 - Location of Turbine T9 and Borrow Pit No. 2



Photo 42 - Location of Turbine T10



Photo 43 – Drainage channel D02



Photo 44 – Access road to T11



Photo 45 - Location of Turbine T11



Photo 46 – Access road to T12



Photo 47 - Location of Turbine T12

Appendix to Chapter 5: Description of the Development

Appendix 5.2: Site Photos of the Candidate Gathabawn Grid Connection



Photo 1 – Location of the Ballylehaun-Ballyring Underground Cabling (UGC) in the L5818 local road



Photo 2 – Location of the Ballylehaun-Ballyring UGC watercourse crossing (W1) in L5818 local road



Photo 3 – Location of the Ballylehaun-Ballyring UGC in the L5821 local road



Photo 4 – Location of the Ballylehaun-Ballyring UGC watercourse crossing (W2) in the L5820 local road



Photo 5 – Location of the Ballylehaun-Ballyring UGC in the L5820 local road



Photo 6 – Location of the Ballyring-Parksgrove UGC in Ballyring Lower townland



Photo 7 – Location of the Ballyring-Parksgrove UGC Lismaine Stream crossing (W3)



Photo 8 – Location of the Ballyring-Parksgrove UGC L1808 local road crossing



Photo 9 – Location of the Ballyring-Parksgrove UGC in Lisdowney townland



Photo 10 – Location of the Ballyring-Parksgrove UGC L1811 local road crossing



Photo 11 – Location of the Ballyring-Parksgrove UGC Lisdowney Stream crossing (W4)



Photo 12 – Location of the Ballyring-Parksgrove UGC Ballyconra Steam crossing (W5)



Photo 13 – Location of the Ballyring-Parksgrove UGC in Grange townland



Photo 14 – Location of the Ballyring-Parksgrove UGC in Ballyconra townland



Photo 15 – Location of the Ballyring-Parksgrove UGC in Parksgrove townland



Photo 16 – Location of the Ballyring-Parksgrove UGC L1807 local road crossing



Photo 17 – Location of the Ballyring-Parksgrove UGC in Parksgrove townland in lane to Parksgrove Substation



Photo 18 – Location of the Parksgrove Substation in Parksgrove townland



Photo 19 – Location of the Parksgrove-Moatpark UGC N77 national road horizontal directional drill



Photo 20 – Location of the Parksgrove-Moatpark UGC in Ballyconra townland



Photo 21 – Location of the Parksgrove-Moatpark UGC River Nore horizontal directional drill (W6)



Photo 22 – Location of the Parksgrove-Moatpark UGC in Moatpark townland



Photo 23 – Location of the Parksgrove-Moatpark UGC in the R432 regional road



Photo 24 – Location of the Existing Eirgrid Ballyragget Substation in Moatpark townland

Appendix to Chapter 5: Description of the Development

Appendix 5.3: Turbine Delivery Route Assessment

FW1 - Facilitating Works

Legend:

Wheel Track

Temporary New Windfarm Site Road

0.94

Regional Road R639

Fenceline

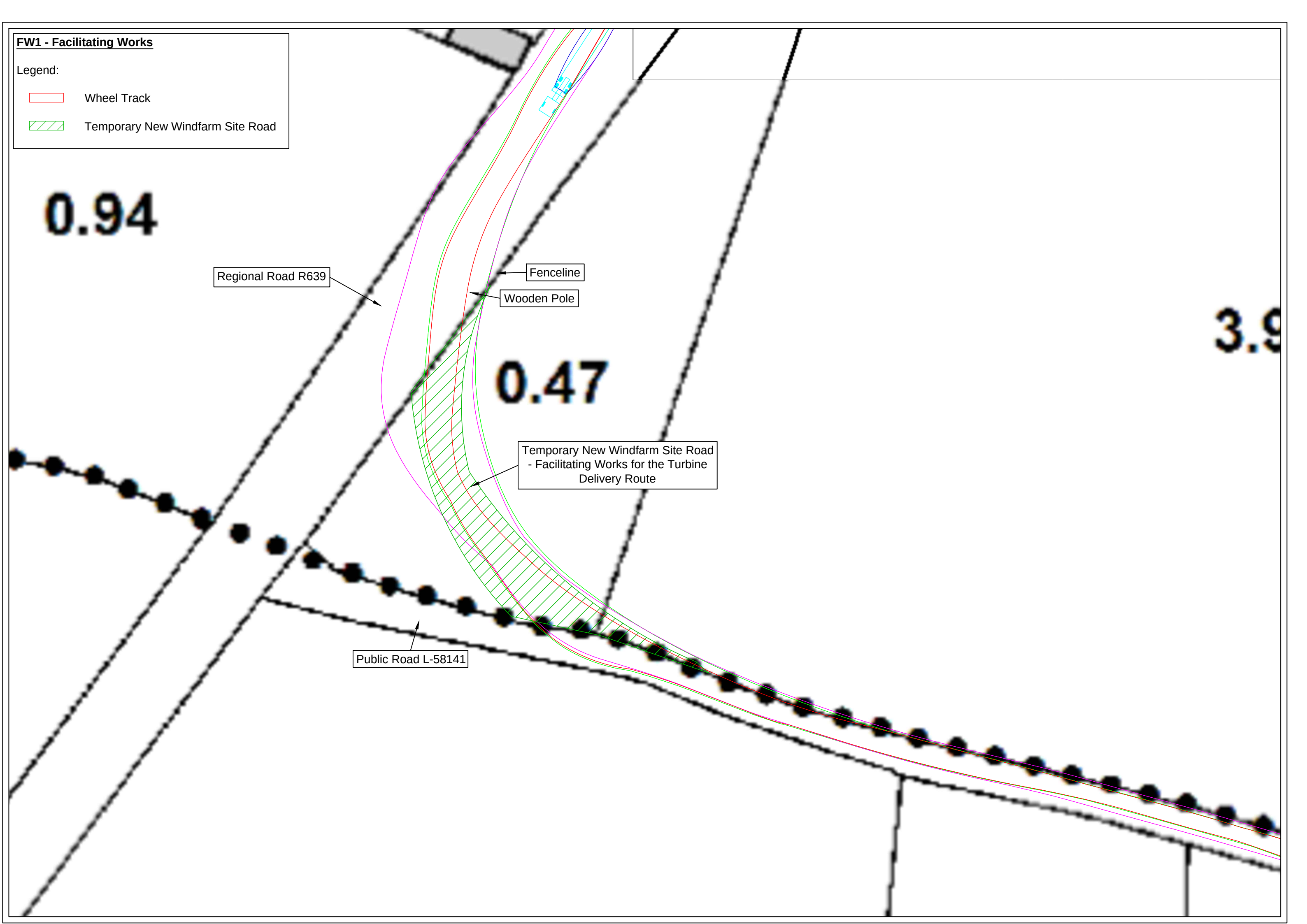
Wooden Pole

0.47

3.9

Temporary New Windfarm Site Road
- Facilitating Works for the Turbine
Delivery Route

Public Road L-58141



FW7 - Facilitating Works

Legend:

Wheel Track

Temporary New Windfarm Site Road

1.25

Temporary New Windfarm Site Road
- Facilitating Works for the Turbine
Delivery Route

Hedgeline

Public Road L-1803

Wall

Sc

FW8 - Facilitating Works

Legend:

- Wheel Track
- Temporary New Windfarm Site Road

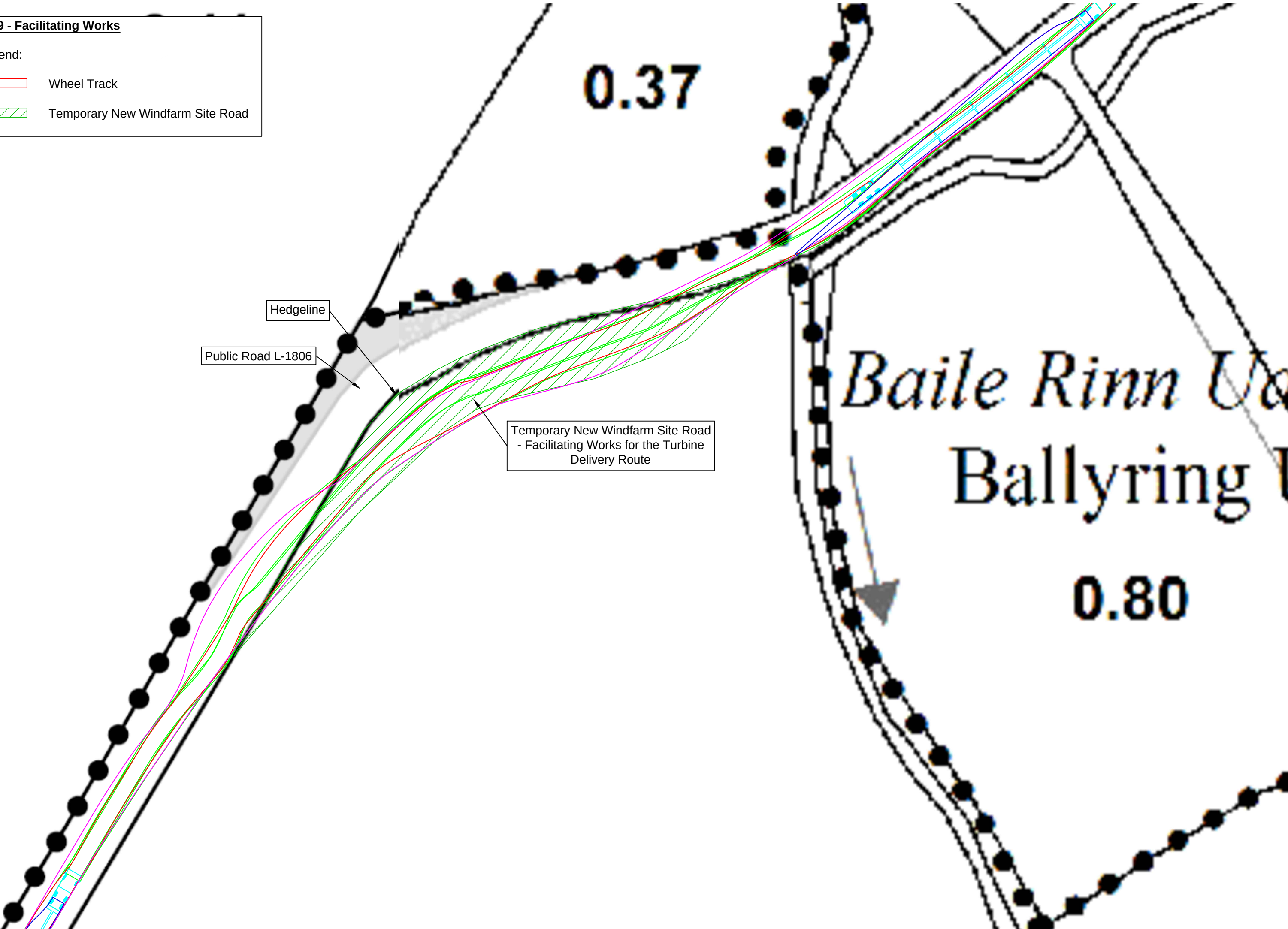


FW9 - Facilitating Works

Legend:

Wheel Track

Temporary New Windfarm Site Road



FW10 - Facilitating Works

Legend:

- Wheel Track
- Temporary New Windfarm Site Road

B a i l y

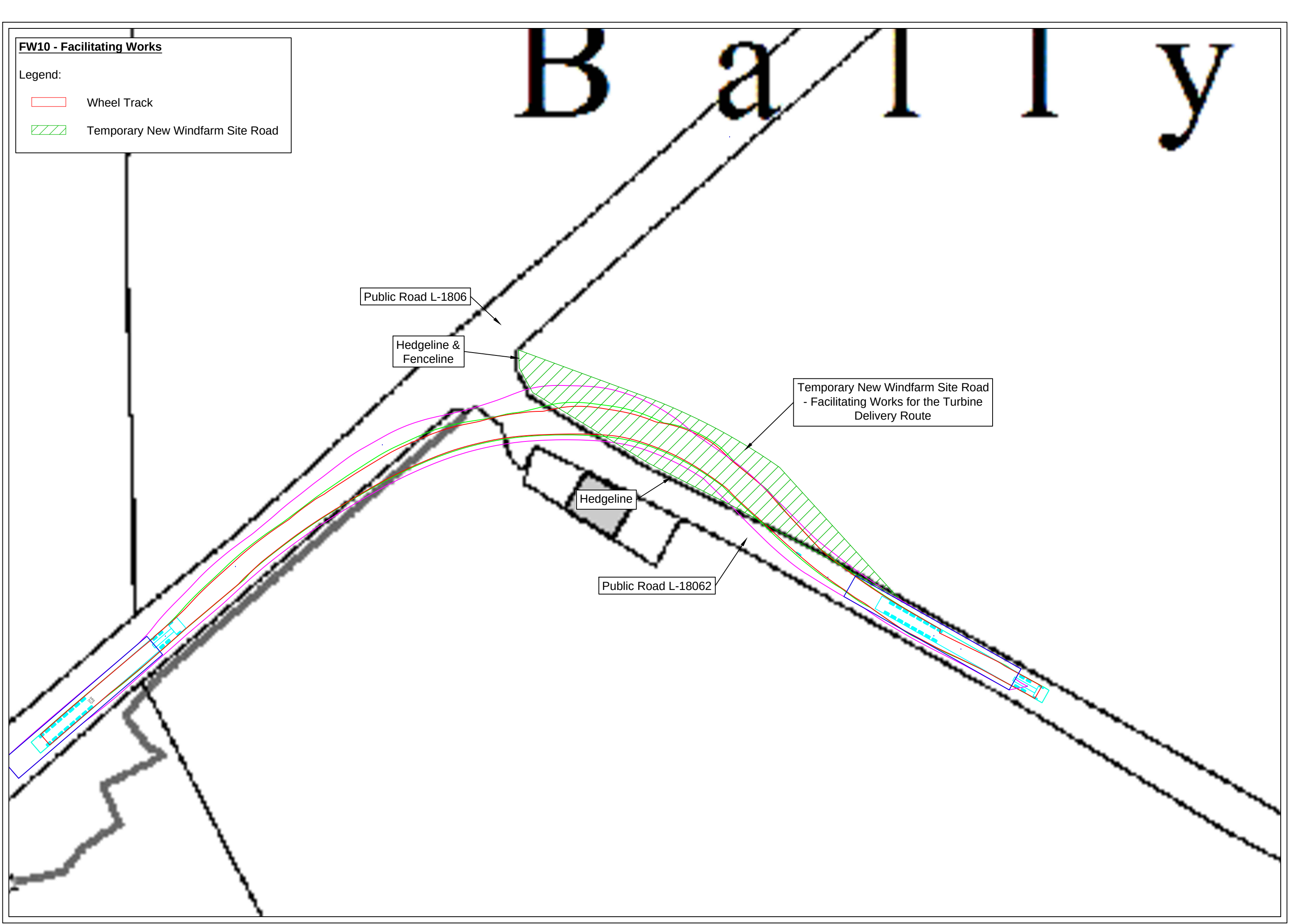
Public Road L-1806

Hedgeline &
Fenceline

Temporary New Windfarm Site Road
- Facilitating Works for the Turbine
Delivery Route

Hedgeline

Public Road L-18062



Appendix to Chapter 5: Description of the Development

Appendix 5.4: Other Projects Considered for Cumulative Effects

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A5.4 Other Projects Considered for Cumulative Effects

A5.4.1 Details of Other Projects Considered for Cumulative Effects

≡	Name	Details
1	Lisdowney Wind Farm	Status: Operational 4 wind turbines with a maximum blade tip height of 121.5m, a meteorological mast, electrical control transformer building, borrow pit and associated site roads. Location: Lisdowney, Ballyragget, Co. Kilkenny
2a	Parksgrove Solar Farm	Status: Operational A 17.3 hectare solar farm, including a control room and all associated works. The solar farm will have an operational life of 40 years Location: Parksgrove, Ballyragget, Co. Kilkenny
		Status: Operational A 39.6ha solar farm including an onsite 38 kV substation and all associated ancillary development works. Location: Ballyconra, Ballyragget, Co. Kilkenny
2b	Parksgrove Solar Farm Grid Connection	Status: Operational Installation of a 33kV network connection between the solar farms comprising: c. 921m of overhead line and 9 No. wooden poles; onward connection of said approved solar farms to Ballyragget 38kV Substation by installation of a 38kV cable comprising c. 786m of underground cable and c. 395m of overhead line on 5 No. wooden poles; amendments to solar farm comprising removal of substation and replacement with solar panels; amendments to the layout of the substation, and all associated site works. Location: Ballyconra, Parksgrove and Moatpark, Ballyragget, Co. Kilkenny
3a	Farranrory Wind Farm	Status: Under Construction 9 turbines with maximum overall ground to blade tip height of up to 156.5 metres, associated foundations and hardstand areas; new site entrances, upgrade of existing site entrances; new on-site 38KV substation, provision of LiDAR, and all ancillary site works. Location: Farranrory Upper, Farranrory Lower, Coolnashinnagh & Gortnasmuttaun, Ballingarry, Co. Tipperary 38kV underground electrical cabling and all other ancillary works including joint bays, culverts, maker posts and all associated development. Location: Killeen, Rathmacan, Gortnagap, Kyleballyoughter, Courtstown, Raheen, Lates, Curraghscarteen, Canvarstown, Trenchardstown, Lisnalea, Hillend, Coldharbour, Killahy, Greenhill, Lughinny, Carddockstown, Tubbrid Lower, Clomantagh Lower, Barna, Newtown, Kilrush, Belville, Lodge, Garranamanagh, Balleen Lower, Lodge, Tifeaghna (Browne), Lodge Demesne West, Lodge Demesne East, Clontubbrid, Clone, Acragar, Skinstown, Liddowney, Seskin South, Parksgrove, Ballyragget & Moatpark, Co. Kilkenny; Coolnashinnagh, Ardragh, Gortfree, Bolakeale, Co. Tipperary
3b	Farranrory Wind Farm Grid Connection	Status: Under Construction Installation of 31.4 km of a 38kV underground grid connection comprising cable ducting and associated electrical cabling and all other ancillary works including joint bays, culverts, maker posts and all associated development. Location: Killeen, Rathmacan, Gortnagap Kyleballyoughter, Courtstown, Raheen, Lates, Curraghscarteen, Canvarstown, Trenchardstown, Lisnalea, Hillend, Coldharbour, Killahy, Greenhill, Lughinny, Craddockstown, Tubbrid Lower, Clomantagh Lower, Barna, Newtown, Kilrush, Belville, Lodge, Garranamanagh, Balleen Lower, Lodge, Tifeaghna (Browne), Lodge Demesne West, Lodge Demesne East, Clontubbrid, Clone, Acragar, Skinstown, Lisdowney, Seskin South, Parksgrove Ballyragget & Moatpark, Co Kilkenny.
4	EirGrid Ballyragget Substation (including compound extension)	Status: Operational Existing 110kV substation. Location: Moatpark, Ballyragget, Co. Kilkenny
		Status: Consented

☐	Name	Details
		A 2000sq.m extension to the existing Ballyragget 110kV Substation compound including; Site clearance works including the removal of existing palisade fence along the North and West boundaries and demolition of an existing Interface Transformer bund foundation. Provision of new electrical plant and equipment including: 1 No. Power Transformer, associated bund and firewall (c. 67 m2, 5.6 m high), 1 No. 20 / 10 kV Interface Transformer and associated bund (c. 25 m2, and 2.25 m high), 1 No. Arc Suppression Coil and associated bund (c. 18 m2, and 4.0 m high), a 38 kV busbar plinth with 3 No. cubicles and associated cable sealing ends (c. 6.5 m high), associated and ancillary outdoor electrical equipment and other apparatus, including installation of underground cables; Site development works including provision of extension of lighting, internal access road, new fencing, provision of site services including drainage; and all other ancillary works
5	Battery Energy Storage Development 1 at Moatpark	Status: Consented A Battery Energy Storage System (BESS) consisting of a 10-year planning permission and an operational life of 35 years; 29 units of 8 containers on concrete plinth foundations containing batteries and related equipment; 29 no. prefabricated modular power conversion units; containerised power transformers; underground electrical and communications cabling; upgrade of on-site access tracks, 1 no. temporary construction compound, 4 no. spare parts containers; all associated and ancillary site development, lighting, perimeter fence, landscaping, drainage and CCTV. Location: Moatpark, Ballyragget, Co. Kilkenny
6	Battery Energy Storage Development 2 at Moatpark	Status: Consented A 10-year planning permission and a 35-year operational life for an energy storage facility comprising energy storage containers installed on concrete plinth foundations; electrical transformers; underground electrical and communications cabling; provision of a new access point from the R432; on-site access track; security fencing and security gates; pole-mounted security cameras; ancillary electrical equipment and storage containers including a staging area; and all associated and ancillary site development, drainage, landscaping and reinstatement works.
7a	Ballynalacken Windfarm	Status: Consented 12 no. turbines, turbine foundations and hardstanding areas, Windfarm Site Roads, Internal Windfarm Cabling, Windfarm Control Building, Site Entrances, ancillary works at and for the windfarm, along with the Internal Cable Link, Tinnalintan Substation and ancillary works, and Ballynalacken Grid Connection and grid connection works to the Eirgrid Ballyragget Substation. The Project also involves works and activities along the turbine component haul route remote from the site, including the construction of a temporary Blade Transfer Area at HR8. Location: Byrnesgrove, Commons, Ballymartin, Ballynalacken, Ballyouskill, Loughill, Tinnalintan, Moatpark, Co. Kilkenny
7b	Ballynalacken Windfarm Grid Connection	Status: Consented Underground Grid Connection 1961m in length from the Tinnalintan Substation to the existing EirGrid Ballyragget Substation through Tinnalintan, Coole and Moatpark townlands, and facilitating works in the EirGrid Substation.
8a	Tirlán Dairy Processing Facility	Status: Operational The Tirlán Dairy Processing Plant is a multi-purpose integrated dairy processing facility which includes production buildings; administrative block; a Research & Development building; boiler house; wastewater treatment plant; combined heat and power plant; and storage buildings. Location: Ballyconra, Co. Kilkenny
8b	Tirlán Water Treatment Plant & Anaerobic Digester	Status: Operational An existing wastewater treatment plant on the east side of the N77 national road. Location: Ballyconra Status: Consented Two anaerobic digesters, one equalization tank to include concrete base, earth embankment and associated works; construction of biogas storage dome with biogas flare, desulfurization unit; construction of membrane and control building with yard slab and link road; construction of ferric chloride storage tank; installation of a new pipeline with underground and overground sections for the purpose of conveying renewable biogas to the Glanbia facility east of the N77 road; realignment of the existing internal road to facilitate vehicle movements; drainage works and all associated site works including landscaping. The dismantling and removal of an existing disused sludge mixing tank; dismantling and removal of an existing biotower. This facility holds an industrial emissions licence issued by the Environmental Protection Agency. Location: Ballyconra, Co. Kilkenny

☐	Name	Details
8b	Tirlán Solar Farm	Status: Under Construction A solar PV development on a ca. 13Ha Site incorporating: Solar panels on ground-mounted frames over an area of ca. 6.5 ha, string inverters, 1 no. containerised transformer unit, post and wire fencing, CCTV system with 4 no. pole mounted cameras and landscaping; Underground electrical cables connecting the solar PV development to existing onsite substation; extension to existing onsite substation of 51.3sqm; A temporary construction compound; and All associated ancillary site development works. Location: Ballyconra, Co. Kilkenny
9a	Seskin Wind Farm [Laois/Kilkenny]	Status: In Planning – currently under appeal to An Coimisiún Pleanála 8 no. wind turbines with an overall tip height of 175m; a rotor blade diameter of 150m; and a hub height of 100m; and associated foundations and hard standing areas; a permanent 38kV substation compound; permanent underground electrical (38kV) and communications cabling to the existing Ballyragget 110kV substation in the townland of Moatpark; underground electrical and communications cabling connecting the wind turbines and meteorological mast to the on-site substation; a meteorological mast with a height of 100m above ground and associated foundation and hard-standing area; upgrade of existing tracks and roads and the provision of new site access roads; all works associated with the upgrade of the existing agricultural access off the L58333 local road; 2 no. temporary construction compounds; accommodation works along the N77 National secondary road in the townlands of Durrow Townparks, Co. Laois and Ballynaslee, Co. Kilkenny to facilitate the delivery of turbine components and other abnormal sized loads; a borrow pit; spoil management; hedgerow removal; Biodiversity Management and Enhancement Plan measures; site drainage; operational stage signage; and all associated site development works, ancillary works and apparatus. Location: Ballynaslee, Seskin, Ballyconra, Moatpark, Co. Kilkenny; Tinwear, Archerstown and Durrow, Co. Laois
9b	Seskin Wind Farm Grid Connection	Status: In Planning – currently under appeal to An Coimisiún Pleanála Permanent underground electrical (38kV) and communications cabling to the existing Ballyragget 110kV substation in the townland of Moatpark
10a	Briskalagh Wind Farm	Status: Consented 7 no. wind turbines with an overall turbine tip height of 185 metres; a rotor blade diameter of 163 metres; and hub height of 103.5 metres, and associated foundations and hard-standing areas; a permanent 38kV substation compound; permanent underground electrical (38kV) and communications cabling to the existing Ballyragget 110kV substation in the townland of Moatpark (including joint bays, communication and earth sheath link chambers and all ancillary works along the route), primarily located within the public road corridor; underground electrical (33kV) and communications cabling connecting the wind turbines and meteorological mast to the on-site substation; 3 no. temporary construction compounds; a meteorological mast with a height of 30 metres; a new temporary site entrance on the L1009; a new gated site entrance on the L5024; upgrade of existing site tracks/roads and provision of new site access roads, junctions and hardstand areas; a borrow pit; Spoil Management; tree felling and hedgerow removal; Biodiversity Management and Enhancement Plan measures; Site Drainage; Operational Stage site signage; and all ancillary works and apparatus. Location: Acragar, Ballyconra, Ballycuddihy, Ballyroe, Ballyroe (Grace), Ballyroe (Maher), Baunaniska, Boherkyle, Briskalagh, Brittas, Clone, Coolnapisha, Curraghduff, Freshford, Freshford Lots, Graigueswood, Grange, Huntstown, Kilmanagh, Knockeenglass, Knockown, Moatpark, Monabrika, Monavadaroe, Moneenaun, Oldtown, Oldtownhill, Parksgrove, Picketstown, Rathealy, Sart, Sweethill, Tobernapeastia, Tullaroan, Upperwood Demesne, Co. Kilkenny
10b	Briskalagh Wind Farm Grid Connection	Status: Consented Permanent underground electrical (38kV) and communications cabling to the existing Ballyragget 110kV substation in the townland of Moatpark (including joint bays, communication and earth sheath link chambers and all ancillary works along the route), primarily located within the public road corridor.
11	Garrylaun Mining Project	Status: Consented Recommencement of underground mining at the former Galmoy Zinc and Lead Mine, comprising access portal, declines, ventilation shafts and extensions to existing underground workings. It is also proposed to extend the mine into the townland of Kyle, Co. Laois. The development will also involve the refurbishment of a number of existing mine related surface structures, dewatering wells, and buildings including the Goul pumphouse, 3 no. workshops, administrative building which includes provision for offices, laboratories, storage warehouse areas, toilets and washing facilities, fire and fresh water pumphouse, and associated infrastructure, mine change house, security hut, weighbridge, transformers, substations and switch-rooms, stormwater pond, rock storage area for the storage of soil, overburden and rock from the mine workings and the ore storage structure as part of the ore crushing plant. Permission is also sought for the replacement of the previous water treatment plant with a new water treatment plant to treat mine and site water in a new location within the plant site. The new water treatment plant will also reuse and refurbish the existing backfill thickener tank as part of the revised plant. Permission is also sought for the provision of a mine backfill plant consisting of feed-hoppers, crushing equipment, ball mill, 13.9m high cement silo and mixer. The mine backfill plant is to be located adjacent to the

№	Name	Details
		existing ESB sub-station in the North of the existing plant site. The proposed development also includes for the following ancillary elements; structures for fuel and emulsion storage; water and other pipelines, water discharge diffuser, the installation of a new proprietary effluent treatment system to deal with foul water and wheel wash. Permission is also sought for the provision of two new wells and associated ancillary pumping infrastructures for the supply of supplementary water to the Galmoy Rathdowney public water supply. Location: Garrylaun, Castletown, Rathreagh, Rathpatrick, Whiteswall, Moneynamuck (Stopford) Rathbane and Waterland, Co. Kilkenny; Kyle, Co. Laois
12	Lisheen Wind Farm	Status: Operational Lisheen I: 18 turbines Vestas V90/2MW (located within the Suir Catchment) Lisheen II: 12 turbines Vestas V90/2MW (located within the Suir Catchment) Lisheen III: 8 turbines with maximum tip height of 156m (4 no. turbines located within the Nore Catchment, 4 no. turbines located within the Suir Catchment) Grid connection to Lisheen 110kV Substation. Location: Barnalisheen, Derryville, Killoran, Colleeny, Derryfadda, Co. Tipperary; Baunmore, Bruckland, Rathpatrick, Co. Kilkenny; Gragueadrisly, Co. Laois
13	Bruckana Wind Farm	Status: Operational 14 no. turbines of up to 100m hub height and up to 112m rotor diameter with a total height not exceeding 156m; a transformer and crane hardstanding area at each turbine; underground electrical and communication cables linking the turbines; internal site tracks; a permanent meteorological lattice mast 100m high; drainage works; a 38kV substation and associated equipment and control building with associated septic tank and treatment system, a 38kV overhead line to the 110kV Lisheen substation and associated works. Location: Rathpatrick, Bruckana & Baunmore, Johnstown, Co. Kilkenny; Killoran & Tullowmacjames, Templetouhy, Co. Tipperary
14	Talbots Inch / Keatingstown Solar Farm	Status: Operational A solar farm on an area of approximately 14.0 hectares, comprising photovoltaic panels on ground mounted frames, 4 no. single storey inverter/transformer stations, 1 no. single storey terminal station, 1 no. single storey electrical switch room, 1 no. storage container, security fencing, CCTV and all associated ancillary development works. Location: Keatingstown, Co. Kilkenny
15	Substation at Killeen	Status: Under Construction New on-site 38KV substation associated with Farranrory Windfarm Location: Coolnashinnagh, Co. Tipperary
16	Foylealure Wind Farm	Status: Operational Four wind turbines with hub height of 80m and a maximum blade tip height of 121m, together with an electrical transformer station, control housing, borrow pit, meteorological mast and associated access roads and site works at this site. Location: Foylealure, Courtstown, Co. Kilkenny
17	Kyleballyoughter Wind Farm	Status: Consented 2 no. wind turbines with a hub height up to 80m and a maximum blade tip height up to 121m, a grid control building, underground cabling, borrow pit, together with associated access roads and site works. The turbines will form part of a permitted wind farm on the adjacent Foylatalure and Courtstown site. Location: Rathmacan, Kyleballyoughter, Courtstown, Co. Kilkenny
18	Ballybay Wind Farm	Status: Operational Seven turbines each with a maximum blade tip height of 110m and all associated infrastructure. Location: Boggan, Ballybeagh, Co. Kilkenny
19	Cnoc Wind Farm (Knocknamuck WF)	Status: Operational 5 no. wind turbines, site tracks, hard standing areas, anemometry mast, small control building and compound, underground cabling, site signage, temporary site works and ancillary works Location: Grangehill, Bawnlea, Newpark, Grange, Barna, Co. Tipperary
20	Gorteen Wind Turbine	Status: Operational 1 no. wind turbine, site tracks, hard standing areas, anemometry mast, small control building and compound, underground cabling, temporary site works and ancillary works.

№	Name	Details
		Locations: Gorteen Lower, Gortnahoe, Thurles, Co. Tipperary
21	Moyne Solar Farm	Status: Consented Construction of a Solar PV development with a maximum export capacity (MEC) of up to 122MW comprising of ca. 214,800 no. photovoltaic panels laid out in arrays, the construction of a 38kV substation, (ca.57.31m2 x 4.45m tall) along with associated ancillary development including 30 no. Transformer Stations (ca. 7.27m2 x 2.6m) with an integrated bund, 716 string Inverters, 1 no. DNO Substation Building (16.28m2 x 5.42m), 1 No. Storage and maintenance building (ca. 57.31m2 x 4.45m tall), 38 no. CCTV cameras mounted on ca. 3.8m high poles, perimeter security fencing and all ancillary works, the total development area will be ca. 77ha. Location: Cooleeny, Derryfadda and Killoran, Co. Tipperary
22	Littleton Wind Farm and Grid Connection	Status: In Planning A wind farm consisting of 11 no. wind turbines and associated infrastructure including internal access tracks, hard standings, additional amenity trails, an onsite borrow pit, peat deposition areas, a permanent meteorological mast, an onsite 110kV substation and associated grid connection infrastructure, internal electrical and communications cabling, temporary construction compounds, drainage infrastructure, biodiversity management and enhancement measures, temporary accommodation works along the Proposed Turbine Delivery Route and all associated works related to the construction of the Proposed Development.
23	The Sheehys / Derrymore Solar Farm	Status: Under Construction A 58.11 hectare Solar PV Farm consisting of the installation of a 30 year operation and subsequent decommissioning of a series of ground mounted solar photovoltaic PV panels, mounted on steel support structures 3m in height, together with 1 single storey ESB control room, 25 electrical transformation enclosures, underground cabling, CCTV poles and cameras, a Battery Energy Storage system with a compound size of 5,400 square meters containing 60 battery units and 30 inverter units together with a switch room/SCADA room, deer type security fencing, wooden fence along part of the M7 Motorway, wooden fence placed along the western site boundary, site entrance and access roads, including landscaping along the western and south eastern site boundaries, and other associated development works, for the purpose of generating renewable energy electricity. Location: Leonards Bog, The Sheehys, Derrymore, Roscrea, Co. Tipperary
		Status: Under Construction A 29.09 Hectare Solar PV Farm consisting of the installation of a 40 year operation and subsequent decommissioning of a series of ground mounted solar photovoltaic PV Panels, mounted on steel support structures 2.885m in height, together with a single storey ESB Control Room, connection to nearby ESB Substation, 9 electrical transformation enclosures, underground cabling, CCTV poles and cameras, deer type security fencing around the site boundary, Site Entrance access roads, Temporary Construction Compound Area, Landscaping and other associated development works, for the purpose of generating renewable energy electricity. Location: Derrymore, Roscrea, Co. Tipperary
24	Brehony's Bog Solar Farm	Status: Under Construction A 34.11 hectare / 84.28 acre solar farm consisting of a series solar photovoltaic (PV) panels mounted on steel support structures and will measure 2.00m in overall height. Ancillary development to the installation of solar PV panels includes 12no. transformers; 106no. pole-mounted CCTV cameras measuring 2.75m high; underground cabling; 3.80km (approx.) of fenceline measuring 2.00m at highest point; creation of new graded internal access tracks approximately 4.00m wide from two existing gated entrances on northern site boundary, each measuring 6.50m wide. A temporary compound measuring 5,000sqm will be established during the construction phase of the solar farm, whereupon the area will then be used for the siting of solar PV panels following the construction phase. Location: Brehony's Bog, Monaincha, Roscrea, Co. Tipperary
25	Monaincha Solar Farm	Status: Under Construction A 142.7 hectare solar farm consisting of a series of ground mounted solar photovoltaic (PV) panels, mounted on steel support structures, 34 no. electrical transformation enclosures, a temporary construction compound, underground cabling, inverters, CCTV poles and cameras, deer type security fencing around the site boundary , landscaping and biodiversity measures and all associated ancillary development works , for the purpose of generating renewable energy electricity. Location: Monaincha, Roscrea, Co. Tipperary
26	Monaincha Wind Farm	Status: Operational 15 no. wind turbines with a tip height of up to 156m; electrical substation and switch station; access tracks and buried cable ducts; and all associated site work. Location: Monaincha Bog, Monaincha & The Sheehys, Roscrea, Co. Tipperary

№	Name	Details
27	Borris-in-Ossory WWTP upgrade works	Status: Consented Demolish existing redundant structures and construction of new (1) inlet works, (2) aeration tanks and clarifiers with flow splitter chamber, air blowers, sludge wasting pumps and sludge return pumps; (3) sludge drying reed beds; (4) Upgrades to mechanical and electrical components of existing tanks; (5) Installation of a GRP kiosk to house electrical control panel; (6) erection of new boundary fencing around the site; and all ancillary site works. Location: Townparks, Borris-in-Ossory, Portlaoise, Co. Laois
28	Ballyroan WWTP upgrade works	Status: Consented Provide for the upgrade of the Ballyroan Wastewater Treatment Plant and will comprise of the following: Installation of an additional new Sequence Batch Reactor (SBR) wastewater treatment stream complete with flow splitter chamber, air blowers, sludge wasting pumps and effluent pipework; Installation of a new above ground storm water holding tank complete with internal cleaning system, flow return system and associated access stairs and platform; Installation of a new above ground sludge holding tank complete with internal decant system and associated access stairs and platform; Installation of tertiary filter; Installation of wash water pumping station; Installation of a GRP kiosk to house electrical control panel and all ancillary site works. Location: Ballyroan, Co. Laois
29	Coolglass Wind Farm	Status: Consented 13 no. wind turbines within two clusters with overall ground to blade tip height of 180m, rotor diameter ranging from 155m to 162m inclusive & a hub height ranging from 99 to 102.5m inclusive; permanent turbine hardstands & turbine foundations; 1 no. permanent 110 kV electrical substation including 2 no. control buildings, all associated electrical plant and equipment, all associated underground cabling; 33kV collector cable circuit connecting the wind farm two clusters along the L3851/Knocklead Road; 2 temporary construction compounds; 1 on-site borrow pit; new permanent internal site access roads, upgrade existing internal site access roads, including passing bays & all associated drainage infrastructure; an internal site drainage network & sediment control systems; all associated underground electrical & communications cabling connecting the wind turbines to the wind farm substation; improve site entrance to an existing access to include localised widening of the road to facilitate the delivery of abnormal loads & turbine component deliveries; related temporary upgrade works on the turbine delivery; erection of a permanent meteorological mast 102.5m in height. Location: Fossy Upper, Aghoney, Gorreelagh, Knocklead, Scotland, Brennanshill, Monamantry, Coolglass, Crissard, Kylenebehy, Monamantry, Timahoe, Carrigeen, Ballygormill South, Money Upper, Hophall, Rathleague, Ballymooney, Rathbrennan, Co. Laois
30	Pinewood Wind Farm	Pinewood Wind Farm Status: Under Construction The windfarm development will comprise 11 no. wind turbines, each with a maximum height of up to 136.5 metres, and all associated site development and ancillary works, including a 110kV electricity substation, switchroom and equipment compound; two single circuit strain towers with a maximum height of up to 26.5 metres; turbine foundations; crane hardstandings; 7.4 kilometres of site access tracks, underground electricity and communications cabling; site drainage works; 7 no. site entrances; a permanent meteorological mast with a maximum height of up to 85 metres; and temporary upgrade to the R430/L7800 road junction. Amend the wind farm development permitted: (i) an increase in the rotor diameter of the wind turbines from 103 metres to 117 metres; (ii) a reduction in the hub height of the wind turbines from 85 metres to 78 metres, thus retaining the permitted overall tip height of the wind turbines of 136.5 metres; (iii) the re-siting of wind turbines T8, T9, and T10; and (iv) all associated site development, drainage, access and reinstatement works. Location: Knockardagur, Boleybawn, Garrintaggart, Ironmills (Kilrush) and Graiguenahown, Co. Laois Pinewood Wind Farm 110kV Substation Status: Under Construction A 110kV loop-in/loop-out air insulated switchgear electrical substation, 2 no. single-story control buildings, 1 no. transformer bay, 2 no. line bays and all associated electrical equipment, services and lighting, 2 no. lattice-type strain towers with a maximum height of up to 21m and approximately 70m of 110kV overhead electricity lines to facilitate connection of the proposed substation to the permitted 110kV Laois-Kilkenny Grid Reinforcement Project electricity transmission line, approximately 0.65km of on-site access track, site entrance from public road and all associated ancillary works. Location: Knockardagur, Co. Laois
31	Potential Windfarm & Fassa Grid Connection	Potential windfarm, pre-planning in the Rathgarry/Crutt area.

№	Name	Details
32	Crutt Single Turbine	Status: In Planning For construction of a Single Wind Turbine development on a 5.98-hectare site consisting of: - I. A single 4.26-megawatt (MW) wind turbine with an overall tip height of 150 metres, comprising a rotor diameter of 138m and a hub height 81m; II. Wind turbine foundation, crane hardstanding and assembly area; III. Temporary Construction Compound; IV. Upgrading and repositioning of existing farm entrance; V. Upgrading and widening of existing access track; VI. New access track; VII. An on-site 20kV electrical substation building; VIII. Electrical and communication cabling within private lands; IX. Underground 20kV grid connection within private lands and within the L5851 and the R426 public roads connecting to the existing ESB Castlecomer 38kV Substation; X. Hedge and tree removal, landscaping and reinstatement works; and XI. All associated ancillary works. The operational lifespan of the development will be 35-years from the date of commissioning. Location: Loan, Co. Kilkenny
33	Loan Solar Farm	Status: Under Construction For a 5MW solar farm consisting of photovoltaic panels on ground mounted galvanised steel frames, 4 no. transformers, 4 no. auxiliary transformers, 4 no. invertors, 1 no Distributor Network Operator building, 1 no. communications building, 1 no. storage building, 1 no. substation, a new site access road onto the R426, internal access roads, site access gate, security fencing, cctv and all associated ancillary development works Location: Loan, Castlecomer, Co. Kilkenny
34	Brownstown Solar and Storage Park	Status: Consented A Solar Farm and Storage Park consisting of linear arrays of solar photovoltaic (PV) panels mounted on steel supported structures with associated cabling and ducting (including underground cable connection to the proposed on-site 110kV substation); 50 no. inverter substations, a storage park (including 55 no. containers with cells and 15 no. containers with PCS and inverters); perimeter fencing; 6 no. palisade double security gates; 3 no. temporary construction compound/material storage area; 2 no. steel storage containers; 25 no. turning bays, on-site pole mounted CCTV cameras (at 60 locations); and 2 no. temporary construction stage Moby Dick type wheel wash systems (with over ground settlement tank); and all associated ancillary development services and works, all to be provided within an application boundary of 112ha. Location: Brownstown, Co. Kilkenny
35	Kilderry Solar Farm	Status: Consented Up to 200,000 sq.m of solar PV panels up to 2.6m in height mounted on metal frames complete with c. 370 string inverters mounted to the rear of the panels; Up to 16 no. Transformer Stations; 38kV Substation compound including 1 no. customer control room, 1 no. ESB control room, 1 no. switch gear room and 1 no. spare room, 1 no. 38kV cable bay, 1 no. lightning mast (18m in height), 1 no. telecoms pole (11m in height), perimeter palisade fencing (2.6m in height), 7 no. lighting poles (c.3.2m in height) and associated electrical infrastructure; new entrance from the Johnswell Road (L2616-9) for construction and operational access to the site; 2 no. temporary construction compounds for the duration of the construction phase of the project; Internal tracks, site landscaping and drainage works, internal site cabling, security fencing, CCTV and all associated ancillary site development works; National grid connection in the form of an underground 38 kV electrical cable (c. 8.5km in length located in the public road) from the proposed 38kV substation to the existing Kilkenny 110kV substation. Location: Kilderry, Scart, Ballynamona, Rathgarvan (or Clifden), Churchclara, Clarabricken, Clara Upper, Clara, Kilmagar, Feathallagh and Ballysallagh, Co. Kilkenny
36	Seskin Wind Farm [Carlow] & Grid Connection	Status: Consented 7 no. turbines with total tip height range of 179.5m – 180m, rotor diameter range of 149m – 155m, hub height range of 102.5m to 105m; construction of associated foundations, hardstand and assembly areas, all associated wind farm underground electrical and communications cabling connecting the turbines and meteorological mast to the proposed onsite electrical substation; construction of 1 no. permanent 38kV electrical substation compound; a permanent Battery Energy Storage System within the electrical compound; all works associated with the connection of the proposed wind farm to the national grid via underground 38kV electrical cabling predominantly within the public road corridor from the proposed onsite electrical substation; 1 no. meteorological mast of 36.5m in height; the permanent upgrade of 1 no. existing site entrance and the provision of 1 no. new permanent site entrance; upgrade of existing tracks/roads and provision of new site access roads; 2 no. temporary construction compounds; carriageway strengthening works; peat and spoil management; tree felling; and operational signage. Location: Ridge, Agharue, Coolnakisha and Seskinrea, Co. Carlow Status: Consented

	☐	Name	Details
			The connection of Seskin Wind Farm to the national electricity grid via underground 38kV electrical cabling within the public road corridor to the existing Kilkenny 110kV substation; provision of 16 no. joint bays, communication chambers and earth sheath links along the underground electrical cabling route; reinstatement of the road and track surfaces above cabling trench along existing roads and tracks; carriageway strengthening works at 'Black Bridge' on the L1835 / L3037; a new temporary access road off the N78 to the L30372 to facilitate the delivery of turbine components and other abnormal loads; all ancillary apparatus and site development works above and below ground. Location: Kilmagar, Clara Upper, Mountnugent Upper, Mountnugent Lower, Ossoryhill, Feathallagh, Churchclara, Rathgarvan or Clifden, Clarabricken, Coolgreany, Coolcullen, Reeavanagh, Scart, Highrath, Ballysallagh, Ballynamona, Coan East and Cloneen, Co. Kilkenny
37		Clara Energy Storage Project	Status: Consented A ten-year planning permission for an energy storage facility comprising energy storage modules installed on concrete plinth foundations; electrical inverters and transformers; underground electrical and communications cabling; the upgrade of an existing agricultural entrance from the R712; on-site access track; security fencing and security gates; pole-mounted security cameras; an electrical control building; a compensatory flood storage area; and all associated and ancillary site development, drainage, landscaping and reinstatement works. The operational lifetime of the proposed development is 35-years. Location: Scart (Dunbell E.D.), Co. Kilkenny
38		Clashwilliam Farm and Connection Solar Grid	Status: Operational A solar farm on a site of approximately 46.0 hectares consisting of the following up to 293,500m ² of solar photovoltaic panels on ground mounted steel frames; electrical substation with electrical control building and associated compound with palisade fence; inverter/transformer stations; underground power and communication cables and ducts; boundary security fencing; new internal access tracks and associated drainage infrastructure; new site entrance to the L6235 public local road; CCTV cameras and all associated site services and works. Location: Smithstown, Co. Kilkenny Status: Operational Laying of underground 38kV medium voltage electrical cables with associated ducting, 7 no. joint bays, with associated communication chambers and ancillary development within the R172, L2646, L2631, L67062 and L2633 public roads and private lands South of the R172. The cable will run for a distance of 5,710m. Approximately 4890 metres of this will be within the public road and approximately 820 metres of cabling will be on private lands located South of the R172 and on lands of the permitted Clashwilliam Solar Farm. The cable will transverse under the Irish Rail Railway within the townland of Highrath and the M9 motorway in the townland of Roughfield through trenchless Horizontal Directional Drilling (HDD) methods. The underground cable is intended to connect the permitted 38kV substation in Clashwilliam Solar Farm, in Smithstown townland, with the Kilkenny 110kV ESB substation. Location: Scart, Highrath, Maddoxtown, Rathgarvan/Clifden, Roughfield, Abbeygrove, Annfield, Carran and Smithstown (Townlands), Co. Kilkenny
39		Sand and Gravel Quarry Development, Abbeyleix	Status: In Planning – currently under appeal to An Coimisiún Pleanála The extraction of sand and gravel (c. 787,310m ³ total or c. 1.57 million tonnes total, at a maximum rate of c. 200,000 tonnes per annum) over the proposed 10 year permission sought; alterations to the existing agricultural entrance to create an entrance to the site with associated gates, piers and boundary fencing; provision of a haul road; site clearance; overburden removal; construction of screening berms; provision of a wheel wash and refuelling hard standing area; provision of hard and soft landscaping; and all associated site works above and below ground. Location: Knocknamoe and Ballymullen, Abbeyleix, Co. Laois
40		Spink Quarry	Status: Operational Continued use and operation of the existing quarry including deepening of the quarry. Location: Knockbaun, Co. Laois
41		McKeon Stone, Threecastles Quarry	Status: Consented 1.Continuance of use of the existing permitted quarry site and all existing ancillary site and welfare facilities, storage areas, and provision for crushing and screening of unsuitable dimension stone rock, authorised by the previous grants of planning permissions P. Ref. 04/1867 (which superseded P. Ref. P538/96) and P. Ref 16/474, which are due to expire on the 1 January 2025; 2. Lateral extension of the existing quarry void by c. 5.3 hectares to give an overall quarry footprint of c. 9.3 hectares. The final extraction depth will be c. 56m AOD similar to the existing quarry floor level permitted by P. Ref. 04/1867; 3.Provision of screening berms to proposed quarry extension boundary; 4.Provision of a new site

№	Name	Details
		maintenance shed (c.10m x 16m = 160m ²) adjacent to the existing processing factory with an overall height of c. 11.2m; 5.Restoration thereafter to a combination of ecological habitat site and agricultural lands; 6.All associated site works within an overall application area of c. 15.8 hectares. Location: Killaree, Threecastles, Co. Kilkenny
42	Sand Pit, Abbeyleix	Status: In Planning – currently under appeal to An Coimisiún Pleanála Quarry activities for the extraction of sand and gravel within a total area of c. 4.40ha with an excavation area of c. 3.1ha site over a ten year period, On site equipment would include a dry screener, a loading shovel, a dumper as required, an excavator as required and a concrete wheelwash at entrance, Installation of a new site entrance and removal of hedgerow to the south and north onto the public road L6719 to achieve 90m sightlines, Installation of temporary compound and access road with hard stand, wheel wash, concrete refuelling slab, interceptor, soakaway, weighbridge, portacabin, portaloo toilets and internal security gates installed, Installation of passing bays, Installation of passing bays will involve removal of small sections of existing hedging, re-routing of drains, fencing, new hedge planting, road construction & resurfacing, A fenced off buffer zone of 10m between the existing hedgerow and proposed excavation area has been allowed for to protect the hedgerows locally important ecological value. Location: Redhill, Abbeyleix, Co. Laois
43	Bennettsbridge Limestone Quarries	Status: In Planning – currently under appeal to An Coimisiún Pleanála for The proposed development will take place within an overall application area of approximately 61 hectares and will consist of the following: • The continued extraction of rock?—?including periodic blasting to fragment the rock prior to excavation?—?from the existing permitted quarry area (Plan File Ref. No. 18/858) beyond the current permission expiry date; • The continued use of existing quarry infrastructure (including crushing, screening and lime processing plant), existing pre-cast manufacturing facility (including associated ancillary works for manufacturing of concrete products), batching of lime products, workshop, canteen, toilet facilities, weighbridges, wheelwash, fuel stor-age area and switch room, settlement lagoons, haul roads, ESB substation, plant and product storage areas and all other ancillary facilities as permitted under Plan File Ref. No. 18/858; • The continued use of site offices authorised under Plan File Ref. No. 20/891; • A lateral extension of the existing limestone quarry, within an area of approx. 4.5 Ha., comprising: - approximately 18.2 hectares of extraction, including blasting, over 2 no. c 19 metre high benches to a final floor level ranging from 25 to 30m OD; and - overburden storage areas and landscaped screening berms (6.3 Ha). • To access the extension lands rock will be extracted - including by controlled blasting - from under: - approx. 1.4 hectare of land that is currently under landscaping measures authorised under Plan File Ref. No. 18/858; - approx. 2.1 hectare of land that is currently in use as an access ramp authorised under Plan File Ref. No. 18/858. • The removal of topsoil and overburden, construction of landscaped screening berms, and provision of an overburden storage area; • Demolition of an existing farmyard and associated buildings and structures, permitted under Plan File Ref. No. 15/595, and removal of approximately 6.81 hectares of commercial forestry within the proposed extension area to allow for the proposed quarry development; • All associated ancillary site facilities/works, including surface water management, internal haul roads, phased restoration, and landscaping. Location: Killree, Sheastown, Bennettsbridge, Co. Kilkenny
44	Large Housing Developments in the environs of Kilkenny City	Status: Consented The development will consist of the construction of 210 no. dwellings, creche, open space and ancillary infrastructure. Location: At William Robertson Way, Poulgour Road, Kilkenny Status: Consented The development will consist of the construction of 210 no. dwellings, creche, open space and ancillary infrastructure Location: Poulgour, Kilkenny
45	Potential Killoshulan Wind Farm & Grid Connection	Status: Potential, pre-planning Potentially 11 no. turbines, 1 no. meteorological mast, 2 no. temporary construction compounds, site roads, 1 no. onsite 110kV electrical substation and 110kV grid connection to the existing 110kV substation at Ballyragget. Location: Spahill and Clonmantagh

A5.4.2 Scoping Exercise – Environmental Factor Topics

A scoping exercise was carried out for Environmental Factor topic by the competent experts of the various topic chapters, as set out below. The Other Projects are identified by number and illustrated on Map 1.

A5.4.2.1 Land

Map ID	Other Projects	Scoping Exercise
	Offsite Project –TDR Activities at Portlaoise J17	OUT – separation distance, locational context.
5	Battery Energy Storage Development 1 at Moatpark	OUT – landowner will be remunerated, neutral impact
45	Potential Killoshulan Wind Farm (grid connection)	OUT - grid connection only, works within public road corridor

A5.4.2.2 Soils

Map ID	Other Projects	Scoping Exercise
	Offsite Project –TDR Activities at Portlaoise J17	OUT – separation distance, locational context.
1	Lisdowney Wind Farm	IN - proximity
2a	Parksgrove Solar Farm	OUT - scale of excavations during construction. Separation distance. Negligible excavations required during operation.
2b	Parksgrove SF Grid Connection	OUT - scale of excavations during construction. Separation distance. Negligible excavations required during operation.
3b	Farranrory Grid Connection	OUT - construction will be complete in 2026/2027. Negligible sources of impact. No likely overlap of decommissioning phases
4	Eirgrid Ballyragget Substation (including Extension yard)	OUT - operational substation. Extension works are small scale.
5	Battery Energy Storage Development 1 at Moatpark	IN - proximity to CGGC
6	Battery Energy Storage Development 2 at Moatpark	IN - proximity to CGGC
7b	Ballynalacken WF Grid Connection	IN - proximity to CGGC
8a	Tirlán Dairy Processing Facility	OUT - construction complete. Operational. No new excavations likely.
8b	Tirlán Water Treatment Plant & Anaerobic Digester	OUT - construction complete. Operational. No new excavations likely.
9b	Seskin WF [Laois/Kilkenny] Grid Connection	IN - proximity to CGGC
10b	Briskalagh WF Grid Connection	IN - proximity to CGGC
22	Littleton Wind Farm (grid connection)	IN - proximity to CGGC
45	Potential Killoshulan Wind Farm	IN - proximity

A5.4.2.3 Water

Map ID	Other Projects	Sub-catchment	Scoping Exercise
	Offsite Project –TDR Activities at Portlaoise J17		OUT – separation distance, locational context.
1	Lisdowney Wind Farm	Nore_SC_070	IN - shared sub-catchment and proximity
2a	Parksgrove Solar Farm	Nore_SC_070	OUT - construction complete. Operational. Negligible sources of impact. No likely overlap of decommissioning phases

Appendix 5.4: Other Projects Considered for Cumulative Effects

2b	Parksgrove SF Grid Connection	Nore_SC_060	OUT - construction complete. Operational. Negligible sources of impact. No likely overlap of decommissioning phases
3b	Farranrory Grid Connection	Nore_SC_060 Nore_SC_070	OUT - construction will be complete in 2026/2027. Negligible sources of impact. No likely overlap of decommissioning phases
4	Eirgrid Ballyragget Substation (including Extension yard)	Nore_SC_060	OUT - operational substation. Extension works are scale.
5	Battery Energy Storage Development 1 at Moatpark	Nore_SC_060	IN - not built yet, potential for construction during the Gathabawn construction period
6	Battery Energy Storage Development 2 at Moatpark	Nore_SC_060	IN - not built yet, potential for construction during the Gathabawn construction period
7a	Ballynalacken Windfarm	Nore_SC_060 Nore_SC_080 Dinin[North]_SC_010	IN - while outside the 2km study area, within the same sub-catchment as the Whole Gathabawn Windfarm Project
7b	Ballynalacken WF Grid Connection	Nore_SC_060	IN - not built yet, potential for construction during the Gathabawn construction period
8a	Tirlán Dairy Processing Facility	Nore_SC_070	IN - operational facility, shared sub-catchment, operational phase cumulative assessment
8b	Tirlán Water Treatment Plant & Anaerobic Digester	Nore_SC_070	IN - operational plant, shared sub-catchment, operational phase cumulative assessment
8c	Tirlán Solar Farm	Nore_SC_070	OUT - construction complete. Operational. Negligible sources of impact. No likely overlap of decommissioning phases
9a	Seskin Wind Farm	Nore_SC_060 Nore_SC_070	IN - while outside the 2km study area, within the same sub-catchment as the Whole Gathabawn Windfarm Project
9b	Seskin WF Grid Connection	Nore_SC_060 Nore_SC_070	IN - not consented yet, potential for construction during the Gathabawn construction period
10b	Briskalagh Grid Connection	Nore_SC_060 Nore_SC_070	IN - not consented yet, potential for construction during the Gathabawn construction period
19	Cnoc Wind Farm	Goul_SC_010, Munster_SC_010	OUT - construction complete. Operational. Negligible sources of impact. No likely overlap of decommissioning phases
30	Pinewood Wind Farm	Nore_SC_060	OUT - construction will be complete in 2027. Negligible sources of impact once operational. No likely overlap of decommissioning phases
31	Potential Fassa Windfarm & Grid Connection	Nore_SC_060 Dinin[North]_SC_010	OUT - preplanning status. Cumulative effects with the Gathabawn project expected to be included in the Killeshulane EIAR.
22	Littleton Wind Farm (grid connection)	Goul_SC_010 Nore_SC_070	IN - not constructed yet, potential for construction during the Gathabawn construction period
40	Spink Quarry	Nore_SC_060, Dinin[North]_SC_010	OUT - operates under an EPA licence.
45	Potential Killeshulane Wind Farm	Goul_SC_010 Nore_SC_070	IN - shared sub-catchment and proximity

A5.4.2.4 Air Quality

Map ID	Other Projects	Scoping Exercise
	Offsite Project –TDR Activities at Portlaoise J17	OUT – separation distance, locational context.
2a	Parksgrove Solar Farm	OUT - already constructed, no major groundworks/dust sources
2b	Parksgrove SF Grid Connection	OUT - already constructed, no major groundworks/dust sources

3b	Farranrory Grid Connection	OUT - already constructed, no major groundworks/dust sources
4	Eirgrid Ballyragget Substation (including Extension yard)	OUT - scale of works, locational context
5	Battery Energy Storage Development 1 at Moatpark	IN - potential for overlapping construction periods, proximity
6	Battery Energy Storage Development 2 at Moatpark	IN - potential for overlapping construction periods, proximity
7b	Ballynalacken WF Grid Connection	OUT - works within public road corridor - substantially reduces dust potential
8a	Tirlán Dairy Processing Facility	OUT - already constructed, no major groundworks/dust sources
8b	Tirlán Water Treatment Plant & Anaerobic Digester	OUT - already constructed, no major groundworks/dust sources
9b	Seskin WF Grid Connection	IN - potential for overlapping construction periods, proximity
10b	Briskalagh WF Grid Connection	IN - potential for overlapping construction periods, proximity
22	Littleton Wind Farm (Grid Connection)	IN - potential for overlapping construction periods, proximity
45	Potential Killoshulan Wind Farm (Grid Connection)	IN - potential for overlapping construction periods, proximity

A5.4.2.5 Noise and Vibration

Map ID	Other Projects	Scoping Exercise – Construction Stage
	Offsite Project –TDR Activities at Portlaoise J17	OUT – separation distance, locational context.
2a	Parksgrove Solar Farm	OUT - already constructed, no noise sources
2b	Parksgrove SF Grid Connection	OUT - already constructed, no noise sources
3b	Farranrory Grid Connection	OUT - already constructed, no noise sources
4	Eirgrid Ballyragget Substation (incl Extension yard)	OUT - scale of works, locational context
5	BESS 1 at Moatpark	IN - potential for overlapping construction periods, proximity
6	BESS 2 at Moatpark	IN - potential for overlapping construction periods, proximity
7b	Ballynalacken WF Grid Connection	IN - potential for overlapping construction periods, proximity
8a	Tirlán Dairy Processing Facility	OUT - existing, no further construction works planned
8b	Tirlán WWTP & Anaerobic Digester	OUT - already constructed, no noise sources
9b	Seskin WF Grid Connection	IN - potential for overlapping construction periods, proximity
10b	Briskalagh Grid Connection	IN - potential for overlapping construction periods, proximity
22	Littleton Wind Farm (Grid Connection)	IN - potential for overlapping construction periods, proximity
45	Potential Killoshulan Wind Farm (Grid Connection)	IN - potential for overlapping construction periods, proximity

Map ID	Other Projects	Scoping Exercise
	Offsite Project –TDR Activities at Portlaoise J17	OUT – separation distance, locational context.
1	Lisdowney Wind Farm	IN - operating windfarm within the windfarm cumulative study area
2a	Parksgrove Solar Farm	OUT - already constructed, no source of noise
2b	Parksgrove SF Grid Connection	OUT - already constructed, no source of noise
3b	Farranrory Grid Connection	OUT - already constructed, no source of noise
8c	Tirlán Solar Farm	OUT - already constructed, no source of noise
9a	Seskin Wind Farm [Laois/Kilkenny]	IN - within study area
10b	Briskalagh Grid Connection	OUT - separation distance, linear progression of construction works,
22	Littleton Wind Farm (Grid Connection)	OUT - separation distance, linear progression of construction works,
45	Potential Killoshulan Wind Farm	IN - within study area

A5.4.2.6 Biodiversity

Map ID	Other Projects	Scoping Exercise– 100m -600m Study Areas
	Offsite Project –TDR Activities at Portlaoise J17	OUT – separation distance
2a	Parksgrove Solar Farm	IN - already constructed, associated loss of habitat is limited. Potential for further disturbance/mortality needs to be addressed.
2b	Parksgrove SF Grid Connection	OUT - already constructed, associated loss of habitat is limited. no further disturbance/habitat loss
3b	Farranrory Grid Connection	OUT - already constructed, no further disturbance/habitat loss
4	Eirgrid Ballyragget Substation (incl Extension yard)	OUT - existing facility, existing source of lighting, minor scale of works, limited scale of additional compound area, No removal of hedgerows
5	BESS 1 at Moatpark	IN - potential for overlapping construction periods, involves permanent habitat removal, may involve additional lighting, proximity to river channel
6	BESS 2 at Moatpark	IN - potential for overlapping construction periods, involves permanent habitat removal, may involve additional lighting, distance from the Nore channel, locational context
7b	Ballynalacken WF Grid Connection	IN - potential for overlapping construction periods
8a	Tirlán Dairy Processing Facility	IN - already constructed, no further disturbance/habitat loss Waste release impacts possible.
8b	Tirlán WWTP & Anaerobic Digestor	IN - already constructed, no further disturbance/habitat loss. Waste release impacts possible.
9b	Seskin WF Grid Connection	IN - potential for overlapping construction periods, involves temporary habitat removal, HDD at river
10b	Briskalagh Grid Connection	IN - potential for overlapping construction periods, involves temporary habitat removal, HDD at river
22	Littleton Wind Farm (grid connection)	IN - proximity to works, potential for overlapping construction periods
45	Killoshulan Wind Farm (grid connection)	IN – proximity to works

Map ID	Other Projects	Scoping Exercise– Birds and Bats
	Offsite Project –TDR Activities at Portlaoise J17	OUT – separation distance
1	Lisdowney Wind Farm	IN - operating windfarm within the windfarm cumulative study area
2a	Parksgrove Solar Farm	IN - already constructed, no source of displacement. Solar impacts to bats has interactions with the substation.
2b	Parksgrove SF Grid Connection	OUT - already constructed, underground.
3a	Farranrory Wind Farm	IN - part of this whole project (grid connection) within 4km and 10km, windfarm element scoped in as a precaution
3b	Farranrory Grid Connection	OUT - construction will be completed. Underground - no sources of displacement
4	Eirgrid Ballyragget Substation (incl Extension yard)	OUT - already constructed, no source of displacement
5	BESS 1 at Moatpark	IN - construction periods could overlap, above ground structures
6	BESS 2 at Moatpark	IN - construction periods could overlap, above ground structures
7a	Ballynalacken Windfarm	IN - part of this whole project (grid connection) within 10km, windfarm element scoped in as a precaution
7b	Ballynalacken WF Grid Connection	OUT - works within public road corridor, no habitat loss, existing road already causes disturbance.
8a	Tirlán Dairy Processing Facility	OUT - already constructed, no source of displacement
8b	Tirlán WWTP & Anaerobic Digestor	OUT - already constructed, no source of displacement
8c	Tirlán Solar Farm	OUT - already constructed, no source of displacement

9a	Seskin Wind Farm [Laois/Kilkenny]	IN - part of this whole project within 10km, windfarm element scoped in
9b	Seskin WF Grid Connection	OUT - underground grid connection.
10a	Briskalagh Wind Farm	IN - part of this whole project (grid connection) within 4km and 10km, windfarm element scoped in as a precaution
10b	Briskalagh Grid Connection	OUT - underground grid connection.
12	Lisheen Wind Farm	IN - outside study area, windfarm element scoped in as a precaution
13	Bruckana Wind Farm	IN - outside study area, windfarm element scoped in as a precaution
22	Littleton Windfarm	IN - part of this whole project (grid connection) within 4km and 10km, windfarm element scoped in as a precaution
45	Potential Killeshulán Wind Farm	IN - preplanning status. Included as a precaution within the study area.

Map ID	Other Projects	Scoping Exercise – 20km Study Area
	Offsite Project –TDR Activities at Portlaoise J17	OUT - n/a nature of activities
15	Killeen substation	OUT - building
16	Foylatalure Wind Farm	IN - operational wind farm
17	Kyleballyoughter Wind Farm	IN - under construction Wind Farm
18	Ballybay Wind Farm	IN - operational wind farm
19	Cnoc Wind Farm	IN - operational wind farm
26	Monaincha Wind Farm	NO - outside the 20km study area
29	Coolglass Wind Farm	NO - outside the 20km study area
30	Pinewood Wind Farm	IN - under construction Wind Farm
31	Potential Fassa Windfarm	IN - potential wind farm (pre-planning, at Pre-App SID)
32	Crutt single turbine	IN - potential wind farm (currently in-planning)
36	Seskin Wind Farm [Carlow]	NO - outside the 20km study area

Map ID	Other Projects	Sub-catchment	Scoping Exercise- Local Sub-catchments and Upper Nore Catchment
	Offsite Project –TDR Activities	Nore	OUT- Scale, separation distance
1	Lisdowney Wind Farm	Nore_SC_070	OUT - construction complete. Operational. Negligible sources of impact. No likely overlap of decommissioning phases
2a	Parksgrove Solar Farm	Nore_SC_070	OUT - construction complete. Operational. Negligible sources of impact. No likely overlap of decommissioning phases
2b	Parksgrove SF Grid Connection	Nore_SC_060	OUT - construction complete. Operational. Negligible sources of impact. No likely overlap of decommissioning phases
3b	Farranrory Grid Connection	Nore_SC_060 Nore_SC_070	OUT - construction will be complete in 2026/2027. Negligible sources of impact. No likely overlap of decommissioning phases
4	Eirgrid Ballyragget Substation (including Extension yard)	Nore_SC_060	OUT - operational substation. Extension works are small scale.
5	BESS 1 at Moatpark	Nore_SC_060	IN - not built yet, potential for construction during the Gathabawn construction period
6	BESS 2 at Moatpark	Nore_SC_060	IN - not built yet, potential for construction during the Gathabawn construction period
7a & 7b	Ballynalacken Windfarm & Grid Connection	Nore_SC_060 Nore_SC_080 Dinan[North]_SC_010	IN - not built yet, potential for construction during the Gathabawn construction period
8a	Tirlán Dairy Processing Facility	Nore_SC_070	IN - operational facility. Drainage network in place. Operates under EPA licence conditions.

8b	Tirlán WWTP & Anaerobic Digester	Nore_SC_070	IN - operational plant. Drainage network in place. Operates under EPA licence conditions.
8c	Tirlán Solar Farm	Nore_SC_070	OUT - construction complete. Operational. Negligible sources of impact. No likely overlap of decommissioning phases
9a & 9b	Seskin Wind Farm [Laois/Kilkenny] & Grid Connection	Nore_SC_060 Nore_SC_070	IN - not consented yet, potential for construction during the Gathabawn construction period
10b	Briskalagh Grid Connection	Nore_SC_060 Nore_SC_070	IN - not consented yet, potential for construction during the Gathabawn construction period
19	Cnoc Wind Farm	Goul_SC_010, Munster_SC_010	OUT - construction complete. Operational. Negligible sources of impact. No likely overlap of decommissioning phases
22	Littleton Wind Farm (grid connection)	Goul_SC_010 Nore_SC_070 Nore_SC_060	IN - not consented yet, potential for construction during the Gathabawn construction period
29	Coolglass Wind Farm	Nore_SC_060 Barrow catchment	IN - not built yet, potential for construction during the Gathabawn construction period. Far outside realistic impacts.
30	Pinewood Wind Farm	Nore_SC_060	OUT - construction will be complete in 2027. Negligible sources of impact once operational. No likely overlap of decommissioning phases
31	Potential Fassa Windfarm & Grid Connection	Nore_SC_060 Dinin[North]_SC_010	IN - while at preplanning stage, potential for construction during the Gathabawn construction period. Far outside realistic impacts.
40	Spink Quarry	Nore_SC_060, Dinin[North]_SC_010	OUT - operates under an EPA licence.
45	Potential Killoshulan Wind Farm & grid connection	Goul_SC_010 Nore_SC_070	IN - while at preplanning stage, potential for construction during the Gathabawn construction period

A5.4.2.7 The Landscape

Map ID	Other Projects	Scoping Exercise – Construction/decommissioning
	Offsite Project –TDR Activities	OUT- scale, separation distance
1	Lisdowney Wind Farm	OUT - already constructed, no further groundworks/disturbance
2a	Parksgrove Solar Farm	OUT - already constructed, no further groundworks/disturbance
2b	Parksgrove SF Grid Connection	OUT - already constructed, no further groundworks/disturbance
3b	Farranrory Grid Connection	OUT - will be constructed, no further groundworks/disturbance
4	Eirgrid Ballyragget Substation (including Extension yard)	OUT - locational context, minor extent of extension works
5	BESS 1 at Moatpark	OUT - scale, height to structures
6	BESS 2 at Moatpark	OUT - scale, height to structures
7a	Ballynalacken Windfarm Project	IN - potential for overlapping construction periods
8a	Tirlán Dairy Processing Facility	OUT - already constructed, no further groundworks/disturbance
8b	Tirlán WWTP & Anaerobic Digester	OUT - already constructed, no further groundworks/disturbance
8c	Tirlán Solar Farm	OUT - already constructed, no further groundworks/disturbance
9	Seskin Wind Farm Project	IN - potential for overlapping construction periods
10	Briskalagh Wind Farm	IN – consented windfarm
35	Killoshulan Wind Farm Project	IN - potential wind farm, proximity to the study area

Map ID	Other Projects	Scoping Exercise
	Offsite Project –TDR Activities	OUT- scale, separation distance
1	Lisdowney Wind Farm	IN - existing wind farm within the cumulative study area
2a	Parksgrove Solar Farm	OUT - height above ground level of solar panels, screening provided by local vegetation.
2b	Parksgrove SF Grid Connection	OUT - underground grid connection

3a	Farranrory Wind Farm	IN - existing (currently under construction) wind farm within the cumulative study area
3b	Farranrory Grid Connection	OUT - underground grid connection
4	Eirgrid Ballyragget Substation (including Extension yard)	OUT - existing facility, minor scale of extension works.
5	Battery Energy Storage Development 1 at Moatpark	OUT - height above ground level of battery containers and substation buildings/apparatus, separation distance to GWF turbines
6	Battery Energy Storage Development 2 at Moatpark	OUT - height above ground level of battery containers and substation buildings/apparatus, separation distance to GWF turbines
7a	Ballynalacken Windfarm	IN - consented wind farm within the cumulative study area
8a	Tirlán Dairy Processing Facility	OUT - existing facility. Part of baseline, separation distance to GWF turbines
8b	Tirlán Water Treatment Plant & Anaerobic Digester	OUT - existing facility. Part of baseline, separation distance to GWF turbines
8c	Tirlán Solar Farm	OUT - height above ground level of solar panels, screening provided by local vegetation.
9a	Seskin Wind Farm [Laois/Kilkenny]	IN - potential (advanced in the planning system) wind farm within the cumulative study area
9b	Seskin Wind Farm [Laois/Kilkenny] Grid Connection	OUT - underground grid connection
10a	Briskalagh Wind Farm	IN - potential (advanced in the planning system) wind farm within the cumulative study area
10b	Briskalagh Grid Connection	OUT - underground grid connection
11	Garrylaun Mining Project	OUT - nature of project - ground level/subterranean works
12	Lisheen Wind Farm	IN - existing wind farm within the cumulative study area
13	Bruckana Wind Farm	IN - existing wind farm within the cumulative study area
14	Talbots Inch/Keatingstown Solar Farm	OUT - height above ground level of solar panels, separation distance to GWF turbines
15	Substation at Killeen	OUT - height above ground level of buildings, separation distance to GWF turbines
16	Foylelature Wind Farm	IN - existing wind farm within the cumulative study area
17	Kyleballyoughter Wind Farm	IN - existing wind farm within the cumulative study area
18	Ballybay Wind Farm	IN - existing wind farm within the cumulative study area
19	Cnoc Wind Farm	IN - existing wind farm within the cumulative study area
20	Gurteen Wind turbine	OUT - single turbine - scale and separation distance, precludes cumulative impacts
21	Moyne Solar Farm	OUT - height above ground level of solar panels, separation distance to GWF turbines
22	Littleton Wind Farm	IN - proposed wind farm within the cumulative study area
23	The Sheehys/Derrymore Solar Farm	OUT - height above ground level of solar panels, separation distance to GWF turbines
24	Brehony's Bog Solar Farm	OUT - height above ground level of solar panels, separation distance to GWF turbines
25	Monaincha Solar Farm	OUT - height above ground level of solar panels, separation distance to GWF turbines
27	Borris-in-Ossary WWTP upgrade works	OUT - scale of works, separation distance to GWF turbines
28	Ballyroan WWTP upgrade works	OUT - scale of works, separation distance to GWF turbines
30	Pinewood Wind Farm	IN - existing (currently under construction) wind farm within the cumulative study area
31	Potential Fassa Wind Farm	IN - pre-planning, proposed wind farm within the cumulative study area
32	Crutt single turbine	OUT - single turbine - scale and separation distance, precludes cumulative impacts
33	Loan Solar Farm	OUT - height above ground level of solar panels, separation distance to GWF turbines
34	Brownstown Solar and Storage Park	OUT - height above ground level of solar panels and battery containers, separation distance to GWF turbines
35	Kilderry Solar Farm	OUT - height above ground level of solar panels, separation distance to GWF turbines

37	Clara Energy Storage Project	OUT - height above ground level of solar panels and battery containers, separation distance to GWF turbines
38	Clashwilliam Solar Farm and Grid Connection	OUT - height above ground level of solar panels, separation distance to GWF turbines
39	Sand and Gravel Quarry Development, Abbeyleix	OUT - nature of project - ground level/subterranean works
40	Spink Quarry	OUT - nature of project - ground level/subterranean works
41	McKeon Stone, Threecastles Quarry	OUT - nature of project - ground level/subterranean works
42	Sand Pit, Abbeyleix	OUT - nature of project - ground level/subterranean works
43	Bennettsbridge Limestone Quarries (in planning)	OUT - nature of project - ground level/subterranean works
44	Large Residential Kilkenny	OUT - height of buildings, separation distance to GWF turbines
45	Potential Killeshulane Wind Farm	IN - pre-planning, proposed wind farm within the cumulative study area

A5.4.2.8 Cultural Heritage

Map ID	Other Projects	Scoping Exercise – visual impacts
	Offsite Project –TDR Activities	OUT- scale, separation distance
1	Lisdowney Wind Farm	OUT - part of the baseline
2a	Parksgrove Solar Farm	OUT - low profile of solar panels, separation distance to GWF
2b	Parksgrove SF Grid Connection	OUT - underground nature of grid connection
3b	Farranrory Grid Connection	OUT - underground nature of grid connection
4	Eirgrid Ballyragget Substation (including Extension)	OUT - small scale, ground level works, separation distance
5	BESS 1 at Moatpark	OUT - scale, low height of containers, separation distance
6	BESS 2 at Moatpark	OUT - scale, low height of containers, separation distance
7a	Ballynalacken Windfarm	OUT - separation distance
7b	Ballynalacken WF Grid Connection	OUT - scale, low height of buildings, underground grid, separation distance
8a	Tirlán Dairy Processing Facility	OUT - height of buildings, separation distance from windfarm
8b	Tirlán WWTP & Anaerobic Digestor	OUT - scale, low height of containers, separation distance
8c	Tirlán Solar Farm	OUT - low profile of solar panels, separation distance to GWF
9a	Seskin Wind Farm [Laois/Kilkenny]	IN - potential windfarm within 10km of GWF.
9b	Seskin WF Grid Connection	OUT - underground nature of grid connection
10b	Briskalagh Grid Connection	OUT - underground nature of grid connection
11	Garrylaun Mining Project	OUT - subterranean/ground level works, separation distance
12	Lisheen Wind Farm	OUT - separation distance
41	McKeon Stone, Threecastles Quarry	OUT - ground level works, separation distance
45	Potential Killeshulane Wind Farm	OUT - in pre-app stage, not enough information to inform cumulative assessment

Map ID	Other Projects	Scoping Exercise – construction stage
	Offsite Project –TDR Activities	OUT- scale, separation distance
1	Lisdowney Wind Farm	OUT - already constructed. No new excavations required during operation
2a	Parksgrove Solar Farm	OUT - already constructed. No new excavations required during operation
2b	Parksgrove SF Grid Connection	OUT - already constructed. No new excavations required during operation
3a	Farranrory Wind Farm	OUT - separation distance to works
3b	Farranrory Grid Connection	OUT - already constructed. No new excavations required during operation

4	Eirgrid Ballyragget Substation (including Extension)	OUT - separation distance to subject development works
5	Battery Energy Storage Development 1 at Moatpark	OUT - separation distance to subject development works
6	Battery Energy Storage Development 2 at Moatpark	OUT - separation distance to subject development works
7a	Ballynalacken Windfarm	OUT - separation distance to subject development works
7b	Ballynalacken WF Grid Connection	OUT - Overlapping works areas will not result in additional impacts to the same asset
8a	Tirlán Dairy Processing Facility	OUT - already constructed. No new excavations required during operation
8b	Tirlán Water Treatment Plant & Anaerobic Digester	OUT - already constructed. No new excavations required during operation
8c	Tirlán Solar Farm	OUT - already constructed. No new excavations required during operation
9a	Seskin Wind Farm [Laois/Kilkenny]	OUT - separation distance to works
9b	Seskin WF Grid Connection	OUT - Overlapping works areas will not result in additional impacts to the same asset
10a	Briskalagh Wind Farm	OUT - separation distance to works
10b	Briskalagh Grid Connection	OUT - Overlapping works areas will not result in additional impacts to the same asset
22	Littleton Wind Farm (Grid Connection)	OUT - Overlapping works areas will not result in additional impacts to the same asset
45	Potential Killoshulan Wind Farm (Grid Connection)	OUT - Overlapping works areas will not result in additional impacts to the same asset

A5.4.2.9 Material Assets Cumulative Scoping Exercise

Map ID	Other Projects	Scoping Exercise
	Offsite Project –TDR Activities	OUT- separation distance
1	Lisdowney Wind Farm	OUT - construction complete. Operational. Daily traffic is minimal and there is no temporal overlap with construction phases.
2a	Ballyragget & Parksgrove Solar Farm	OUT - construction complete. Operational. Daily traffic is minimal and there is no temporal overlap with construction phases.
2b	Parksgrove SF Grid Connection	OUT - construction complete. Operational. Daily traffic is minimal and there is no temporal overlap with construction phases.
3b	Farranrory Grid Connection	OUT - construction will be complete in 2026/2027. Daily operational traffic will be minimal and there is no temporal overlap with construction phases.
4	Eirgrid Ballyragget Substation (including Extension yard)	OUT - operational substation. Extension works are small scale. Substation is unmanned and generates negligible traffic.
5	Battery Energy Storage Development 1 at Moatpark	IN - not built yet, potential for construction during the Gathabawn construction period
6	Battery Energy Storage Development 2 at Moatpark	IN - not built yet, potential for construction during the Gathabawn construction period
7b	Ballynalacken Windfarm Grid Connection	IN - not built yet, potential for construction during the Gathabawn construction period.
8a	Tirlán Dairy Processing Facility	OUT - operational facility. Generates steady commercial HGV movements on the N77, but the N77 is designed to accommodate strategic industrial freight.
8b	Tirlán Water Treatment Plant & Anaerobic Digester	OUT - operational plant. Daily traffic is minimal and there is no temporal overlap with construction phases.

8c	Tirlán Solar Farm	OUT - construction complete. Operational. Daily traffic is minimal and there is no temporal overlap with construction phases.
9a	Seskin Wind Farm	IN - not built yet, potential for construction during the Gathabawn construction period. Includes a site entrance on the N77 (Public roads and Road Users). OUT - separation distance (Built Services)
9b	Seskin WF Grid Connection	IN - not consented yet, potential for construction during the Gathabawn construction period. Includes trenching in the carriageway of the N77.
10b	Briskalagh Grid Connection	IN - not consented yet, potential for construction during the Gathabawn construction period. Includes trenching in the carriageway of the N77 and R432.
22	Littleton Wind Farm (Grid Connection)	IN - not consented yet, potential for construction during the Gathabawn construction period. Includes trenching in the carriageway of the N77 and R432.
45	Potential Killoshulan Wind Farm (Grid Connection)	IN - not consented yet, potential for construction during the Gathabawn construction period. Includes trenching in the carriageway of the L1806 and N77.

A5.4.2.10 Population

Map ID	Other Projects	Electoral Divisions	Scoping Exercise
	Offsite Project –TDR Activities	n/a	OUT – separation distance, nature of activities
1	Lisdowney Wind Farm	LISDOWNEY	OUT - construction complete. No community benefit fund.
2a	Parksgrove Solar Farm	BALLYCONRA	OUT - construction complete.
2b	Parksgrove SF Grid Connection	BALLYCONRA/BALLYRAGGET	OUT - construction complete.
3b	Farranrory Grid Connection	BALLEEN, LISDOWNEY, BALLYCONRA, BALLYRAGGET	OUT - construction complete.
4	Eirgrid Ballyragget Substation (including Extension yard)	BALLYRAGGET	OUT - small scale of extension works
5	BESS 1 at Moatpark	BALLYRAGGET	OUT - could be constructed during same period as the Gathabawn project, limited scale of construction contract value into local economy
6	BESS 2 at Moatpark	BALLYRAGGET	OUT - could be constructed during same period as the Gathabawn project, limited scale of construction contract value into local economy
7a b	Ballynalacken Windfarm & Grid Connection	BALLYRAGGET	IN - could be constructed during same period as the Gathabawn project, large construction project
8a	Tirlán Dairy Processing Facility	BALLYCONRA	OUT - long establish dairy processing unit whose positive impact on local employment and local economy is already part of the baseline/history of LISDOWNEY, BALLYCONRA AND BALLYRAGGET EDs
8b	Tirlán WWTP & Anaerobic Digestor	BALLYCONRA	OUT - construction complete.
9a b	Seskin Wind Farm [Laois/Kilkenny] & Grid Connection	BALLYCONRA	IN - could be constructed during same period as the Gathabawn project, large construction project
10b	Briskalagh Grid Connection	BALLYCONRA/BALLYRAGGET	OUT - could be constructed during same period as the Gathabawn project, limited scale of construction contract value into local economy
45	Potential Killoshulan Wind Farm	could be partially in BALLEEN	OUT - preplanning. Expected that cumulative visual/landscape impacts will be included in cumulative evaluations within Killoshulan EIAR

Map ID	Other Projects	Scoping Exercise – visual impact
	Offsite Project –TDR Activities	OUT – separation distance, nature
1	Lisdowney Wind Farm	IN - existing wind farm within the 5km study area
2a	Parksgrove Solar Farm	OUT - height above ground level of solar panels
2b	Parksgrove SF Grid Connection	OUT - underground grid connection
3a	Farranrory Wind Farm	IN - existing (currently under construction) wind farm within the cumulative study area
3b	Farranrory Grid Connection	OUT - underground grid connection
4	Eirgrid Ballyragget Substation (including Extension yard)	OUT - existing facility. Minor scale of extension works.
5	BESS 1 at Moatpark	OUT - height above ground level of battery containers and substation buildings/apparatus, separation distance to GWF turbines
6	BESS 2 at Moatpark	OUT - height above ground level of battery containers and substation buildings/apparatus, separation distance to GWF turbines
7a	Ballynalacken Windfarm	IN - consented wind farm within the cumulative study area
8a	Tirlán Dairy Processing Facility	OUT - existing facility. Part of baseline, separation distance to GWF turbines
8b	Tirlán WWTP & Anaerobic Digestor	OUT - existing facility. Part of baseline, separation distance to GWF turbines
8c	Tirlán Solar Farm	OUT - height above ground level of solar panels
9a	Seskin Wind Farm [Laois/Kilkenny]	IN - potential (advanced in the planning system) wind farm within the cumulative study area
10a	Briskalagh Wind Farm	IN - potential (advanced in the planning system) wind farm within the cumulative study area
10b	Briskalagh Grid Connection	OUT - underground grid connection
11	Garrylaun Mining Project	OUT - nature of project - ground level/subterranean works
12	Lisheen Wind Farm	IN - existing wind farm within the cumulative study area
13	Bruckana Wind Farm	IN - existing wind farm within the cumulative study area
15	Killeen Wind Farm	OUT - part of Farranrory WF, see above.
16	Foylatalure Wind Farm	IN - existing wind farm within the cumulative study area
17	Kyleballyoughter Wind Farm	IN - existing wind farm within the cumulative study area
18	Ballybay Wind Farm	IN - existing wind farm within the cumulative study area
19	Cnoc Wind Farm	IN - existing wind farm within the cumulative study area
20	Gurteen Wind turbine	OUT - scale of works, single turbine, separation distance to GWF turbines
21	Moyne Solar Farm	OUT - height above ground level of solar panels, separation distance to GWF turbines
22	Littleton Wind Farm	IN - consented wind farm within the cumulative study area
27	Borris-in-Ossary WWTP upgrade works	OUT - scale of works, separation distance to GWF turbines
30	Pinewood Wind Farm	IN - consented wind farm within the cumulative study area
31	Potential Fassa Windfarm	IN - potential wind farm on the border of the 20km study area.
32	Crutt single turbine	OUT - scale of works, single turbine, separation distance to GWF turbines
33	Loan Solar Farm	OUT - height above ground level of solar panels, separation distance to GWF turbines
34	Brownstown Solar and Storage Park	OUT - height above ground level of solar panels and battery containers, separation distance to GWF turbines
35	Kilderry Solar Farm	OUT - height above ground level of solar panels, separation distance to GWF turbines
39	Sand and Gravel Quarry Development, Abbeyleix	OUT - nature of project - ground level/subterranean works
40	Spink Quarry	OUT - nature of project - ground level/subterranean works
41	McKeon Stone, Threecastles Quarry	OUT - nature of project - ground level/subterranean works
42	Sand Pit, Abbeyleix	OUT - nature of project - ground level/subterranean works
44	Large Residential Kilkenny	OUT - height of buildings, separation distance to GWF turbines
45	Potential Killeshulán Wind Farm	IN - potential wind farm on the border of the 5km study area.

Map ID	Other Projects	Scoping Exercise- Community Benefit Funds
1	Lisdowney Wind Farm	OUT - older windfarm, no RESS Community Benefit Fund (CBF). No commitment to yearly community benefit fund
2a	Parksgrove Solar Farm	IN - Subject to RESS - CBF will be provided by the developer. Value €50,000 - 100,000 p.a
2b	Parksgrove SF Grid Connection	OUT - not a renewable generator, RESS not applicable
3b	Farranrory Grid Connection	OUT - not a renewable generator, RESS not applicable
4	Eirgrid Ballyragget Substation (including Extension yard)	OUT - not a renewable generator, RESS not applicable
5	BESS 1 at Moatpark	OUT - not a renewable generator, RESS not applicable
6	BESS 2 at Moatpark	OUT - not a renewable generator, RESS not applicable
7a	Ballynalacken Windfarm	IN - likely to be subject to RESS - CBF will be provided by the developer. Value c.€280,000 per annum for the lifetime of the project
7b	Ballynalacken WF Grid Connection	OUT - not a renewable generator, RESS not applicable
8a	Tirlán Dairy Processing Facility	OUT - not a renewable generator, RESS not applicable
8b	Tirlán WWTP & Anaerobic Digester	OUT - not a renewable generator, RESS not applicable
9a	Seskin Wind Farm [Laois/Kilkenny]	IN - likely to be subject to RESS - CBF will be provided by the developer - value c.200,000 per annum
9b	Seskin WF Grid Connection	OUT - not a renewable generator, RESS not applicable
10a	Briskalagh Wind Farm	IN - likely to be subject to RESS - CBF will be provided by the developer - value c.275,000 per annum for the first 15 years
10b	Briskalagh Grid Connection	OUT - not a renewable generator, RESS not applicable
11	Garrylaun Mining Project	OUT - not a renewable generator, RESS not applicable
12	Lisheen Wind Farm	OUT - older windfarm, no RESS Community Benefit Fund (CBF)
13	Bruckana Wind Farm	IN- older windfarm, no RESS Community Benefit Fund (CBF), however developer operates a c.€50,000 community benefit fund per annum
15	Farranrory Substation (at Killeen)	OUT - not a renewable generator, RESS not applicable
16	Foylatalure Wind Farm	OUT - older windfarm, no RESS Community Benefit Fund (CBF)
17	Kyleballyoughter Wind Farm	OUT - older windfarm, no RESS Community Benefit Fund (CBF)
18	Ballybay Wind Farm	OUT - older windfarm, no RESS Community Benefit Fund (CBF)
19	Cnoc Wind Farm	OUT - older windfarm, no RESS Community Benefit Fund (CBF)
21	Moyne Solar Farm	IN - could be subject to RESS, CBF fund potentially c.>200,000 per annum for the first 15 years
31	Potential Fassa Windfarm & Grid Connection	OUT - preplanning. Expected that cumulative CBF impacts will be included in cumulative evaluations within Fassa EIAR
32	Crutt single turbine	OUT - Small scale, no CBF likely to be associated with a single turbine.
45	Potential Killeshulan Wind Farm	IN - could be subject to RESS, CBF fund potentially c.>250,000 per annum for the first 15 years