



# Chapter 3: Description of Proposed Development

Coolglass Wind Farm Vol. 2 EIAR

Coolglass Wind Farm Limited

Prepared by:

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## Acronyms and Abbreviations

SLR	SLR Consulting Limited
EIAR	Environmental Impact Assessment Report
EIA	Environmental Impact Assessment
SEAI	Sustainable Energy Authority of Ireland
WTGs	Wind Turbine Generators
NIS	Natura Impact Statement
ITM	Irish Transverse Mercator
MWh	Megawatt Hours
SG155	Siemens Gamesa V155
V162	Vestas 162
AEP MRFS	Annual Exceedance Probability Mid-Range Future Scenario
OPW	Office of Public Works
TSO	Transmission System Operator
CEMP	Construction and Environmental Management Plan
AP1	Access Point 1
AP2	Access Point 2
ABP	An Bord Pleanála
CBM	Cement Bound Material
HDPE	High Density Polyethylene
ESBN	Electricity Supply Board Networks
SSE	South /Southeast
SE	Southeast
CCC	Carlow County Council
LCC	Laois County Council



## 3.0 Description of the Proposed Development

### 3.1 Introduction

This chapter of the EIAR describes the existing site and the main components of the Proposed Development and provides details on the construction, operation and decommissioning of the Proposed Development in compliance with the EIA Directive.

The Proposed Development is located approximately 11km southeast of Portlaoise, 14km northwest of Carlow and 11km east of Abbeyleix. The Proposed Development site includes lands contained within the following townlands: Fossy Upper, Aghoney, Gorreelagh, Knocklead, Scotland, Brennanshill, Monamantry, Coolglass, Crissard, Kilenabehy, County Laois.

The Proposed Development is located across two prominent hills- Fossy Mountain and Wolfhill, comprised of two no. clusters of development and briefly comprises thus:

- The northern cluster of the Proposed Development is comprised of a geographical area defined by Fossy Lower Road at the northernmost extent, the R426 at the westernmost extent, Luggacurren Road at its easternmost extent, and Knocklead Road to its southernmost extent. Elements of the Proposed Development which will be located in the northern cluster, if consented, comprise:
  - o 7 no. turbines (turbine nos 1-7) and their associated access tracks, hardstandings and foundations;
  - o 1 no. 110 kV substation;
  - o 1 no. temporary construction compound (TCC1);
  - o 1 no permanent 102.5m meteorological mast;
  - o 1 no. site access point (AP1);
  - o A recreational amenity trail (part of a future separate planning application);
  - o The origin of 2 no. cable routes from the proposed on-site substation (part of a future separate planning application);
  - o A 33kV collector cable which connects both clusters to the proposed on-site substation.
- The southern cluster of the Proposed Development is comprised of a geographical area defined by Knocklead Road at its southernmost extent, Crissard Road at its easternmost extent, Knocklead/Moyadd road at its westernmost extent and Slatt Lower road at its southernmost extent. Elements of the Proposed Development which will be located in the southern cluster, if consented, comprise:
  - o 6 no. turbines (turbine no's 8-13) and their associated access tracks, hardstandings and foundations;
  - o 1 no. Borrow pit;
  - o 1 no. temporary construction compound (TCC2);
  - o 1 no. site access point (AP2).

Coolglass Wind Farm Limited (the applicant) is applying to An Bord Pleanála for consent for the Proposed Development (as defined in Section 3.1.1).



### 3.1.1 Definition of Terms

For the purposes of assessment, the following terms (Capitalised) are to be utilised throughout each chapter and the NIS:

- **Proposed Development:** The portions of the Project which development consent is sought- in this instance, it is the wind farm and its ancillary infrastructure (including the 33kV collector cable between the Northern and Southern cluster) and the Turbine Delivery Route
- **Project:** This is an all-encompassing term which covers all components of the wind farm its ancillary infrastructure as defined in the Proposed Development- including cable route which connects the on-site substation to the National Grid and the Recreational Amenity Trail in the Northern Cluster. It should not be used for the purposes of this assessment unless it is specifically referring to this definition.
- **Northern Cluster:** This definition is clearly stated in Section 3.1 above
- **Southern Cluster:** This definition is clearly stated in Section 3.1 above
- **Site:** The subject site where the Proposed Development is located
- **Option 1 Cable Route:** This cable route extends from the Proposed Development southwards towards Pinewoods Substation.
- **Option 2 Cable Route:** This cable route extends from the Proposed Development northwards towards Coolnabacky Substation.
- **Design Permutations:** This term is to be utilised define each permutation within the turbine range when assessing the dimensional ranges which are set out in **Table 3-1**.

### 3.1.2 Site Context

The Proposed Development is located south-east of Portlaoise. The main towns and villages within the vicinity of the Proposed Development include: Timahoe, Swan, Wolfhill, Newtown, Ballinakill, Stradbally, Athy, Carlow, Portlaoise, and Abbeyleix.

The site spans Fossy Mountain and Wolfhill, northeast of Swan and southeast of Timahoe. These hills are the most prominent landscape features within the central study area and its wider surrounds with Fossy Hill reaching a height of approximately 325m AOD.

The site is located in a predominantly forestry plantation and agricultural area, with elevations within the site ranging from 196 m to 325 m above sea level. The lens cover is classified in Corine Landcover 2018 as predominately Coniferous and Mixed Forest and Transitional Areas interspersed with Agricultural Areas. This is illustrated in **Figure 3-3**.

The Proposed Development is divided into two distinct areas identified as the northern cluster and the southern cluster as defined in Section 3.1. These areas are identified clearly in **Figure 3-1**.

The northern cluster of the Proposed Development is characterised by elevated lands with elevations between 285 – 325 m with moderate to steep slopes to the west and north of the site boundary. Slopes within the Proposed Development and proposed infrastructure locations generally comprises gentle to moderate slopes.

The southern portion of the Proposed Development site (Wolfhill) is characterised by elevated lands with elevations between 196 – 300 m with moderate to gentle slopes down to the north and west throughout the site boundary. Slopes within the Proposed





Development and at proposed infrastructure locations generally comprises gentle to moderate slopes.

## 3.2 Applicant

The applicant for the Proposed Development is Coolglass Wind Farm Limited, an entity wholly owned by Statkraft, a leading company in hydropower internationally and Europe's largest generator of renewable energy. Statkraft is one of the biggest renewable energy developers in Ireland with over 4GW pipeline of offshore, onshore, solar and grid services projects. The Statkraft Ireland team, which is based in Cork and Tullamore, Co. Offaly, has constructed a portfolio of almost 350MW of wind projects across the country, operates over 500MW, and has an established track record in wind energy in Ireland having previously developed previously wind farms in Counties Clare, Cork, Kerry, Donegal, Limerick, Galway, Waterford, Tipperary, Offaly and Tyrone.

## 3.3 Landownership

Ownership of the lands associated with the Proposed Development are a combination of lands owned by Coillte and by private landowners. The Applicant has obtained letters of consent for the Proposed Development. Development consent is sought for the development as described in Sections 3.5 and 3.8.1.

## 3.4 Statement of Authority

This chapter has been prepared by Crystal Leiker, BA M.PLAN, Principal Planner and Darren Keogh BEng, MPhil, PHD Civil Engineering, both employed by SLR Consulting.

- Crystal is a chartered planner and has eight years' experience in project management, EIA coordination, planning for large scale infrastructure and renewable energy projects and preparing environmental impact assessment chapters and reports for renewable energy and tourism projects.
- Darren is a Chartered Civil Engineer with 22 years' experience in renewable energy developments.

## 3.5 Summary of the Project to be Assessed

The Proposed Development consists of the following elements and herein is known as the 'Proposed Development':

- Turbines and associated infrastructure
- Turbine Delivery Route
- 2 no. Cable Routes (Option 1 and Option 2)
- Recreational Amenity trail
- 102.5m permanent meteorological mast

### 3.5.1 Turbines and Associated Infrastructure

The turbines and their associated infrastructure will consist of:

- 13 no turbines across two clusters – the northern cluster consists of 7 no turbines while the southern cluster consists of 6 no. turbines,



- 110kV on site substation,
- two no. construction compounds to assist in the construction process of the project
- 15.5 km of access tracks connecting the turbines to all associated and ancillary infrastructure
- 1 no. borrow pit to assist in the construction process of the project.

The townlands for this element of the project include: Fossy Upper, Aghoney, Gorreelagh, Fallowbeg Upper, Brennanshill, Scotland, Coolglass, Crissard, Kylenebehy, Co. Laois.

This element of the Proposed Development comprises part of the development consent currently sought for this planning application. The general layout of the site is shown in **Figure 3-1**.

### 3.5.2 Turbine Delivery Route

Temporary accommodation works to facilitate turbine delivery is proposed within the following townlands: Monamanry, Brennanshill, Aghoney, Baunogemeely, Knocklead, Timahoe, Carrigeen, Ballygormill South, Money Upper, Derrytrasna, Derry, Rathleague, Ballymooney, Rathbrennan, Ballydavis, County Laois.

The Turbine Delivery Route element of the project forms part of the Proposed Development currently sought for this planning application. The turbine delivery route assessed as part of this project is found in **Figure 3-5**.

### 3.5.3 Cable Routes

Two 110 kV cable routes are assessed as part of this EIAR. The preferred underground cable route connecting the proposed wind farm to the national grid will be part of a separate planning application. The two cable routes assessed in this EIAR traverse the following townlands:

- **Option 1:** Under this option, the cable route will exit the proposed on-site substation heading south before entering the L3851 (Knocklead Road). From there, the cable will cross the R426 and head south and west along two minor unnamed roads before crossing forestry tracks to the south and joining Pinewoods substation from the north. The length of this cable route is c. 9.9km and crosses the following townlands: Knocklead, Baunogemeely, Knockacrin, Cleanagh, Knockbawn, Garrintaggart, Graiguenahown, Boleybeg and Knockardagur, Co. Laois.
- **Option 2:** The cable route will exit the proposed onsite substation heading south, before entering the L3851. From there, the route will head north along the R426 for approximately 10km before entering private fields to the Coolnabacky substation. The length of this cable route is c. 10.1 km and crosses the following townlands: Aghoney, Fossy Upper, Ballintlea Lower, Fossy Lower, Timahoe, Coolnabacky, Esker, Cremorgan, Carrigeen, County Laois.

The proposed cable routes assessed is shown in **Figure 3-2**.

### 3.5.4 Recreational Amenity Trail

A recreational amenity trail is proposed within the northern cluster of the Proposed Development (see section 3.1). This trail will utilise an existing trail around and across Fossy Mountain and connect to other existing trails in the vicinity while also linking the town of



Timahoe to Fossy Mountain. The proposed recreational amenity trail will traverse the townlands of Fallowbeg Upper, Fossy Upper, Fossy Lower, Clashboy and Timahoe.

Works proposed for this element of the Proposed Development comprise

- Minor surface enhancements where required to the existing trails on Fossy Mountain so that the trails are suitable for walking
- The provision of signage throughout the trail
- Minor works from Timahoe town to Fossy Mountain to facilitate safe pedestrian access to the site.

The recreational amenity trail does not form part of the Proposed Development currently sought for this planning application. The Recreational Amenity Trail assessed within this EIAR is found in **Figure 3-6**.

### 3.5.5 Meteorological Mast

The Proposed Development will involve the erection of a permanent 102.5m meteorological mast located at ITM coordinates X 656149, Y 687904 and is part of this planning application.

## 3.6 Existing Environment

The Proposed Development is located within two Hydrometric Areas: the northern cluster is located in the Barrow catchment, while the southern cluster is located in the Nore catchment. The site is situated in the South Eastern River Basin District. The main hydrology features are the Stradbally River and Crooked River in the northern cluster, and tributaries of the River Clough and Owveg River in the southern cluster.

The geology present within the development site and wider study area comprise of carboniferous shales, siltstones and thin coals, with clay beds. The majority of the proposed cable route is underlain by carboniferous shales, siltstones and thin coals, with clay beds along the proposed route.

There are 56 residential properties located within 1 kilometre of the Proposed Development. There are 105 residences within 500m of the cable routes. The nearest residential property is located 722metres from a wind turbine.

The site is accessible from both the north and the south via the R526 Regional Road which runs the M7 Motorway and the N 78 National Road.

## 3.7 On-Site Wind Resource

The layout of the Proposed Development has been designed to minimise the potential environmental impacts of the Proposed Development, while at the same time maximising the energy yields of the wind resources passing over the site. Available wind speed is a key factor in determining the economic viability of potential wind energy locations. The Sustainable Energy Authority of Ireland (SEAI) Wind Mapping System<sup>1</sup> identifies the site as having an average wind speed of between 6.1 and 7.8 metres per second at 20 m above ground level.

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<sup>1</sup> Sustainable Energy Authority of Ireland (SEAI) Wind Mapping System <https://gis.seai.ie/wind/>



### 3.8 Proposed Project

The proposed Project will primarily consist of a wind farm of 13 number of wind turbine generators (WTGs), one substation compound along with ancillary civil and electrical infrastructure.

The total installed capacity of the proposed development is between 85.8 to 93.6MW (please note: the MW output is stated here based on turbines of a 6.6MW and a 7.2 MW output and only for the purposes of assessment of benefits towards climate as set out in Chapter 6

The exact proposed turbine will be subject to a competitive procurement process that will only commence if the Proposed Development receives consent. The proposed turbines will be detailed by the turbine manufacturer and award of the contract. However, the installed turbines will within the range of minimum and maximum hub height and rotor diameter parameters of the following two turbines:

- Siemens Gamesa 155;
- Vestas V162

The proposed turbines will be within the following specifications:

- The turbines will be three bladed, horizontal access type;
- The turbines will have a height of 180 m from top of foundation (at ground level) to blade tip height
- The rotor diameter of the proposed turbines will be within the range of 155 – 162m (inclusive)
- The hub height will be within the range of 99m-102.5m (inclusive)

In terms of appearance, modern wind turbines from all main turbine manufacturers have evolved to share a common appearance and major characteristics with only minor cosmetic differences which differentiate one manufacturer from another.

The associated cable route will consist entirely of underground cable route. Two cable routes are being assessed as part of this EIAR (see section 3.4.3 for details). However, the cable route does not form part of this planning application. One of these two cable route routes will be chosen and subject to a separate planning application.

A 33kv collector circuit cable will run between the northern and southern clusters of the Proposed Development. This internal cable route has been assessed and forms part of the Proposed Development.

#### 3.8.1 Summary of the Statutory Development Description for Consent

The Proposed Development which consists of a 13 no turbine wind farm development and associated works on land within the townlands of Fossy Upper, Aghoney, Gorreelagh, Knocklead, Scotland, Brennanshill, Monamantry, Coolglass, Crissard, Kylenebehy, Monamanry, Brennanshill, Knocklead, Aghoney, Timahoe, Carrigeen, Ballygormill South, Money Upper, Hophall, Rathleague, Ballymooney, Rathbrennan, County Laois. The site is 731 ha in size. The development will consist of:

- Construction of 13 No. wind turbines within two clusters with an overall ground to blade tip height of 180m. The wind turbines will have a rotor diameter ranging from 155m to 162m inclusive and a hub height ranging from 99 to 102.5m inclusive.



- Construction of permanent turbine hardstands and turbine foundations.
- Construction of 1 no. permanent 110 kV electrical substation including 2 no. control buildings with welfare facilities, all associated electrical plant and equipment, security fencing and gates, all associated underground cabling, wastewater holding tank, and all ancillary structures and works.
- Construction of a 33kV collector cable circuit connecting the wind farm two clusters along the L3851/Knocklead Road
- Construction of two temporary construction compounds with associated temporary site offices, parking areas and security fencing.
- Development of one on-site borrow pit.
- Construction of new permanent internal site access roads, upgrade of existing internal site access roads, including passing bays and all associated drainage infrastructure
- Development of an internal site drainage network and sediment control systems.
- All associated underground electrical and communications cabling connecting the wind turbines to the wind farm substation.
- Ancillary forestry felling to facilitate construction of the development.
- All associated site development works including berms, landscaping, and soil excavation.
- Improvement of a site entrance to an existing access off the L3851/Knocklead local road to include localised widening of the road and creation of a splayed entrance to facilitate the delivery of abnormal loads and turbine component deliveries. Improvements include removal of existing vegetation for visibility splays to facilitate the use of the access for the delivery of construction materials to the site.
- A new site entrance slip road from the L3851 / Knocklead local road to facilitate the delivery of abnormal loads and turbine component deliveries. Works at this location require the removal of existing forestry to facilitate the use of the access for the delivery of construction materials to the site and for use during the operational phase.
- Construction related temporary upgrade works on the turbine delivery route to facilitate the delivery of turbine components to include the use of temporary road surfaces at a roundabout at the southern exit of Junction 16 of the M7, the R425/N80 roundabout and the R426 – L3851 junction.
- The erection of a permanent meteorological mast 102.5m in height

This planning application seeks a 10-year construction period and a 35-year operational period.

This EIAR includes an assessment of the likely significant effects of the Proposed Development as a whole and cumulative effects, including any cumulative effects with both grid connection options which will occur as a direct result of the Proposed Development, including connection to the national electricity grid.

A Natura Impact Statement (NIS) will also be submitted to the planning authority with the planning application.



A cable route will be sought as part of a separate planning process and does not form part of this planning application.

### 3.8.2 Turbines

#### 3.8.2.1 Candidate Turbines

The exact make and model of the turbine will be dictated by competitive tender process but will remain within the range listed below. The candidate turbines and the dimensions assessed for the purposes of this EIAR are set out in **Table 3-1**.

**Table 3-1 Design Parameters to be Assessed**

Turbine Type	Tip Height (m)	Hub Height (m)	Rotor Diameter (m)	Foundation Size	Hardstand dimensions
Siemens Gamesa SG155	180	102.5	155	25m diameter	50m x 20m
Vestas V162	180	99	162	25m diameter	80m x 30m

The specifications of each candidate turbine is contained in Technical Appendix 3.1 found in Volume III of this EIAR.

#### 3.8.2.2 Turbine Layout

The turbine layout consists of 13 no turbine layout among two clusters within Fossy Hill and Wolfhill, Co Laois.

The northern cluster (Fossy Hill) consists of seven turbines (no's 1-7) broadly arrayed in mostly commercial forestry plantation with varying stages of maturity. Turbine 4 is to be located within an existing agricultural field.

The southern cluster will comprise 6 no. turbines (no's 8-13), all arrayed within commercial plantation at varying stages of maturity.

The layout of the Proposed Development has been designed to minimise the potential environmental effects of the wind turbines on the surrounding area, while at the same time maximising the energy yield of the wind resource which passes over the site. The Proposed Development layout is shown in **Figure 3-1**. This layout reflects the outcome of an iterative design process. Further detail on the design, philosophy, constraints and alternative layouts is documented in Chapter 17'Site Selection and Alternatives'.

The turbines referenced from T1-T13 and coordinates in Irish Transverse Mercator [ITM] are detailed in **Table 3-2**.

**Table 3-2 Proposed Turbine Coordinates**

Turbine ID	X (ITM)	Y (ITM)
1	655032	687985
2	655375	688632
3	655675	688369



Turbine ID	X (ITM)	Y (ITM)
4	656166	688288
5	656858.6	688320.6
6	656569	687959
7	657151	687733
8	657545	684471
9	657418	684888
10	656562	684216
11	656660	683654
12	656978	684062
13	657286	683895

### 3.8.2.3 Turbine Blades

The blades of a modern turbine are comprised of glass fibre reinforced polyester. The blades of a turbine rotate between five and 15 revolutions per minute, dependent on wind speed and turbine make. A turbine begins generating electricity at a wind speed of approximately 3 to 4 m/s depending on the turbine type, with rated power generation at wind speeds of approximately 12 to 14 m/s.

Turbines are usually shut down at wind speeds greater than 25 m/s, although some machines are designed to operate up to 30 m/s. The yaw mechanism, controlled by a wind vane, turns the nacelle and blades into and out of the wind. Blades are pitched to match the wind conditions.

### 3.8.2.4 Turbine Tower and Foundation

The tower of a turbine is a conical steel tube, with multiple painted finishes. It is generally transported to the site in 4 to 5 sections. The first section is bolted to the steel base which is cast into a concrete foundation. The shape and size of the foundation may vary depending on the turbine manufacturer specifications; however, the foundations will be 25 metres diameter and 2m in depth and are gravity-based foundations composed of reinforced concrete. All foundations will be located below ground level.

The upper sections of the tower are bolted to the lower ones in sequence. The base of the tower is 4.5m to 5m in diameter, tapering to between 3 and 4 metres, where it is attached to the nacelle. It is accessed by a galvanised steel staircase and a steel hatch door which will be kept locked except during maintenance.



### 3.8.2.5 Turbine Transformer

The turbine will have a transformer located within the tower. The turbine transformer steps up the voltage of the electricity generated by the turbine to approximately 33 kV to reduce the electrical loss on the cabling connector circuits that connect to the site substation.

### 3.8.2.6 Power Output

The Proposed Development will have an estimated installation capacity of 85.8 MW (SG 155) to 93.6 MW (V162) depending on the final turbine technology installed. Turbines of the exact same make, model and dimensions can have different power outputs depending on the capacity of the electrical generator installed in the turbine may sell. Rated capacity of 85.8 MW has been used below to calculate the power output of the Proposed Development. Assuming installed capacity of 85.8 to 93.6 MW, the Proposed Development has the potential to produce approximately 248,030 (SG155) to 270,579 (V162) MWh (megawatt hours) of electricity per year, based on the following calculation:

$A \times B \times C =$  megawatt hours of electricity produced per year

Where:

- ✓ A = the number of hours in a year: 8760 hours
- ✓ B = the capacity factor, which takes into account the intermittent nature of wind, the availability of wind turbines and array losses. The capacity factor of 33% is applied here
- ✓ C = rated capacity of the wind farm: 85.8 MW (SG 155) or 93.6 MW (V162)

The 248,030 – 270,579 MWh of electricity produced by the Proposed Development would be sufficient to supply approximately 59,000 to 64,000 Irish households with electricity per year, based on the average Irish households using 4.2 MWh of electricity<sup>2</sup>

According to the 2016 Census of Ireland, there are a total of 29,107 private households within County Laois. Based on a capacity factor of 33%, the Proposed Development would therefore produce enough electricity for the equivalent of 100% of all households in County Laois as per the Housing stock of the 2016 Census, as well as the projected increase of 6,019 households by 2027, leaving capacity to power an additional 23,974 to 28,974 households based on the installation capacity calculated above. Effectively, the Proposed Development would have the capacity to power approximately two times the number of households in County Laois with renewable energy, including the additional required housing stock, based on the forecast requirement.

### 3.8.2.7 Turbine Colour

Turbines have multiple painted coatings which protect against corrosion. They are coloured flies were light grey to blend into the sky background. The colour of the turbine minimises visual impact, as recommended by the following guidelines on wind energy developments:

- Draft Wind Energy Development – Planning Guidelines (2019)
- Wind Energy Development – Planning Guidelines (2006)

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<sup>2</sup> March 2017 CER Review of Typical Consumption Figures Decision





- The Influence of Colour on The Statics of Wind Turbine Generators” – ETSU W/14/00533/00/00
- Pan45, The Scottish Office Environment Department
- PPG 22, Department Of The Environment – Welsh Office
- Technical Advice Note 8, Welsh Assembly, 2005

### 3.8.3 Turbine Delivery Route, Access Tracks and Hardstandings

#### 3.8.3.1 Turbine Delivery Route

The proposed turbine delivery route is presented in **Figure 3-5**. A turbine delivery route selection and assessment were carried out to identify the optimum delivery route to the sites.

Turbine delivery will be from Dublin port and delivered along one distinctive route. The turbine delivery route will leave Dublin port and join with the M 50 motorway via the Dublin Port Tunnel. The route will continue along the 50, exiting the N7 National Road / M7 Motorway heading west before exiting at Junction 16. The route then exits the motorway and travel south on the R445 Regional Road before descending further south towards Rathleague. Once the turbine delivery route crosses the M7 motorway, the route will continue in a southern and easterly direction on Portlaoise Road/R426 Regional Road, through the town of Timahoe. The route will continue along the R426 Regional Road before heading east on Knocklead Road before accessing either the southern or northern clusters via existing forestry tracks.

Further discussion on this route selection assessment is found in Chapter 12 and Technical Appendix 12.1 found in Volume III of this EIAR.

#### 3.8.4 Internal Access Tracks

The Proposed Development will require 15.5 kilometres of internal access tracks to be upgraded. Of this, 5 kilometres of old internal access tracks will be utilised.

**Figure 3-1** illustrates the internal access tracks within the Proposed Development site. The proposed internal site track layout will permit access for vehicles during the construction phase, for maintenance during the operational phase, and for vehicles to decommission the turbines at the end of the life of the development.

An extensive network of forestry access tracks exist within the site. These existing access tracks have been utilised wherever possible to facilitate the Proposed Development. All access tracks will be approximately 5 m wide along straight sections and wider at bends. The tracks will be finished with a well graded aggregate. Existing drainage infrastructure will be maintained and upgraded where necessary.

It is anticipated that the stone required for the construction of all new internal access roads will be sourced from quarries in the vicinity of the site.

Access track formation will consist of a 500m hard core on a geotextile membrane. The construction methodology for newly constructed tracks will be as follows:

- the formation will be prepared to receive the geotextile membrane
- stone will be placed and compacted in layers to 500 mm depth
- drainage will be provided along the sides of the track



- surplus excavated material will be placed along the side of sections of the tracks and dressed to blend in with surroundings landscaping.

### 3.8.5 Borrow Pit

The Proposed Development will include a singular borrow pit at the access point of the southern cluster as demonstrated in **Figure 3-1**.

### 3.8.6 Cable routes

Two associated cable routes from the Site to the selected offsite substation will be assessed in this EIAR as part of the Proposed Development; however, the cable routes do not comprise part of this planning application and will be submitted under a separate planning process in the future. For the purposes of this assessment, two cable routes will be assessed and the most suitable will be taken forward into a separate planning application.

- Option 1 comprises a cable route between the proposed onsite substation and the Pinewoods substation. This route is 9.9km in length.
- Option 2 comprises a cable route between the proposed onsite substation and Coolnabacky substation. This route is 10.1km in length.

These works are expected to be conducted over a 12 month period of time. This element of the Proposed Development is to be a permanent fixture and will be taken in charge by EirGrid at the end of the construction phase.

### 3.8.7 Recreational Amenity Trail

A 9km trail loop originating from Timahoe town to and through the northern cluster of the Proposed Development will form a separate planning consent process but will be assessed as part of this EIAR. This trail loop will utilise existing forestry tracks around the Fossy Mountain Loop and local public roads.

Beginning in Timahoe town, the recreational amenity trail will head east on an unnamed local road at the Tower Inn heading towards Stradbally from the town square. It will follow this public road for c. 1.2km before joining a local access road, heading south for c. 1km before joining existing forestry tracks at the bottom of Fossy Hill. This recreational amenity trail is shown in **Figure 3-6**. These works could be conducted over a 6-month period of time (ca 26 weeks).

### 3.8.8 Watercourse Crossings

#### 3.8.8.1 Internal Access Track Watercourse Crossings

The proposed wind turbine layout will utilize in total four crossings as shown on **Figure 3-7**. The existing and new crossings are listed in **Table 3-3**. There will be one new crossing over the Fallowbeg Upper stream. The size and details of the crossing structures are outlined as part of the flood risk assessment provided in Section 9.

New crossings are designed to convey 1% AEP MRFS (Annual exceedance probability Mid-range future scenario) storm event with minimum 300mm freeboard level. This is in line with the OPW requirements. A Section 50 application will be required to obtain the consent of the OPW for the construction of the crossings.



### 3.8.8.2 Watercourse Crossings Along the Cable Route

The proposed cable routes will cross twelve watercourses in total. Seven crossings are along Option 1's route while there are five watercourses along Option 2's route. Should a watercourse be required to be crossed for the purposes of the cable route, the most relevant of the following methodologies will apply, to be assessed on a case-by-case basis:

- **piped culvert crossings** – where sufficient cover is available, the cable ducts will be laid above the culvert with a minimum separation distance, t 300 mm unless otherwise required by the local authority and Eirgrid. Where sufficient cover is not available, cable ducts will be laid under the culverts with a minimum separation distance, 300 mm unless otherwise required by with the local authority and Eirgrid.
- **Flatbed formation over culvert** – where the cable duct is to be installed over an existing culvert where sufficient cover is not available, the ducts will be laid in a much shallower trench the depth of which will be determined by the location of the top of the culvert. The ducts will be laid in this trench in a flatbed formation over the existing culvert and it will be encased in 6 mm thick steel galvanised pleat with the concrete surround as per EirGrid specification.

For more detail on the chosen methodology for each crossing, please see Chapter 9 Water.

### 3.8.8.3 Watercourse Crossings Along the Turbine Delivery Route

There are five watercourses along Option 2's route and the turbine delivery route which run in parallel along the entire cable corridor. There will be no construction works required on the crossing structures to facilitate the turbine delivery. Only minor works (tree removing, placement of temporary load bearing surface, street furniture removal, vegetation trimming) will be required along the TDR to accommodate the delivery.

### 3.8.9 Onsite Electricity Substation

It is proposed to construct one on-site electricity substation within the Proposed Development site as shown in Figure 3-1. This substation will provide a connection point between the Proposed Development and the proposed cable route point at either the Option 1 or Option 2 substations. A 33kV collector cable will route electricity from the southern cluster to the proposed on-site substation.

The dimensions of the proposed substation compound will be 65 metres by 127 metres and will include 2 no. substation control buildings and electrical components necessary to export electricity generated from the Proposed Development to the National Grid. The substation compound will be surrounded by a 2.6 metres high steel palisade fence and internal fences will also be provided to segregate different areas within the main substation compound.

Lighting will be required on site, and this will be provided by lighting poles located around the substation and exterior wall mounted lights on the control buildings.

The proposed substation will contain 2 no. control buildings; one of which, the Customer Switchgear Room (the IPP Building), will be operated and maintained by the Applicant while the Transmission System Operator (TSO) 'Control Building' (the Eirgrid Building) will be operated and maintained by EirGrid. The IPP Building will measure 17.83 metres by 7.5 metres and will have an overall height of 6.28 metres. It will house switchgear, associated electrical equipment and apparatus, storage and welfare facilities.



The EirGrid Building will measure 25 metres by 18 metres and will have an overall height of 8.5m. It will contain a control room, associated electrical equipment and apparatus and will also include storage and welfare facilities.

Staff welfare facilities will be provided in the control building and there will be a small water requirement for occasional toilet flushing and hand washing. It is proposed to install a rainwater harvesting system as the source of water for toilet facilities and this rainwater harvesting tank will be installed adjacent to the control buildings. Waste facilities will include portable toilets which will be serviced by a contractor.

This element of the Proposed Development is to be a permanent fixture and will be taken in charge by EirGrid at the end of the construction phase.

### **3.8.10 Electrical Cabling**

The electricity generated from wind turbines between the northern and southern clusters will be collected at a medium voltage 33 KV cable circuits of buried cables which will follow on site access tracks. A 33kV collector circuit cable will be embedded within the public roadway between the clusters, between Turbine 10 and the proposed onsite substation in the northern cluster. The electricity from the northern and southern clusters will be exported from the on-site substation to the existing grid via a 110 KV buried cable to either the Option 1 or Option 2 substations. Internal collector circuit cable routes are shown in the planning application drawings.

This element of the Proposed Development is to be a permanent fixture and will be taken in charge by EirGrid at the end of the construction phase.

#### **3.8.10.1 Cable Installation**

The specifications for cables and cable installation will be in accordance with EirGrid requirements. A description of cable installation works is found within the CEMP.

#### **3.8.10.2 Joint Bays**

A joint bay will be constructed in pits. Each joint bay will be approximately 4.5 m x 1.8 m x 1.2 m deep. A reinforced concrete slab will be constructed in the bay to accommodate the jointing enclosure.

Communication chambers, which are similar to small manholes, will also be installed at the joint bay locations to facilitate connection of fibre-optic communication cables.

### **Wind Farm**

Joint bays will be required for the 33kV collector cable which connects the northern and southern clusters of the Proposed Development and will form part of this planning application. Locations of joint bays are specified by Eirgrid at detailed design stage. The locations of joint bays are assumed to be required at each 90-degree bend and approximately every 750 m. Using this assumption, approximately 12 no. joint bays are required for the 6km collector cable running from turbine 10 to the on-site substation.

### **Cable Routes**

Joint bays are precast concrete chamber buildings where cables are joined to form one continuous cable. Locations of joint bays are specified by Eirgrid at detailed design stage. The cable routes assessed in this EIAR do not form part of this planning application.



Therefore, joint bay drawings for the two cable routes will not be included as part of this planning application, but it is assumed that a joint bay will be required at each 90 degree bend and approximately every 750m. For the purposes of this assessment, approximately 9 no. joint bays will be located in public roads with 5 no. joint bays located on private lands (Option 1) or approximately 12 no. joint bays will be located in public roads with 3 no. joint bays located on private lands (Option 2).

### **3.8.11 Traffic Management**

#### **3.8.11.1 Wind Farm**

Access to this element of the Proposed Development will be facilitated via the R426 with the L7791 and the L3851. Entry to Access Point 1 (AP1) is located 1.5km east along the L3851, with the entry to Access Point 2 (AP2) a further 2.1km along the L3851.

#### **3.8.11.2 Turbine Delivery Route**

The port of entry for AILs has been identified as Dublin Port, with a route via the M50 and M7 to Portlaoise.

Turbine deliveries would exit the M7 at Junction 16, heading southwest along the R445 for a short distance before turning south onto the R425. The R425 would be followed to the R426, where they will continue for approximately 12.8km. At the junction of the R426 with the L7791 and the L3851, deliveries will head east towards Luggacurren. Access to the northern cluster will be facilitated via Access Point 1 (AP1) which is located 1.5km east along the L3851, with access to the southern cluster via Access Point 2 (AP2) which is located a further 2.1km along the L3851.

#### **3.8.11.3 Cable routes**

Two cable routes which leave the Site and connect to external substations are to be assessed as part of the Proposed Development:

- Option 1: Under this option, the cable route will exit the proposed onsite substation heading south before entering the L3851 (Knocklead Road). From there, the cable will cross the R426 and head south and west along two minor unnamed roads before crossing forestry tracks to the south and joining Pinewoods substation from the north.
- Option 2: The cable route will exit the proposed onsite substation heading south, before entering the L3851. From there, the route will head north along the R426 for approximately 10km before entering private fields to the Coolnabackey substation.

A careful approach will be taken to planning the works to ensure minimal impacts on road users and the general public. Cable trenching will be carried out with the aid of either a lane closure or road closure, which will ensure that the trenching works are completed as expeditiously as possible. Due to the length of cabling within the road corridor (ca 10 km), it is expected that these works would be conducted over a 6-month period of time (ca 26 weeks).



### 3.8.12 Peat management

No peat has been observed within the Proposed Development area following an assessment and walkover of the existing environment. Further information on soils, soil and peat management can be found in Chapter 08 Land Soils and Geology.

### 3.8.13 Drainage

The proposed drainage system will be based on two key methods. The first method will involve keeping clean water clean by avoiding disturbance to natural drainage features, minimising any works in or around drainage features, and diverting clean surface runoff around excavations and construction areas. The second method will involve collecting any drainage water from works area that might carry silts or sediments, and to route them towards settlement ponds prior to controlled diffuse release over vegetated natural surfaces.

Further details on the hydrology and drainage are contained in Chapter 09 Water and in the accompanying planning drawings.

#### 3.8.13.1 Tree Felling and Replant Lands

Much of the Proposed Development site comprises commercial coniferous forestry. There are 11no. turbines located within forestry and consequently tree felling will be required as part of the Project. Felling of 54.36 ha (52.78 ha permanent; 1.58 ha temporary) of largely coniferous forestry is required within and around the wind farm infrastructure to accommodate the construction of some turbines, hardstanding's, crane pads, access tracks, construction compounds and the proposed onsite substation. The Felling area proposed is the minimum necessary to construct the Proposed Development and will provide necessary mitigation where required.

Tree felling will be subject to a felling licence application to the Forest Service prior to construction in accordance with the Forest Service's policy on granting felling licences for wind farm developments.

The Forest Service policy requires that a copy of the planning permission for a wind farm is submitted with a felling licence application, therefore, the felling licence cannot be applied for until planning permission is received for the Proposed Development site. The licence will include the provision of relevant replant lands to be planted in view of the proposed tree felling on the site.

The construction methodology for tree clearance will follow the specifications set out in the Forest Service Forestry Standards and Procedures Manual (2015<sup>3</sup>) and Felling and Reforestation Policy (2017<sup>4</sup>).

Before harvesting works commence on site, all personnel, particularly machine operators, will be made aware of the following and will have copies of the relevant documentation including:

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<sup>3</sup> Department of Agriculture, Food and the Marine: Forestry Standards and Procedures Manual. Available at: [https://www.forestryservices.ie/wp-content/uploads/2019/05/Forestry\\_Standards\\_and\\_Procedures\\_Manual\\_2015.pdf](https://www.forestryservices.ie/wp-content/uploads/2019/05/Forestry_Standards_and_Procedures_Manual_2015.pdf)

<sup>4</sup> Department of Agriculture, Food and the Marine. Felling and Reforestation Policy (2017). Available at: <https://www.teagasc.ie/media/website/crops/forestry/advice/Felling-and-Reforestation-Policy.pdf>



- The felling plan, surface water management, construction management, emergency plans and any contingency plans;
- Environmental issues relating to the site;
- The outer perimeter of all buffer and exclusion zones;
- All health and safety issues relating to the site.
- The proposed method of tree felling near infrastructure will be limited to:
  - A 20 m wide buffer for new and upgraded access tracks;
  - A 10 m buffers surrounding hard standings and compounds;
  - A 6 m corridor for buried cables on private lands;
  - A 50 m separation distance from turbine blade tip to vegetation feature height as per the requirements of NatureScot Guidance.

Replacement replanting of forestry in Ireland is subject to licence in compliance with the Forestry Act 2014 (as amended). The consent for such replanting is covered by the Forestry Regulations 2017 (S.I. no. 191 of 2017).

It is proposed to fell 54.36 hectares of coniferous forest for the Proposed Development. Replant lands are required. The replacement replanting of forestry can occur anywhere in the state, subject to licence. Potential replanting sites will be subject to a separate application.

It is worth noting that practical difficulties exist in the identification and environmental assessment of replant lands at the planning application stage. Such practical difficulties include the following:

- Felling can only occur after the grant of a felling licence by the Department of Agriculture, Food and the Marine (DAFM), however the extent of felling is determined by the grant of planning permission, thereby necessitating that the scope of the licence required can only be determined after the grant of planning permission.
- The details of the area, size and location of the replant lands will not be capable of being determined until after planning permission is granted.
- It is prudent to note that if a felling licence is obtained at the planning application stage, it is probable that the licence would expire before the planning process is complete and before planning delivery preparations could be completed.
- It is therefore considered that the identification and licencing of replant lands after the grant of planning permission has the benefit of ensuring that the licence is compliant with up to date legislation and environmental information. It would also ensure that cumulative environmental assessment considers the wider environmental impacts at that point in time
- Key environmental issues related to afforestation (i.e water, soils, biodiversity, archaeology, landscape and climate) are subject to regular updates in terms of best practice, guidelines, standards and national policies

It is therefore considered that the delay in the identification of replant lands until such time as they are required enables identification of optimum lands available from an environmental perspective.



Section 15.2.3 in Chapter 15 of this EIAR contains further information on the replant lands.

### **3.8.14 Meteorological Mast**

There will be a permanent meteorological mast erected on site as part of this planning application. The type of meteorological mast is a lattice design and is 102.5m in height as demonstrated in the accompanying planning drawings. Construction methodology for the erection of the proposed met mast is set out in section 3.9.9.

## **3.9 Project Construction**

### **3.9.1 CEMP**

A Construction and Environmental Management Report (CEMP) is contained in Technical Appendix 3.2 found in Volume III of this EIAR.

The CEMP sets out the key environmental management measures associated with the construction, operation, and decommissioning of the Proposed Development, to ensure that during these phases of the development, the environment is protected, and any potential impacts are minimised. In the event that An Bord Pleanála (ABP) decides to grant approval for the Proposed Development, the CEMP will be updated as required to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned by ABP. The CEMP will be a key construction contract document which will ensure that the contractor will implement the prescribed measures to protect the environment.

### **3.9.2 Construction Activities**

#### **3.9.2.1 Wind Farm**

For the wind farm element of the Proposed Development, the construction sequence will be as follows:

- tree felling,
- upgrading of existing site tracks and the provision of new site tracks,
- drainage infrastructure to be constructed in parallel with access track construction,
- construction of the turbine foundations and
- the provision of the hardstanding areas

#### **3.9.2.2 Electrical Works and Cable route**

Construction of the substation and internal cable network in conjunction with off-site connection works to the National Grid will be carried out in tandem to the wind farm element of the Proposed Development in sequenced activities. A description of construction techniques is contained within the CEMP in Technical Appendix 3.2 found in Volume III of this EIAR.





### 3.9.3 Site Access Tracks and Drainage

#### 3.9.3.1 Access Tracks

In order to provide access to each of the turbines within the Proposed Development, access tracks are required. Drainage infrastructure therefore will be constructed in parallel with access track construction.

The Proposed Development will incorporate the upgrading of 5 kilometres of existing forest tracks. In addition, the Proposed Development will also require the construction of 10.55 kilometres of new site access tracks and associated drainage infrastructure. Existing drainage infrastructure will be retained where possible and improved as necessary while new drainage infrastructure will be required on all new access tracks.

- Access tracks would be formed on suitable underlying material (superficial soil or rock with sufficient bearing capacity) in the following manner:
- stripping of surface vegetation (turves) and careful stockpiling of this material;
- excavating the remaining superficial soil materials and stockpiling this material;
- where different superficial materials are present these would be stored according to type. This material would be monitored and watered (as appropriate) to be retained for reinstatement purposes;
- the exposed suitable track formation would have rock fill material tipped from dumper trucks directly onto the proposed access track alignment; and
- this material would then be either spread by a dozer or placed by a hydraulic excavator and compacted in layers, typically using vibratory rollers.

Access tracks would be formed from a sub-base of general fill, and finished off with a cap-stone / wearing course of graded crushed rock to provide a nominal Type-B (Series 800) finish. Wearing course stone would be of a suitable material that is not susceptible to breaking down / weathering to a high fines content material.

Maintenance of the running surface would be carried out on a regular basis, as required, to prevent undue deterioration. Loose track material generated during the use of access tracks would be prevented from reaching watercourses by maintaining an adequate cross fall on the tracks. Periodic maintenance of tracks by way of brushing or scraping would be carried out to minimise the generation of wheel ruts, which could lead to some track material being washed away. In dry weather, dust suppression methods may be required for track and hardstanding areas. The site access tracks, hardstandings and trackside drains would be inspected on a regular basis by the Contractor.

#### 3.9.3.2 Drainage

The construction of the site drainage comprises:

- The excavation of in channel rock check drainage channels 2m in width and 275mm in depth from the edge of the site access track.
- Silt fence textile will be laid within the channel. The silt fence textile will be Hy-tex Terrastop premium or similar and will be fixed to the upslope side of the supporting slope within the main drainage channel.
- Support posts for silt fence support and for channel supports will be inserted at the edge of the drainage channel at 1500mm intervals



- Silt fence textile will be anchored using clean drainage stone

The area behind silt fence will be maintained regularly and silt will be removed and buried. Further detail is shown in the planning drawings which accompany this planning application.

### 3.9.4 Cable Trenches

#### 3.9.4.1 Wind Farm

Cable-ducts within the site access tracks will be laid when the track is being constructed and will follow the edge of the site access tracks. Cable ducts within the public roadway will be laid within the verge of the roadway where possible. A separation distance of 600mm from existing services will be preserved. The trenches within these locations will be backfilled using the excavated material. The contractor will excavate cable trenches and then lay high density polyethylene (HDPE) ducting in the trench in a surround of cement bound material (CBM). A rope will be inserted into the ducts to facilitate cable-pulling later. The as-constructed detail of the cable duct locations will be carefully recorded. Cable marker strips will be placed above the ducts and the two communication ducts will also be laid. An additional layer of cable marker strips will be laid above the communication ducts and the trench back-filled. Back-filling and reinstatement in public roads will be to a specification to be agreed with the road authority and at least as good as the existing.

#### 3.9.4.2 Cable routes (Collector Cable, Options 1 and 2)

The proposed cable routes are shown in **Figure 3-2**. During the consultation and scoping processes for the Proposed Development, searches of existing utility services were carried out to identify areas where existing major assets exist such as high-voltage electricity cables and gas mains are. Private utilities and telecommunications companies were also consulted during this period to inform the proposed design. It should be noted that no responses from utilities were provided to the applicant during the scoping period.

During the construction stage of the Proposed Development, records of services such as water mains, sewers, gas mains and other power cables will be obtained from the relevant service providers ahead of construction works to ensure that all new developments between the period of assessment and pre-- construction is captured.

Where required, cable detection tools, ground penetrating radar, and slit trenches will be used as appropriate to find the exact locations of existing services. The final locations of the cable routes within the public roads and on the verge along the public road will be selected following these investigatory works to minimise conflicts with other services.

A minimum separation distance of 300 mm will be maintained with existing services.

#### 3.9.4.3 General Construction Sequence for All Cable Trenches

The detailed construction sequence for the installation of cabling is detailed in the CEMP in Technical Appendix 3.2 found in Volume III of this EIAR and demonstrated in **Plate 3-1**. However, a general overview of the construction sequence is detailed below:

- All relevant bodies i.e. ESNB, Gas Networks Ireland, Eir, Laois County Council, Irish Water etc. will be contacted and all drawings for all existing services will be sought to confirm the conditions predicted in this EIAR.



- Immediately prior to construction taking place the area where excavations are planned will be surveyed and all existing services will be identified, and temporary warning signs erected where necessary.
- For cable works in the public road, the traffic management plan will be implemented. Clear and visible temporary safety signage will be erected all around the perimeter of the live work area to visibly warn members of the public of the hazards of ongoing construction works.
- An excavator will be used to excavate the trench to the dimensions of 600mm wide by 1.2m deep.
- A silt filtration system will be installed on all existing drainage channels for the duration of the cable construction to prevent contamination of any watercourse.
- Any ingress of ground water will be removed from the trench using submersible pumps and pumped to the nearest available existing drainage channel.
- Once the trench has been excavated, a bedding layer of sand or 15 Newton concrete will be installed and compacted. All concrete will be offloaded directly from the concrete truck into the trench.
- PVC ducts will be installed on top of the compacted base layer material in the trench.
- Once the ducts have been installed, couplers will be fitted and capped to prevent any dirt etc. entering the unjointed open end of the duct.
- In poor ground conditions, the open end of the duct will be shimmed up off the bed of the trench to prevent any possible ingress of water and dirt into the duct. The shims will be removed once the next length of duct has been joined to the duct system.
- The as-built location of the installed ducts will be surveyed and recorded using a total station/GPS before the trench is backfilled to ensure recording of exact location of the ducts, and hence the operational electricity cable. These co-ordinates will be plotted on as-built record drawings for the cable route cable operational phase.
- When ducts have been installed in the correct position on the trench base layer, sand (in road trench) or Lean-mix CBM4 (CL1093) (off road trench) will be carefully installed in the trench around the ducts so as not to displace the duct and compacted.
- Spacer templates will be used during installation to ensure that the correct cover of duct surround material is achieved above, below and at the sides of the duct in the trench.
- A red cable protection strip will be installed above duct surround layer of material and for the full length of the cable route.
- A layer of Lean-mix CBM4 (CL1093) (in road) or excavated material (off road) will be installed on top of the duct surround material to a level 300mm below the finished surface level.
- Yellow marker warning tape will be installed for the full width of the trench, and for the full length of the cable route, 300mm from the finished surface level.



- The finished surface of the road, road verge, or agricultural land will be reinstated as per its original condition or to the requirements of the Laois Area Engineer.
- Precast concrete cable joint bays will be installed within excavations in line with the trench. The cable joint bays are backfilled and the finished surface above the joint bay reinstated as per its original condition. The cable joint bays are re-excavated a second time during cable pulling and jointing, after which the finished surface above the joint bays is reinstated again to its original condition.
- When trenching and ducting is complete, the installation of the cable route cable will commence between the onsite sub-stations to the chosen 110kV substation (subject to a separate planning application).
- Construction work areas and traffic management measures will be setup at 2 no. consecutive cable joint bays simultaneously. The underground cable will be pulled through the installed ducts from a cable drum set up at one joint bay and using a winch system which is set up at the next joint bay, the cable is pulled through.
- The cables are jointed within the precast concrete cable joint bays.
- The finished surface above each cable joint bay is reinstated to its original condition, and the construction work area removed.



**Plate 3-1 Example of 110kV Cross Section Trefoil Configuration along a roadway**



### 3.9.5 Watercourse Crossings

Watercourse crossings can be classified as follows:

- Existing structures (bridges or culverts) that need to be crossed by infrastructure (access tracks or cables) associated with the Proposed Development, without a need to modify the existing structure;
- Installation of new structures to facilitate the crossing of existing watercourses by infrastructure associated with the Proposed Development;
- Existing structures that need to be either replaced or upgraded to facilitate the crossing of existing watercourses by infrastructure associated with the Proposed Development;

There is only 1 no. new watercourse crossing for new access tracks within the Proposed Development site. Proposed methods for crossing existing watercourses along the cable routes are set out in **Table 3-3**.

**Table 3-3 Watercourse Crossings**

Crossing Point	Existing / Proposed	X coordinate (ITM)	Y coordinate (ITM)	Crossing type	Watercourse
WF-HF1	Existing	656925	684326	Culvert	Unnamed
WF-HF2	Existing	656707	687931	Culvert	Unnamed
WF-HF3	Existing	656548	688049	Culvert	Unnamed
WF-HF4	Proposed	656531	688072	Culvert	Unnamed
WF-HF5	Existing	656810	688357	Culvert	Brennanshill
GCR-1	Existing	651288	683688	Culvert	Grainguenahown
GCR-2	Existing	651826	683756		Owveg (Nore)
GCR-3	Existing	652531	683670		Owveg (Nore)
GCR-4	Existing	652727	683607	Culvert	Garrintaggart
GCR-5	Existing	653089	683731	Culvert	Garrintaggart
GCR-6	Existing	653020	684530	Culvert	Cleanah
GCR-7	Existing	653308	685552		Owveg (Nore)
GCR-8	Existing	654047	687545	Culvert	Aghoney
GCR-9	Existing	653875	689103		Fossy Lower
GCR-10	Existing	653547	690511		Stradbally (Laois)
GCR-11	Existing	653156	691140		Cremorgan
GCR-12	Existing	655421	687083		Scotland

### 3.9.6 Turbine Hardstands

Each turbine will have a turbine hardstanding area constructed at the base of them to provide solid area for the main installation crane that will be used to back the turbine and for the assembly of the turbine. The dimensions of these hardstandings are 80m by 30m in size for the V162 turbine, while the SG155 turbine the hardstandings will be 50m by 20m in size.



The Proposed Development will use material on site in the first instance and will utilise local quarries if required for the importation of required materials on the site. These quarries will be sourced once planning consent for the Proposed Development is secured. Further information on the quarries most likely to be utilised if required is found in Chapter 08 Land Soils and Geology. An assessment of trips required for the transportation of material is provided in Chapter 12 Traffic and Transport within this EIAR.

Turbine crane hardstands will consist of a 500 mm hardcore placed on top of a geotextile separator membrane. The construction methodology for newly constructed tracks will be as follows:

- The formation will be prepared to receive the geotextile membrane.
- Stone will be placed and compacted in layers to 500mm depth.
- A drainage ditch will be formed, within the excavated width and along the sides of the hard standing.
- Surplus topsoil will be placed along the side of the hard standing and dressed to blend in with surrounding landscaping.
- Surplus excavated subsoil will be used to reinstate the borrow pit.

### **3.9.7 Turbine Foundations**

The bases of the foundations are excavated to a competent bearing strata. The proposed foundations will be gravity-based foundations consisting of a reinforced concrete base 25m in diameter. Based on site investigations carried out to date, it is proposed that all turbine foundations will be shallow gravity base types and founded on either rock or glacial till. This will be confirmed with confirmatory site investigations prior to construction.

Excavated soil will be placed in the temporary storage areas adjacent to the turbines. Formwork and reinforcement are placed, and the concrete poured. Once the concrete is set the earthing system is put in place and the foundation is backfilled with suitable material.

### **3.9.8 Turbine Erection**

The turbine components will be delivered on site where they will be placed on hardstand and laydown areas prior to assembly. The components include the turbine towers which have delivered in sections, and the turbine blades which will be delivered one by one. Once all components are available and there is suitable weather each turbine will be assembled.

Each turbine will take approximately 3-4 days to erect, weather dependent and will require two cranes in the assembly process. The turbines will then be commissioned and tested. Any waste that is generated during the development's construction phase will be collected, separated and stored in dedicated receptacles at the temporary construction compounds during construction works. The contractor for the main construction works will nominate a suitable site representative such as a Project Manager, Site Manager or Site Engineer as the Waste Manager who will have overall responsibility for the management of waste. The Waste Manager will have overall responsibility to instruct all site personnel including subcontractors to comply with on-site requirements. This will ensure that at an operational level, each crew foreman is assigned direct responsibility.



### 3.9.8.1 Waste Generated

The following categories of waste will most likely be generated during the construction phase of the Proposed Development:

- construction and demolition waste,
- waste oil and hydrocarbons,
- paper and cardboard,
- timber and steel,
- municipal solid waste generated from the office and canteen.

Sanitary waste will be removed from site by a licensed waste disposal contractor. All portaloos located on the site during the construction phase will be operated and maintained in accordance with the manufacturer’s instructions and will be serviced under contract with the supplier. All such units will be removed off site following the completion of the construction phase.

A fully authorised waste management contractor will be appointed prior to the commencement of construction works. This contractor will provide the appropriate receptacles for the collection of the various waste streams able ensure regular emptying and/or collection of these receptacles.

**Table 3-4** lists the licensed waste facilities in the surrounding area:

**Table 3-4 Licenced Waste Facilities**

Facility	Type of Waste Accepted	Location
Oil Go and Recycle Environmental	Oil	Mountmellick, Co. Laois
Agnail Recycling	Fiber, polymer, Building Materials	Portlaoise, Co. Laois
ROC Recycling	Plastic, Cardboard, Commercial	Portlaoise, Co. Laois
Kyletalesha Landfill	Paper, cardboard, metal, green waste, plastic, waste oil, glass, timber	Kyletalesha, Co. Laois

### 3.9.8.2 Waste Reduction Practices

All efforts will be made by site management to minimise the creation of waste throughout the lifetime of the Project. Such measures include the following:

- Material storage areas will be of a suitable design and construction to adequately protect which would generate additional waste
- Material ordering will be optimised to ensure only the necessary quantities of materials are delivered to the site
- All plants will be serviced before arriving to the sites which will reduce the risk of breakdown and the possible generation of waste oil or hydrocarbons on site
- Where material such as concrete are to be ordered, great care will be practice in the calculation of quantities to reduce wastage
- All operators and foreman will be instructed in measures to cut back on the amount of wastage and will only order the materials necessary to complete each construction task as required



- Prefabrication of design elements will be used where appropriate to eliminate waste generation on sites

### 3.9.8.3 Waste Reuse

When possible, materials will be re used onsite for other suitable purposes as follows:

- Re-use of shuttering etc. Where it is safe to do so;
- Re-use of rebar cut-offs where suitable;
- Re-use of excavated materials for screening, berms etc.;
- Re-use of excavated material etc. – where possible will be used as suitable fill elsewhere on site for site tracks, the hardstanding areas and embankments where possible;
- Excess subsoils from excavations shall be used to reinstate borrow pits on site.

Any excess excavated material that will be used for fill, re-instatement, or similar activities, within the development site boundary is not categorised as a waste material under relevant waste legislation, rather this material is exempt from waste classification.

Article 2 (1) (c) of Directive 2008/98/EC on waste, transposed through Article 26 (1) (c) of the European Communities (Waste Directive) Regulations (S.I. 126 of 2011) identifies the following as being an exemption from waste regulation:

*“uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated”.*

Surplus material will be re-instated in its natural condition on the site from which it was excavated, this material is not considered as waste.

### 3.9.9 Meteorological Mast

The proposed met mast will be comprised of a 102.5m lattice structure. The works involved with the erection of the mast will comprise:

- Private access through existing forestry tracks for the delivery of the mast via a flatbed truck to the base of the proposed mast location.
- Existing forestry tracks are approximately 3 to 4.5 m wide. In areas where tree growth has reduced the track width, trimming of the side branches on the conifer trees will be undertaken with filled branches used for brushing. Sections of the track may require levelling by an excavator to remove deep ruts.
- The mast sections and all other equipment shall be manually lifted from the truck. A 4x4 vehicle, or a tractor and trailer will be used to transport equipment to the mast location.
- Lifting of the tower is achieved using a lifting probe attached to the top of a gin pole and directed via a block at the tower base to the winch position.
- A reinforced concrete foundation will be provided for the 102.5 m lattice structure- the dimensions of the foundation are 10m diameter and 2m in depth





- Once the mast is lifted into position and secured, all materials and machinery will be removed from site. It is anticipated that an area of surface vegetation and subsoil at the base of the met mast and the provision of a hardstand (25m x 25m x 2m in depth) to erect will be provided.
- Anemometers and wind vanes are to be placed at 62.5m, 82.5m and 102.5 m above ground height on the meteorological mast.
- Delivery of the meteorological mast, erection and decommissioning works will avoid periods of high rainfall, and ideally be undertaken during the drier summer autumn months as per standard good practice.
- In total it is anticipated that the Met mast will take approximately five days to erect, remaining in situ for the duration of the operation of the Proposed Development, whereupon the mast will be removed using the same machinery as proposed in the installation process during the same period. Installation and removal will only be undertaken in dry weather conditions as per good construction standards.

### 3.9.10 Waste Management

A wastewater holding tank will be provided outside the substation compound fence line but within the red line boundary so that it can be maintained where required without requiring access to the substation compound. The wastewater holding tank will be a sealed storage tank with all wastewater tinned off-site as required by an authorised waste collector to a wastewater treatment plant. Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007, will be employed to transport wastewater away from the site). The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. The wastewater storage tank alarm will be part of a continuous stream of data from the site's turbines, wind measurement devices and electricity substation that will be monitored 24 hours a day seven days per week. This approach for managing wastewater on site has become a standard practice in wind farm sites, which are often proposed, and areas were residual waste.

Receptacles will be clearly labelled, signposted and stored in dedicated areas.

The following sources aggregated material containers. The provision of receptacles for the separation and collection of dry recyclables such as paper, cardboard, plastics will be provided and removed to a licenced facility by a suitable contractor.

The developer and the appointed contractor will seek to prevent, reduce, reuse and recover as much of the waste generated on the site as possible and to ensure the appropriate transport and disposal of residual waste is undertaken off site in accordance with the Waste Management Act 1996 (as amended) and in alignment with the National Waste Management Guidelines and the European Waste Management hierarchy.

#### 3.9.10.1 Waste Recycling, Recovery and Disposal

National waste policy requires the separation of recyclable material at source. During the construction phase of the Proposed Development, receptacles will be provided for the separation and collection of dry recyclables ( paper, cardboard, plastics ), biological waste ( canteen waste).

- All receptacles will be clearly labelled, signposted and stored in dedicated areas.



Receptacles for the following sources aggregated materials will be made available on site at a suitable location:

- food waste
- packaging waste
- dry mixed recyclables
- aluminium
- ferrous materials
- timber

These materials will be transported off site by an authorised contractor to a permitted recovery centre. These materials will then be processed through the various recovery operations.

Residual waste generated on site may require disposal. This waste will be deposited within dedicated receptacles and collected by the permitted waste management contractor who will then transport this waste to an appropriate facility. All waste movements will be recorded, and the waste manager on site will hold these records.

### **3.9.11 Construction Timeline**

The construction phase of the Proposed Development, which includes civil, electrical, grid works, and turbine assembly is anticipated to take 18-24 months once the proposed turbines are acquired via a competitive tender process.

## **3.10 Project Operation and Lifespan**

During the construction phase of the Proposed Development, turbines will operate automatically on a day-to-day basis. The turbines will respond to changes in wind speed and direction by means of anemometry-equipment and control systems.

Twice a year each turbine will undergo a schedule service. The operation of the wind turbines will be monitored remotely, and a caretaker will oversee the day-to-day running of the Proposed Development.

The expected physical lifetime of the turbine is 35 years, and permission is sought for a 35 year operation period commencing from full operational commissioning of the wind farm. However, it should be noted that following the end of their useful life, wind turbines may, subject to planning permission, be replaced with a new set of turbines or the site may be decommissioned.

## **3.11 Project Decommissioning**

During the decommissioning phase of the Proposed Development, cranes will disassemble the above grounds turbine components which will be removed off site for recycling.

The foundations will be covered over and allowed to re-vegetate naturally. Leaving turbine foundations in situ is considered a more environmentally sensible option as to remove the reinforced concrete associated with each turbine would result in environmental nuisances such as noise and vibration and dust. It is proposed that the internal site access tracks will be left in situ, subject to agreement with Laois County Council and the relevant landowners.



The proposed onsite substation will be taken in charge by ESBN /EirGrid upon completion and should be left in place forming part of the national electricity network

Underground cabling will be cut back and left in situ.

A detailed decommissioning plan will be agreed in advance of construction with Laois County Council if required. A decommissioning plan is contained within the CEMP in Technical Appendix 3.2 found in Volume III of this EIAR and will contain the same mitigation measures as the CEMP unless otherwise agreed with the Laois County Council.

### 3.12 Cumulative Projects to be Assessed

A monthly desktop based planning search spanning 10 years within a radius of 20km was undertaken. Sources consulted included the EIA portal, An Bord Pleanála, Laois County Council and Carlow County Council planning lists. The list was refined by eliminating all single homes from 2km outside the red line boundary of the Proposed Development and focused on planning applications of over 50 houses and planning applications which contained an EIAR or an NIS. This formed our cumulative long list of developments.

Further refinement was undertaken to ascertain developments within this list. These refinements included:

- All wind farms and cable route planning applications within 20km where the planning status is to be determined, or where the construction period would likely coincide with the construction period of the Proposed Development
- All infrastructural projects which are operational and utilising the same road networks that are proposed by the Proposed Development
- All quarries within 2km of the Proposed Development red line boundary
- All Strategic Infrastructure and Strategic Housing Developments within 20km where the same road network would be utilised
- All Strategic Housing Development and Large Scale Residential Developments within 5km.

The result formulated the cumulative development short list which is set out in **Table 3-5**.

#### 3.12.1 Wind Farms in the Surrounding Area

There are no constructed wind farms in the immediate vicinity (5km) of the Proposed Development. At the time of this assessment, there are several wind farms (proposed and permitted) within 20km and are shown in Figure 3-4.

The nearest wind farms to the Proposed Development include:

- Cullenagh Wind Farm, unconstructed, comprises 18 turbines located 3.5km W was granted in 2014 but the associated cable route is currently in the planning system. This wind farm is the closest wind farm to the Proposed Development
- Pinewoods Wind Farm, unconstructed, comprises 11 no. turbines located approximately 5.2km SW. This wind farm has been granted, but its cable connection is still to be determined.

Consented, but not yet constructed wind farms within 20km of the Proposed Development include:



- Farranrory Wind Farm (9 no. turbines) located approximately 17km SW – Its associated cable route application was recently granted so construction may commence soon
- Bilboa Wind Farm (5 no. turbines) unconstructed and consented located approximately 17km SW

Wind farms that are currently operational within 20km of the Proposed Development include:

- Gortahile Wind Farm is located (8 no. turbines) c. 11km southeast. This wind farm has been operational since 2010.
- Lisdowney Wind Farm (7 turbines) is located 11km SW, and has been operational since 2016.

Wind farms which have been applied for but not yet determined include:

- White Hill Wind Farm (10 turbines) is located 16km SSE,
- Seskin Wind Farm (7 turbines) 15km SE

### 3.12.2 Projects to be Assessed Cumulatively

In terms of all proposed and permitted developments within vicinity of the site, the details of projects considered in the cumulative assessment are presented in Technical Appendix 1.2 'Projects Considered in the Cumulative Assessment' found in Volume III of this EIAR – this is the cumulative long list of projects. The short list of these projects which are included as part of this assessment (including the wind farms listed above) are set out in **Table 3-5**. These projects were selected for two reasons: 1) they are wind farms within 20km of the Proposed Development or 2) they utilise the same road networks as the Proposed Development.



**Table 3-5 List of Cumulative Projects within 20km of the Proposed Development**

Applicant / Development Name	Development Type	Reg. Ref.	Distance to Development
Michael Johnson	restoration of existing quarry to agricultural grassland and to include the importation of inert soil and stones (EWC class 17 05 04 ) at a rate of 15,000 tonnes per year to facilitate same development and associated site works.	20247 (Laois) Granted 19/11/2020	4km
Bilboa Wind Farm	installation of approximately 4.6 ('km') of underground cables within Carlow County Council ('CCC') boundary and approximately 2.0km within Laois County Council ('LCC') boundary with a voltage of up to 38 kilovolts and associated works, including a new substation with LCC, for the connection of the consented Bilboa Wind Farm (Planning Register References: Carlow County Council 11/154; An Bord Pleanala PL 01.240245) to the national electricity grid; upgrading of an existing forestry track within CCC; construction of two new onsite access track within CCC; re-orientation and increasing in size of a crane hardstanding area within CCC; and road strengthening and widening along an updated turbine delivery route, within LCC, pursuant to the consented Bilboa Wind Farm (Planning Register References: Carlow County Council 11/154; An Bord Pleanala PL 01.240245).	Date Granted: 12.07.2021 (Laois Co. Co.) / 13.07.2021 (Carlow Co. Co.) Grant Date: 19/11/2020	17km
Bilboa Wind Farm	installation of approximately 4.6 kilometers ('km') of underground cables within Carlow County Council ('CCC') boundary and approximately 2.0km within Laois County Council ('LCC') boundary with a voltage of up to 38 kilovolts and associated works, including a new substation with LCC, for the connection of the consented Bilboa Wind Farm (Planning Register References: Carlow County Council 11/154; An Bord Pleanala PL 01.240245) to the national electricity grid; upgrading of an existing forestry track within CCC; construction of two new onsite access track within CCC; re-orientation and increasing in size of a crane hardstanding area within CCC; and road strengthening and widening along an updated turbine delivery route, within LCC, pursuant to the consented Bilboa Wind Farm (Planning Register References: Carlow County Council 11/154; An Bord Pleanala PL 01.240245).	Laois (20281) / Carlow (20282) Date Granted: 15.02.2022	17km
Bord Na Móna Powergen Ltd.	Develop a Renewable Gas Facility, associated peat deposition area and external and internal road upgrades at Cúil Na Móna Bog within the townland of Clonboyne and Clonkeen, Portlaoise, Co. Laois. The total area of the Proposed Development is 17.34 Ha and consists of the following elements: 1. Renewable Gas Facility (6.85 Ha) including the following: Weighbridge and Weighbridge Office - 21m2 in area 4.45m high, Administration Building 228m2 in area 5.1m high, Reception Building 2,700m2 in area 11.75m high, Odour Abatement unit 400m2 in area stack height 18m, Tank Farm - 2 no. primary digestion tanks (6,500m3) 22m high; 2 no. secondary digestion tanks (5,650m3) 17.2m high; 2 no. buffer storage (450m3) 6m high; 4 no. liquid feed intake tanks (100m3) 12m high; 2 no. process water tanks (30m3) 7.5m high; 4 no. pasteurisation tanks (30m3) 7.5m high, Gas Upgrade and Injection Plant 1,278m2, Covered Digestate lagoon 55,100m3 capacity, Surface Water Attenuation pond 20m x 30m, Wastewater below ground holding tank 10m3	ABP-309293-21 / 19530 (Laois) 3 <sup>rd</sup> Party appealed on 06/10/2022	14km



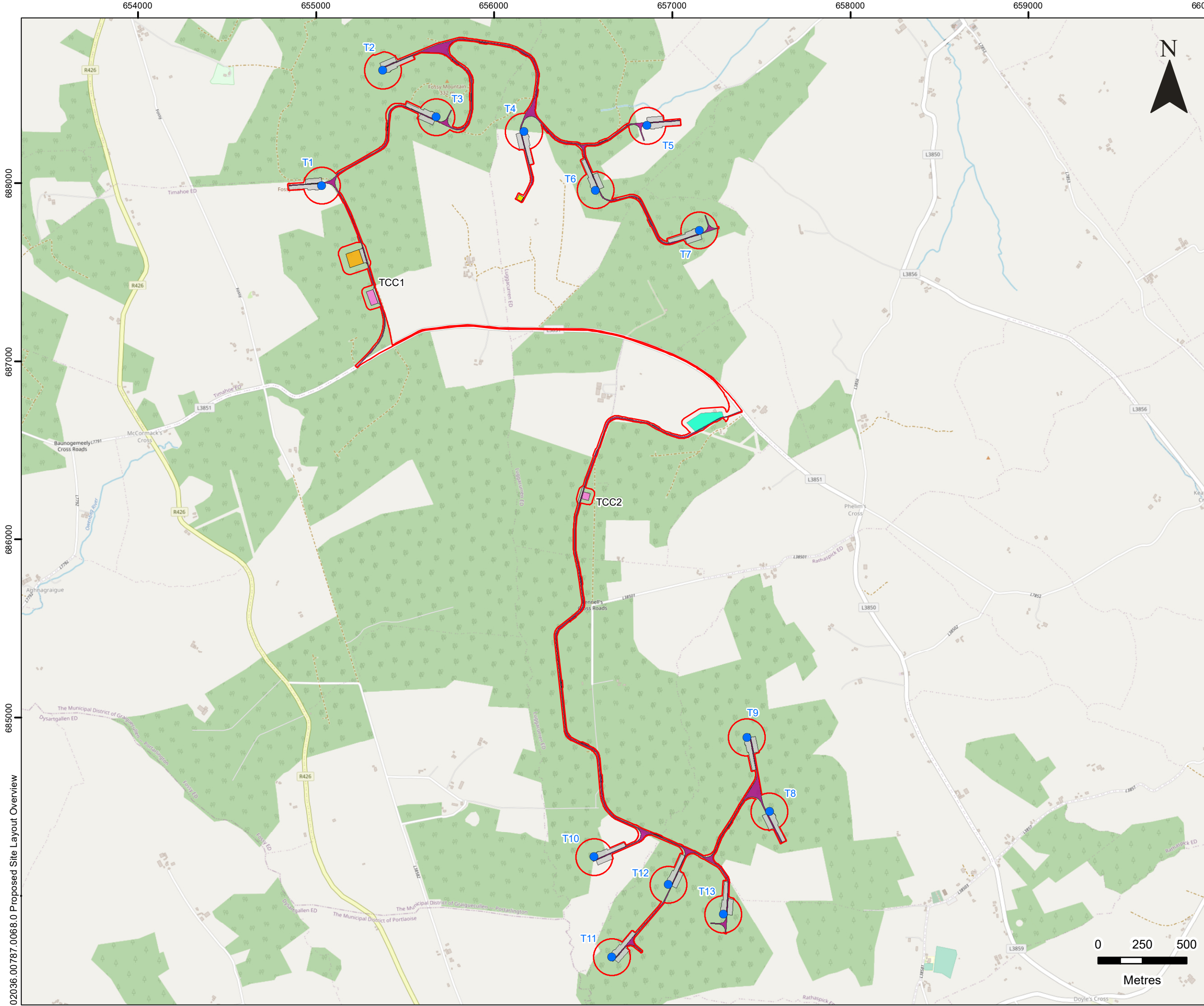
Applicant / Development Name	Development Type	Reg. Ref.	Distance to Development
	capacity, Palisade site fencing 2.4m high, 1,420m in length, On-site electrical sub-station up to 22m2, Circulation yard area 3,500m2 incl. 28 no. car parking spaces. 2. Peat deposition and surrounding area (9.13Ha) 3. External road upgrades including proposed new roundabout, upgrade of R445 and local access road to existing site entrance - 660m in length (0.91Ha) 4. Internal upgrade of site access road - 443m in length (0.45Ha). Permission is sought for a period of 10 years and is a development that is for the purpose of an activity requiring an Industrial Emission Licence from the EPA		
Lagan Limited (Spink Quarry)	Materials (Spink Quarry) Develop as follows: the continued use and operation of the existing quarry including deepening of the quarry. Extraction will be confined to the existing permitted quarry area (P.A. Ref. 10/383) comprising an extraction area of c. 14.5 ha within an overall application area of c. 19.6 ha. The development will include provision of new site infrastructure, including portacabin site office / canteen, toilets, concrete batching plant and truck washdown facility, hydrocarbon interceptors, mobile crushing and screening plant, upgrading of the water management system, provision of holding tank for wastewater, and other ancillaries. The Proposed Development will utilise/upgrade the existing in-situ quarry infrastructure, including site access, internal roads, storeroom, wheel wash, weighbridge, aggregate storage bays, refuelling hard stand, water settlement pond system, and other ancillaries.	21700 (Laois) Currently under appeal	3km
Pinewood Limited	Wind 11 wind turbines, electricity substation, switch room, equipment compound, site access tracks, 7 site entrances, meteorological mast, upgrade of road junction. Townlands: Knockardugar, Boleybawn, Garrintaggart, Ironmills, Co. Laois	PL11.248518 (ABP) / 16/260 (Laois) Granted 03/09/2021	4km
Pinewood Limited	Wind A 110kv 'loop in/loop-out' Air-Insulated Switchgear substation, electricity lines, on-site access tracks and all associated site development works. Townlands: Knockardagur, Ballinakill, County Laois	ABP-308448-20 Granted 22/11/2021	4km
Pinewood Limited	Wind 2 kilometres of site access tracks, underground electricity and communications cabling and site drainage works. Townlands: Lands at Crutt, County Kilkenny.	PL10.248392 (ABP) /17/62 (Laois) Granted 03/09/2019	4km
Cullenagh Farm	Wind develop 18 no. wind turbines each with a hub height of up to 85m and a rotor diameter of up to 93m with an overall tip height of up to 131.5m (including associated transformers and hardstands at each turbine). Permission is also being sought for the provision of internal access roads and strengthening and widening of	PL11.232626 (ABP) / 13268 (Laois)	3.5km



Applicant / Development Name	Development Type	Reg. Ref.	Distance to Development
	existing internal forestry access roads; 1 no. permanent meteorological mast of approx. 86m in height; a 38KV single storey substation compound (including switchrooms, control room and ancillary areas) with sanitary facilities and holding tank & 6 no. associated car parking spaces; underground electrical and communication cables linking the turbines with the substation compound; widening of 2 no. existing entrances on the L3777 for temporary construction access, temporary construction compound, and all associated site development and drainage works.	Granted 14/6/2014	
Gortahile Wind Farm	a ten year planning permission for a renewable energy development with a 40-year operational life (from the date of commissioning of the renewable energy development). The entirety of the development constitutes the provision of a 9-turbine wind farm and all associated works on lands in both Counties Tipperary and Kilkenny.	04935 (Laois)  Granted 27/10/2024	11km
Farranrory Wind Farm and Cable route	erect 7 no. wind turbines, up to 80m hub height & up to 45m blade length, access roads, control building & ancillary site works / a ten-year appropriate period planning permission for development of this site: the Proposed Development will constitute the provision of the following: the installation of 2.25 km of 38kV underground cable route comprising cable ducting and associated electrical cabling and all other ancillary works including joint bays, culverts, maker posts and all associated developments. Advisory Note: The full extent of the cable route is 33.8 km	Wind Farm- 211620 Tipperary (granted 30/3/2021  Cable route 20972 Tipperary  Granted 14/11/2022	17km
Lisdowney Wind Farm (Kilkenny)	for a modification for the redesign of a previously approved development at site address Lisdowney, Ballyragget, Co. Kilkenny planning reference no 08/1511. The previously approved development consisted of a wind farm with 4 turbines, a meteorological mast, electrical control transformer building, burrow pit and associated site roads. The proposed revision is to optimise the layout of the 4 turbines and associated road infrastructure and associated ancillary works and increase the hub height from 64m up to a hub height of 80m and increase the maximum blade tip height from 99.5m to 121.5m.	08/1500, modified under 12/172 (Kilkenny)  Granted 23/7/2012	11

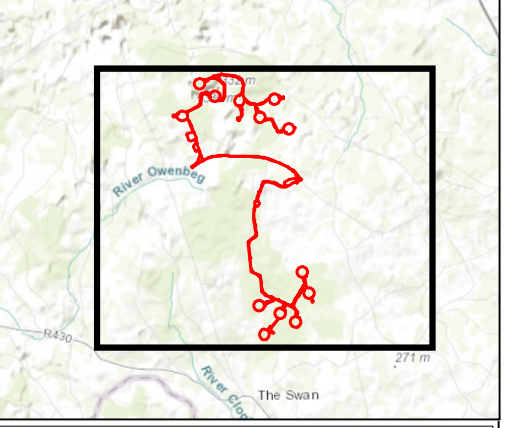
(Sources: EIA Portal, Laois County Council, Kilkenny County Council, Carlow County Council, An Bord Pleanála)





**LEGEND**

- Proposed Development Site Boundary
- Proposed Turbine Layout
- Proposed Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Hardstanding
- Proposed Access Track
- Proposed Met Mast Hardstanding



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**COOLGLASS WIND FARM  
 ENVIRONMENTAL IMPACT  
 ASSESSMENT REPORT**

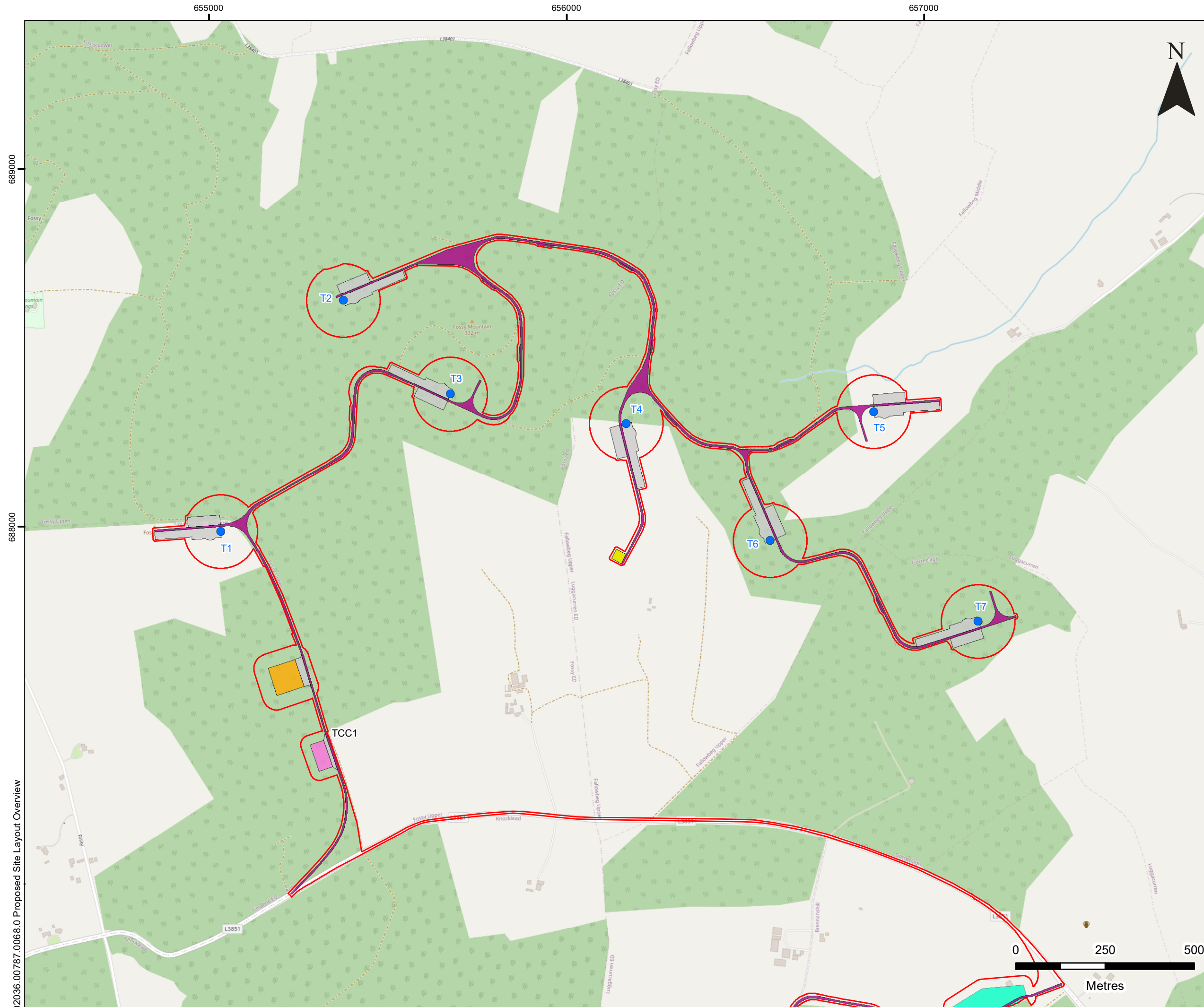
**DESCRIPTION OF THE DEVELOPMENT**

**PROPOSED SITE LAYOUT  
 OVERVIEW**









**FIGURE 3-1-a**

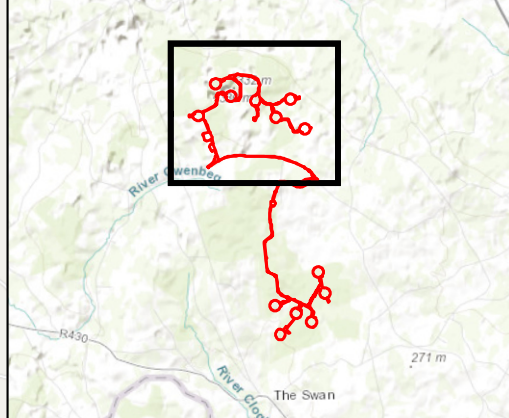
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**LEGEND**

-  Proposed Development Site Boundary
-  Proposed Turbine Layout
-  Proposed Substation Compound
-  Proposed Temporary Construction Compound
-  Proposed Borrow Pit
-  Proposed Hardstanding
-  Proposed Access Track
-  Proposed Met Mast Hardstanding



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DESCRIPTION OF THE DEVELOPMENT

**PROPOSED SITE LAYOUT  
 NORTHERN CLUSTER**

**FIGURE 3-1-b**

Scale 1:10,000 @ A3 Date JUNE 2023

02036.00787.0068.0 Proposed Site Layout Overview

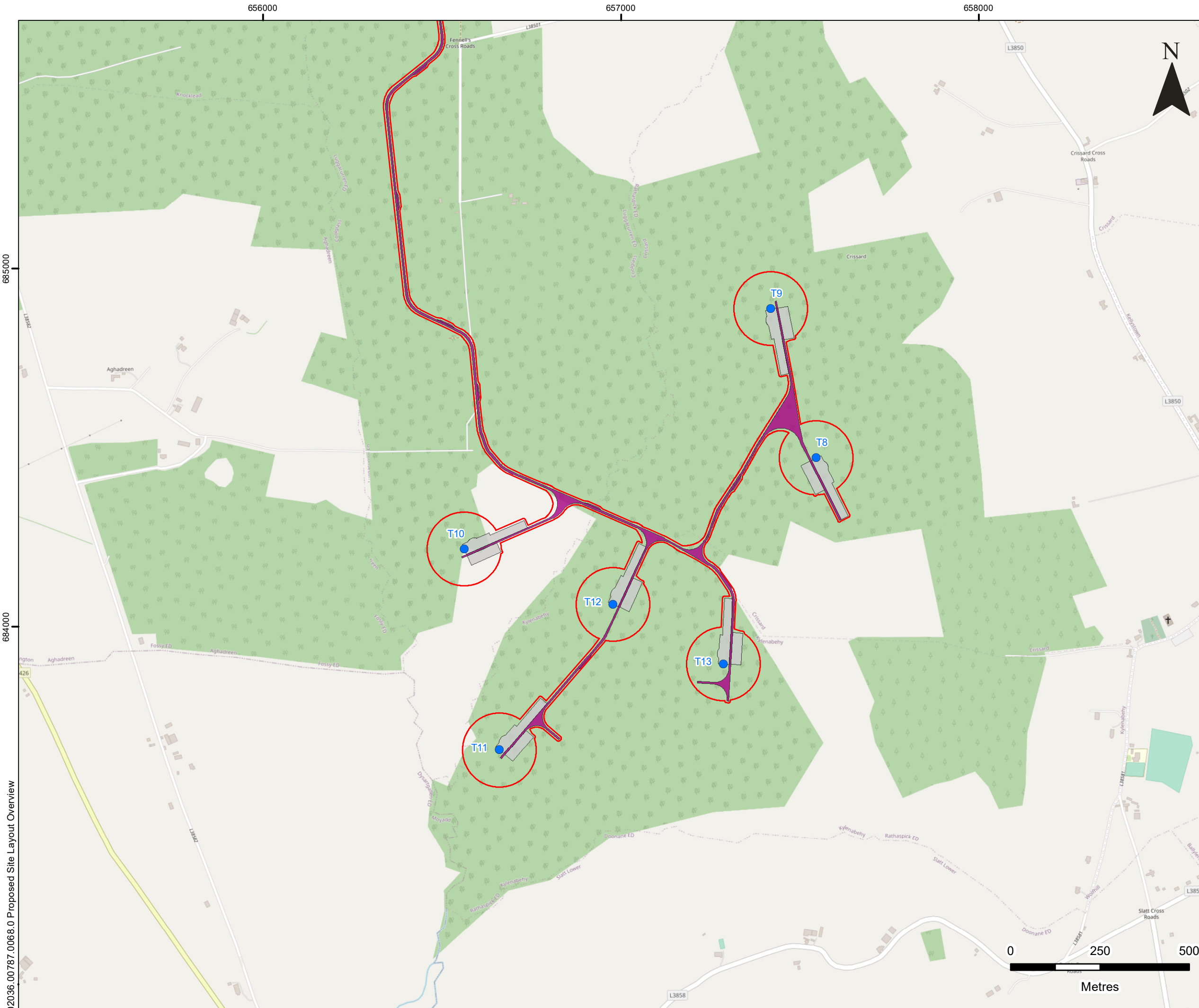
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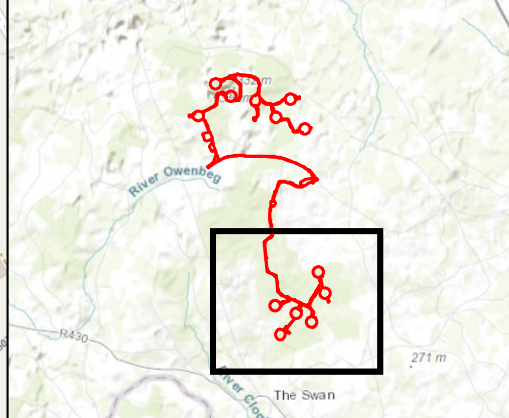
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**LEGEND**

- Proposed Development Site Boundary
- Proposed Turbine Layout
- Proposed Hardstanding
- Proposed Access Track



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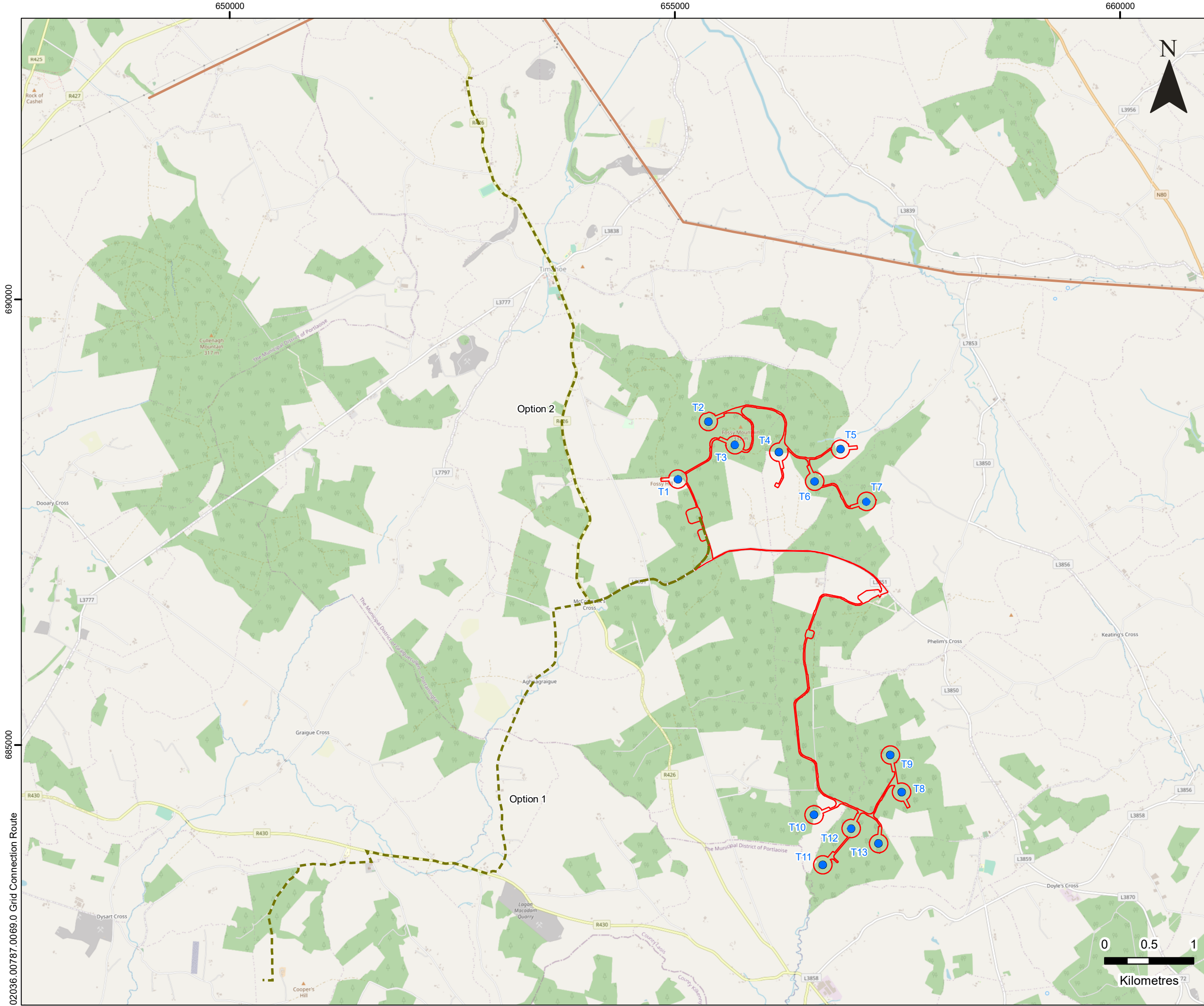
DESCRIPTION OF THE DEVELOPMENT

**PROPOSED SITE LAYOUT  
 SOUTHERN CLUSTER**

**FIGURE 3-1-c**

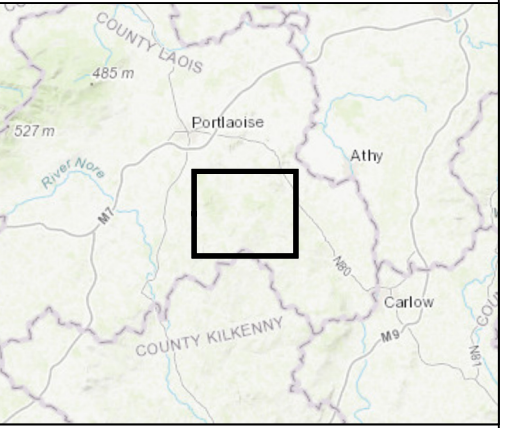
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02036.00787.0068.0 Proposed Site Layout Overview



**LEGEND**

- Proposed Development Site Boundary
- Proposed Turbine Layout
- Proposed Cable Routes to be Assessed (Separate Planning Application)
- Existing High Voltage Transmission Line



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**DESCRIPTION OF THE DEVELOPMENT**

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**CABLE ROUTES**

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**FIGURE 3-2**

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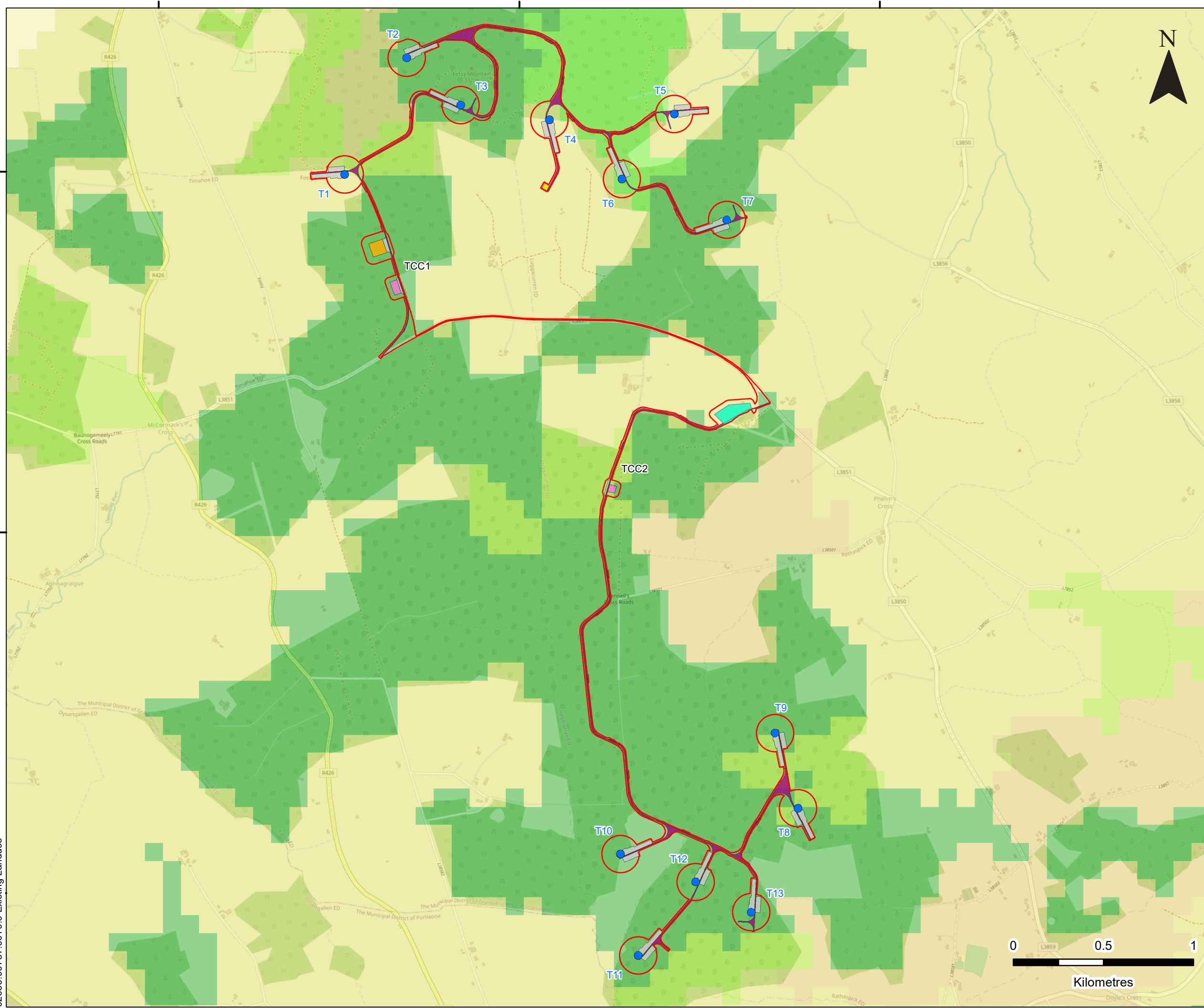
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02036.00787.0070.0 Existing Landuse

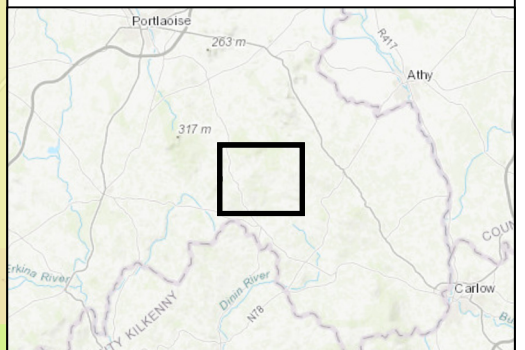


**LEGEND**

- Proposed Development Site Boundary
- Proposed Turbine Layout
- Proposed Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Hardstanding
- Proposed Access Track
- Proposed Met Mast Hardstanding

**Corrine Land Cover (2018)**

- Non-Irrigated Arable Land
- Pastures
- Land Principally Occupied By Agriculture, With Significant Areas Of Natural Vegetation
- Coniferous Forest
- Mixed Forest
- Transitional Woodland-Shrub



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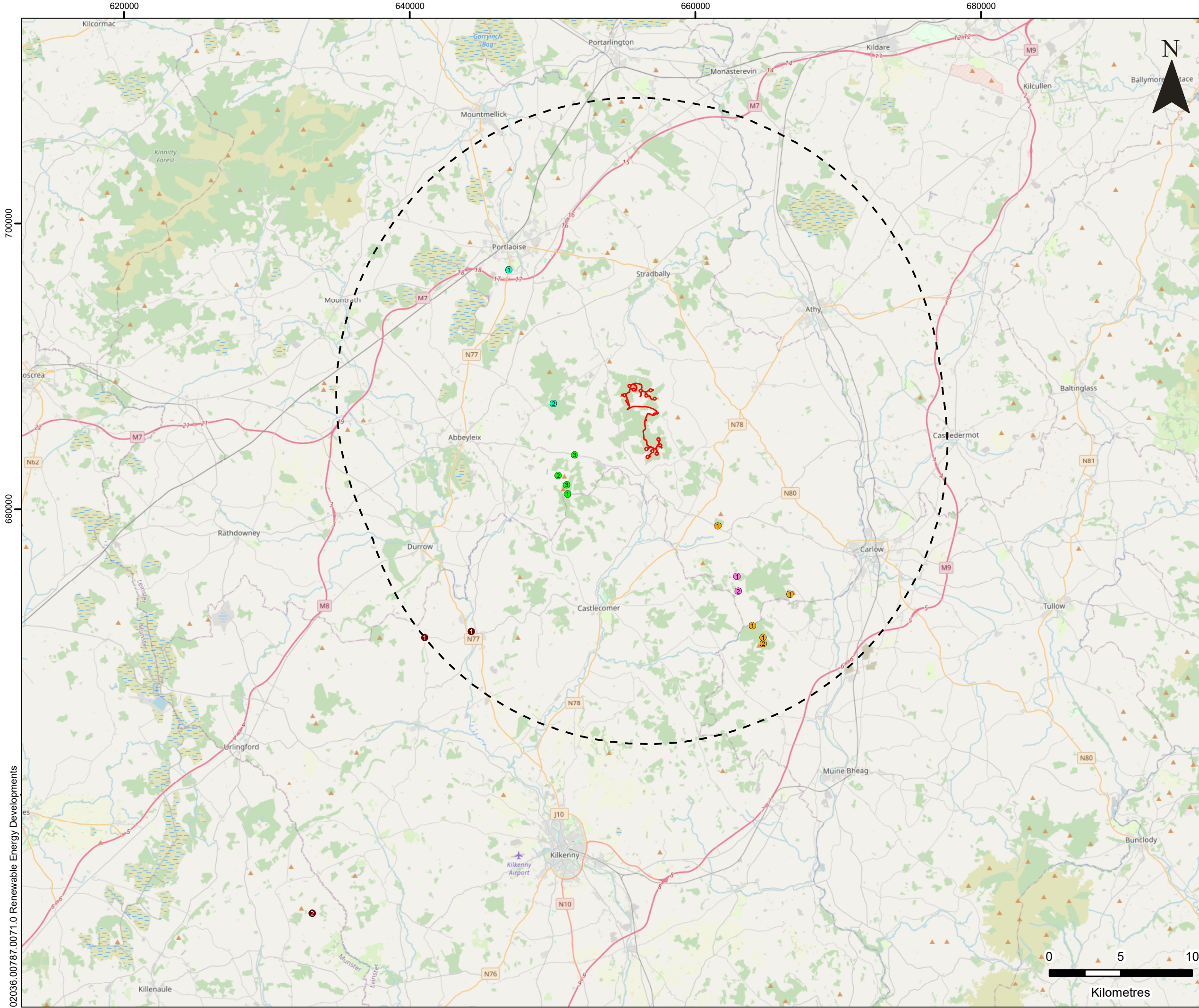
**DESCRIPTION OF THE DEVELOPMENT**

**CORINE LAND COVER 2018  
EXISTING LAND USE**

**FIGURE 3-3**



Scale: 1:20,000 @ A3      Date: JUNE 2023



**LEGEND**

- Proposed Development Site Boundary
- Proposed Development Site Boundary 20 km Buffer

**Renewable Energy Projects**

- 1 Bilboa Wind Farm - Grid Connection
- 2 Bilboa Wind Farm - Wind Farm Development and Alterations
- 1 Cullenagh Wind Farm - Grid Connection
- 2 Cullenagh Wind Farm - Wind Farm Development
- 1 Farranrory Wind Farm - Grid Connection
- 2 Farranrory Wind Farm - Wind Farm Development
- 1 Gortahile Wind Farm - Retaining of Entrance Road
- 2 Gortahile Wind Farm - Wind Farm Development
- 1 Pinewood Wind Farm - Further Works
- 2 Pinewood Wind Farm - Grid Connection
- 3 Pinewood Wind Farm - Wind Farm Development



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**COOLGLASS WIND FARM  
 ENVIRONMENTAL IMPACT  
 ASSESSMENT REPORT**

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**DESCRIPTION OF THE DEVELOPMENT**

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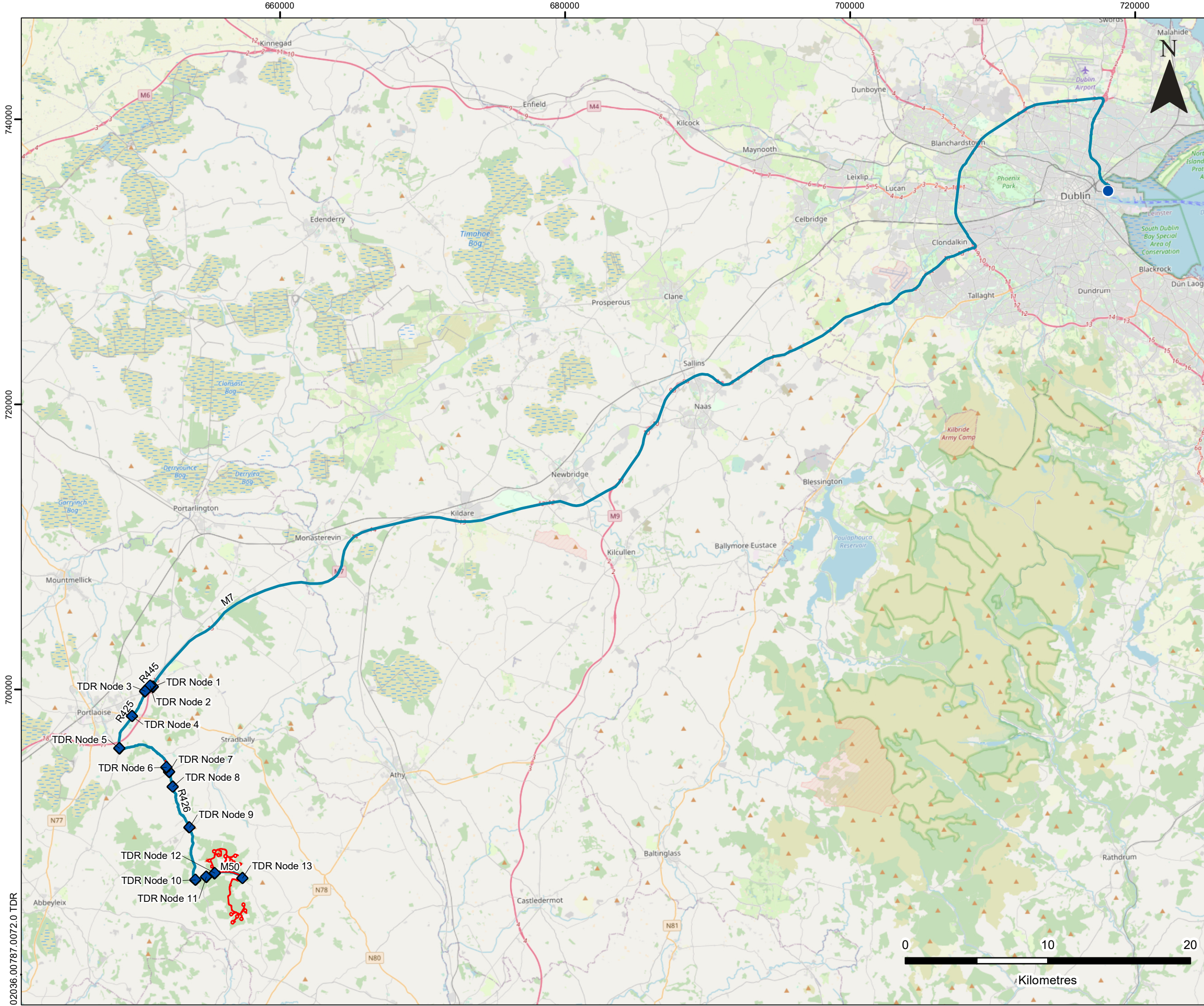
**CUMULATIVE DEVELOPMENTS IN  
 THE VICINITY OF THE  
 PROPOSED DEVELOPMENT**

---

**FIGURE 3-4**

Scale 1:250,000 @ A3	Date JUNE 2023
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02036.00787.0071.0 Renewable Energy Developments



**LEGEND**

- Proposed Development Site Boundary
- Dublin Port
- ◆ Proposed Turbine Delivery Route Node
- Proposed Turbine Delivery Route



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 ENVIRONMENTAL IMPACT  
 ASSESSMENT REPORT**

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**DESCRIPTION OF THE DEVELOPMENT**

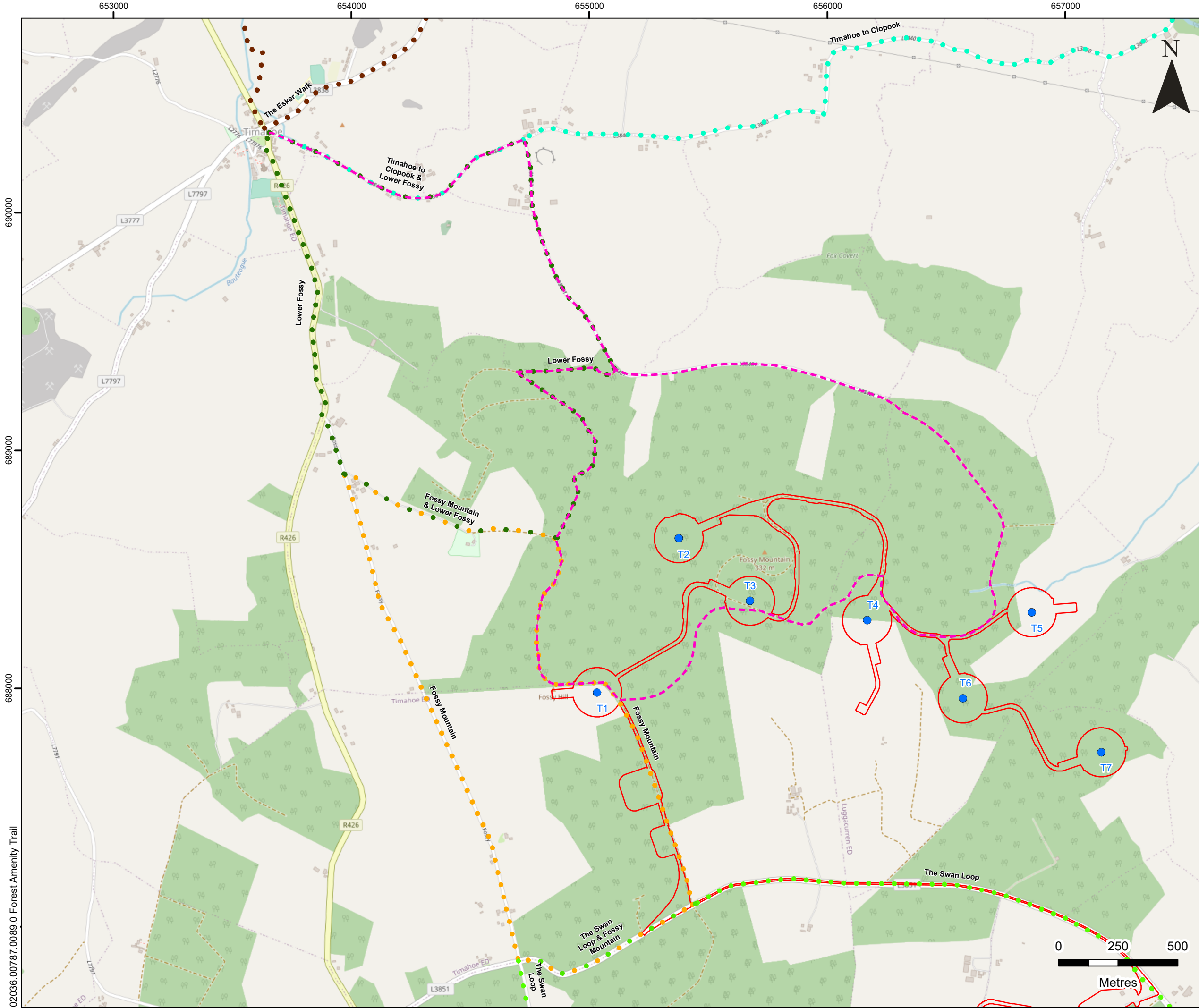
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**PROPOSED TURBINE  
 DELIVERY ROUTE OVERVIEW**

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**FIGURE 3-5**

Scale 1:250,000 @ A3	Date JUNE 2023
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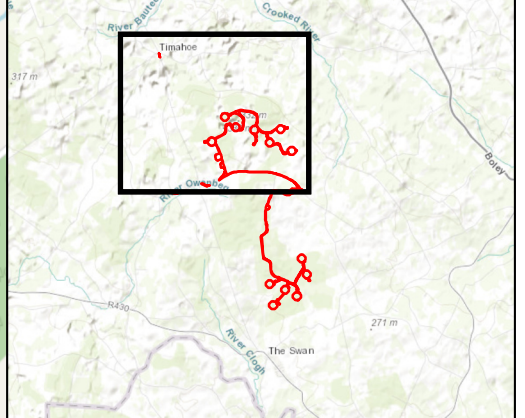


**LEGEND**

- Proposed Development Site Boundary
- Proposed Turbine Layout
- Proposed Recreational Amenity Trail to be Assessed (Separate Planning Application)

**Existing Trail Routes**

- Fossy Mountain
- Lower Fossy
- Timahoe to Clopook
- The Esker Walk
- The Swan Loop
- Fossy Mountain & Lower Fossy
- The Swan Loop & Fossy Mountain
- Timahoe to Clopook & Lower Fossy



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DESCRIPTION OF THE DEVELOPMENT

**PROPOSED RECREATIONAL  
AMENITY TRAIL**

**FIGURE 3-6**

Scale 1:15,000 @ A3	Date JUNE 2023
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02036.00787.0089.0 Forest Amenity Trail

653000

654000

655000

656000

657000

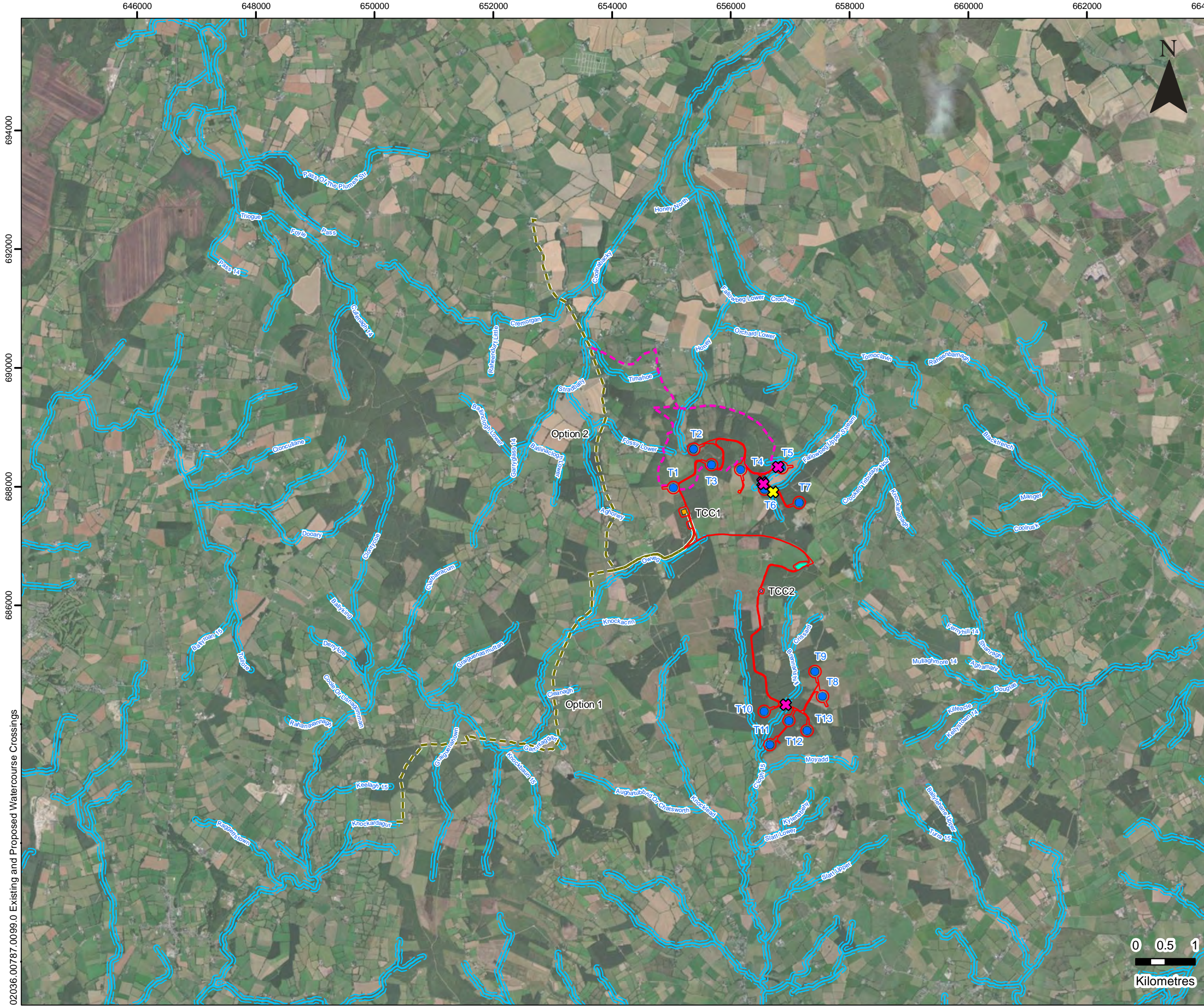
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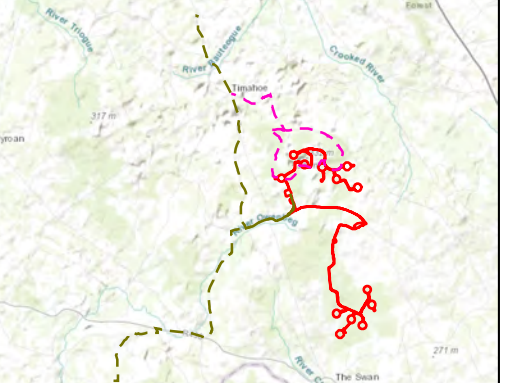
0 250 500

Metres



**LEGEND**

- Proposed Development Site Boundary
- Proposed Turbine Layout
- Proposed Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Met Mast Hardstanding
- Proposed Cable Routes to be Assessed (Separate Planning Application)
- Proposed Recreational Amenity Trail to be Assessed (Separate Planning Application)
- ✕ Existing Watercourse Crossing
- ✕ Proposed Watercourse Crossing
- Watercourse
- Watercourse 50 m Buffer



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**WATER**

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**EXISTING AND PROPOSED  
 WATERCOURSE CROSSINGS**

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**FIGURE 3-7**

Scale 1:60,000 @ A3      Date JUNE 2023

02036.00787.0099.0 Existing and Proposed Watercourse Crossings

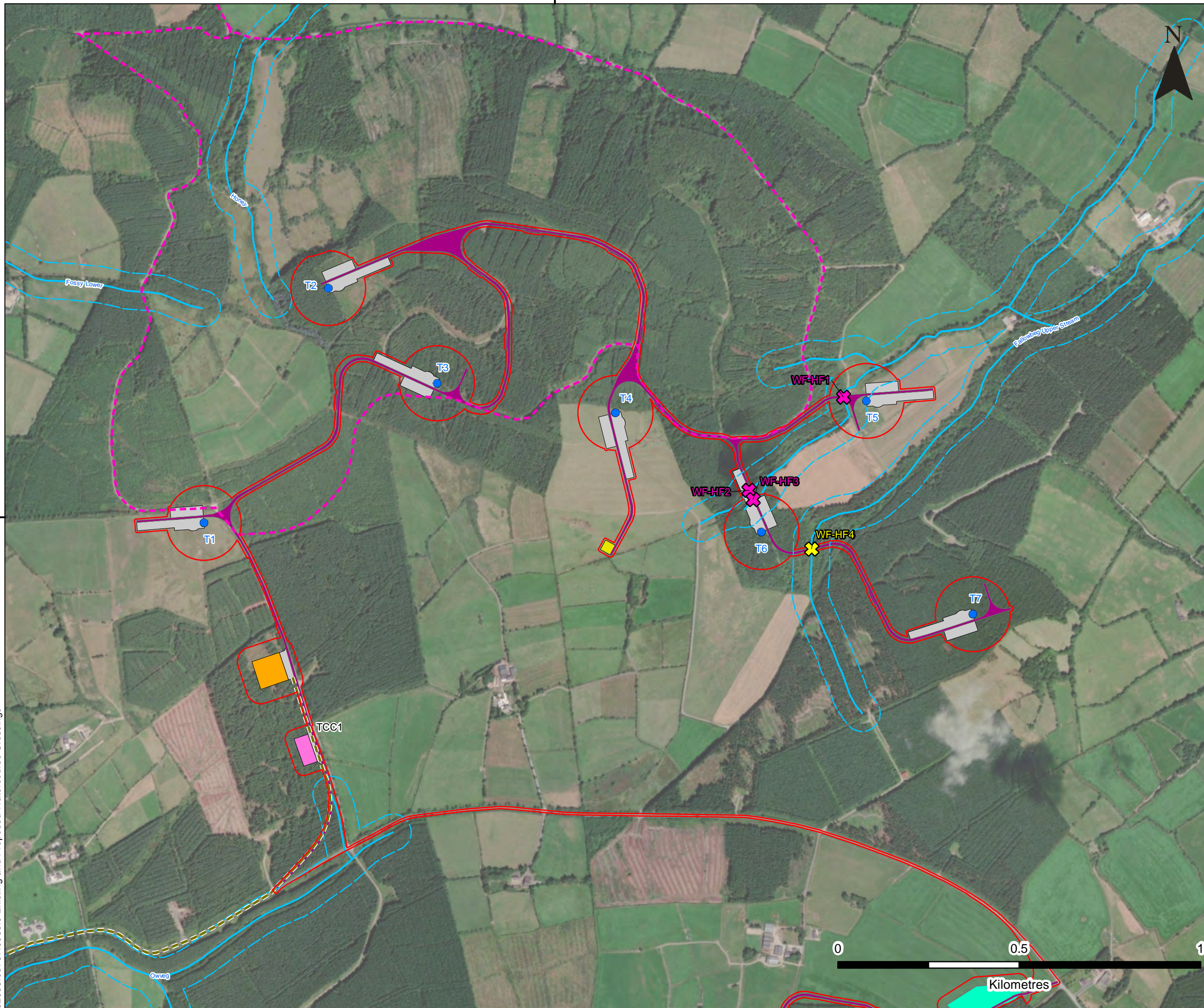




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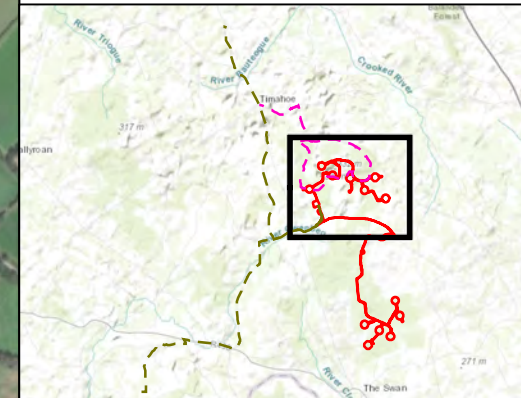
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02036.00787.0099.0 Existing and Proposed Watercourse Crossings



**LEGEND**

- Proposed Development Site Boundary
- Proposed Turbine Layout
- Proposed Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Hardstanding
- Proposed Access Track
- Proposed Met Mast Hardstanding
- Proposed Cable Routes to be Assessed (Separate Planning Application)
- Proposed Recreational Amenity Trail to be Assessed (Separate Planning Application)
- ✕ Existing Watercourse Crossing
- ✕ Proposed Watercourse Crossing
- Watercourse
- Watercourse 50 m Buffer



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**WATER**

**EXISTING AND PROPOSED  
 WATERCOURSE CROSSINGS**

**FIGURE 3-7**

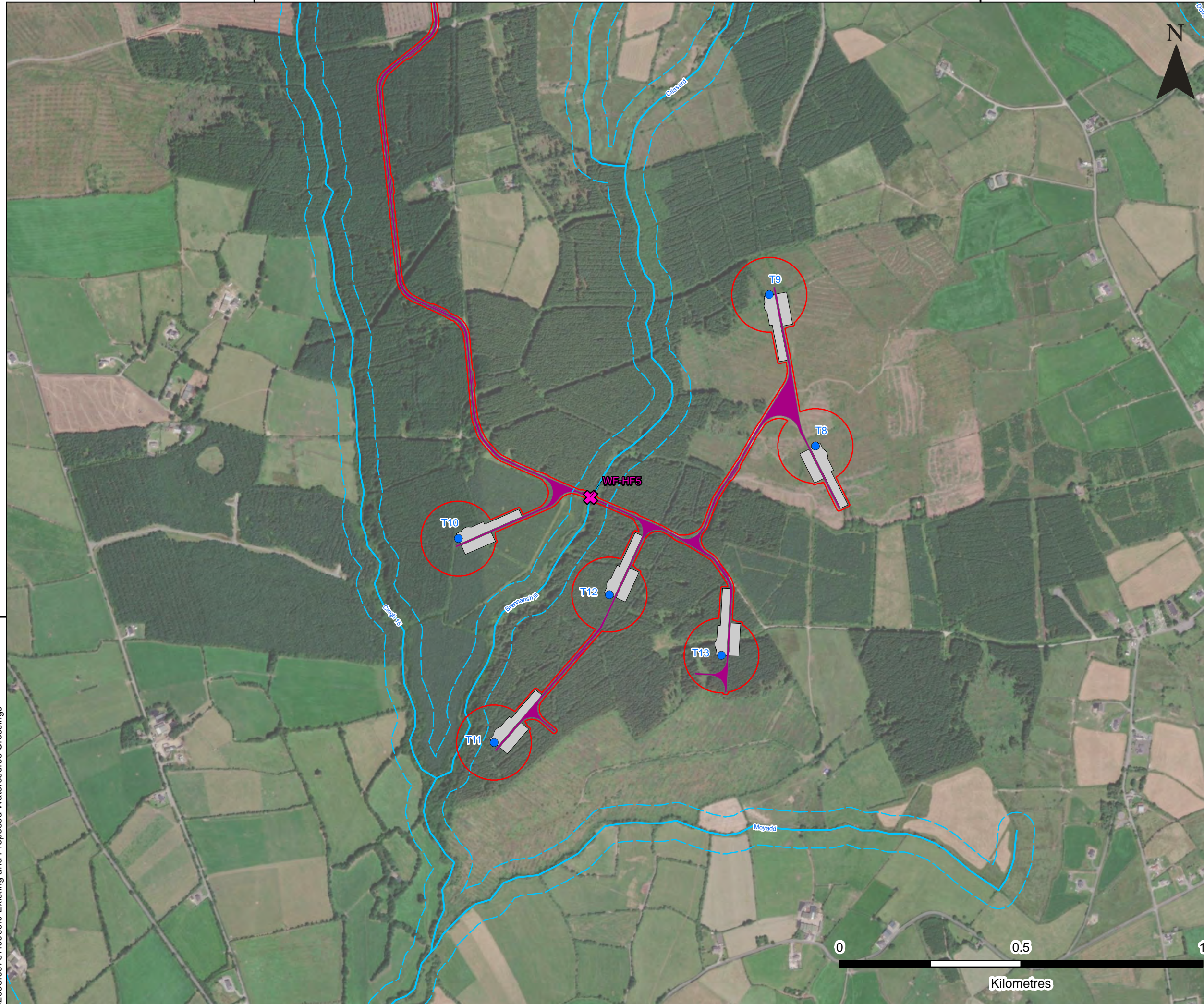
Scale 1:10,000 @ A3 Date JUNE 2023

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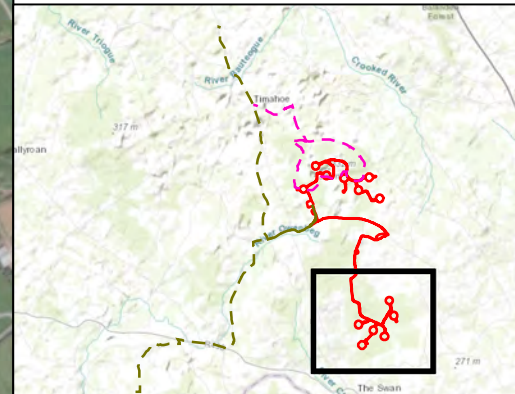
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658000



**LEGEND**

- Proposed Development Site Boundary
- Proposed Turbine Layout
- Proposed Hardstanding
- Proposed Access Track
- ✕ Existing Watercourse Crossing
- Watercourse
- Watercourse 50 m Buffer



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WATER

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**EXISTING AND PROPOSED  
 WATERCOURSE CROSSINGS**

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**FIGURE 3-7**

Scale 1:10,000 @ A3      Date JUNE 2023

02036.00787.0099.0 Existing and Proposed Watercourse Crossings



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