2. DESCRIPTION OF PROJECT

Additional information relevant to Section 2 is presented in Appendix B in Volume 2 of 3 of the EIS.

2.1 OVERVIEW

The development of Grousemount Wind Farm will be undertaken by ESB Wind Development Limited.

In summary, the project comprises the previously approved Barnastooka and Grousemount Wind Farms, which in combination comprise 38 wind turbine generators. Planning permissions were granted separately for these developments, which are adjacent, being in a remote location east of Kilgarvan, Co. Kerry.

- Planning permission (Ref. 10/0197) for Barnastooka Wind Farm, comprising 14 wind turbine generators with a maximum overall dimension of 125 m and associated infrastructure works was granted by Kerry County Council in November 2010. The applicant was Kerry Wind Power Limited.
- Planning permission (Ref. 10/1333) for Grousemount Wind Farm, comprising 24 wind turbine generators with a maximum overall dimension of 126 m and associated infrastructure works was granted by Kerry County Council in January 2012. The applicant was ESB Wind Development Limited.
- Rights to develop Barnastooka Wind Farm have been acquired by ESB Wind Development Limited, which intends that the approved wind farms be developed as a single project (Grousemount Wind farm) comprising 38 wind turbines.

A Group Processing Approach, known as the Gate Process, has been adopted for applications by wind farm developers for connections to the National Electricity Network. Grousemount Wind Farm comprising the combined approved Barnastooka and Grousemount Wind Farms is amongst those processed as a Gate 3 application.

Relevant associated developments include the following:

- Coomataggart 110 kV Substation: Planning permission (Ref. 15/262) for the substation, which is located within the wind farm site, was granted by Kerry County Council in August 2015.
- Barnastooka Wind Farm Access and Borrow Pits: Planning permission (Ref. 15/327) for a new site entrance from the L3021, access tracks and borrow pits / repositories was granted by Kerry County Council in August 2015.
- An underground cable connection from Coomataggart 110 kV Substation to the national Electricity Network: Declarations by both Cork County Council (Ref. D215.15) and Kerry County Council (Ref. EX392) under Section 5 of the Planning and Development Act 2000, as amended, have confirmed the exempted development status of this part of the project.

2.2 THE DEVELOPER

The applicant for the proposal is ESB Wind Development Limited, which is a wholly-owned independent subsidiary company of Electricity Supply Board (ESB). It is the part of the ESB organisation that is dedicated to implementing ESB's policy in relation to developing wind energy projects.

History

In 2014 ESB was responsible for 43% of all electricity generation and for 37% of electricity sales in the all-island market.[1] The company has been to the fore in the development of renewable energy in Ireland and has developed all the major hydropower schemes in Ireland. In relation to wind energy, it has carried out development programmes in the 1950s, 1980s and 1990s, but it is only in the past decade that wind generating technology has matured world-wide. As a company ESB contributed €2 billion to the Irish economy in 2014 through purchases from Irish suppliers, taxes, rates, wages and dividends.

ESB is Ireland's largest generator of green electricity and the company's commercial wind portfolio has expanded to include a number of developments on its own and in partnership with others. In this context, 60 MW of renewable wind generation was commissioned in Ireland by ESB in 2006. Mountain Lodge Wind Farm in Co. Cavan comprising 23 turbines added a further 35 MW in 2008. A number of developments with a combined capacity of approximately 60 MW were commissioned in 2010 and in 2011 an additional 96 MW of new wind generating capacity was added.

The company has also been developing its renewables business in Northern Ireland and Britain, where it is the owner of projects with a combined generating capacity of more than 150 MW. At 66 MW capacity, its Fullabrook Wind Farm is one of the largest onshore wind farms in England. In 2012 Carrickatane Wind Farm (21 MW) in Co. Derry was commissioned and erection of turbines was completed in 2013 at the 35 MW wind farm in Myndd y Betwys in Wales.

Woodhouse Wind farm in Co. Waterford with a rated capacity of 20 MW was completed in 2015, bringing ESB's operational wind portfolio to more than 400 MW.

Through it subsidiary companies ESB Generation & Wholesale Markets manages, trades, owns and operates ESB's portfolio of wind farms throughout Ireland and the UK. Renewables O&M is the division within ESB responsible for the operation, maintenance and general management of ESB's wind farms.

Future Policy

The Board of ESB has approved a Strategic Framework to:

- Achieve carbon neutrality across all markets by 2050
- Cut ESB's carbon intensity (-50% by 2025, -85% by 2035 vs 2005 levels)
- Grow the % of renewables in the generating mix (from 12% to 26% by 2025).

This will see major company investment in renewable energy, the halving of its carbon emissions within 12 years and the achievement of carbon net-zero by 2050. The plan, which will establish ESB as a world class renewables company, makes emissions reduction and energy efficiency central to its ambitious targets.

By 2030, ESB will be delivering one-third of its electricity from renewable generation. This will include over 1,600 MW of wind generation, in addition to wave, tidal and biomass. To promote this, the company will invest in emerging green technologies.

The investment by ESB in its Networks will ensure continued efficient delivery of the vital infrastructure needed to support the Irish economy. It will also facilitate the development of up to 6,000 MW of wind in an all-island context.

[1] ESB Annual Report, 2014

2.3 PLANNING HISTORY

2.3.1 Barnastooka & Grousemount Wind Farms

Historic and current approved developments are as below with the various latter consents presented in Appendix B in Volume 2 of 3 of the EIS:

Ref. No. 03/3524

An application for Planning Permission (Ref. No. 3524/03) was made in November 2003 in respect of a wind farm development comprising 28 wind turbines at Grousemount. Planning Permission was granted by Kerry County Council in August 2004, subject to a schedule of 20 Conditions.

Condition No. 1 provided that the permitted scheme should comprise 24 turbines.

Ref. 10/0197

An application for Planning Permission (Ref. 10/0197) was made in March 2010 in respect of a wind farm development comprising 14 wind turbines at Barnastooka. Following submission of additional information in July 2010, Kerry County Council's decision to grant permission subject to a schedule of 14 conditions was appealed to An Bord Pleanála (Ref. PL 08.237551).

The appeal was subsequently withdrawn and planning permission was granted in November 2010.

Ref. 10/1333

An application for Planning Permission (Ref. 10/1333) was made in December 2010 in respect of a wind farm development comprising 24 wind turbines at Grousemount. Following submission of additional information in November 2011, planning permission was granted by Kerry County Council in January 2012, subject to a schedule of 21 Conditions.

Ref. 14/412

An application for Planning Permission (Ref. 14/412) was made in July 2014 in respect of temporary guyed anemometer masts at Barnastooka. Planning Permission was granted by Kerry County Council in August 2014, subject to a schedule of four Conditions.

Ref. 15/262

An application for Planning Permission (Ref. 15/262) was made in April 2015 in respect of an amendment to the Substation at Grousemount permitted under planning Ref. 10/1333. Planning Permission was granted by Kerry County Council in August 2015, subject to a schedule of seven Conditions.

2.3.2 Grid Connection

Ref. EX392

An application (Ref. EX392) for a declaration on exempted development in accordance with Section 5 of the Planning & Development Act 2000, as amended, was submitted to Kerry County Council in March 2015 regarding the portion in Co. Kerry of the underground cable connection from ESB Networks' Ballyvouskill Substation to Coomataggart Substation.

Kerry County Council declared in April 2015 that the works constituted exempted development.

Ref. D215.15

An application (Ref. D215.15) for a declaration on exempted development in accordance with Section 5 of the Planning & Development Act 2000, as amended, was submitted to Cork County Council in March 2015 regarding the portion in Co. Cork of the underground cable connection from ESB Networks' Ballyvouskill Substation to Coomataggart Substation.

Cork County Council declared in May 2015 that the works constituted exempted development.

2.3.3 Current Applications

Ref. 15/327

An application for Planning Permission (Ref. 15/327) was made in April 2015 in respect of a site entrance from the L3021 third class road and up to three borrow pits / repositories at Barnastooka. In June 2015 Kerry County Council sought additional information, submission of which remains outstanding.

2.4 WIND FARM SITE

2.4.1 Location

The site is in an isolated rural part of Co. Kerry near its border with Co Cork. Its centre is at a distance of approximately 7.5 km east from Kilgarvan, Co. Kerry and approximately 14 km west from Ballyvourney, Co. Cork. It is about 8 km north-west of Ballingeary, Co. Cork, although it cannot be accessed directly from here.

The site largely comprises the upper reaches of the Roughty River valley, which has a rugged, wilderness character with land cover being predominantly rock, heath and peat. The site is defined generally by the watershed of the valley.

The R569 Regional Road, which itself is accessed from the N22 National Primary Road, passes within approximately 5 km of the site to the west at Morley's Bridge. Access to the site from here is via the L3021 Third Class Road. Alternatively it may be accessed from the N22 at Ballyvourney via the L3021 Third Class Road. (This road is numbered L3400 by Cork County Council and is numbered L3021 by Kerry County Council. Given the wind farm's location in Co. Kerry, the Kerry County Council designation is used herein.)

The L11187 Third Class Road extends from its junction with the L3021 at Sillahertane into the site, where it terminates. The L11187 provides access to only three permanently occupied residences, all of whose owners are financially involved in the project, and there is no traffic other than that generated by these three residences.

With few exceptions the site is generally hidden from the public view from the L3021 Third Class Road linking the R569 Regional Road at Morley's Bridge and The Coom (north-west to north-east of the site). The topography of the area provides an exceptionally high level of screening.

The overall area of the site is approximately 1,465 ha, but the development will occupy only a very small proportion of this.

Altitudes in the general area vary from less than 200 m above Ordnance Datum (OD) in the northern sector to over 520 m OD at the summit of Coomataggart in the south-east, and up to 570 m OD in the extreme south-western tip.

The Ordnance Survey (OS) Discovery Series (1:50,000) maps on which the site appears

are Sheets No 78 and No. 85.

The settlement pattern in this general area is sparse and dispersed. The nearest settlement of size is Coolea village to the east and beyond it Ballyvourney. To the west the nearest sizeable settlement is Kilgarvan. Where it does occur, development comprising one-off dwelling houses dominates in the environs of the site.

2.4.2 Site Conditions

The lands at the site are in private ownership and ESB Wind Development will lease the lands on which the turbines will be installed.

The site and adjoining lands have a rugged, wilderness character and land cover is predominantly rock, heath and peat. A small amount of seasonal rough grazing is currently undertaken and its continuance will not be affected by the wind farm development. The site would not support arable crops or grasses for fodder, and its elevation and relative inaccessibility mean that any land uses entailing frequent access are not feasible.

The nature of the site is such that it is generally unsuitable for agriculture, particularly due to the presence of underlying peat which is characterised by water retention, acidity and poor nutrient profile.

The natural habitat of much of the wider area is shallow blanket bog and heath.

By reference to Section 6.9 of the DoEHLG Windfarm Planning Guidelines the landscape character type best describing the site is Mountain Moorland

The general geological succession at the site comprises a vegetative layer and peat generally less than 1 m deep, stiff silty clay (glacial till) and bedrock (generally sandstone).

2.4.3 Planning Designations

In relation to possible wind energy developments, the Kerry Renewable Energy Strategy 2012 identifies Strategic Site Search Areas and areas Open to Consideration throughout the county. The site at Grousemount is located within an Area Open to Consideration for wind energy development.

A total of 46 separate Landscape Character Areas (LCAs) in Co. Kerry are identified in the Kerry County Development Plan 2012-2018. The site lies within the following LCA:

- 21. Upper Roughty River Valley

2.4.4 Nature Conservation Designations

Sites and species of conservation value and / or concern have been designated in an effort to protect their biodiversity resource. Designated conservation areas are areas containing habitats or species of national or international conservation importance. Three types of designation are considered here, as follows: Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Natural Heritage Areas (NHA).;

SACs are protected under the EU Habitats Directive (92/43/EEC) and SPAs are designated under the EU Birds Directive (79/409/EEC). Together these form the backbone of the Natura 2000 network.

NHAs and proposed NHAs (pNHA) are protected under the Wildlife Act 1976 (as amended) and are areas considered important for the habitats present or which hold species of plants and animals whose habitat needs protection.

The development area is not part of any site designated for conservation purposes. However, two such sites adjoin the development area, as follows:

- Sillahertane Bog Natural Heritage Area (site code 01882): This NHA is situated immediately north-east of the site (adjoins site boundary) and extends north-east of the plantation. It is a fairly intact blanket bog and wet heath system, with some well-developed flushes.
- Ballagh Bog proposed NHA (site code 01886): This pNHA is situated immediately south of the site. It comprises a high-level river plain and surrounding mountain slopes. There is a series of small valley bogs that are reasonably wet. (This pNHA is within the land ownership boundary but is not within the development area.)

There are six catchments in Co. Kerry designated under the European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations, 2009 in response to the presence of significant pearl mussel populations:

- Caragh
- Currane
- Gearhameen
- Kerry Blackwater
- Munster Blackwater
- Owenmore

The development area is not part of any of the above catchments.

2.5 DESCRIPTION OF SCHEME

The main components of the development are the wind turbines, access tracks, anemometer masts, Coomataggart 110 kV Substation containing electrical Control Buildings and an underground cable connection to the national Electricity Network. The layout of the wind farm component of the development is shown on Figure 2.1 and the route of the underground cable is shown on Figure 2.2.

The development comprises the following:

- Construction of approximately 28 km of new site tracks with associated drainage and sediment control, and development of nine borrow pits / repositories,
- Construction of turbine foundations and cranepads.
- Erection of 38 wind turbines having a maximum overall dimension of 126 m from the base to the tip of the wind turbine blades in the fully upright position.
- Installation of approximately 55 km of medium voltage underground cabling between the wind turbines and Coomataggart Substation.
- Four free standing anemometer masts with a maximum overall height of 80 m.
- Entrances to the wind farm site from the public road and alterations to the public road for the delivery of turbines (turbine delivery route) to the wind farm site.
- All associated site works including minor felling of coniferous trees.

In addition to the above, the following are part of the overall project:

- Construction of Coomataggart 110 kV Substation including three Control Buildings, outdoor electrical equipment and an foul effluent holding tank.
- Installation primarily in the public road of approximately 31 km of 110 kV underground cable including cable joint bays to form a link between ESB Networks' existing Ballyvouskill 220/110 kV substation and the permitted but as yet unbuilt Coomataggart 110 kV substation within Grousemount Wind Farm

The development will generate electricity by harnessing the wind and will supply the power to the national electricity network. Each wind turbine will have a rated electricity generating

capacity of up to approximately 3,300 kW. It is anticipated that the project will generate about 350,000,000 kWh (units) of electricity per annum.

The capital costs for installation of the proposed wind farm are projected to be in the order of up to €180M.

In total, the development area at the wind farm extends to approximately 1,465 ha, but the completed development will occupy less than 3% of these lands. The remaining areas will continue under the control of the current landowners. Existing land uses outside of the area occupied by the development will not be affected and the proposal will not compromise possible future alternative use of these lands.

2.5.1 Wind Farm Entrance

There will be three points of access to the site from the public road as follows:

- Access A: Site entrance from the L3021 Third Class Road near its junction with the L11187 Third Class Road at Coolknoohill.
- Access B: Site entrance from the L11187 Third Class Road at a location approximately 1 km south of its junction with the L3021.
- Access C: Site entrance from the L11187 Third Class Road, where the public road terminates, as permitted under planning Ref. 15/262.

Detailed design of the site entrances will fully meet the appropriate guidelines regarding sightlines at accesses to non-national roads and drainage will be provided as necessary to prevent water from the access flowing onto the public road. Similarly, any existing road drainage will either be maintained or effective alternative measures will be provided.

A modified arrangement will be used temporarily during the latter stages of the wind farm construction programme when deliveries to the site of wind turbine components are taking place. The long load vehicles involved have restricted turning ability and would be unable to negotiate a conventional site entrance. The permanent entrance will be reinstated thereafter with the use of indigenous planting.

At Access A from the L3021 a lockable gate will be set back from the road frontage by an adequate distance to avoid traffic entering the site having to queue on the public road. This will also provide adequate visibility splays for traffic exiting the site and the radius at the entrance will be sufficient to accommodate the largest vehicle likely to use the access. Gates will be hung so that they do not open towards the carriageway.

The entrance will incorporate a cattle grid on the outside of the entrance gate and wheel wash facilities will be provided inside. The wheel wash will be an approved proprietary wheel wash. Wash water will not be allowed to enter any local watercourses and will enter a dedicated lagoon where the resultant sludge will be removed from site by a fully licenced contractor with the relevant waste collection and disposal permits.

The L11187 Third Class Road will be widened as necessary from its junction with the L3021 as far as Access B. There is effectively no traffic on this road and the need to avoid traffic queuing doesn't arise.

2.5.2 Wind Turbines

The turbines will have a maximum overall dimension of 126 m, although the overall dimensions of the selected turbines may be lower than this.

The overall maximum dimension is equivalent to the permitted maximum dimension of the turbines in the approved Barnastooka (125 m) and Grousemount Wind Farms (126 m).

Specifying a maximum overall dimension rather than specific dimensions for the two components allows for greater flexibility in choice of turbines by the inclusion of a larger number of candidate turbine models. However, turbines will likely comprise a tower height in the range 70 – 85 m and three blades, each with a blade rotor diameter in the range of up to 82 – 112 m, i.e. turbines may be configured as comprising a 70 m tower with 56 m long blades or an 85 m tower with 41 m long blades.

The wind turbines, a typical view of which is shown in Figure 2.3, will be selected from a range of models that have been demonstrated successfully throughout Europe and certified to the highest international standard. In accordance with EU procurement rules for utilities, to which ESB and its subsidiary companies are subject, the contract to supply and construct the wind farm will be open to international competition. For this reason it is not possible to specify the exact turbine which will be deployed at Grousemount but it will be within the range indicated.

While the choice of make and model has not yet been finalised, the wind turbines under consideration for installation are three bladed, horizontal axis machines. There are a number of candidate machines, with those indicated in Table 2.1 being typical. Modern wind turbines from the main turbine manufacturers have evolved to share a common appearance and other major characteristics. Only minor cosmetic features differentiate one from another.

Table 2.1: Candidate Wind Turbines

Model	Hub Height (m)	Rotor Diameter (m)	Overall Dimension (m)
Nordex N80	85	80	125.0
Nordex N90	80	90	125.0
Vestas V90	80	90	125.0
Siemens SWT93	79.5	93	126.0
Siemens SWT101	75	101	125.5
Vestas V112	70	112	126.0

The turbine towers will be of tubular steel design tapering from about 4 m diameter at the base to about 2.5 m diameter at the top where the nacelle will be mounted. Access to the tower is via a staircase located outside on the hardstand and a secure hinged door into the tower. The nacelle will be accessed from the tower using an internal ladder with landing or rest positions. The tower and nacelle will incorporate internal and emergency lighting.

The nacelle will contain the generator and control unit, which will be designed for computer controlled monitoring of all major functions of the turbine. It will have effective sound insulation and smooth performance of moving parts will ensure minimal noise. The components of a typical nacelle are shown in Figure 2.4. A three blade rotor will be attached to the nacelle.

Wind turbines can be supplied in any colour, with the predominant colours being off-white and light grey. The current position is that a light grey colour may blend better with the typical sky colouring in Ireland. Subject to agreement with the planning authority, the turbines will be coloured light grey (RAL 7035) or white with a matt finish. .

The steel tube towers with high specification, factory applied, paint finish will be fixed to

concrete bases, the exact depth and structural design of which will depend on site conditions and may vary slightly from one turbine to another. Detailed geotechnical investigations will be undertaken at the site prior to commencement of construction to enable structural design of foundations.

Personnel access in the turbine towers and nacelles will meet all safety regulations. The equipment will be protected from lightning strike by deep earthing and from corrosion by multiple coatings. The turbine tower and nacelle will be equipped with optical smoke sensors.

Method of Operation

The basis of wind turbine operation is as follows:

- Sensors are used to monitor wind direction and a yaw mechanism turns the nacelle to keep the blades facing into the wind.
- The blades of the turbine, which are bolted onto a hub with a pitch mechanism interposed to allow the blade to rotate about its axis to take advantage of varying wind speeds, rotate at a rate of once every 3–5 seconds (s), depending on wind conditions.
- Inside the nacelle located at the turbine hub, the rotor drives a large shaft into a gearbox, which steps up the revolutions per minute to a speed suitable for the electrical generator
- The electricity generated is fed via underground cables to electrical transformers where it is transformed to a higher voltage for supply to the national Electricity Network.

The turbines will commence operation at a wind speed of about 4 m per second (m/s), will attain maximum output at about 15 m/s and will shut down when the wind speed reaches about 25 m/s. Power will be controlled automatically as wind speed varies.

Locations

The wind turbines will be located at elevations in the approximate range 300 – 500 m OD. Details are as follows:

Table 2.2: Locations of Wind Turbines

Turbine	East	North	Elevation (mOD)	Turbine	East	North	Elevation (mOD)
T1	509157	571590	343	T2	509263	571347	336
T3	509351	571082	324	T4	509543	570736	306
T5	509860.5	570428	390	T6	510154	570247	406
T7	510088	569922	370	T8	508860	569948	393
T9	508625	569548	381	T10	509105	569709	390
T11	508796	569240	403	T12	509230	569320	460
T13	509651	569402	493	T14	509339	568932	465
T15	509055	568532	454	T16	507371	568711	403
T17	507145	568973	457	T18	507539	569063	410

Turbine	East	North	Elevation (mOD)	Turbine	East	North	Elevation (mOD)
T19	507329	569308	463	T20	507610	570305	370
T21	507993	570504	350	T22	507484	570624	395
T23	507117	570663	385	T24	506701	570550	402
T25	507777	572315	329	T26	507244	572069	384
T27	507606	572006	346	T28	507297	571721	345
T29	507006	571788	353	T30	506690	571605	344
T31	506386	571287	344	T32	505904	571196	368
T33	506096	571517	389	T34	506367	571771	391
T35	506663	571988	391	T36	507568	572430	367
T37	507217	572337	396	T38	506956	572364	396

The following is to be noted regarding the above:

- Turbines T1 – T24 in the above correspond to turbines T1 – T24 in the approved Grousemount Wind Farm and T25 – T38 correspond with turbines T1 – T14 in the approved Barnastooka Wind Farm.
- Turbines T1 – T6 will have a maximum rotor blade diameter of 93 m, so that their locations provide a wind take separation of 232.5 m (2.5 x rotor blade diameter) separation from the property boundary.

Transformers

A separate transformer will be associated with each wind turbine to uprate the generation voltage of the turbines to a higher voltage for connection to Coomataggart Substation via underground cables. Uprating the voltage helps to reduce electrical losses on the cabling connector circuits.

In modern wind turbines in the range of sizes under consideration, the transformer is most commonly located within the nacelle or turbine tower. However, depending on the turbine manufacturer, for safety reasons, it may be located outside of and beside the tower close to the base.

Where not accommodated within the wind turbine, it is not feasible or good practice from a safety perspective to locate the transformer underground. Rather, it will reside within a compact glass-reinforced plastic or steel enclosure measuring approximately 2.5 m x 2.5 m in plan and approximately 2.2 m high. The enclosure will also contain a ring main unit (RMU) switchgear complete with feeder circuit-breaker and close over-current / earth-fault protection.

The hermetically sealed wind turbine transformers, likely contained within the wind turbine nacelle or otherwise located close by, can be considered as leak free and maintenance free. They are dispatched from the factory leak free and can only be damaged during transport or installation. Once in service, they remain closed for their lifetime.

Wind Turbine Delivery

It will be a matter for the chosen turbine supplier to determine the most suitable route for delivery of wind turbine components to the site. While definitive details with regard to the

haulage route cannot be provided in such circumstances, the options that are available are as follows:

Access from the N22 at Ballyvourney, Co. Cork: The L3021 from Ballyvourney provides a 15 km long direct route to the site entrance at Grousemount. However, while it has been used in the past for delivery of wind turbines to other wind farm developments in the locality and currently has no load restrictions applying, the bridge over the Sullane River at Ballyvourney is generally considered unsuitable for delivery of turbines of the size proposed for Grousemount.

A temporary bridge over the Sullane River is proposed to cater for wind turbine deliveries. It will have associated temporary access to it from the N22 and L3021.

Further to this, there are a number of locations along the route from Ballyvourney to the site where minor road realignments and improvements are necessary to facilitate the long load deliveries.

Access from the N22 at Clonkeen, Co. Kerry: An existing access from the N22 at Clonkeen has been used in the past for delivery of wind turbines to other wind farm developments in the locality and an existing access from the L3021 has been similarly used. Construction of a 500 m length of track would link these two currently unconnected accesses to provide a 10 km long continuous access from the N22 at Clonkeen to a point close to the site entrance to Grousemount. Further to this, the final leg of the route, i.e. the existing access from the L3021 was developed for delivery of smaller turbines and requires improvement to facilitate the size of turbine proposed for Grousemount.

The final part of the route along the L3021 is common to the route from Ballyvourney, and some of the locations where minor road realignments and improvements are necessary to facilitate the long load deliveries are between the point where the access track from Clonkeen reaches the L3021 and the site entrance.

2.5.3 Access Tracks

A network of access tracks whose total length will be approximately 28 km will be required throughout the site to:

- Allow access for main construction activities and for deliveries of wind turbines.
- Allow ongoing post-construction access to the wind turbines and anemometer masts for operation and maintenance.
- Allow for decommissioning of the wind farm.

Their form will be broadly similar to that applied in forestry operations, being constructed with stone fill material and having an unsurfaced finish. While the tracks can be constructed with acceptable gradients over most of their length, it is anticipated that gradients at several locations may require a surfaced finish to provide the necessary traction for the delivery vehicles using it, depending on the supplier's requirements. A total length of approximately 600 m where gradient exceed 14% has been calculated. In addition, the portion of the access between the site entrance and the wheel wash will be provided with a surfaced finish.

In terms of construction technique, the tracks will comprise excavated roads. Excavated material will be side cast adjacent to the access tracks and dressed to blend in with surrounding landscaping and partially obscure sight of the track where feasible

The access tracks will require a cambered top surface to assist the drainage of rainwater

to either side of it. A site drainage plan has been developed to manage surface run off from the access tracks and cranepads, turbine locations and other structures associated with the development.

Some of the constraints arising in designing the layout of the tracks are generic and some are specific to the Grousemount site.

- Track length is kept to a minimum to reduce environmental effects, construction time and material quantities.
- Track layout is designed to reflect contours, to avoid cross slopes and deep cut and fill sections into existing terrain.
- Gradients are to be kept to the minimum possible to accommodate the requirements of delivery vehicles and to allow construction plant to move safely around the site.

Being the main entrances during construction, tracks from Access A and Access B will be 7 m wide over the initial part of their length. Otherwise, tracks will have a finished width of about 5 m with passing bays provided at appropriate locations and horizontal bend radii designed and constructed to accommodate the Contractor's transport equipment.

All power and control cabling within the site will be laid underground. Cable trenches, which will typically be 0.5 – 1.0 m wide and 0.75 – 1.00 m deep, will generally follow the edge of the access tracks and will be installed in conjunction with the tracks.

In order to minimise impacts on local hydrology, cable trenches will be backfilled with excavated material, so that trenches do not act as preferential flow paths. Clay plugs will be inserted in cable trenches at regular intervals to further reduce this likelihood.

2.5.4 Cranepads

A cranepad comprising a level hardstanding area will be provided adjacent to each wind turbine to facilitate construction. They will be retained for the lifetime of the wind farm to facilitate any large scale maintenance involving the use of a large crane. The dimension of the cranepad will be approximately 50 m x 25 m. Blade fingers may be provided at each cranepad for storing the turbine blades prior to their assembly and erection

The various turbine suppliers have differing requirements as to the arrangement and orientation of the cranepad relative to the position of the turbine. The above dimensions are indicative and, while the likely arrangement is shown on the project drawings, the actual orientation will be a matter to be agreed with the selected turbine supplier.

Turning heads may be provided where the separate access tracks terminate to allow turning of the vehicles involved in long load deliveries of wind turbine components.

2.5.5 Anemometer Masts

Anemometer masts with a height corresponding to that of the turbines are included in wind farm developments to monitor wind speeds and validate operation of the wind turbines. Each will comprise a free-standing lattice steel tower with an anemometer and wind vane attached. The overall height will correspond with the tower height of the turbines.

A number of factors contribute to determining the number of anemometer masts within the wind farm site.

- The overall separation between the outermost turbines in the development is in excess of 4.5 km.

- There are significant elevational variations in topography over the site, there being almost 200 m of elevational difference between ground levels at the lowest and highest wind turbines.

The above would be expected to result in significant variations in wind speeds across the site and generate a requirement for a number of anemometer masts, whose details are as follows:

Table 2.3: Anemometer Masts

Anemometer	MM1	MM2	MM3	MM4
Easting	510015	508956	506879	506232
Northing	570372	569448	570755	571679
Elevation (m OD)	406	412	380	400

Whereas the above approach represents current industry best practice regarding deployment of anemometers masts, the number of masts actually installed will be determined by contractual considerations and may be less than cited.

2.5.6 Borrow Pits / Repositories

Stone fill material will be needed for construction of the access tracks and cranepads within the wind farm, and it is proposed to develop up to nine (9) on-site borrow pits to provide a local source of this material. Five of these were previously approved in the Grousemount development (Ref. 10/1333).

It is envisaged that some suitable material for this purpose will be available from excavated material that is surplus to backfill requirements at the wind turbine foundations. The remainder will be sourced from the borrow pits.

Investigations have shown the material available at the chosen borrow pit locations is suitable for construction applications, i.e. low risk of mechanical breakdown, and that the borrow pits should yield a sufficient quantity of materials for the project. This availability is of significant advantage in terms of confining impacts of construction to within the wind farm site by avoiding unnecessary traffic on the public road.

Only competent rock that is not subject to mechanical breakdown will be used in construction of access tracks. The results confirm those already available for rock samples previously recovered at the site and compare favourably to those available from other wind farm projects carried out by ESB Wind Development (which yielded slightly lower Slake Durability results) where mechanical breakdown and sedimentation issues were not encountered.

The calculated maximum requirement for stone fill material includes stone to be placed as a capping layer on the tracks and cranepads. It is envisaged that up to approximately 22,500 m^3 of the overall requirement will be for material of this quality. It is not yet fully established that material available on site will be suitable for this application and stone may be imported from a nearby licensed quarry.

Further to this, some stone fill material will be required at the commencement of the works to facilitate initial access.

The borrow pits are conveniently located relative to the approved network of access tracks within the site and the requirement for tracks to access the borrow pits themselves is limited. The habitats at the borrow pit / repository locations are similar to those occurring

elsewhere throughout the site and are of no special conservation value.

In addition to providing a local source of stone fill material, borrow pits will be used as repositories to safely store the overburden material that is stripped to access the underlying rock at the borrow pit and the surplus excavated material arising from the Works.

The borrow pits / repositories will be used exclusively for wind farm construction purposes and there will be no use by the developer beyond completion of the wind farm development. Development will be on an as-needed basis during the construction phase. There will be no significant stockpiling of materials and it is envisaged that the volume of material available at any time at any location will not exceed 2,000 t.

Restoration will be implemented progressively and will be completed immediately upon cessation of use. Suitable fencing will be erected as necessary around the borrow pits during the restoration phase to ensure public safety.

While operations within the borrow pits could have the potential to generate dust during any prolonged period of dry weather, the chosen locations are remote from areas where nuisance could potentially arise. In the first instance dust control measures will entail minimising the extent of areas likely to generate dust. Additionally, a water truck will be available to spray water on the floor of the borrow pits as necessary.

Controls applied within the wind farm site regarding refuelling of construction plant will extend to borrow pits.

2.5.7 Tree Felling

Felling of commercial coniferous forestry is required where approximately 500 m of the turbine transport route from Clonkeen is within a currently afforested area. A clearfelled corridor of 20 m will be created.

The tree felling will be the subject of a Felling Licence from the Forest Service and will be in accordance with the conditions of such a licence. The licence will include the provision of relevant replant lands to be planted in-lieu of the proposed tree felling on the site. The replant lands will be properly certified as suitable for forestry by a certified forester.

The replant lands will be certified to be of an appropriate yield class and soil type and recommendations as to types and amount of fertilisation required will also be provided by a certified forester at the time of applying for the felling licence.

In accordance with the Forest Service's policy, the application for a felling licenses for wind farm developments cannot be made prior to a grant of planning permission for the wind farm developments.

2.5.8 Signage and Fencing

A number of information signs will be required at the site during construction and operation of the wind farm. This will include the following:

- Panel signs at the site entrance indicating the presence of the site entrance.
- Signage on each turbine indicating the turbine number, potential hazards and an emergency contact telephone number.
- Other operational signage as required (Buried HV Cable Route, etc.).

2.6 COMPARISON OF PERMITTED AND PROPOSED ARRANGEMENTS

Key aspects of the current proposal and the arrangements approved under planning permissions Ref. 10/0197 of November 2010 (Barnastooka Wind Farm) and Ref. 10/1333 of January 2012 (Grousemount Wind Farm) are as follows:

- The number of turbines (38) is unaltered.
- The maximum overall dimensions of the turbines are 126 m, being unaltered for 24 turbines and increased by 1 m for 14 turbines (turbines T1-T6 will have a maximum rotor blade diameter of 93 m).
- With minor exceptions, turbine locations correspond with those approved. Turbines T1-T6 are relocated by approximately 10 m to provide for windtake considerations.
- The separate substations at Barnastooka and Grousemount are eliminated and replaced by the approved Coomataggart 100 kV Substation (Ref. 15/262).

The following alterations are incorporated to improve the constructability of the combined development:

- Revised access to Barnastooka and Grousemount: Reviews of permitted access arrangements indicated that revised access to the combined project would be of significant benefit.
- Link track from Barnastooka to Grousemount: Further to the revised access above, from an operational perspective, it is evident that improved access from one section of the development to the other would improve the logistics from an operational and maintenance perspective.
- Modification of dimensions of turbine towers and blades: The permitted developments have an allowable maximum blade tip height of 125 m (Barnastooka) and 126 m (Grousemount). A 126 m limit on the maximum overall dimension will be applied to the combined development. However, greater flexibility in the composition of the overall dimension could potentially increase the overall electricity generation, i.e. open international tendering could result in turbines having a combination of 75 m towers and 50 m long blades (or other combination) being the most attractive for the project.
- Borrow pits / peat repositories at Barnastooka: Whereas on-site borrow pits / peat repositories are provided for in the approved development at Grousemount, this is not the case at Barnastooka. Clearly, such an arrangement would be beneficial from the viewpoint of minimising import of stone fill for construction purposes and disposal of surplus excavated material, with associated reduced traffic impacts on the public road. It would provide a uniform approach to the construction of the two elements of the combined project.
- Additional / relocated anemometer masts: The approved wind turbines are at relatively dispersed locations within the lands, leading to potentially significant variations in the wind regime. An additional anemometer mast or relocation of an approved mast from Grousemount to measure wind speed would facilitate improved validation of the operational performance of the wind turbines

2.7 OPERATION, MAINTENANCE AND DECOMMISSIONING

2.7.1 Operation and Maintenance

Project Lifetime

It is envisaged that the project will remain in operation for about 25 years following its commissioning, although depending on circumstances it may be viable to continue the project for another phase thereafter.

It is believed that an operational life of less than 25 years would be overly restrictive in comparison with recent grants of planning permission by various planning authorities and by An Bord Pleanála. A lesser operational life would impose a commercial disadvantage on this development in comparison with other similar schemes with which this development may potentially be in competition for supply of renewable electricity.

With regard to project lifetimes, the DoEHLG Windfarm Planning Guidelines (Section 7.20) note as follows:

> *The inclusion of a condition which limits the life span of a wind energy development should be avoided, except in exceptional circumstances.*

Operation

It is expected that the wind farm will have an availability of about 98%, i.e. it will capable of operation for 98% of the time. Actual operation will be determined by the wind conditions experienced. However, on average, turbines turn and therefore produce electricity for about 80 - 85% of the time. The output of the wind turbines will depend upon the wind regime but a capacity factor of 30% - 35% is expected. This means that over the course of a year each turbine would produce 30% - 35% of the amount it could theoretically produce if it was working at maximum output at all times throughout the year.

Wind farms are designed to operate largely unattended and during the operational phase the wind farm will normally be unmanned. Each turbine will have its own in-built supervision and control system that will be capable of starting the turbine, monitoring its operation and shutting down the turbine in the case of fault conditions.

Supervisory operational and monitoring activities will be carried out remotely using a SCADA system, with the aid of computers connected via a telephone modem link.

Servicing of the wind turbines will be carried out in accordance with the manufacturer's specifications, which would be expected to entail the following:

- Six-month service - three week visit by four technicians
- Annual service - six week visit by four technicians
- Weekly visit by Developer or agents to check over the site, notices etc.

Occasional technical problems may require maintenance visits by technical staff.

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

A drainage management protocol will be incorporated into the management procedures for the post-construction / operational phase of the wind farm.

Once the underground cable has been constructed and installed, its operation will be for

the main part fully autonomous. This means that day-to-day access to the infrastructure by persons and vehicles will be very infrequent, only required to undertake minor routine maintenance and inspection.

2.7.2 Decommissioning

Options & Removal of Development

The available options at the projected end of the wind farm's operational life are as follows:

- Refit the turbines' key components and continue electricity production.
- Repower with the most up-to-date technology and continue electricity production.
- Decommission the development and reinstate the site.

The purpose of the activities surrounding the ultimate decommissioning of the wind farm will be to ensure that residuals are recovered / disposed of in a manner that will not adversely affect the environment, and that the site is fit for further use and poses no risk of environmental pollution.

It is not envisaged that special environmental considerations will apply during decommissioning and the same principles of mitigation that apply to the construction works will apply to decommissioning. Mitigation measures applying at the time will take into consideration any improvements and developments in recognised good practice in the interim.

A full Decommissioning / Reinstatement Plan will be agreed with the Planning Authority prior to decommissioning in accordance with the circumstances then prevailing. The underlying principles will as follows:

- Reuse or recycling where possible of all components to provide environmental and economic benefits.
- Disposal in accordance with all regulations in force at that time of residuals materials that are not or cannot be reused or recycled.
- Avoidance of further disturbance of areas that have recovered successfully after the construction phase.

It is currently envisaged that this will broadly comprise the following:

- All turbines will be dismantled by crane, and this will entail removing the turbine blades and the nacelle containing the gearbox and generator, followed by removal of the tower sections.
- The upper sections of the turbine foundations will be removed to below ground level. The remaining lower parts will be covered and the ground will be left to re-vegetate naturally.
- Electrical /control equipment and switchgear will be recovered from the Substation for use at equivalent facilities or in other applications elsewhere.
- The Control Buildings within the Substation will be demolished.
- Underground cables will be cut back and left buried in order to avoid disturbance of the already vegetated areas.
- It is anticipated that the majority of access tracks and constructed water course

crossings will be left in-situ for amenity and / or landowner access requirements. Attempting to remove and reinstate the tracks is likely to result in minimal benefit which will be outweighed by the ground disturbance involved in their removal.

- Tracks that are not required on an ongoing basis will be covered over and the ground will be left to re-vegetate naturally.
- Hedgerows and field boundaries will be reinstated with native species.
- All demolition waste will be removed from the site.

The Decommissioning / Reinstatement Plan will result in a decommissioned and decontaminated site suitable for future use.

Successful decommissioning is determined as being completed when the wind turbines, Substation and anemometers, including all equipment, wastes or any other materials that could result in environmental pollution, are removed from the site and recycled, recovered or disposed of in accordance with all regulations in force at that time.

For the lifetime of the windfarm operation the developer will lease the lands on which the turbines and access tracks will be installed. These lands and all other lands within the site boundary will remain the property of the current landowners over the lifetime of the project and thereafter.

Where infrastructure is to be retained following decommissioning, ownership and responsibility for upkeep of the tracks, etc. will pass to the landowner. This will include agreement on transfer of responsibility for maintenance requirements.

Costs of Decommissioning

The decommissioned electrical equipment, which will comprise control and switchgear equipment, and turbine transformers and substation transformers, will have a residual value of at least the cost of its removal. This together with the scrap value of wind turbine components, mainly comprising recyclable steel, will provide a fund that will more than meet the financial costs of decommissioning and site reinstatement.

The DoEHLG Windfarm Planning Guidelines (Section 7.19) recognise that the use of long-term bonds puts an unreasonable burden on developers given the long time span involved in wind energy developments and is difficult to enforce.

It notes as follows:

> *The recycling value of the turbine components, particularly copper and steel, should more than adequately cover the financial costs of the decommissioning. Accordingly, the use of a long-term bond is not recommended.*

2.8 MITIGATION OF POTENTIAL IMPACTS

The EPA's Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) accompanies the Guidelines on the information to be contained in Environmental Impact Statements, also published by the EPA.

The Advice Notes are divided into five sections, each providing detailed guidance on specific aspects to be considered in the preparation of an EIS. Section 3 provides guidance on the topics which would usually be addressed when preparing an EIS for a particular class of development, highlighting typical issues which arise. The projects are grouped into 33 generic types, which have similar development or operational characteristics.

Project Type 33 addresses installations for the harnessing of wind power for energy production and the Possible Mitigation Options that are identified are as follows:

- *Site selection to avoid intrinsic sensitivity is the principal mitigation option for this project type.*
- *Site layout to achieve appropriate orientation and alignment is an appropriate secondary measure*
- *Utilisation of non-disruptive construction methods for access roads, buried cables and other site works can significantly ameliorate impacts on water, soil, ecology and archaeology.*

It is believed that the design of Grousemount Wind Farm is consistent with the strategy outlined.

2.9 COOMATAGGART 110 KV SUBSTATION

The permitted Coomataggart 110 kV Substation (Planning Ref. 15/262), which is located within the wind farm site, will occupy an area of approximately 16,350 m² and will consist of a compound containing outdoor switchgear comprising busbars, line bays, grid transformers and associated bays, house transformers and three Control Buildings. The size of the Station, which provides for potential future expansion, has been determined by EirGrid's design requirements. Its layout is shown on Figure 2.5.

The Substation is in substitution of the two separate substations in the approved Barnastooka and Grousemount Wind Farms.

Equipment will include a Supervisory Control and Data Acquisition (SCADA) system, which will allow for off-site monitoring via a telephone connection.

The Control Buildings will be unmanned, but sanitary facilities comprising a single toilet and wash hand basin will be provided for very occasional use, with discharge to holding tanks that will be sized to reflect the anticipated frequency of use. These will be located outside of the fenced area to allow them to be maintained without requiring access.

Potable water supply will be from a private well which will be constructed so as to prevent contamination and thereafter water will be tested and treated as necessary to meet the requirements of the European Communities (Quality of Water Intended for Human Consumption) (Amendment) Regulations 2000.

Drainage arising from paved surfaces within the Substation and from transformer bunds will be discharged to a percolation area following passage through an appropriate oil interceptor.

Each grid transformer will be located within an impermeable bund capable of oil retention in the event of a total leakage from the transformer. The bund will have a capacity of at least 110% of the volume of oil to preclude any release of contaminants to the environment. Drainage arising from the transformer bund will be discharged following passage through an appropriate oil interceptor. The transformers will have isolating fire walls between them and the Control Buildings.

Permanent 2.6 m high palisade fencing, the colour of which will be agreed with the planning authority prior to construction, will be provided only around the Substation and it is provided here for public safety purposes. Its need arises from the presence within the compound of high-voltage electrical equipment to which public access must be prevented.

There will be two access gates and internal fences to segregate different areas. There will

be internal roads with much of the area within the compound being covered in stone chippings.

When constructed, Coomataggart 110 kV Substation will be owned and operated by ESB Networks (ESBN). It will function as a node on the national electricity grid and will allow renewable energy being generated in the surrounding areas to feed into the national grid.

2.10 GRID CONNECTION

A 110 kV underground cable circuit will be installed over a distance of approximately 31 km to form a link between the existing Ballyvouskill 220/110 kV substation near Millstreet, Co. Cork and the permitted but as yet unbuilt Coomataggart 110 kV Substation within the wind farm site.

It is the policy of ESB Wind Development that, in so far as possible, high voltage underground cables shall only be installed under public roads. One of the key advantages of laying cables under roadways is that there is usually no permanent impact on the environment additional to that caused by the presence of the roadway. When an underground cable is laid under an existing roadway, the potential for impact is normally only a short term impact during the construction phase.

Both Cork County Council and Kerry County Council have declared that the works constitute exempt development.

The Ballyvouskill 220/110 kV substation was permitted by An Bord Pleanála (ABP) as a Strategic Infrastructure Development (SID) in 2012 (ABP Reg. Ref. VA0008). This substation is now constructed, and is owned and operated by ESB Networks (ESBN). It functions as a node on the national electricity grid along the existing Clashavoon – Tarbert 220 kV overhead line. It is located approximately 1 km west of the R582 Regional Road.

The underground cable will be installed primarily along the public road network with approximately 23.5 km being located in Co. Cork and approximately 7.3 km in Co. Kerry.

The route commences at Ballyvouskill Substation approximately 1 km west of the R582 Regional Road. The route exits the substation to the west onto a local road following a west to south-westwards route for approximately 10 km. Approaching Ballyvourney, the route turns southwards with the road skirting the Bohill River. A tributary and then the main channel of the Bohill River are crossed. At Ballyvourney the route crosses the N22 National Primary Road and crosses beneath the main channel of the Sullane River. From Ballyvourney to Coolea, the route is alongside the Sullane River.

The route continues within the Sullane valley to the west of Coolea. An upper tributary of the Sullane River is crossed at Lumnagh Beg and the route continues to rise towards The Coom on the Cork/Kerry border. The Sillahertane Stream flows to the south of the road, with the landscape here more open with heath and small grassland fields. At Sillahertane the route turns south for its final length to reach the site of Coomataggart Substation.

Site investigations along the route will be carried out in advance of the approved designs being finalised and before the contractor commences trenching and ducting civil works. These site investigations will include slit trenches along the roadways to detail the route and to ensure that there is sufficient space to install a 110 kV cable trench typically measuring approximately 0.6 m wide and 1.2 m deep.

Joint bays measuring approximately 2.5 m x 6 m x 2.5 m deep will be required at intervals of approximately 600 – 800 m where the separate cable lengths are joined together. and will for the most part be located off but adjacent to the public road. The bays will be

located underground and will be completely reinstated / backfilled during the works. They will be located either within the existing road or at suitable off-road locations immediately adjacent to the carriageway in order to minimise the disruption to traffic. The selection of joint bay locations involved technical and environmental evaluation of the sites to ensure that the area is suitable for construction works.

There are 147 individual watercourses to be crossed along the cable route, of which most are tiny drains and streams diverted under the roads or small or very small streams, 16 small to moderately sized streams and 8 larger streams.

The cable route passes through two sites designated for nature conservation, as follows:

- Mullaghanish to Musheramore Mountains Special Protection Area (SPA) (code 04162)
- St. Gobnet's Wood candidate Special Area of Conservation (cSAC) (code 0106)

Mullaghanish Bog cSAC (code 01890), is also identified as requiring assessment due to its proximity (c. 1km) to the route corridor.

2.11 OTHER DEVELOPMENTS

There are many operational and permitted wind farm developments in the general region. presents details including the number of permitted turbines and the overall turbine dimensions are presented in Table 2.5 and their locations are shown in Figure 2.6.

Table 2.5: Regional Wind Farm Developments

Location	Name	Distance	Turbines	Dimension
Development Within 0 - 10 km of Grousemount				
Kerry	Sillahertane	2.2 km	10	81 m
Kerry	Foilgreana / Coolknoohil	4.0 km	6	86 m
Kerry	Coolknoohil (Everwind)	4.2 km	11	86 m
Kerry *	Coolknoohill, Inchee	4.7 km	2	125 m
Kerry	Inchee	5.2 km	6	125 m
Kerry *	Coolea	5.6 km	1	125 m
Kerry	Lettercannon	6.6 km	7	125 m
Kerry	Coomagearlahy	6.0 km	15	125 m
Kerry	Inchincoosh	6.8 km	6	125 m
Kerry *	Gortnakilla	8.1 km	4	125 m
Development Within 10 - 20 km of Grousemount				
Kerry	Clydaghroe, Clonkeen	16.5 km	3	101 m
Cork	Coomacheo	17.2 km	15	121 m
Kerry *	Cummeenabuddoge, Clonkeen	17.3 km	2	101 m
Development Within 20 - 30 km of Grousemount				
Cork	Caherdowney, Millstreet	20.3 km	4	121 m

Location	Name	Distance	Turbines	Dimension
Cork	Gneeves, Millstreet	20.8 km	11	91 m
Cork	Curragh, Millstreet	21.1 km	8	91 m
Cork	Curraghglass	21.2 km	10	99 m
Cork *	Carriganimmy, Macroom	25.0 km	6	121 m
Cork	Carrigduff, Millstreet	27.2 km	20	125 m
Cork	Aghabullogue (Bawnmore)	28.6 km	5	126 m

* These wind farms are permitted and await construction. All other wind farms are operational.

The maximum overall dimensions of the turbines proposed at Grousemount is compatible with those in the surrounding developments.

2.12 DURATION OF PERMISSION

The date of actual availability of the grid connection and thereby the construction of the wind farm will depend on an array of factors, not the least of which will be the need or otherwise to undertake either shallow or deep reinforcement of the grid in order to accommodate the additional electricity generation.

The grid is planned and developed to ensure it meets projected transmission needs while maintaining its performance within defined reliability standards. To continue to meet standards, in the context of forecast demand and new generation connections, there is a requirement for ongoing development to reinforce the grid.

It is hoped that this will be achieved within the normal lifetime of a grant of planning permission (five years). However, given the element of uncertainty that is associated with this, as illustrated by delay to date, a duration of ten years is being sought for the lifetime of a planning permission issued on foot of this application.

These difficulties are recognised in the DoEHLG Windfarm Planning Guidelines (Section 7.20) where the following is stated:

> *Planning authorities may grant permission for a duration longer than 5 years if it is considered appropriate, for example, to ensure that the permission does not expire before a grid connection is granted.*

The above is also referenced in the DoEHLG Circular Letter PD 3/08: Wind Energy Development – Planning Permission and Grid Connections, where the following is stated:

> *Authorities are reminded of the powers currently available to them under Section 41 of the 2000 Act to specify a period of more than 5 years during which permission is to have effect. This provision could be a means of providing the necessary flexibility, in respect of new developments, and having regard to the nature and extent of the relevant development, to allow for proper sequencing of permissions and grid connections*

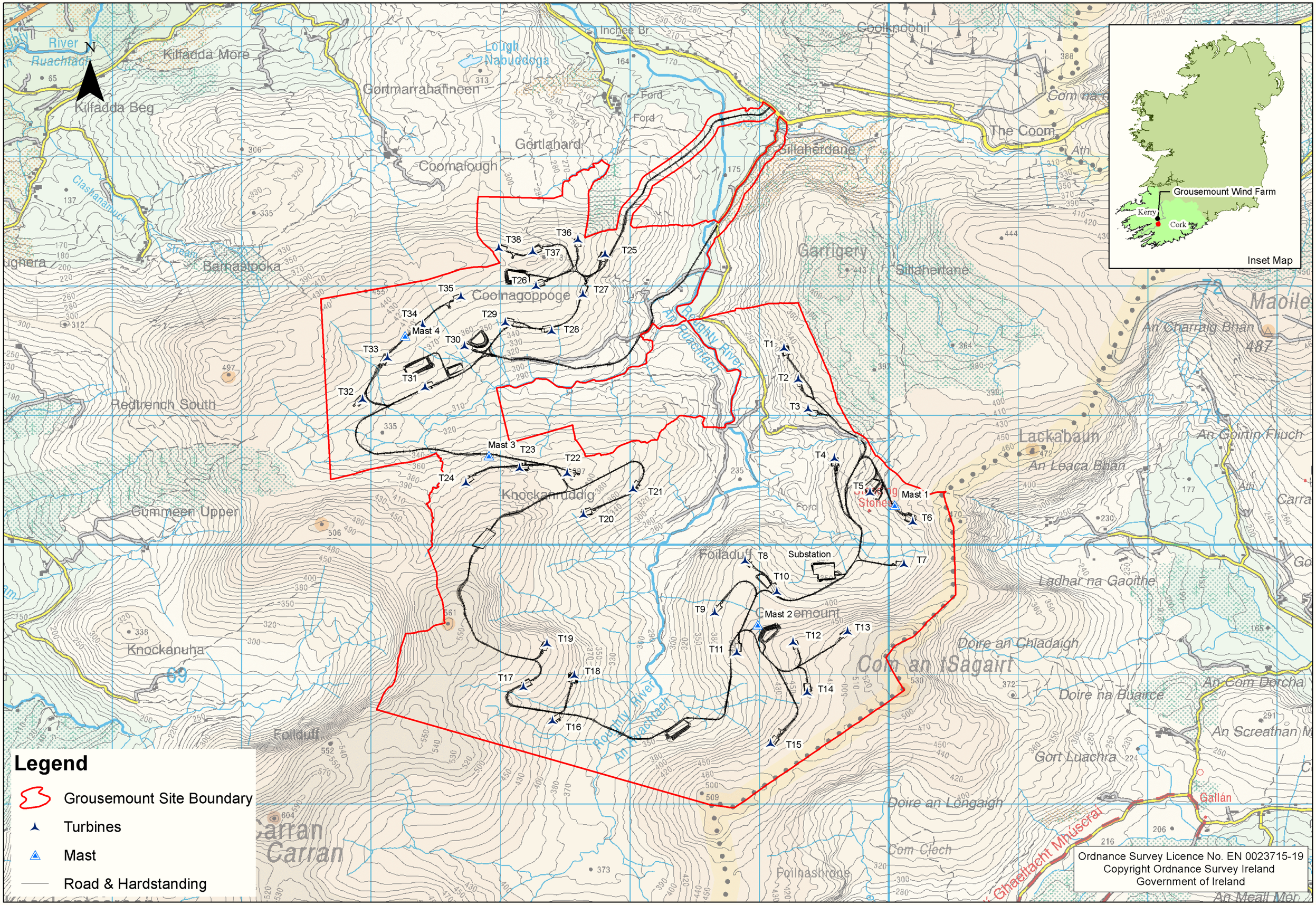


Figure 2.1 - Site Layout

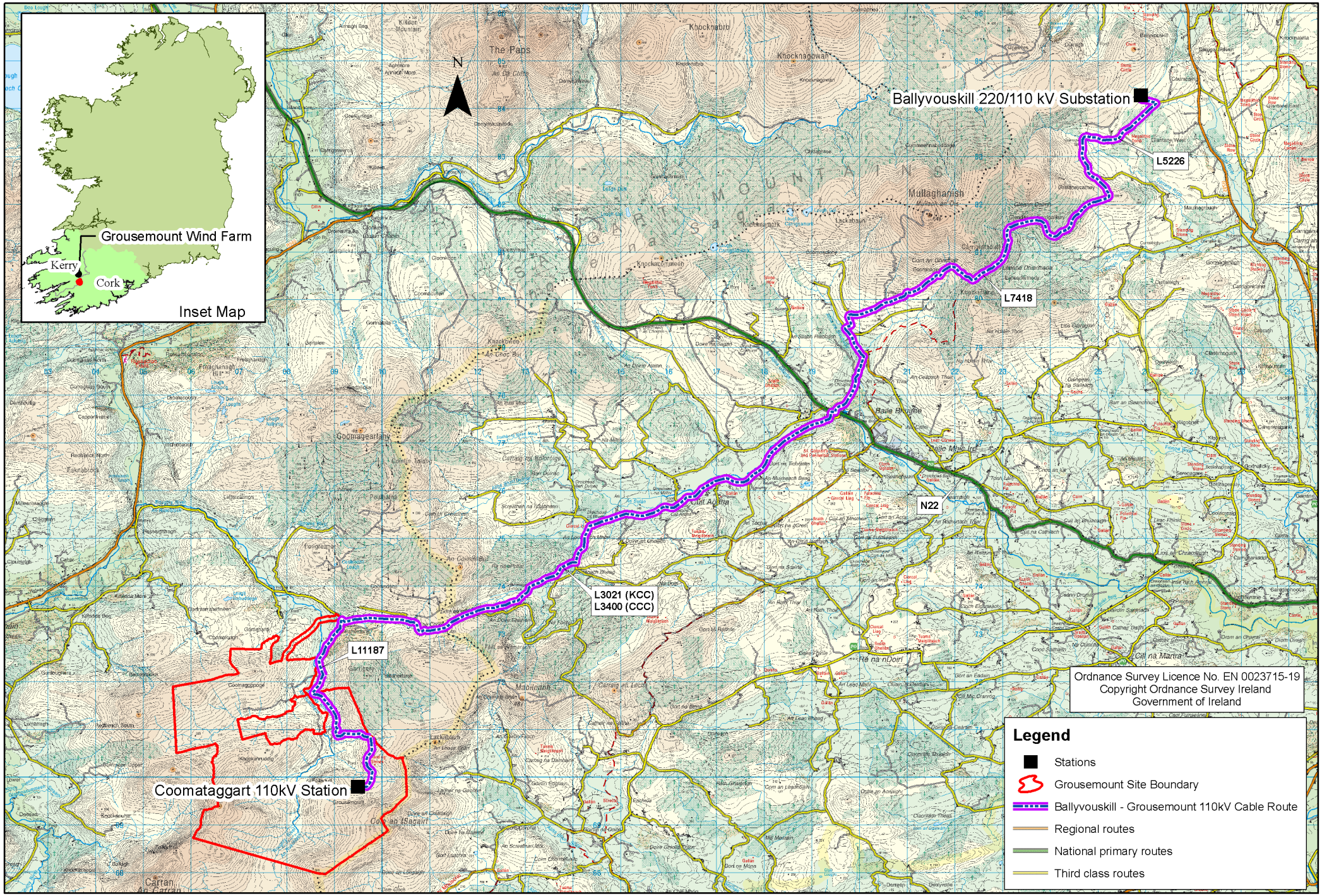
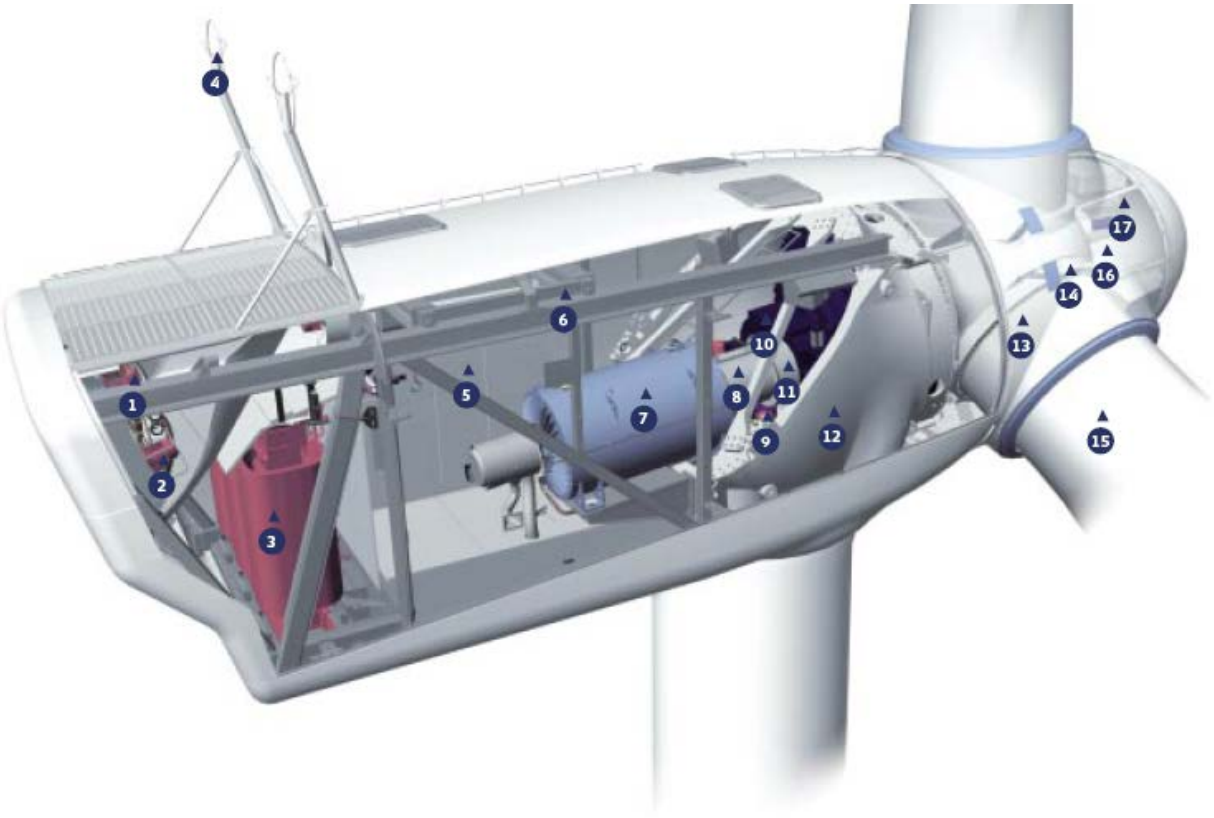


Figure 2.2 - Ballyvouskill - Coomataggart 110kV Cable Route

Figure 2.3: View of Wind Turbine



1 Oil cooler
2 Water cooler for generator
3 High voltage transformer
4 Ultrasonic wind sensors
5 VMP-Top controller with converter
6 Service crane
7 OptiSpeed® generator
8 Composite disc coupling
9 Yaw gears
10 Gearbox
11 Mechanical disc brake
12 Machine foundation
13 Blade bearing
14 Blade hub
15 Blade
16 Pitch cylinder
17 Hub controller

Figure 2.4: View of Nacelle

Figure 2.5 - 110 kV Substation Site Layout

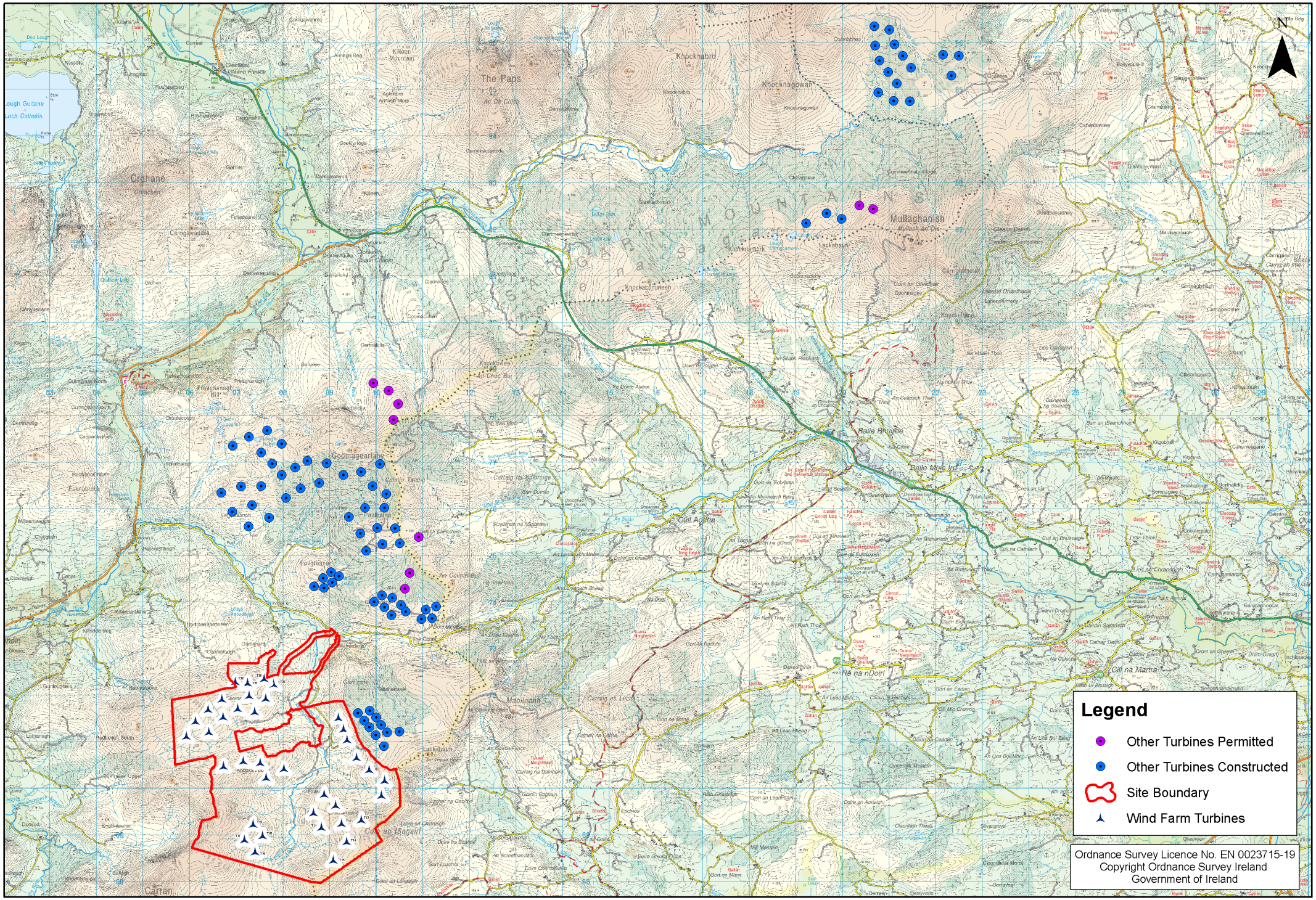


Figure 2.6 - Other Wind Farm Developments