



An
Bord
Pleanála

Inspector's Report ABP-302647-18

Development

110kV/220kV cable and transformer required to facilitate the operation of four rotating stabilisers, five battery storage units, ten electrical houses, control container and associated works on a site of approximately 0.25 hectares.

Location

Glencloosagh, Co. Kerry

Planning Authority

Kerry County Council

Prospective Applicant(s)

Glencloosagh Energy Limited

Type of Application

Pre Application Consultation

Date of Site Inspection

None.

Inspector

Stephen Kay

1.0 Introduction

- 1.1. This report is an addendum to that currently on file, dated 28th October, 2018. On foot of a Board Direction (Ref. BD-001634-18, it was determined that more information regarding the nature of the proposed development, it's functioning within the overall development and how it integrates with the national grid was required. It was directed by the Board that a pre application consultation be held with the prospective applicant, and this meeting was held on 11th December, 2018.
- 1.2. This report should be read in conjunction with that dated 28th October, 2018 which addresses planning history and legislative provisions which are not repeated below.

2.0 Site Location and Description

- 2.1. The site of this pre application consultation request is located in the townland of Kilpadogue, County Kerry approximately 1.5 km to the north west of Tarbert. The site is located adjoining an existing peaking plant and adjacent to the existing Eirgrid 110/220kv substation in this location. The River Shannon is located within 100 metres of the site to the north at Glencloosagh Bay and Tarbert Power station is located c.1.2 km to the south east.
- 2.2. The submitted layout indicates the proposed layout with the gas insulated switchgear infrastructure and the transformer located to the west. Access to the site is available from a dedicated access road that runs north off the local road. Visibility of the site and environs from the residential properties on this local road and Tarbert is restricted by the local topography with the site separated from the local road by a crest.
- 2.3. The site is located on lands that is zoned '*Industry*' in the 2015-2021 Kerry County Development Plan.

3.0 Proposed Development

3.1. The nature of the proposed development is set out in section 1.0 of the initial report on file. The following is a summary of the main elements of the project as presented at the meeting held with the prospective applicant on 11th December, 2018:

- The construction and installation of 4 no. rotating stabilisers,
- Installation of 5 no. battery storage units,
- Installation of 1 no. control container housing equipment related to the control of the rotating stabilisers,
- Installation of 10 no. electrical houses (e house),
- Construction of plinths and associated civil works
- 220/110kv transformer and 220/110kv cable to the existing adjoining Eirgrid substation.

It is noted that the description of the proposed development as set out at the pre consultation meeting differs from that originally submitted in that there is now reference to the installation of 5 no. battery storage units in addition to the previously referenced 4 no. rotating stabilisers.

4.0 Pre Application Consultation and Applicants Case

4.1. At the pre application meeting held on 11th December, the prospective applicant detailed the location and context of the site, the nature and layout of the proposed development, the form of the technology proposed (rotating stabilisers and batteries), the need for the development and why it is considered that the proposal does not constitute SID. A copy of the record of the meeting held on 11th December is on file.

4.2. The following is a summary of the main new issues arising from the presentation of the prospective applicant to the Board and the following discussion:

- That the development includes 4 no. rotating stabilisers and 5 no. battery storage units.
- That the site is located such that the topography in the vicinity is undulating with a ridge line to the south that screens the site from views from residential properties to the south and south east.
- That the site of the proposed rotating stabilisers facility is located on the eastern side of the peaking plant that is under construction on the site. The detailed layout of the proposed development is that the rotating stabiliser units would be located in pairs with the transformers in between the two and the battery storage units located to the north.
- The need for the development is explained as ensuring grid stability. The rotating stabilisers will allow for fast frequency responses necessary to ensure that the grid frequency remains steady, facilitating the uptake of renewable energy and reducing the need for conventional generation back up capacity.
- That rotating stabilisers can stabilise the grid by accepting / injecting active / reactive power.
- That the proposed battery storage will add fast frequency capacity to the grid which will also reduce the need for conventional back up generation.
- The prospective applicant set out how in circumstances where there is too much power on the system that the frequency can increase and conversely, when there is too little power on the grid system, such as during periods when there is a low percentage of renewable energy available, then the frequency on the system can fall. The purpose of the rotating stabilisers is to even out these frequency variations to keep it at, or very close to, 50 Hz.
- The prospective applicants explained to the Board how all conventional generation sources have inbuilt inertia that acts as a stabiliser to ensure consistent frequency on the grid, but that such inertia is not present with renewable energy generation sources. As a result, as renewable energy penetration on the system increases then the system becomes more

unstable. The use of rotating stabilisers is a short term method of keeping the frequency on the system stable.

- The prospective applicant set out how the proposed battery units on site are a designed to also serve short term requirements of the grid and that they would operate to discharge power for a maximum period of 20 minutes. Again, the purpose of the batteries is not as a power generation source but to stabilise the grid and to provide opportunity for additional longer term generation to be deployed if required.
- In the case of both the rotating stabilisers and the batteries, the connection to the grid is considered to be a demand connection and not a supply connection. The development would be a net user of electricity rather than a net generator.
- Contended that the underground power line would not comprise transmission as it does not connect two sub stations and is not connecting a generating station to the grid. It does not therefore come within the definition of transmission used in s.182A of the Act.
- The prospective applicant outlined for the Board how Eirgrid has a programme (The DS3 Programme) which promotes the development of new services needed to address the increased penetration of renewable energy sources onto the grid.
- Stated that the rotating stabilisers would be encased in a steel enclosure measuring approximately 15 m by 6 m by 8.5 m (length by width by height). The battery storage units would be enclosed in steel containers of dimensions approximately 13m. by 2.5 m. by 3 metres.
- Stated that the project is not classified as SID under the Seventh Schedule of the Planning and Development Act.
- By letter dated 13th February, 2019, the prospective applicant has formally requested closure of the pre application process and that the Board would issue a determination as to whether the proposed development does or does not comprise strategic infrastructure.

5.0 Additional Details Regarding Project Submitted by the Prospective Applicant

On foot of the discussions undertaken at the pre application consultation meeting, the prospective applicant committed to providing the Board with some further details relating to the technology involved in the proposed development and also the DS3 Programme operated by Eirgrid. The following is a summary of the main points contained in this submission:

- That the Irish power system is one large system comprising lots of individual small machines (generators) spinning in complete synchronicity with each other. Generators create an alternating current that has a frequency of 50 Hz and the grid network links all generators to all demand.
- That electricity must be generated at exactly the same time as it is consumed and Eirgrid puts put significant resources into ensuring that supply matches demand. If this balance is disrupted by an outage at a generating plant or a line, then there is insufficient power to maintain the 50Hz speed and so the system starts to slow down.
- The occasional failure of generating plants and lines is inevitable and, to maintain frequency in such events, the grid relies on two ‘ancillary services’ these being inertia and reserve.
- ‘Reserve’ is the concept of holding back some power that can be brought on line quickly in the case of an outage. This can comprise generators or battery storage.
- ‘Inertia’ is a measure of the overall weight in the power system, or measure of the resistance to a change in the speed of the system (frequency). The heavier the generators are, the slower the system is to slow down and the more time is available to bring additional power online. Wind and solar generation do not contribute inertia to the grid system and so lead to issues relating to the control of frequency.
- The existing means of frequency control with high renewable penetration on the grid is curtailment where renewable power is cut and conventional power generation brought on stream. This solution is inefficient, and a better

solution is a device that would provide inertia on a standalone basis into the grid. This role is fulfilled by the rotating stabiliser which addresses the issue of inertia and by battery storage that addresses the requirement for reserve power.

- The rotating stabiliser is what is referred to as a synchronous machine, that is it spins at a fixed speed that matches the grid frequency of 50 Hz. The design of the rotating drum is large and heavy to provide as much inertia as possible and the equipment is looped into the grid providing needed inertia into the system. When grid system frequency varies, the rotating stabiliser provides inertia to maintain grid frequency and stability and the design is such that the response is instant.
- During operation, the stabiliser draws energy from the grid to overcome friction and keep itself rotating at the exact required speed. It is therefore a user of electricity and not a generator.
- Eirgrid has a programme called the DS3 Programme that aims to design and procure new services and technologies to address the issues of grid inertia and backup power.

6.0 Assessment

- 6.1. The following assessment should be read in conjunction with the initial report on file dated 28th October, 2018. This report focusses on the clarification sought by the Board on the issue of the functioning of the overall development and how it integrates with the national grid. It should be noted that the details regarding the scope of the project has been expanded / clarified such that it now includes the installation of five battery storage units, control container and electrical houses.
- 6.2. The information provided by the prospective applicant at the pre application meeting held on 11th December, 2018 and the additional details provided to the Board on 12th December, 2018, details the role of the proposed development in the operation of the grid. In the context of the wording contained at s.182A of the Planning and development Act, 2000 (as amended) and the definition of 'transmission' as

contained in s.2(1) of the Electricity Regulation Act, 1999 the following points are particularly noted.

- 6.3. That the proposed development involves the provision of a 110/220Kv connection to the grid via the existing adjoining Eirgrid sub station. The proposed development does therefore comprise a development that is to be connected to the existing transmission system.
- 6.4. The nature of the proposed development incorporating rotating stabilisers and battery storage has been described by the prospective applicant in some detail, as has the role of the proposed equipment in the efficient operation of the grid. In summary, the prospective applicant has detailed how the grid system operates at a frequency of 50 Hz and that any deviation from this frequency results in significant issues for customers and system operation, and potential black outs if the frequency varies too significantly from the 50 Hz level. The prospective applicant has detailed how the high penetration of renewable energy into the grid results in issues of low inertia in the system, contrary to what is achieved with conventional generation. In the event of an outage on the system, either in the form of a loss of generation or a transmission line, the fact that there is a low level of inertia in the system can result in a rapid drop in frequency and a very limited opportunity for back up energy sources to be brought on stream.
- 6.5. The proposed development combines two technologies designed to address the issue of low inertia in the grid system due to high penetration of renewable generation sources and the need for short term power in the event of outages. The proposed rotating stabiliser units are designed to increase resistance and inertia in the grid system, and thereby to replace the impact lost by the replacement of conventional power generation with renewable technologies. Battery storage is also proposed to address the issue of power reserve required to provide short term back up in the event of an outage of generation or transmission line.
- 6.6. The design of the proposed rotating stabilisers is such that to operate at the required 50Hz they need to draw power from the grid to get up to, and maintain, the required speed. The nature of this equipment is therefore such that it draws power from the grid and it would be classified as a demand rather than a supply connection to the

grid. Similarly, in the case of the proposed battery storage part of the proposed development, the batteries are net users of energy and not electricity generators.

- 6.7. In the context of the definition of 'transmission' contained in the *Electricity Regulation Act, 1999*, the proposed development is not a 'generating station' and would not therefore lead to the conveyance of electricity from a generating station to a substation or from one generating station to another. The proposed development does not therefore, in my opinion come within the definition of 'transmission' as set out in s.2(1) of the *Electricity Regulation Act, 1999* and does not therefore comprise 'electricity transmission' as referred to in s.182A of the *Planning and Development Act, 2000* (as amended).
- 6.8. Section 4.1 of the initial report on file, (dated 24th October, 2018), made reference to the fact that the prospective applicant was requested to provide further details with regard to whether the proposed development could be considered to fall within any of the classes of development as set out under the Seventh Schedule of the Act. I note the response received from the prospective applicant in this regard, dated 19th October, 2018, and having reviewed the information submitted and having regard to the description of the proposed development, would agree with the conclusions in the initial report on file that the proposed development does not fall within any of the classes of development set out in the Seventh Schedule and that consideration of the proposal should be under s.182A of the *Planning and Development Act, 2000* (as amended).
- 6.9. In conclusion, having regard to the nature of the proposed development, including in particular the design and function of the proposed rotating stabilisers, battery storage units and associated ancillary equipment in the form of control container and houses, which, while connected to the transmission system via the existing Eirgrid sub station, are net users of electricity such that it would comprise a demand rather than a supply connection to the grid and such that the development would not comprise a generating station. The proposed development would not therefore come within the definition of 'transmission' as set out in s.2(1) of the *Electricity Regulation Act, 1999* and does not in my opinion fall within the scope of Section 182A of the *Planning and Development Act, 2000* (as amended).

7.0 Recommendation

- 7.1. I recommend that Glencloosagh Energy Limited be informed that the proposed development consisting of 110/220Kv cable and transformer, control container and electrical houses to facilitate the operation of five battery storage units and four rotating stabilisers at Glencloosagh, Co. Kerry as set out in the plans and particulars received by the Board on 26th September, 2018, and as amended by the revised plans and details received by the Board on 11th December, 2018, does not fall within the scope of s.182A of the *Planning and Development Act, 2000* (as amended) and that a planning application should therefore be made in the first instance to Kerry County Council.

Stephen Kay
Planning Inspector

19th February, 2019