Corduff Flexible Thermal Generation

Planning & Environmental Considerations Report (PECR)

Submission to: Fingal County Council

Document No.: P000363-PM01-0003

Date: March 2020

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File Reference:	P000363-PM01	
Client / Recipient:	Fingal County Council	
Project Title:	Corduff Flexible Thermal Generation	
Report Title:	Planning & Environmental Considerations Report (PECR)	
Report No.:	P000363-PM01-0008	
Revision:	000	
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Template Used: T-020-007-ESBI Report Template

Change History of Report

Date	New Revision	Author	Summary of Change

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Acronyms

ABP	An Bord Pleanala
AA	Appropriate Assessment
BAT	Best Available Technology
CRM	Capacity Remuneration Mechanism
CLP	Classification, Labelling & Packaging Regulations
CHP	Combined Heat and Power
COD	Commercial Operation Date
COD	Commercial Operation Date
CRU	Commission for Regulation of Utilities
CER	Commission of Energy Regulations
CEMP	Construction Environmental Management Plan
CTMP	Construction Traffic Management Plan
CEMS	Continuous Emissions Monitoring System
COMAH	Control of Major Accident Hazards
COSHH	Control of Substances Hazardous to Health
CDP	County Development Plan
CH	Cultural Heritage
DMP	Decommissioning Management Plan
DS3	Delivering a Secure Sustainable Electricity System
DSO	Distribution System Operator
DCC	Dublin City Council
DRCC	Dun Laoghaire-Rathdown County Council
BoP	Electrical Balance of Plant
ESB	Electricity Supply Board
EMP	Engineering and Major Projects
EPA	Environment Protection Agency
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ESB G and T	ESB Generation and Trading
EU	European Union
FCC	Fingal County Council
FCDP	Fingal County Development Plan
FSRA	Fire Safety Risk Assessment
GNI	Gas Networks Ireland
HSA	Health & Safety Authority
HRSG	Heat Recovery Steam Generator
HGV	Heavy Goods Vehicles
ha	Hectare
IED	Industrial Emissions Directive
I-SEM	Integrated Single Electricity Market
Km	kilometre
kV	Kilovolt
LAP	Local Area Plan
LV	Low Voltage

MW	Megawatt
MWe	Megawatt electrical
NIAH	National Inventory of Architectural Heritage
NOx	Nitrogen oxide
OEE	Office of Environmental Enforcement
PECR	Planning & Environmental Considerations Report
PSCS	Project Supervisor Construction Stage
RPS	Record of Protected Structures
SDCC	South Dublin County Council
SID	Strategic Infrastructure Development
SCADA	Supervisory control and data acquisition
TSO	Transmission Systems Operator
WMP	Waste Management Plan
WLE	Wet Load Emissions

1 Introduction

1.1 The Project

The Electricity Supply Board (ESB) is proposing to develop 75 MWe (megawatts electrical) of flexible thermal generation (FlexGen) on a site located adjacent to the existing 220/110 kV Corduff Substation located north of Blanchardstown within the Fingal County Council (FCC) administrative area. ESB Engineering & Major Projects (EMP) has undertaken various environmental assessments and prepared the planning submission.

The proposed FlexGen development will comprise a modular aero derivative gas turbine, often referred to as a thermal "peaker plant", due to its operational nature. The plant will be primarily fuelled with natural gas, with diesel available as a back-up fuel in accordance with the Commission for Regulation of Utilities (CRU) requirement for 72 hours of fuel storage.

This Planning and Environmental Considerations Report (PECR) has been prepared to accompany the planning application to FCC.

A previous similar planning application (FCC Reg. Ref. FW/19A/0127) was made to FCC in July 2019. FCC requested Further Information (RFI) in September 2019, however, ultimately the application was withdrawn by ESB in February 2020. Whist a response to the RFI was not submitted to FCC, the issues raised in the RFI are addressed in this PECR in Section 4.1 – Planning Considerations of this Report. The purpose of addressing those issues is to ensure FCC have a full understanding of the project context and issues previously raised by them are resolved.

1.2 The Applicant

Planning permission is being sought by the ESB.

The ESB was established in 1927 as a statutory corporation in the Republic of Ireland under the Electricity (Supply) Act 1927. ESB operates across the electricity market, from generation, through transmission and distribution to supply.

This planning application arises from ESB's Brighter Future Strategy which requires transition to lower carbon energy, this is detailed in Section 2 of this Report.

1.3 The Planning Application

1.3.1 Validity of the Planning Permission – 10 year permission sought

Whilst it is anticipated that the plant will be constructed in the short-term, subject to planning being granted, a ten-year duration for the validity of the permission is being sought to allow for any unforeseen events which may delay its construction within the normal five year period.

1.3.2 Nature and Content of the Application Documentation

The application comprises all standard statutory documents and drawings as per the schedule of drawings detailed in Section 1.3.3.

The following reports have also been prepared and appended to facilitate the Planning Authority in its determination:

- Appendix 1 Environmental Impact Assessment (EIA) Screening Report
- Appendix 2 Appropriate Assessment (AA) Screening Report
- Appendix 3 Air Quality Assessment
- Appendix 4 Flood Risk Assessment
- Appendix 5 Drainage and Services Report
- Appendix 6 Landscape Impact Assessment including Photomontages
- Appendix 7 Noise Impact Assessment
- Appendix 8 Cultural Heritage Report
- Appendix 9 Development Framework Area 2

1.3.3 Structure of this PECR

The structure of this PECR is as follows:

- Chapter 1 Introduction
- Chapter 2 Background to the Proposed Development
- Chapter 3 Description of the Proposed Development
- Chapter 4 Planning & Environmental Considerations
- Chapter 5 Conclusions

1.3.4 FlexGen Schedule of Drawings

The following is the Schedule of Planning Drawings:

Table 1-1 Schedule of Planning Drawings

Drawing Number	Drawing Title
QP000032-01-D460-003-001-001	Site Location Map (1:2500)
QP000032-01-D460-004-001-001	Site Location Map (1:1000)
QP000032-01-D460-005-001-001	Site Entrance Sight Lines
QP000032-01-D460-006-001-000	Existing Site Layout
QP000032-01-D460-007-001-002	Site Drainage Layout (Proposed)
QP000032-01-D460-009-001-000	Palisade Fence Details

Drawing Number	Drawing Title
QP000032-01-D460-010-001-000	Palisade Gate Details
QP000032-01-D460-011-001-000	Typical Access Road & Gravel Area Sections
QP000032-01-D460-012-001-000	Typical Drainage Details
QP000032-01-D460-013-001-001	Site Entrance
QP000032-01-D460-025-001-001	Proposed Site Layout
QP000032-01-D460-026-001-001	Proposed Site Sectional Elevations
QP000032-01-D460-027-001-001	Turbine Module Plans & North/South Elevations
QP000032-01-D460-027-002-000	Turbine Module East Elevation
QP000032-01-D460-027-003-000	Turbine Module West Elevation
QP000032-01-D460-027-004-000	Turbine Module Section
QP000032-01-D460-028-001-001	Liquid Fuel Treatment Area Plan, Elevations & Section
QP000032-01-D460-029-001-001	Electrical Equipment Module Plan, Elevations & Section
QP000032-01-D460-030-001-001	Water Treatment Building Plan, Elevations & Section
QP000032-01-D460-031-001-001	Gas Compressor Building Plan, Elevations & Section
QP000032-01-D460-032-001-001	Transformer Compound Plan, Elevations & Section
QP000032-01-D460-033-001-001	GNI Gas Receiving Station & Metering Station Plan & Elevations
QP000032-01-D460-034-001-001	Fin Fan Coolers Plan, Elevations & Section
QP000032-01-D460-035-001-001	Raw / Fire Water Tank Plan, Elevations & Section
QP000032-01-D460-036-001-001	Demineralised Water Tank Plan, Elevations & Section
QP000032-01-D460-037-001-001	Liquid Fuel Tank Plan, Elevations & Section
QP000032-01-D460-038-001-001	Lube Oil Skid Plan, Elevations & Section
QP000032-01-D460-039-001-001	Compressed Air & Fire Suppression Building Plan, Elevations & Section
QP000032-01-D460-040-001-001	Gas Compressor Cooler Plan, Elevations & Section
QP000032-01-D460-042-001-001	House Transformer Plan, Elevations & Section
QP000032-01-D460-043-001-001	Fire Fighting Pumps Building Plan, Elevations & Section
QP000032-01-D460-044-001-001	Emergency Diesel Generator Plan, Elevations & Section
QP000032-01-D460-045-001-001	Contiguous Elevation
QP000032-01-D460-046-001-001	Development Framework Area 2
QP000032-01-D460-047-001-000	Power Control Module (PCM) Plan Elevations & Section
QP000032-01-D460-048-001-000	Control & Instrumentation (C & I) Communications Module Plan Elevations & Section
QP000032-01-D460-049-001-000	Welfare Facilities Building Plan Elevations & Section
QP000032-01-D460-050-001-000	Liquid Fuel Forwarding Skid Plan & Elevations
QP000032-01-D460-051-001-000	Water Injection Skid Enclosure Plan Elevations & Section

Drawing Number	Drawing Title
QP000032-01-D460-052-001-000	Gaseous Fire Suppression Cabinet Plan Elevations & Section
QP000032-01-D460-053-001-000	Water Wash Cart Plan & Elevations
QP000032-01-D460-054-001-000	Continuous Emissions Monitoring (CEMS) Hut Plan Elevations & Section
QP000032-01-D460-055-001-000	Generator Circuit Breaker Plan Elevations & Section
QP000032-01-D460-056-001-000	Spare Parts Storage Container Plan Elevations & Section
QP000032-01-D460-057-001-000	Pipe Bridge Plan & Elevations
QP000032-01-D460-058-001-000	Gas Reducing Building Plan Elevations & Section

2 Background to the Proposed Development

2.1 Introduction

This section details the reasons for the development of flexible generation plants by ESB, and also provides a context for the selection of the Corduff site for the proposed FlexGen development.

2.2 Flexible Generation

2.2.1 The Context for Power Supply Security

Ireland's key target under EU Renewable Energy Directive (2009/28/EC) is for 16% of the country's total energy consumption to come from renewable energy sources by 2020.

In response to this target, EirGrid began a multi-year programme, "*Delivering a Secure, Sustainable Electricity System*", known as DS3 Programme. The aim of the DS3 Programme is to meet the challenges of operating the electricity system in a secure manner while achieving these 2020 renewable electricity targets. This programme is designed to ensure that the power system can securely operate with increasing amounts of variable non-synchronous renewable generation over the coming years. Achieving this level of renewable integration on a synchronous system is unprecedented and presents significant challenges for the real time operation of the power system.

In parallel, the ESB Brighter Future Strategy aims that by 2030 ESB will cease operations in coal and peat. Accordingly, Irish electricity demands are gradually expected to be met by increasing levels of intermittent renewables. This increase in intermittent renewables creates a demand for increased flexibility from the rest of the national generation fleet.

FlexGen developments, such as this proposed development, are well suited to providing this flexibility in a cost-effective manner. In October 2018 the CRU issued a letter to EirGrid stating that due to shortage of supply in the Dublin area all viable projects within the Dublin area should be allowed to enter the capacity market auction held in March 2019. ESB were successful in the auction and secured a capacity contract to construct a FlexGen plant in Corduff with a commercial operation date (COD) no later than October 2022.

FlexGen developments have fast start-capability due to the absence of the steam cycle and can therefore provide response capabilities in a timely fashion to support sudden fluctuations in electricity demand. These fluctuations are anticipated to be more frequent due to the increased amount of renewable generation on the network.

Accordingly, in providing a fast demand response, FlexGen developments will support increased renewable electricity generation connected to the electricity grid.

The proposed FlexGen development is anticipated to operate during periods when electricity generation from renewables is low and during peak demand periods, such as the morning and evening peak periods. It is not expected the FlexGen development will operate continuously over extended periods in the traditional style of power stations but is instead, as stated, proposed to support a generation network increasingly based on renewable energy generation.

Ireland's Climate Action Plan 2019 charts a course towards ambitious decarbonisation targets and sets targets for reduction of carbon emissions. In relation to electricity the plan sets the following broad targets:

- Increase reliance on renewables from 30% to 70% adding 12GW of renewable energy capacity (with peat and coal plants closing) with some of this delivered by private contracts;
- Put in place a coherent support scheme for micro-generation with a price for selling power to the grid;
- Open up opportunity for community participation in renewable generation as well a community gain arrangement; and
- Streamline the consent system, the connection arrangements, and the funding supports for the new technologies on and off shore.

This project is being proposed as part of the target to increase reliance on renewables from 30% to 70%. As noted in the target, this will involve the closure of traditional forms of electricity generation, some of which is generation from peat and coal plants. Such plants are generally medium - large size plants in terms of megawatts of electricity (MWe) produced. In Ireland such plants typically produce 150 – 300 MWs of electricity depending on the size of the generating unit.

To contribute towards the renewable energy targets, ESB and other electricity generators are developing generation plants that will support a low carbon generation system. As the electricity system is decarbonised during the next decade, the requirement for a small number of large scale traditional generation plants will reduce significantly and this will be replaced by a larger number of smaller plants (typically producing 75 – 100MWe). This type of generation is designed as a “peaker plant”. In practical terms, this means that whilst significant amounts of electricity will be generated from wind, solar and other forms of renewable generation, there will be occasions where electricity from these sources is not adequate to meet demand and therefore supply will have to be supplemented for short periods by such “peaker plants”.

2.2.2 Anticipated Demand for Peaker Plants

In 2018 the electricity market in Ireland moved from a traditional model of generators being paid to be available for generation to a capacity market model, this is referred to as the Integrated Single Electricity Market (I-SEM). I-SEM is a new wholesale electricity market arrangement for Ireland and Northern Ireland. The existing market arrangements are replaced by multiple markets or auctions, each

spanning different trading time frames, with separate (although related) clearing and settlement mechanisms, covering both energy and non-energy commodities – seehttp://www.eirgridgroup.com/__uuid/f110639e-9e21-4d28-b193ed56ee372362/EirGrid-Group-I-SEM-Quick-Guide.pdf for full details.

The Capacity Market is designed to help ensure that the generation capacity in Ireland and Northern Ireland is sufficient to meet demand and that the regulatory approved generation adequacy standard is satisfied. It is a competitive auction-based design where the most economical generation is successful. This design helps to promote the short-term and long-term interests of consumers of electricity across Ireland and Northern Ireland with respect to price, quality, reliability and security of supply of electricity.

Two Capacity Auctions are held each year, the first being the T-1 auction, the -1 denotes that capacity is procured for the subsequent year and the second auction is the T-4 auction, similarly the - 4 denotes procurement of capacity in 4 years' time (i.e. T-4 auction in 2019 is for capacity in 2023). New capacity that satisfy certain criteria can bid into the T-4 auction and receive 10 year contracts, which helps investors build a business case to invest in new generation. The concept behind procuring capacity 4 years in advance is not only for the system operator to plan ahead but also allow new generation that receives capacity contracts sufficient time to construct the generating plant and have it operational by the timelines set by the Capacity Auction process. The system operator can influence new generation by two mechanisms, the first being the 10-year capacity contract described above to allow for longer term business case projection and the second being the auxiliary services payments (*Delivering a Secure, Sustainable Electricity System* DS3 programme described below) that influence the type of generation required to support transmission network.

EirGrid (the transmission system operator - TSO) has identified and incentivised characteristics of generation plant which would support renewable generation, as required by the Climate Action Plan 2019, through its "Developing a Sustainable Secure Electricity System (DS3)" programme. This includes the capability to start up quickly and cheaply (i.e. to act as a "peaker plant" to balance supply and demand). Having regard to the characteristics identified by EirGrid, ESB has worked closely with equipment suppliers over the past year to develop power plants utilising gas turbine technology that will meet the fast start requirement in an economic manner. The proposed generation plant at Corduff will have the capability of starting in approximately 5 minutes, providing the much-needed capability for the transmission system operator (EirGrid) to react to system changes resulting from the deployment of renewables (i.e. to provide security of supply to the transmission system).

In comparison, the more traditional large-scale oil, coal, gas generation could take 10 - 12 hours to reach full generation output and therefore not meet the demand in a timely manner.

The Commission for Regulation of Utilities (CRU) and EirGrid release regular consultation papers highlighting the direction the energy market in Ireland needs to move, some of these papers include "*All Island 10-year transmission forecast statements*" and "*Tomorrows Energy Scenarios*" etc. Energy utilities such as ESB use these consultation papers to develop new generation assets that will support the future direction of Irelands electricity demand.

The generation plant technology proposed for the site in Corduff is derived from gas turbines developed for the aviation business and as a result of this, they have fast start up times and extremely high reliability, which are essential characteristics identified by EirGrid. Both these factors are important in a low carbon generation fleet, as it is anticipated the plant proposed at Corduff will have low running hours, but when the EirGrid as the TSO requires electricity, the plant can react fast and reliably. ESB cannot be specific in relation to the operating hours of the plant, as this will be determined by supply requirements to supplement renewables, but experience of such plants in the UK would suggest that the running hours for the proposed plant in Corduff would be in 100's hours per year depending on the TSO requirements from year to year.

2.2.3 Likely Scale and Nature of Such Facilities

As noted previously in this document, the Irish Government's Climate Action Plan calls for 70% of the country's electricity to come from renewable sources by 2030 and therefore reduce consumption of fossil fuels. In order to meet this ambitious plan, the National Grid needs to be able to accommodate large amounts of renewables, primarily wind and solar which are intermittent as per nature. There is the need for generating assets to be able to provide support to the Grid during peak demand period. These plants are required to start-up quickly, typically needing to be online in less than 5 minutes.

Due to the particular characteristics of these plants, which includes the need for fast start-ups and a dual-fuel capability to satisfy regulations; aeroderivative gas turbine types are best suited to this application. These gas turbines are aviation-derived engines, which allow fast, efficient and reliable power either operating on gas fuel as the primary fuel or diesel as a back-up. They provide additional generation to the grid in periods when electricity demand is high, such as adverse weather conditions, or when another base load generation is not available or insufficient, or there is grid instability. These plants will help to ensure stability and security to the Irish electricity supply during periods when generation from renewables does not meet demand.

These types of gas turbine power plants in the power output range required, in this case 75 MW electrical, are tightly packaged and of standard modular design. This ensures they occupy the minimum space envelope possible and allow straightforward construction and maintenance. The size and scale of these "peaker plants" is significantly smaller than traditional plants in Fingal, such as that found at Huntstown, which is significantly larger in scale and size.

The technology is not new and has been operational for many years. In the early 2000s these types of plants were commonly in operation in Ireland due to supply constraints on the national electricity grid.

2.3 Site Selection Process

2.3.1 Strategic Approach

On the 4th October 2018, correspondence between EirGrid and the CRU outlined the need for additional generation in the Dublin Region. EirGrid identified that the forecasted demand would exceed the combined installed generation and planned generation by the 2022/2023 capacity year. To meet security of supply requirements, the CRU instructed EirGrid (the TSO) and ESB Networks (the Distribution System Operator – DSO) to prioritise grid connections to any projects that were successful in the T-4 Capacity market auction for 2022/2023 (auction held in March 2019). The purpose of this was to ensure that the system demands were met and to ensure the electricity demand in the Dublin area would be adequately supplied.

ESB entered the T-4 capacity auction for 2022/2023 with a range of flexible generation options (i.e. peaker plants) and secured 10-year capacity contracts for a number of sites across Dublin, including Poolbeg, Ringsend and Corduff. The projects that received capacity contracts will now play a vital role in ensuring the electricity demands for the Dublin region are met by 2022. Deadlines have been put in place by the CRU to ensure the projects will be in operation by October 2022 and available to meet Dublin's growing electricity demand.

EirGrid continuously monitors the electrical grid system requirements and procure new capacity contracts based on system demands. If the requirement for additional generation within the Dublin area requires EirGrid to procure new capacity contracts through the T-4 Capacity market, then ESB may consider installing additional generation in the future. ESB would only make the decision to install additional generation if they successfully secured a capacity contract for new generating units.

2.3.2 Selection Process and Criteria

ESB identified aeroderivative gas turbines (i.e. peaker plants) as the most appropriate generation technology for Dublin to support the increasing generation of electricity from renewables, as identified in EirGrid's required characteristics, in particular to meet the fast start requirement in an economic way.

Based on the likely scale and nature of such facilities, in 2018, ESB carried out an analysis of potential sites for such peaker plants in the Dublin area based on specific criteria.

2.3.2.1 Connections to the Electricity Network

- Sites were identified that are in close proximity to the national electricity transmission grid substations.

- The purpose of this criteria was to facilitate the connection of generation to the grid in an economical manner by co-locating electricity infrastructure at locations where there is a higher potential to locally distribute the electricity generated (i.e. no local electrical constraints).
- These criteria also have the benefit of reducing the potential environmental impacts and costs of running long lengths of high voltage cable where this can be avoided through co-location.

2.3.2.2 Connections to the Gas Network

- Generation of electricity from gas requires the availability of high pressure gas, therefore a connection directly into the gas network is a key requirement.
- Gas Networks Ireland (GNI) were consulted to ensure potential sites have sufficient gas capacity and pressures available.
- Sites were identified that are in close proximity to the gas grid.
- Similar to the previous criteria, this has the benefit of reducing the potential environmental impacts and costs of running long lengths of high pressure gas pipes.

2.3.2.3 Available Sites in Suitable Locations

- Availability of sites in suitable locations is also a key requirement, as in order to meet the CRU requirement to ensure the projects will be in operation by October 2022 and available to meet Dublin's growing electricity demand, it is necessary to be able to deliver the project in a timely manner.

2.3.2.4 Planning and Environmental Considerations

- A Planning and Environmental Feasibility Review was undertaken which reviewed a number of the sites having regard to planning zoning, development plan policies and objectives and environmental constraints.

2.3.2.5 Potential Sites Meeting Selection Criteria

Following an extensive review of many potential sites in the Dublin area which might meet electrical, gas, and availability criteria, eight sites were initially deemed to have potential for the type of flexible generation plant proposed at Corduff.

- In the administrative areas of the Dublin Councils, the following emerged as having potential for the development of a FlexGen plant. Five in the FCC area, one in the Dublin City Council (DCC) area, one in the South Dublin County Council (SDCC) area and one in the Dun Laoghaire-Rathdown County Council (DLRCC) area.
- The general locations of the potential sites are detailed out in Figure 2-1.

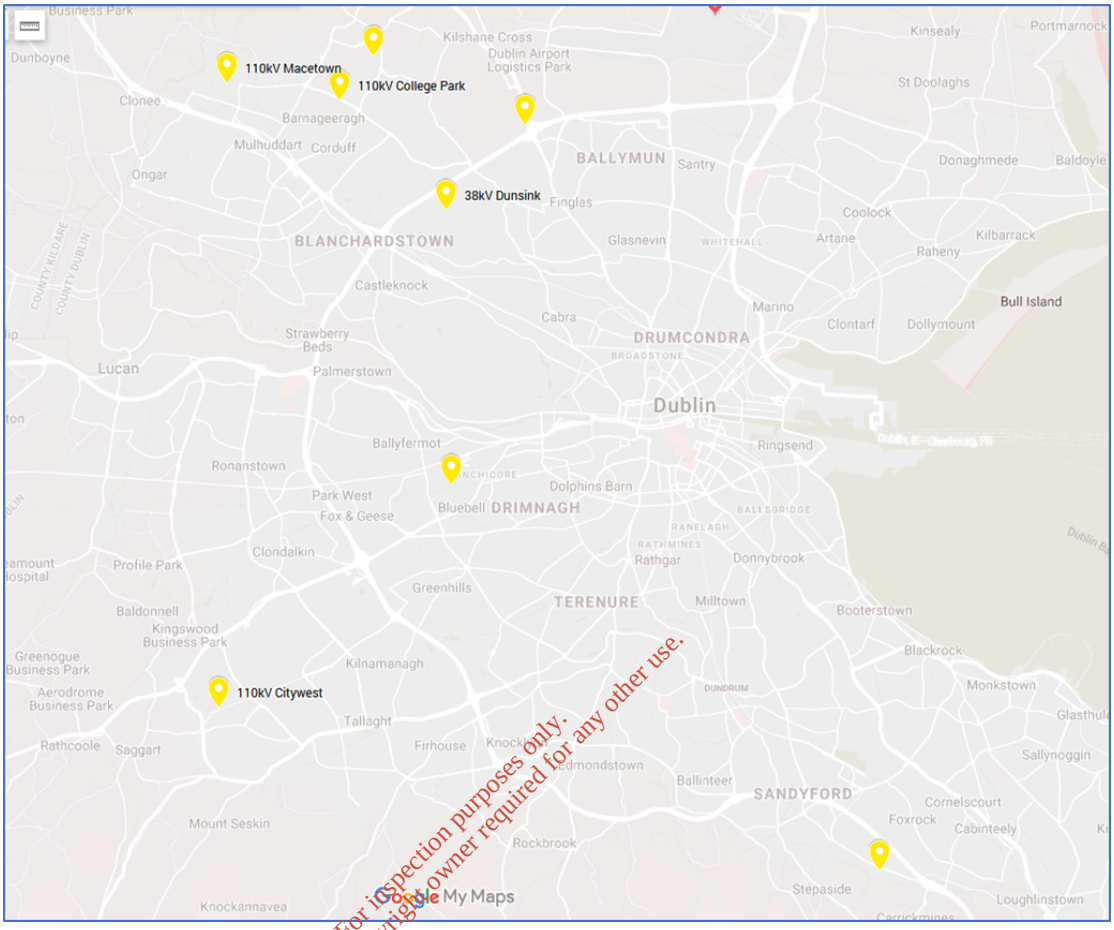


Figure 2-1 General Locations of the Potential Sites

2.4 Results of the Evaluation Process

A multi-disciplinary evaluation process to evaluate the potential site options was developed based on the four key search criteria.

This was a qualitative system based on the concept of more preferred, less preferred and no preference.

Following this evaluation process, two sites were identified as having the greatest development potential. The first site was near the Corduff 220/110 kV substation and the second site was near the Inchicore 220kV substation.

In summary, the key criteria that determined the site at Corduff suitable as more preferred for a FlexGen development are as follows:

Connections to the Electricity Network

- The site is located in close proximity to the Corduff 220/110 kV substation which means that only a short non-strategic connection is required to connect into the electricity network (Note: Connection is at 110 KV based on the most suitable connection point available into the Corduff 220/110 kV substation).

- The substation at Corduff is a key substation in the Dublin region, as the electricity demand in this area from industry is extremely high. Having generation in close proximity to the demand is beneficial for the local grid system to minimise losses and increase reliability.
- Electrical grid studies identified that generation from Corduff is more preferred in terms of potential for distributing the generation due to the high industrial demand in the area.

Connections to the Gas Network

- The site is located in close proximity to one of GNI's main 70 bar gas transmission pipes. This means that only a short connection is required to connect into the gas network.

Available Sites in Suitable Locations

- The site is available for immediate development.
- Its location adjacent to two long established existing sites used for electricity related purposes (i.e. the ESB National Stores and the ESB Corduff substation) ensures that it does not conflict with adjacent land uses.

Planning and Environmental Considerations

- Arising from the initial Planning and Environmental Feasibility Review which assessed sites throughout the Dublin area, a site specific planning and environmental feasibility assessment was undertaken for the Corduff site. This review considered the following criteria in more detail:
    - Planning – land use zoning, development plan policies and objectives and proximity to residential properties.
    - Biodiversity – designated areas and habitats.
    - Landscape – land use and landscape character.
    - Cultural Heritage – archaeological and architectural heritage.
    - Flood Risk – fluvial, pluvial and ground water flood risk.
    - Geotechnical Conditions – quarternary and bedrock data.
    - Site Services and engineering constraints – known services e.g. Eir, electricity, gas, surface water, foul water etc and land use.
- Ultimately the zoning and physical characteristics of the site as well as the surrounding development patterns were deemed compatible with the proposed development.

3 Description of the Proposed Development

3.1 Site Location and Characteristics

The ESB landholding at Corduff is illustrated by Figures 3-1 and 3-2, these figures show the wider geographical context of the site and its location relative to the existing Corduff 220/110 kV substation and the ESB National Supply Store.

Figure 3-1 Site Location Aerial View

The site location is shown on drawings QP000032-01-D460-003-001-001 “Site Location Map (1:2,500)” and QP000032-01-D460-004-001-001 “Site Location (1:1,000)”.

Figure 3-2 Regional Site Location Map

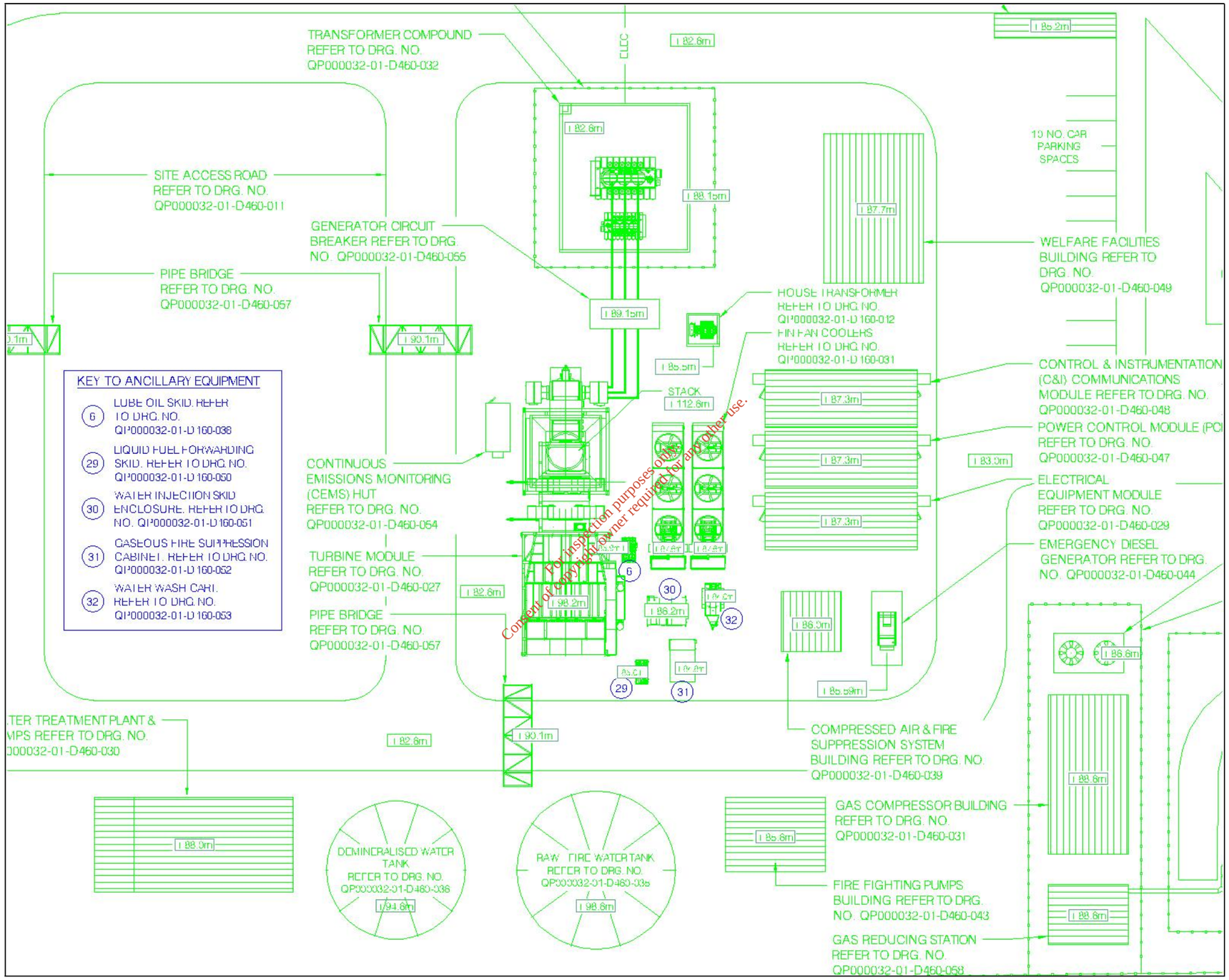


Figure 3-3 Proposed Site Layout

The ESB landholding at Corduff is characterised as follows (Refer to Figure 3-2 and Figure 3-3):

- An ESB National Supply Store for warehousing/maintenance purposes is located to the south with associated outbuildings and access road extending from the proposed development to a local road (Corduff Road), which links to the R121 and then to the N3.
- The existing 220/110 kV Corduff Substation comprising primarily electrical equipment is located to the north of the site. There is an access track connecting the substation to the ESB warehousing compound.
- The site location for FlexGen is an undeveloped area of land between the aforementioned ESB National Supply Store and Corduff Substation. This area formerly comprised agricultural land which was subsequently planted with trees to dissuade unsanctioned grazing of horses at the site.

3.2 FlexGen Description

3.2.1 Key Elements

The 75 MWe FlexGen development will generally comprise the following key elements:

- The compound (c. 3.5 hectare (ha) secure compound), within a total overall development area of 4.8 ha;
- One (1) modular aero derivative gas turbine generator in a packaged enclosure;
- Gas turbine generator auxiliaries, including a continuous emissions monitoring system (CEMS) hut, water wash cart, lube oil skid, fin fan coolers, liquid fuel forwarding skid, water injection skid enclosure, and Gaseous Fire Suppression Cabinet;
- One (1) exhaust stack complete with integrated CO catalyst for emissions control and access ladders/stairways and platforms;
- Associated electrical infrastructure and modules including transformers and other plant;
- Control, Electrical and Building Services modules;
- Associated gas supply equipment including a gas receiving and metering station, pressure regulation and compression equipment;
- Water supply, storage and treatment;
- Fire-fighting systems;
- Liquid fuel (fuel oil) storage and treatment facility;
- Welfare and car parking facilities; and

- All necessary ancillary works.

The key elements are the gas turbine package and the associated exhaust stack.

Connections to external services and networks including gas, electricity and water will require development works and they are part of the overall project, however they do not form part of this application for planning permission.

3.2.2 FlexGen Development as Described in Public Notices

The 75 MWe FlexGen development, as described by the public notices, comprises the following key elements:

The development will consist of a 75 MWe (electrical output) aero derivative gas fired turbine for the generation of electricity and will include the following elements:

(a) c. 240 sq.m. aero derivative gas fired turbine module up to c. 15.4 m high with a c. 30 m high stack;

(b) ancillary buildings comprising: (1) c. 390 sq.m., c. 5.1m high liquid fuel treatment building; (2) c. 11.1 sq.m. single storey gaseous fire suppression cabinet; (3) c. 200 sq.m., c. 5.4 m high water treatment plant and pumps building; (4) c. 21 sq.m., c. 6.6 m high generator circuit breaker building; (5) c. 11.9 sq. m., single storey continuous emissions monitoring hut; (6) c. 29.7 sq.m., single storey spare parts storage building; (7) c. 87 sq.m., c. 4.7 m high control & instrumentation communications module; (8) c. 87 sq.m., c. 4.7 m high power control module; (9) c. 87 sq.m., c. 4.7 m high electrical equipment module; (10) c. 36 sq.m., single storey compressed air and fire suppression system building; (11) c. 128 sq.m., c. 6 m high gas compressor building; (12) c. 75 sq.m., single storey fire fighting pumps building; (13) c. 48 sq.m., c. 6 m high gas reducing station building; (14) c. 150 sq.m., c. 5.1 m high welfare facilities building;

(c) industrial / electrical plant comprising: (1) c.12 m high liquid fuel tank (c. 1,501 cubic metre capacity) within a c. 1,296 sq.m. bunded area; (2) c. 3.8 sq.m., c. 3.3 m high lube oil skid; (3) c. 3 sq.m., c. 2.5 m high liquid fuel forwarding skid; (4) c. 10.5 sq.m., c. 3.7 m high water injection skid; water wash cart (c. 4.8 m in length, c. 2.2 m wide, and c. 1.8 m high); (5) a transformer compound enclosed on three sides (c. 195 sq.m., c. 5.6 m high) housing a main transformer and a unit transformer; (6) demineralised water tank (c. 12 m high, c. 1,501 cubic metre capacity); (7) raw fire water tank (c. 16 m high, c. 2,650 cubic metre capacity); (8) a house transformer compound enclosed on three sides (c. 11 sq.m., c. 2.5 m high); (9) fin fan coolers c. 46 sq.m., c. 5 m high; (10) gas compressor cooler c. 28 sq.m., c. 4 m high; (11) fenced gas receiving & metering station containing various items of industrial plant, and elevated pipework c. 1,200 sq. m.; and (12) an emergency diesel generator;

(d) boundary and internal palisade fencing and gates (c. 2.6 m high);

(e) ancillary site clearance and development works including provision of areas of hardstanding and car parking, internal access roads, landscaped berms and planting, pipe bridges, and on-site services including site drainage and attenuation.

The site will be accessed from the existing entrance off the Corduff Road with a new 2.6m high palisade entrance gate located to the west of the existing entrance gate.

Planning permission is being sought for a duration of 10 years.

3.2.3 Detailed Design Considerations

It should be noted that the drawings and documents have been prepared based on best available information as of March 2020. The final FlexGen plant arrangement will be subject to detailed design prior to construction and will be dependent on commercial and technical issues at the time of procurement.

Dimensions of plant produced by different manufacturers often have minor variations however the total structure height and footprints will not exceed that indicated by the accompanying planning drawings. Furthermore, the operating parameters such as air output and noise output will be within the specifications outlined herein.

The FlexGen development will be broadly similar to that shown in Figure 3-4.

Figure 3-4 Typical FlexGen Plant

For ease of understanding of the elements and in order to understand the limited scale of the proposed development, Table 3-1 identifies the various dimensions associated with each of the proposed key aspects of the FlexGen plant as illustrated by the accompanying planning drawings.

Table 3-1 FlexGen Development Dimensions

Building / Plant / Equipment	Dimensions (Length x Width x Height)
Turbine Module including stack	c. 10.4 m x 29.0 m x 30 m
Continuous Emissions Monitoring System (CEMS) Hut	c. 2.4m x 5.4m x 2.7m
Gaseous Fire Suppression Cabinet	c. 4.3m x 2.6m x 2.2m
Liquid Fuel Forwarding Pump Skid	c. 2.4m x 1.4m x 2.4m
Water Injection Skid Enclosure	c. 3.9m x 3.0m x 3.7m
Water Wash Cart	c. 4.8m x 2.2m x 1.8m
Generator Circuit Breaker	c. 7m x 3m x 6.6m
Fin Fan Coolers (x2)	c. 14.7 m x 3.8m x 5 m
Lube Oil Skid	c. 2.7m x 1.4m x 3.3m
Bunded Transformer Compound containing Main Step Up Transformer and Unit Transformer	c. 15 m x 13 m x 5.6 m
Bunded Transformer Compound containing House Transformer	c. 3.3m x 3.3m x 2.5m
Gas Reducing Building	c. 8m x 6m x 6m
Gas Compressor Building	c. 16 m x 8 m x 6 m
Gas Compressor Coolers	c. 7 m x 4 m x 4 m
Compressed Air & Fire Suppression Building	c. 6 m x 6 m x 3 m
Welfare Facilities	c. 15m x 10 m x 5.1m
Gas Receiving and Metering Area	c. 40 m x 30 m x 4.7 m
Fire-Fighting Pumps	c. 10 m x 7.5 m x 3 m
Fire / RAW Water Tank	c. Dia. = 16 m, Height = 16 m
Demineralised Water Tank	c. Dia. = 14 m, Height = 12 m
Water Treatment Plant & Pumps	c. 20 m x 10 m x 5.4 m
Power Control Module	c. 17.8m x 5.7m x 4.7m
Emergency Diesel Generator	c. 7.4 m x 3 m x 2.6 m

Building / Plant / Equipment	Dimensions (Length x Width x Height)
Liquid Fuel Tank	c. Dia. = 14 m, Height = 12 m Bund = 36 m x 36 m x 1.5m
Liquid Fuel Treatment Area	c. 26 m x 15 m x 5.1 m
Car Parking	c. 25 m x 5 m
Electrical/Control Room	c. 17.8 m x 5.7 m x 4.7 m
Comms. /C&I Module	c. 17.8m x 5.7m x 4.7m
Liquid Fuel Unloading Area	c. 25 m x 17 m
Pipe Bridge(s)	c. 3m x 10.2m x 7.5m
Spare Parts Storage Container	c. 12.2m x 2.4m x 2.6m

3.2.4 Site Access

Access to the property will be via the existing entrance at a roundabout on the eastern boundary of the site. The proposed access to the FlexGen site from the property boundary will cross beneath existing overhead 220/110 kV lines. The existing entrance provides access/egress to the ESB Networks High Voltage Substation, including 24-hour emergency operation and maintenance access when required. This entrance also provides access to maintain the lands where the development is proposed, and a soak-away associated with the ESB Networks stores facility positioned within the lands where the development is proposed.

The location of the entrance is detailed on Drg. No. QP000032-01-D460-025-001-001 “Proposed Site Layout” (1:500). This drawing indicates the location of the existing fencing and gate which is intended to be retained. The gate is manually operated, necessitating personnel to temporarily park their vehicles in front of the entrance gate in order to operate the gate.

3.2.5 The Development Site

The FlexGen development will be wholly contained within a c. 3.5 ha secure development site.

The FlexGen development includes all equipment and plant associated with the development as outlined by the following sections, in addition to internal access roads, laydown areas, welfare facilities and site attenuation.

Refer to Figure 3-3 Proposed Site Layout.

Plans, elevations and sections for the proposed plant and equipment are included in the planning drawings which accompany this application.

3.2.6 Turbine Module

The turbine module comprises the gas turbine in an individual packaged unit. The footprint of the turbine and generator enclosure(s) is c. 10.4m x 29.0m and the turbine plant proposed, aside from the stack, will extend to a proposed height of 15.6 m. The proposed stack will extend to a maximum height of 30 m.

The accompanying planning drawings demonstrate plans and elevations for each of the proposed plant / buildings which illustrate their overall heights.

An aero derivative gas turbine is proposed for a variety of reasons including the following:

- To facilitate the increased generation of renewables on the national grid;
- Fast start up durations from cold to full power generation in approximately 5 minutes;
- Best Available Technology (BAT) efficiency of 38% to 43%;
- Low emissions;
- Can operate on both fuel gas and liquid fuel (fuel oil) as a back-up fuel (As per CRU requirements); and
- High reliability.

As is typical for aero derivative type gas turbines, the unit will be housed in a packaged enclosure which is the manufacturer's standard design approach. This turbine is capable of dual fuel operation and includes all of the following items of plant and equipment which are necessary for the operation of the plant:

- Air Inlet Filter Housing:
- Gas turbine generator package in enclosure(s);
- Vent air outlet; and
- Exhaust stack.

In addition to the above, a number of auxiliary plant items are required for turbine operation, including:

- Lube oil skid; and
- Fin fan coolers.
- Gaseous Fire Suppression Cabinet
- Water Wash Cart
- Water Injection Skid and Enclosure
- Liquid Fuel Forwarding Pump Skid
- Generator Circuit Breaker
- Continuous Emissions Monitoring System

Detailed design of the plant will be carried out following selection / confirmation of the turbine supplier.

Drawing Nos. QP000032-01-D460-025-001-001 “Proposed Site Layout” (1:500) illustrates the location of the turbine plant, while Drawing’s No. QP000032-01-D460-027-001-001, QP000032-01-D460-027-002-000, QP000032-01-D460-027-003-000 and QP000032-01-D460-027-004-000 illustrate the typical elevations, sections and plans of the turbine module.

In order to minimise ground disturbance and facilitate ease of routine maintenance it is proposed that cables / connections within the turbine module and supporting plant, will be laid above ground. The exact details are subject to detailed design and will be confirmed by the electrical designer following a procurement process.

At present the project is in the development stage and as such specific detailed design for power and control cables and respective cable containment systems will be determined once the project enters the design and build phase, which is expected to be in Q4 2020.

It is therefore not possible to provide detailed specifications at this time in the process. However, it can be confirmed that all Cables/Connections to be procured for this project will comply with applicable Legislation, Codes and Standards for Power and Control Cables.

In relation to length of cables/connections, the following details the general lengths of the proposed connections:

- The length of busbar connections from the Generator to the Generator Step Up Transformer and Unit Transformer is approximately 60 m, this will be confirmed upon completion of detailed design.
- The length of MV Power Cables from the Unit Transformer to respective MV Switchgear Room is approximately 40 m and will be confirmed upon completion of detailed design.

Each building and item of plant will be cabled/connected, the specific detailed design of which will be determined by the successful Design and Build Contractor.

The various drawings accompanying this planning application illustrate the relevant plant and equipment. Refer to Figure 3-5 Example of Above Ground Cable Tray Installation below.

Figure 3-5 Example of Above Ground Cable Tray Installation

3.2.6.1 Exhaust Stack

In order to achieve adequate air dispersion resulting from gas turbine emissions, the stack height for the aero derivative modular gas turbine is assumed to be a maximum height of 30 m above prevailing ground levels.

The **Air Quality Assessment Report**, included in **Appendix 3,** details the air quality assessment findings which has informed the minimum stack height proposed for the FlexGen development.

Drawing No. QP000032-01-D460-027-001-001 “Turbine Module Plans & North/South Elevations” (1:200) shows the proposed elevation views of the gas turbines including the exhaust stack.

3.2.7 Exporting Electricity to the Grid

Electrical equipment proposed for the export of the generated electricity to the existing 220/110 kV Corduff substation, which is a node on the national electricity transmission grid (Note: Connection is at 110 KV based on the most suitable connection point available into the Corduff 220/110 kV substation), will be via the following:

- Generator Step Up Transformer; and
- Underground (UG) grid connection cables.

One main generator step up transformer will be required on site. This will step up the voltage for export to the national grid system from medium voltage (MV) to high voltage (HV). This transformer will have an appropriate bund constructed and fire protection including blast walls, if necessary. It should be noted that the electrical components associated with the FlexGen project do not function as part of the electricity transmission system, as operated by EirGrid, they merely allow power to be transformed to appropriate voltages so that the generator can export electricity.

The grid connection will be by means of an underground electrical cable. It is considered that the cable falls within the exempted development provisions set out under Class 26 of the Planning and Development Regulations, namely *'carrying out by any undertaker authorised to provide an electricity service of development consisting of the laying underground of mains, pipes, cables or other apparatus for the purposes of the undertaking'* and it will be developed on this basis.*'*

For completeness, the cable connection route, while not part of this planning application is generally identified in Planning Drawing QP000032-01-D460-025-001 while the other aspects of the electrical equipment are illustrated by the various drawings accompanying this planning application.

3.2.8 Associated Electrical / Other Infrastructure

Other electrical infrastructure included within the FlexGen compound include the following:

- Control & electrical building;
- Electrical Balance of Plant (BoP) Control Room;
- House transformer; and
- Compressed Air & Fire Suppression Building.

All of the above are illustrated by Drawing No. QP000032-01-D460-025-001-000 "Proposed Site Layout" (1:500).

In addition, an emergency diesel generator is provided.

3.2.9 Gas Supply Equipment

The main fuel for the site will be supplied by Gas Networks Ireland (GNI) to the gas receiving and metering system on site.

Gas supply equipment required includes the following:

- Gas receiving and metering system;
- Gas reducing station;
- Gas compressor building;

- Gas compressing cooler; and
- Associated gas piping system.

All of the above are illustrated by the various drawings accompanying this planning application.

The connection to the Gas Transmission System will be provided by GNI in accordance with their statutory role, GNI equipment will be housed in a separate area with a dedicated internal entrance.

3.2.10 Water Supply and Storage

Raw water, potable water and demineralised water will be required for the FlexGen development as follows:

1. Potable water will be required for domestic purposes (drinking water, toilets etc.).
2. Demineralised water will be required for water injection into the gas turbines for NOx (Nitrogen Oxides) emissions control.
3. Raw / fire water for emergency response.

The potable water will be provided by means of a new metered connection to an existing public water main to the east of the site. The route of this connection is illustrated by Drawing No. QP000032-01-D460-007-001-002 “Site Drainage Layout (Proposed)”.

The demineralised water will be stored in a single tank of 12 m in height (14 m diameter) with a capacity of 1,500.90 m^3 as illustrated by Drawing No. QP-000032-04-D460-036-001-001 “De-Mineralised Water Tank Plan, Elevations & Section”.

The raw / fire water, required for the firefighting system, will be stored in a single raw / fire water tank of 16 m in height (16 m diameter) with a capacity of 2,649.79 m^3 as illustrated by Drawing No. QP-000032-04-D460-035-001-001 “Raw Water Tank Plan, Elevations & Section.

In addition to the storage tanks the proposed water facilities also include the following:

- Water Treatment Building; and
- Firefighting Pumps Building.

All of the above are illustrated by the various drawings accompanying this planning application. Note that the service connections, are not part of this planning application.

3.2.11 Liquid Fuel Storage

The proposed development also includes a liquid fuel (fuel oil) tank with associated pump/treatment house and a liquid fuel unloading area. This will be the back-up fuel for the plant in case natural gas is unavailable.

The liquid fuel will be stored in one (1) dedicated liquid fuel tank on the south western side of the site with a capacity of up to approximately 1,500 m^3, as illustrated by Drawing No. QP-000032-04-D460-037-001-001. This will store enough fuel for three days in accordance with the Commission of Energy Regulations (CER) requirements.

In addition to the storage tank the proposed fuel oil facilities also include the following:

- Liquid fuel bund; and
- Liquid fuel treatment building.

The liquid fuel tank will be bunded for environmental protection in accordance with requirements of the EPA's guidance note "*Storage and Transfer of Materials for Scheduled Activities 2004*". The liquid fuel will be transferred from the liquid fuel tank to the turbine through an appropriately designed piping system, details of which will be determined during the detailed design phase of the project.

All of the above are illustrated by the various drawings accompanying this planning application.

3.2.12 Site Services

Welfare Facilities Building

It is proposed to provide welfare facilities in the north east part of the FlexGen development site with details as illustrated by Drawing No. QP-000032-04-D460-049-001-000. The service connection for the provision of water to the building is outlined by Section 3.2.10 with foul service provisions outlined below.

Foul Wastewater Drainage

The foul water from the proposed welfare facility shall discharge to an existing 225 mm public foul sewer line to the east of the site. If the invert level of the public foul line is elevated relative to the proposed development the use of a pumping chamber and rising main will be adopted as necessary.

Surface Water Drainage

The majority of the proposed facility will be surfaced with permeable stone and surface water generated on this area will largely infiltrate to ground as per the Greenfield conditions. Surface water generated on the impermeable elements of the proposed development, including a turbine module, transformer bunds and laydown areas, will be collected in an underground drainage network and conveyed via swales to the proposed attenuation system. Surface water discharge from the Flexible site will be at a controlled rate to an unnamed watercourse to the west of the site. The proposed development will be in accordance with Industrial Emissions Directive (IED) Licence requirements.

Demineralised water will be taken from the proposed water treatment plant in the generating station and held in a storage tank shown on QP000032-01-D460-007-

001-002“Site Drainage Layout (Proposed)”. It is expected that the demineralised water will be sprayed into the turbine ignition and will leave through the stack as vapour. The estimated process water discharging from the turbine into the proposed surface water drainage system will be minimal.

During the operational phase of the proposed development, run-off from all elements of the development vulnerable to spills including the proposed oil filled transformer bunds and laydown areas will be treated through the use of a Class 1 Full Retention oil separator to remove silt and oil prior to discharging into the proposed Surface Water Drainage Network.

Full details of the proposed drainage system for the site including calculations for the proposed treatment and attenuation, are provided in the Drainage & Services Report, attached as **Appendix 5** and shown on Drawing QP000032-01-D460-007-001-002 “Site Drainage Layout (Proposed)”.

Lighting

External lighting is proposed throughout the FlexGen compound. A lighting plan will be undertaken during the detailed design of the FlexGen plant.

Parking & Laydown

Car parking spaces are proposed in the north east part of the site with a laydown area in the north west part. Both are illustrated by Drawing No. P000032-01-D460-025-001.

3.2.13 Ancillary Development -Temporary & Enabling Works

The construction works, in summary, will involve site clearance and preparation, laying of foundations for plant and buildings, structural steelwork and cladding, installation of plant and equipment, concrete works, hard surfacing and paving, landscaping and fencing.

The following sections identify the various temporary works and provisions required during the construction phase.

Temporary Construction Compound

A temporary construction compound will be required for the duration of the construction works, which will be used to store equipment and supplies and will include laydown areas and provide all the necessary temporary facilities such as porta cabins, staff welfare facilities, car parking, etc. All areas under construction will be located within a secure perimeter fence and temporary lighting supplied as necessary.

Construction Equipment

Construction equipment used will be typical of a project of this scale; including heavy duty earthmoving and excavating equipment, heavy goods vehicles (HGV’s), concrete trucks, mobile cranes and hoists.

Site Clearance

In order to facilitate the proposed development, the site will be cleared and prepared for development. The internal access roadway will be constructed to provide vehicular access to the site. The construction of the internal access road will include construction of a culvert/bridge over the existing field drain as part of site clearance and internal access roadway construction.

The proposed development will require the removal of approximately 3 ha of planted willow woodland, established between 2000 and 2005.

Temporary Site Facilities

A temporary compound will be used to accommodate the contractors' facilities during the construction of the development. The compound is expected to contain a number of portable site offices for the Contractors' and the Owner's Engineering staff, a meeting room, a canteen, drying room, toilet facilities and containerised storage units.

Exact details of the temporary site compound will be included in the Construction Environmental & Management Plan (CEMP), agreed with the contractor prior to Commencement of Works.

Temporary Provision of Potable Water

The water supply proposed for construction works will be provided by means of the existing connection in the vicinity of the site.

Telecommunications

Existing telecommunications infrastructure will be utilised during the construction period. During operation, operation and monitoring will be facilitated by an installed communications system.

Power Supply

During the construction phase, electric power will be provided using diesel generators or a local supply. A permanent LV power supply from the existing network will be provided for the operational phase.

3.3 Project Construction

3.3.1 Project Supervisor Construction Stage (PSCS)

A Project Supervisor Construction Stage (PSCS) will be appointed by ESB for the construction phase of the proposed development.

The PSCS will be responsible for managing and co-ordinating the safety and health issues on site.

Prior to the commencement of any works on site the PSCS will develop a Safety and Health Plan for the proposed FlexGen development. This Plan will explain how the key safety and health issues will be managed.

3.3.2 Overview of Construction Methodology

The works required for the construction of the proposed FlexGen development will include the following stages of works:

- Site investigation to inform final design;
- Temporary site compound and laydown areas established for the works;
- Clearance of trees and vegetation;
- Protection of existing open drain (possible ha-ha ditch) channel;
- Excavation, levelling and grading;
- All associated site drainage systems and associated installations;
- Construction of cable ducting throughout the compound;
- Construction of reinforced concrete foundations to support the gas turbine generator, oil and water storage tanks and auxiliary equipment items, with piling and / or ground improvements, where necessary;
- Installation / construction of pipework and tanks associated with gas, water, and fuel oil including environmental control infrastructures such as bunds;
- Fire-fighting system including water storage tank, pipework and hydrants;
- Construction of liquid fuel unloading and treatment areas;
- Construction gas supply equipment including a gas receiving and metering station, pressure regulation and compression equipment;
- Construction of welfare facilities, internal road access and parking;
- Construction of perimeter fencing;
- Installation of access gates;
- Construction of permanent maintenance laydown areas;
- Construction of transformer compound including bunds and fire walls, if required;
- Complete electrical installations, SCADA System etc.;
- Installation of gas turbine generator package and associated auxiliary skids, modules, associated apparatus and transformers;
- Installation of exhaust stack, CO catalyst and access ladders/stairways and platforms;
- Installation of electrical balance of plant modules;
- Installation of control modules, equipment and facilities for operators;
- Installation of modules for building services provisions, such as IT and telecoms.

- Commission and test plant;
- Demobilise temporary offices; and
- Reinstatement works, site finishing and landscaping.

Connections to external services and networks including gas, electricity and water will require development works and they are part of the overall project, however they do not form part of the associated application for planning permission.

3.3.3 Construction Phase Timeline

ESB have been awarded a capacity contract for the FlexGen development at Corduff. As per the capacity market rules, ESB has to meet milestones for the delivery of the project. The two major milestones are substantial financial close (all major contracts and licencing) in October 2020 and full commercial operation is expected to be in October 2022.

It is anticipated that site works for the FlexGen development will commence in Q4 2020 with design, construction and commissioning activities lasting approximately 18 to 22 months, however as with any project of this nature, timelines may vary.

3.3.4 Traffic Management During Construction

There will be a moderate, temporary impact on the local road network associated with the construction phase. This will occur in the context of other existing developments in the vicinity.

During construction of the project, no parking of cars by persons associated with the project will be permitted on the surrounding public roads. Parking arrangements and other traffic mitigation measures and / or restrictions will be specified in the Construction Traffic Management Plan (CTMP) prepared in advance of construction commencement.

3.3.4.1 Construction Duration

The construction phase is anticipated to last approximately 18 to 22 months. However, the intensity of traffic will vary over the course of the construction programme.

The values referenced herein are only anticipated during peak periods and therefore representative of worst-case scenario. Due to the temporary nature of those impacts these are not deemed to have a significant adverse impact on the local road network.

3.3.4.2 Working Hours

Normal working hours during the construction period are expected to be Monday to Friday 7am to 7pm and Saturday from 7am to 2pm. There may be instances where extended working hours / days are required however should working outside these hours / days be required they will only be undertaken in agreement with Fingal County Council (FCC).

3.3.4.3 Personnel Volumes

A maximum daily workforce of approximately 66 people is expected during the peak period for construction works on site. However, typical daily workforce requirements will be less than this.

A vehicle occupancy rate of 1.25 is assumed and in the worst-case scenario this would result in average daily personnel movements of 106 vehicles (approximately 53 vehicles per day). This would mean a requirement for up to 53 temporary car parking spaces in the worst-case scenario.

3.3.4.4 Heavy Goods Vehicle Volumes

During construction it is estimated that there will be approximately 46 HGV movements per day during peak construction stages (approximately 23 vehicles per day over a four (4) month period).

The majority of the deliveries will be during the construction of the groundworks and the foundations for the proposed development. All civil construction materials are anticipated be delivered using standard rigid and articulated trucks, low-loaders and ready mix concrete trucks etc.

3.3.4.5 Abnormal Load Volumes

It is estimated that there will be approximately 20 abnormal load movements over the course of the development (10 abnormal loads). However, the final requirements will be established during detailed design and are dependent upon whether the proposed tanks, buildings will be delivered to site in modular format, pre-fabricated or construction on site.

Appropriate permits will be sought in due course from FCC subject to final detailed design. As per the personnel vehicles and HGV's the final requirements and management of abnormal load vehicles will be detailed in the CTMP document.

3.3.5 Pollution Prevention & Control

Storage of Fuels & Oils

All hazardous substances on site will be controlled in accordance with Code of Practice for Chemical Agents Regulations 2016. The area where oils will be stored, used or where the possibility of oil spillage exists, will be bunded to prevent discharge into the environment. In the unlikely event of a spillage occurring into a bunded area, the effluent will be pumped out to a road tanker for re-use or disposed of in accordance with relevant legislative requirements. No tanks or pipework containing liquids such as fuel, oils or chemicals will be stored below ground. All tanks containing liquids whose spillage could be harmful to the environment will be bunded.

Refuelling

Accidental spills of hydrocarbons, such as diesel and lubrication oil during refuelling of plant machinery, is a potential risk during the construction phase of the proposed development. Refuelling off-site is the most effective way of controlling hydrocarbon

spillages from construction plant. Offsite re-fuelling should occur at a controlled fuelling station. Where refuelling off-site is not possible, a designated “fuel station” will be constructed for the purposes of safe refuelling. The fuel station will be bunded to 110% capacity of the stored fuel and drained by an oil interceptor.

Disposal

Oil from any accidental spill will be disposed of by recycling and the services of a specialist, licenced, waste oil recycler will be engaged for this task.

3.3.6 Construction Environmental Management Plan (CEMP)

During the construction phase ESB will employ a technically competent Contractor who will have responsibility for all aspects of day to day operations on site. A Construction Environmental Management Plan (CEMP) will be prepared and implemented by the Contractor during the construction phase of the proposed development. This plan will be subject to review by ESB and will be updated regularly and revised as necessary to ensure that the measures implemented are effective.

3.3.7 Waste Management Plan

Prior to the commencement of the development, and as part of the Construction Environmental Management Plan (CEMP), a Waste Management Plan (WMP) will be prepared, which will provide for the classification, handling and management of all waste generated during the construction stage in accordance with Irish Waste Regulations (and amendments) including;

- Waste Management Act 1996;
- Waste Management (Licensing) Regulations 2004;
- Waste Framework Directive 2006;
- Waste Management (Facility Permit and Registration) (Amendment) Regulations 2008 S.I No. 86 of 2008; and
- European Communities (Waste Directive) Regulations 2011 (S.I. 126 of 2011).

Spoil from the construction stage will be utilised to create four landscaped mounds ranging in height between 2 - 2.5m and with a slope gradient of 1:3, refer to Appendix 6 for further details.

3.4 Operation and Maintenance

3.4.1 Operational Process

The overall power generation process representing the operational phase of the FlexGen development can be summarised as follows:

1. **Gas Operation Mode**

During gas operation the aero derivative gas turbine utilise the Brayton Cycle, using air as the working fluid. Air at atmospheric pressure enters the compressor and is compressed before fuel gas is added to the combustor. The resulting gases produced are expanded across a turbine to drive the gas turbine generator.

2. **Back-up Fuel Operation Mode**

   In the event of a loss of the fuel gas supply, the aero derivative gas turbine can operate in back-up operation mode if the system requires it due to shortage of supply. The back–up fuel will be fuel oil.

   Control System The gas turbine control system consists of a proprietary system controlling the air fuel ratio, combustion optimisation, safety, combustion monitoring and emissions control. Many suppliers of aero derivative gas turbines supply the unit itself as a packaged plant, which includes the main gas turbine generator enclosure, auxiliary skids and control module to house the local control and monitoring facilities for the gas turbine. The aero derivative gas turbine on site can be controlled from a local control desk or remotely from a control room away from the site. It is intended that this FlexGen development will be primarily controlled from the remote control room.

3. **Emission Control System**

   The emissions control system will ensure operational adherence in accordance with IED Licence Requirements. The IE Licence will incorporate the requirements of the EU Commission implementing decision with regard to Best Available Technology (BAT) for large combustion plant.

   As is common for aero derivative gas turbine technology, NOx emissions will be controlled through utilisation of a Wet Low Emissions (WLE) combustor, in which demineralised water is injected into the turbine's combustor to reduce the formation of NOx.

   The exhaust gases will be discharged through an exhaust stack with a maximum height of 30 m above ground level. It will incorporate a CO catalyst to control CO emissions to an acceptable level.

While the plant will be available to operate 24 hours per day, the operational period for the plant is likely to be non-continuous. The FlexGen plant is anticipated to operate during the peak demand periods, e.g. during early morning and evening peak periods.

During its operational phase the FlexGen plant will be operated remotely and generally unmanned, with periodic site inspections throughout the week by a site engineer and / or security and periodic maintenance inspections. There will also be sporadic occasions when staff will be on site for meetings, monitoring or testing purposes including monitoring that is required as a condition of the IE Licence for the development.

Site management systems will be implemented in accordance with ESB procedures and policies. Out of hours security services and maintenance will be arranged as required.

3.4.2 Staffing

During its operational phase the FlexGen plant will be generally unmanned with periodic site inspections throughout the week by a site engineer and / or security and periodic maintenance inspections.

There will also be sporadic occasions when staff will be on site for meetings, monitoring or testing purposes.

Site management systems will be implemented in accordance with ESB procedures and policies. Out of hours security services and maintenance will be arranged as required.

3.4.3 Operational Activity

Once constructed and operational the FlexGen development can be configured to provide energy for a number of the DS3 System Services and may also provide short-term generation to the grid via a Capacity Remuneration Mechanism (CRM). This generally coincides with peak demand periods and is required in order to balance an increasing supply of energy from renewable sources on the grid and to contribute towards energy reliability during peak demand durations.

As EirGrid increase the amount of electricity from renewable generators onto the grid, they will call upon these services to maintain the stability of the national electricity grid. These services will be of an intermittent nature as the services are called upon by the system operator as required.

3.4.4 Traffic Management

Primary access to the site will be via the existing access identified by Section 3.2.4. As the proposed FlexGen development will for the most part be an unmanned site the traffic generated by the development in operation will relate to its maintenance, and intermittent deliveries and / or meetings on site. During the operational phase, the maximum number of vehicle movements anticipated is 2 per day.

Heavy goods vehicles will be required to visit the site infrequently for large deliveries of maintenance spare parts but the nature of the plant is low maintenance so these will be by exception. Such deliveries will be made by prior arrangement of the plant operations and maintenance staff who will ensure the development site entrance gate is opened in advance and closed when required. In the situation that a single light goods vehicle is accessing the site, the vehicle will be required to temporarily park in front of the entrance gate in order to operate the gate, as per the current operational philosophy.

The existing entrance design is adequate for the proposed development. Due to the low intensity traffic volumes associated with the operation and maintenance of the

proposed development, and the operational traffic management philosophy, it is considered that there is no requirement to relocate the existing gates back into the site, or to incorporate automated bollards. Further due to the requirement to continue to provide unrestricted 24 hour emergency access to the ESB Networks substation this is not feasible in terms of ESB Networks operational requirements .

It is not envisaged that there will be any mitigation measures required for the operation phase of the proposed development.

3.5 Health & Safety Considerations

3.5.1 Control of Major Accident Hazards (COMAH) (EU Directive 2012/18/EU)

Background to Seveso III Directive

As of 1 June 2015, the Seveso III Directive (2012/18/EU) was implemented in Ireland by the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (S.I. 209 of 2015).

Operators of establishments with above threshold quantities of certain named substances and categories of dangerous substances are required to comply with the provisions of the 2015 COMAH Regulations. COMAH establishments may be 'lower tier' or 'upper tier'.

The categories of dangerous substances and preparations from Part 1 of Schedule 1 to the 2015 COMAH Regulations (listed in Appendix 1) are as defined in the Classification, Labelling and Packaging Regulation (Regulation (EC) No 1272/2008). Annex I to the CLP Regulation describes the criteria that apply to each classification. Named dangerous substances and thresholds from Part 2 of Schedule 1 to the 2015 COMAH Regulations are listed in Appendix 1.

Seveso Screening Assessment

The proposed FlexGen plant at Corduff will store a maximum of 1,500 m^3 of liquid fuel (fuel oil) on site as a backup fuel. The regulations specify lower and upper threshold quantities of 2,500 and 25,000 tonnes respectively for fuel oil. The density of distillate fuel oil is 829 kg/m^3 giving a total weight of fuel oil being stored on the site of 1,243 tonnes; below the 2,500 tonnes threshold.

In accordance with current regulations, the proposed development is not classified as a Seveso site and Seveso III regulations do not apply.

The Chemical Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (S.I. 209 of 2015) define the "consultation distance" as a distance or area relating to an establishment, within which there are potentially significant consequences for human health or the environment from a major accident at the establishment, including potentially significant consequences for developments such as residential areas, buildings and areas of public use, recreational areas and major transport routes.

Table 2-2 lists the nearest sites that are notified to the Health and Safety Authority (HSA) as COMAH establishments under the 2015 COMAH Regulations. Table 2-2 also lists the distance to the establishments, and the consultation distance as set out in Table 12.13 of the Fingal Development Plan.

Table 3-2 Nearest Seveso/COMAH site, consultation distance and distance to proposed development

Seveso / COMAH site	*Consultation distance*	Distance to proposed development site
Gensys Power Ltd., T/A Huntstown Power Station, Huntstown Quarry, Finglas, D11	300 m	2.5 km
Barclay Chemicals Manufacturing Ltd. (t/a Barclay Crop Protection), Damastown Way, Damastown Industrial Park, Mulhuddart, Dublin 15	-	2.6 km
Chemco (Ireland) Limited (t/a Chemsource Logistics), Macetown North, Damastown Industrial Estate, Dublin 15	700 m	2.6 km
Contract & General Warehousing Ltd., Westpoint Business Park, Navan Rd. Mulhuddart, Dublin 15	700 m	3.1 km
Astellas Ireland Co., Ltd Damastown Road, Damastown Industrial Park, Mulhuddart, Dublin 15	1,000 m	3.6 km

It is concluded that the proposed development site is not located within the consultation distance of any COMAH establishment that is notified to the HSA. Therefore, there are no implications for major accident hazards at the proposed FlexGen development site.

3.5.2 Fire Protection Systems

Further to the completion of the detailed design for the proposed FlexGen and development a site wide Fire Safety Risk Assessment (FSRA) will be completed. The plant and equipment will be required to meet the relevant standards and the FSRA which will be completed for the facility will incorporate the proposed measures and controls that are to be incorporated into the facility to minimise the likelihood of fire and to mitigate the risk of fire spreading.

In order to prevent environmental damage as a result of a fire involving any raw material stored on site, a number of mitigation measures have been incorporated into the project design to minimise risk of uncontrolled releases of these substances to the environment. These include:

- All chemicals stored on site will be subject to a COSHH (Control of Substances Hazardous to Health) assessment and compliance with the requirements of REACH;
- All containers and bunds will be inspected regularly;

- Accidental spillages will be contained and cleaned immediately;
- Spill kit(s) will be stored on site; and
- All potentially polluting substances including waste will be stored in designated areas in appropriate containers within bunds, drip trays or spill pallets, as required.

3.5.3 Industrial Emissions Directive (2010/75/EU)

The proposed development is not located within the boundary of a licenced facility. An IED licence will be sought for the FlexGen development from the EPA at the appropriate time.

3.6 Decommissioning

On cessation of activities the plant will be decommissioned, and the site remediated and restored in line with any requirements of a planning permission and IE licence, unless otherwise authorised.

On decommissioning the following steps will be implemented:

- All plant equipment will be dismantled and either sold, recycled or disposed of though licenced waste contractors;
- All waste will be removed to a licenced facility by licenced waste contractors; and
- The site will be reinstated.

A Decommissioning Management Plan (DMP) will be prepared at the appropriate time, with consideration for any conditions of the IE Licence for the development, which will include details of decommissioning of all plant and equipment ensuring that there will be no environmental pollution.

4 Planning & Environmental Considerations

4.1 Planning Considerations

4.1.1 Planning History of the Site

The ESB National Supply Store was constructed in 1992. The Corduff 220/110 kV substation was constructed in 2002. The wider site is therefore well established for electricity and related uses and is well positioned for further electricity related use.

The existing site is mainly covered in woodland with no evidence of previous development. A review of the aerial photography from c. 2005 – 2016 shows some woodland planting in this area, with the existing site being mainly covered in willow.

In summary, the wider site has a history of electricity related use dating back to 1992. There have been various planning applications made on this wider landholding during the intervening period with the most significant application relating to the Corduff substation made in 2001.

4.1.2 Previous Planning Application FW19A/0127 Including Meeting with FCC

A previous similar planning application (FCC Reg. Ref. FW/19A/0127) was made to FCC in July 2019. FCC requested Further Information (RFI) in September 2019, however, ultimately the application was withdrawn by ESB in February 2020.

Prior to withdrawing the application ESB had a meeting, in December 2019, with planning officials of FCC to discuss the items in the RFI. The proposed responses to the RFI were verbally presented to the FCC officials, who indicated that in general terms the responses appeared to address the issues requested.

Whist a response to the RFI was not submitted to FCC, the issues raised in the RFI are addressed in this section. The purpose of addressing those issues is to ensure FCC have a full understanding of the project context and issues previously raised by them are resolved.

4.1.2.1 RFI Item 1 – Site Selection

Request - Provide information in relation to power supply system and in relation to the strategic approach being adopted in the Fingal area with regard to such FlexGen developments, including the anticipated level of demand for same, the likely scale and nature of such facilities and site selection criteria.

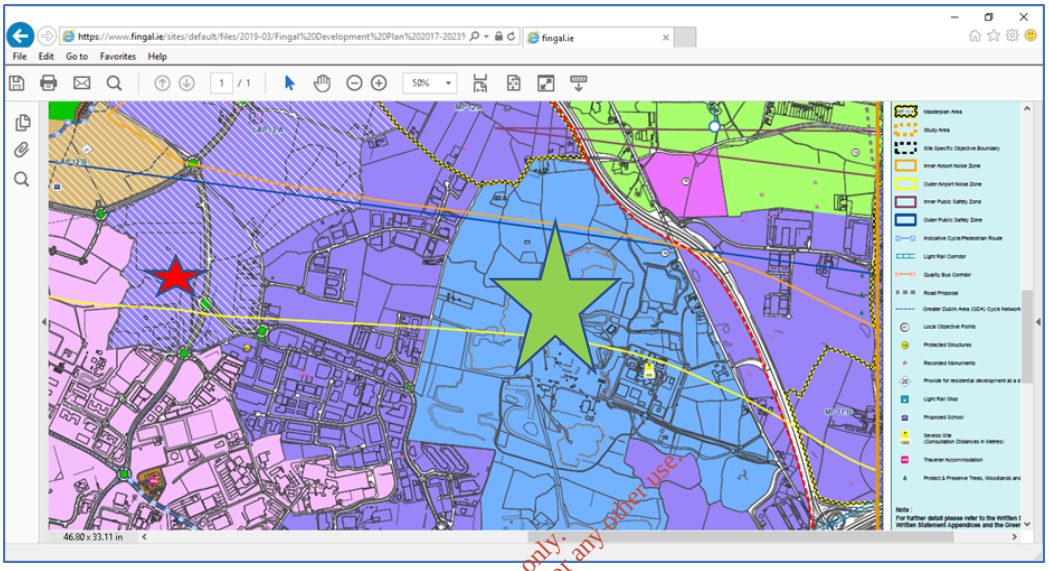
Response – This information is provided in sections 2.2 and 2.3 of this PECR.

4.1.2.2 RFI Item 2 – Alternative Site Zoned Heavy Industry

Request - Having regard to the location of this site in proximity to lands zoned Heavy Industry to the east and the established electrical power supply at Huntstown, provide details of the site selection process undertaken with respect to this development and to provide justification for the selection of the application site

arising from the process, noting that alternative sites within lands zoned Heavy Industry may afford a more appropriate location.

Response – The extract from the FCC Zoning Map Sheet 12 shows the site (red star) and the lands which it is believed are being referred to in the RFI (green star).



The proposed FlexGen development is significantly smaller in scale, when compared, in general terms, to the older, traditional power generation facilities which already exist and would be more suited to lands zoned 'Heavy Industry' as located in the Huntstown area. Therefore, the requirement for lands zoned 'Heavy Industry' for a FlexGen development is not a significant locational requirement. This type of development is capable of being accommodated in other lands use zonings, subject to the environmental assessment and being compatible with surrounding land uses.

Furthermore, it should be understood that the Huntstown facilities are not under the control of ESB. Huntstown is a large scale power generation plant owned and operated by Energia, which first commenced operation in 2002. As stated on the Energia website https://www.energia.ie/business/huntstown-power-plant, "in total the combined output of Huntstown can provide up to 20% of the total electricity fed into the national grid system". Based on the CRU report https://www.cru.ie/wp-content/uploads/2018/11/CRU18122-Electricity-Security-of-Supply-Report-2018.pdf, page 26, Huntstown has registered capacity of dispatchable generation of 750 MW of electricity, which is 10 times the proposed output of Corduff peaker plant.

The site at Corduff is part of an ESB landholding. The specific FlexGen site is located between two long established existing sites used for electricity related purposes (i.e. the ESB national stores and the ESB Corduff substation), this ensures that it does not conflict with adjacent land uses.

The entire ESB land holding is zoned 'GE General Employment' in the Fingal County Development Plan (FCDP) and has been similarly zoned in previous CDPs.

'Utility Installations' (which the proposed development is considered to be) are stated as being 'permitted in principle' in the FCDP. The development is therefore considered to be compatible with the local planning policy context and land use zoning objectives as set out in the FCDP.

Potential impacts of the proposed development have been considered in the context of the environment and amenity of the local area as detailed in the PECR. These assessments demonstrate that the proposed development will be able to operate within suitable parameters and will be compatible with surrounding land uses including the existing ESB utility installations to the north and south. It should also be noted that the proposed development can only be operated subject to an Industrial Emissions (IE) licence being issued by the Environmental Protection Agency (EPA). The purpose of an IE licence is to set specific operating emission limits for the plant.

Given that the proposed development is compatible with the planning policy context and land use zoning objectives as set out in the FCDP, the potential impacts of the proposed development have been assessed as being compatible with surrounding land uses, the operation of the plant will be licenced by the EPA and the fact that the proposal has been successful in the capacity auction makes this an appropriate location for the proposed development.

4.1.2.3 RFI Items 3 and 10 – Visual Impact Assessment and Additional Photomontages

Request – Additional visual impact assessment and submission of additional photomontages was requested.

Response – This information is provided in **Appendix 6** of this PECR.

4.1.2.4 RFI Item 4 – Drainage and Settlement Pond

Request – Concerns had been expressed in relation to bodies of open water in the vicinity of Dublin Airport and to provide proposals to mitigate this risk.

Response – This has been addressed in **Appendix 5** of this PECR, the open water drainage feature has been replaced with a settlement tank.

4.1.2.5 RFI Item 5 – Operational Traffic and Access

Request – Provide details of operational traffic and further details around access from the roundabout.

Response – This is addressed in Section 3.4.4 of this Report.

4.1.2.6 RFI Item 6 – Potential for Plant to Serve District Heating Systems

Request – Facilitate future connections to a district heating system.

Response – This is not possible for the reasons detailed below.

As flexible generation peaking units are primarily intended to operate intermittently for short amounts of time (typically 2-4 times a day, less than 1-2 hours at a time) they are not an effective means of supplying heat to a district heating network. The main reasons are outlined below:

- District heating systems require a reliable, usually continuous, supply of heat that the proposed peaking plants are not able to ensure due to short, infrequent running times.
- The standard design concept for the proposed FlexGen plant does not allow for recovering heat from the turbine exhaust. As the proposed development is intended for grid support for renewable power during peaks of electricity demand rather than baseload (full power operation 24 hours a day for 7 days a week), it is not a viable techno-economic solution to include additional plant items for heat recovery.
- Continuous operation of the proposed FlexGen plant, in order to provide heat for the district heating network, would eliminate its primary purpose of coming online for peaking/grid support.

Due to the nature of the project to date, no plans were made to incorporate Combined Heat and Power (CHP) in the current basis of design since as outlined above it is not a viable techno-economic solution.

If in the future the scenario arises where the unit is required to operate primarily in baseload application, not requiring rapid start-up and shutdowns with short run times and there are consumers for district heating infrastructure to be developed in the vicinity of the plant, heat recovery equipment could be retrofitted to supply heat to such a network.

The retrofit would require additional plant to be installed, to include as a minimum:

- Heat Recovery Steam Generator (HRSG), or similar, with associated piping and pumps.
- Additional water supply/discharge and associated treatment facilities.
- Control and instrumentations required for the operation of the above.

Associated metering and connection to the district heating network.

4.1.2.7 RFI Item 7 – Cherryhound LAP

Request – Submit a framework plan for the site in line with Cherryhound LAP.

Response – This information is provided in **Appendix 9** of this PECR.

4.1.2.8 RFI Item 8 – Detailed Design of Cable Connections

Request – Provide detailed design of cables which should be laid overground.

Response – This is addressed in Section 3.2.6 of this PECR.

4.1.2.9 RFI Item 9 – Foul Water

Request – Provide details of disposal of foul water.

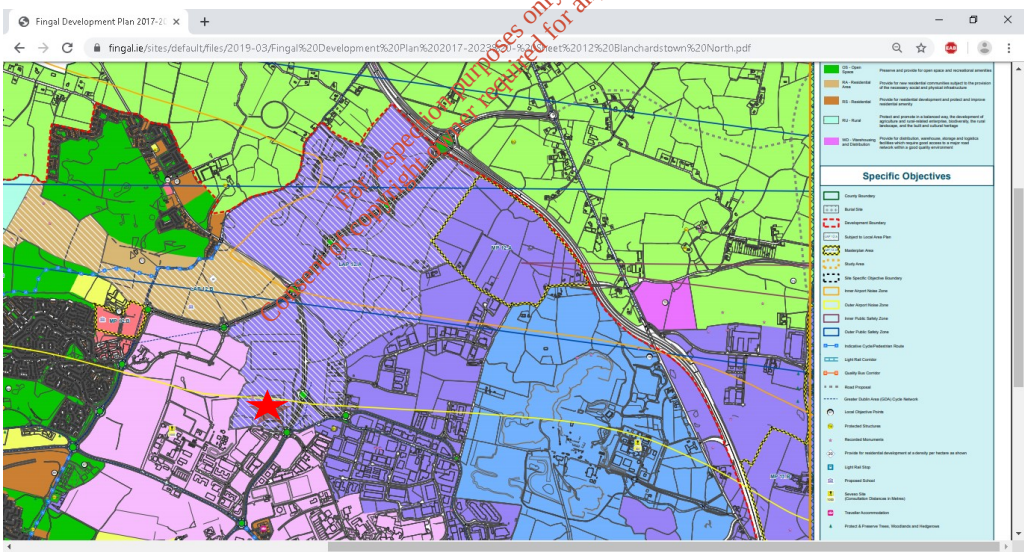
Response – We are proposing public foul connection. This is addressed in Section 3.2.12 of this PECR.

4.2 Planning Policy Provisions

The prevailing statutory plan for the area is the Fingal County Development Plan (CDP) 2017 – 2023. The CDP at Section 11.2 Sheet 12 Zoning Objectives includes a specific objective to produce a statutory Local Area Plan (LAP) for lands comprising 240 hectares which are zoned 'GE' – General Employment where the objective is to - 'provide opportunities for general enterprise and employment'. The vision of this zoning is to facilitate opportunities for compatible industry and general employment uses, logistics and warehousing activity in a good quality physical environment. General employment areas should be highly accessible, well designed, permeable and legible. Permitted uses within this land use zoning include utility installations; sustainable, energy installations; and industry (light and general).

The lands covered by the Zoning Objective are situated north of the built-up area of Blanchardstown and are shown in Figure 4-1 – Extract from CDP Sheet 12 Zoning Objectives (hatched area), they are referred to as the Cherryhound LAP lands. The proposed Corduff FlexGen development site (shown with a red star) is within Development Framework Area 2 (DFA 2) within the Cherryhound LAP lands.

Figure 4-1 Extract from CDP Sheet 12 Zoning Objectives (hatched area)



In relation to LAPs, Section 11.2 of the CDP generally states that the preparation of LAPs will enable a high degree of flexibility in the application of zoning and planning policies and assist in the application of the Council's policies in relation to a variety of land uses and development types.

The LAP was prepared in 2012 arising from the previous Fingal CDP 2011 – 2017, and its lifetime has been extended until it is replaced at a future date. The LAP area is mixed in terms of land uses and comprises 240 hectares of which 183 hectares are not developed. The developed areas include the ESB substation to the north/stores to the south, the multiplicity of established employment generating uses, the quarry and M2/N3 link road. The majority of the lands are in agricultural use, for tillage and pasture. Field sizes are large, typical to north County Dublin.

There is an extensive quarrying operation in the area that has ceased production. There are also a number of dwelling houses within and adjacent to the lands. Existing county roads traverse the area. These include the Ratoath Road which forms part of the south-western boundary of the lands and Bay Lane - a narrow meandering road that leads from the N2 to the Ratoath Road.

The LAP requires that a Development Framework (included at **Appendix 9**) must be prepared before development is permitted in any framework area and is required to guide the context parameters for any future schemes. It suggests that the framework should include details on massing and form, building layout/lines, building design, boundary treatment, landscaping, lighting etc.

The ESB lands fall within the development framework area and therefore the requirements of the LAP need to be addressed. However, it should be noted that the lands are already developed to a significant extent, when compared to other greenfield lands. The development of the ESB lands has resulted in a landscape character of utility/industrial appearance. In this regard the lands are quite different to greenfield lands which will be defined by future developments. Therefore, whilst there is limited opportunity to change the long established landscape character, aspects such as landscaping have been considered in the project design where the lands interface with the public realm.

It is noted in the Cherryhound LAP that the lands subject to the FlexGen application are zoned 'GE' – General Employment as are the other lands within the Cherryhound LAP. Notwithstanding the unmanned nature of the proposed FlexGen facility, it should be noted that the wider ESB landholding provides employment on site, specifically in the context of the ESB National Stores (directly to the south of the proposed development). Furthermore, taken at regional and national scales, ESB employs a large number of people, as do industries associated with renewable energy which the FlexGen development is designed to facilitate. As EirGrid increase the amount of electricity from renewable generators onto the grid, they will call upon the proposed FlexGen services to maintain the stability of the national electricity grid. These services will operate on an intermittent basis as the services are called upon by the System Operator as required.

Within the CDP (Chapter 11 – Land Use Zoning Objectives) the following types of development are permitted in principle, with an assumption that they are compatible with the zoning objective for 'GE - General Employment': 'Industry (light)' and 'Utility installations. It is considered that the proposed FlexGen development falls within these types of land use, being compatible with the relevant zoning objective and is therefore permitted in principle in the context of the prevailing CDP.

4.3 Environmental Considerations

4.3.1 Biodiversity / Ecology

The Screening for Appropriate Assessment (AA) which has been prepared to accompany this report is included as **Appendix 2**.

The footprint of the proposed development relates to an undeveloped area of land between the aforementioned ESB National Supply Store and existing Corduff substation. This area formerly comprised agricultural land which was subsequently planted with trees to dissuade unsanctioned grazing of horses at the site. Species utilised for this planting are almost exclusively fast-growing willow hybrids; planting was carried out in the early 2000's and the site has rapidly matured into woodland with some areas of canopy reaching 10 -12 m in height. Tree density reduces as one progresses towards the north of the site, where there are a number of areas of open rank grassland with a large component of ruderal broadleaf species, particularly rosebay willowherb and creeping thistle. An overgrow hedgerow comprising hawthorn and ash runs along an old ditch which forms the eastern, western and northern boundaries of the site. A mature treeline comprising Scot's pine, beech, sycamore and ash defines the southern boundary between the development site and the ESB National Supply Store.

The planted area is likely to be utilised by a number of locally resident bird species for nesting and/or foraging. Species recorded during site surveys are as follows: Starling, mistle thrush, robin, rook, jackdaw, magpie, woodpigeon, wren, blackbird, dunnock and chaffinch.

With regard to mammal species, rabbit signs are widespread throughout the site. Fox scat was recorded on the site, though no evidence of dens were noted during surveys. Irish hare is known to occur in the locality and has the potential to utilise the open grassland areas within the site for foraging. Other ubiquitous mammal species such as hedgehog and rabbit may also occur. No evidence of badger foraging or setts were observed during site visits; there is no suitable habitat for otter in the immediate locality.

Several bat species are known to occur along the Tolka Valley. Foraging bats could be expected to occasionally occur along the mature peripheral treelines at the site. Based on the habitat survey findings, there are no trees within the development footprint (i.e. requiring removal) with any potential to act as bat roosts (i.e. trees with cavities, crevices, limb fractures, loose bark, etc). Given the predominantly urbanised nature of the environs of the proposed development, which is also adjacent to intensive tillage fields comprising minimal hedgerows, the suitability of the development site for bats is considered to be low.

The proposed development will require the removal of approximately 3 Ha of planted willow woodland, established between 2000 and 2005. It is envisaged that felling would be subject to the requirements of the Forestry Act 2014 and the Forestry Regulations 2017 (SI No 191 of 2017). A felling license will therefore be applied for from the Forest Service.

4.3.2 Air Quality

The Air Quality Assessment Report which has been prepared by AWN Consulting, to accompany this PECR, is included as **Appendix 3**. This report outlines the process undertaken for the air quality assessment which considers the proposed FlexGen development.

In conclusion, that Air Quality Assessment Report notes that the modelling results demonstrate that ambient pollutant concentrations (including background) beyond the site ownership boundary are well below the applicable ambient air quality limit values at all off-site receptors modelled for all scenarios assessed.

The proposed stack height of up to 30 m for the proposed FlexGen development does not result in any significant impacts on ambient air quality beyond the site boundary.

The emissions control system will ensure operational adherence in accordance with IED Licence Requirements which is the responsibility of the EPA.

4.3.3 Flood Risk & Drainage

The Flood Risk Assessment (FRA) and the Drainage Reports are included in **Appendix 4** and **Appendix 5** respectively.

Based on the FRA undertaken, there is no significant risk of fluvial, pluvial, coastal or groundwater flooding to the proposed FlexGen development. It is reasonable to conclude that the site of the proposed works can be placed within Flood Zone C as defined by the guideline document to Planning Authorities in relation to Flood Risk Management.

Surface water proposals for the proposed FlexGen development have been developed to replicate pre-development drainage conditions of the site where possible. All surface water discharge from the development site will pass through a suitably sized BS EN 858 Class 1 Full Retention Oil Separator. This will ensure that no oil is present in the discharge from site. The rate of surface water discharge from the site will be limited by a flow control system so that runoff does not exceed the calculated pre-development rate of 18.6 l/s. This run-off will be discharged from the proposed FlexGen development site into an existing unnamed watercourse to the west of the site. The proposed development will be in accordance with IED Licence requirements.

Demineralised water used in the turbine operating process will be taken from a proposed new metered connection to an existing public watermain to the east of the site. The foul water from the proposed welfare facility shall discharge to an existing 225 mm public foul sewer line to the east of the site. If the invert level of the public foul line is elevated relative to the proposed development the use of a pumping chamber and rising main will be adopted as necessary.

4.3.4 Landscape and Visual

The Landscape Assessment Report which has been prepared to accompany this Report is included as **Appendix 6.1**.

Four photomontages, refer to **Appendix 6.2** are included, these being taken from the following locations:

- Corduff Road to the east of the site;
- Roundabout junction to Dublin Corporate Park to the southeast of the site;
- Entrance to the ESB compound to the southeast; and
- Location to the west of the site (Bristol Myers Squibb campus).

The proposed development site is part of an existing ESB land holding located in Corduff, West Dublin to the north of Blanchardstown. The site is bounded by the Corduff 220/110 kV Substation to the north and ESB Networks Dublin Supply Store to the south. The Bristol-Myers Squibb Campus is located west of the site and the Corduff Road runs along its eastern boundary. The North West Business Park is located to the east of the proposed site along with Blanchardstown Corporate Park and Ballycoolin further to the south. This inherent existing land use generates much of the light industrial local character of the area. The existing land where the Proposed Development is to be located currently comprises semi-mature tree vegetation, shrubs and grassland and most noticeably contains several overhead transmission lines along with associated lattice tower structures.

The proposed development will alter the current character of the site from a fenced off area of land mostly comprised of grassland, semi mature tree and scrub vegetation into a light industrial character. This will lead to a localised intensification of the light industrial character of the area, bridging the existing land gap between the Corduff 220/110 kV Substation to the north and ESB National Supply Store to the south. Changes in landscape character outside of the proposed site boundary will be greatest in its immediate and nearby surroundings of the proposed site up to approximately 250 m radius particularly along Corduff Road to the east. Landscape effects will reduce quickly within approximately 500 m distance from the site boundary due to the screening effects of intervening existing buildings and vegetation. A recognisable modification in the landscape character beyond 500 m in long distance views will unlikely be noticed due the built up nature and industrial character of the wider study area and intervening vegetation. The Proposed Development will therefore not result in a change or modification of the wider landscape character.

The highest visual effects will be confined to the site itself and to adjacent locations within approximately 250 m of the proposed site, particularly when seen from Corduff Road along the eastern site boundary. The visual change due to the introduction of the plant components will be significant but not out of character when viewed in conjunction with the existing light industrial environs, substation buildings and tall transmission line towers. The introduction of the Proposed

Development will reinforce the light industrial character and intensify the presence of electricity infrastructure in available views. Visual effects and their significance will decrease quickly beyond approximately 250 m to 500 m distance from the Proposed Development due to intervening built structures and vegetation. Visibility of the Proposed Development from locations beyond 500 m becomes scarce as the Proposed Development is either fully screened or integrates into the existing landscape environs. Potential visual effects on residential properties are generally limited in the study area due to screening effects provided by intervening building structures, topography and vegetation. Visibility of the development from residences will not alter main components in currently available views due to the existing nature of the intervening built environment and intervening vegetation.

The Corduff FlexGen project will result in cumulative effects when seen in conjunction with the permitted C.V.R.T testing centre is located east of the Corduff roundabout opposite of the Proposed Development. Both developments will be seen either in combination or successively (a receptor would need to turn the head to see one or the other development) when travelling along Corduff Road, particularly when in proximity of the Corduff Road Roundabout east of the proposed FlexGen site. Additional changes to the to the landscape character and in available views are considered not significant as both developments will be seen in conjunction with adjacent existing light industrial developments. The construction of the permitted development will likely partially or fully screen views of the Proposed Development from residential receptors located in the eastern part of the study area along Ratoath Road, hence reducing the visual effects of the proposed FlexGen project on these receptors.

Refer to **Appendix 6.3** for Outline Planting and Maintenance Specification.

4.3.5 Noise

The Noise Assessment Report which has been prepared to accompany this Report is included as **Appendix 7**.

Hayes McKenzie Partnership Ltd. (HMPL) were commissioned to carry out an assessment of the noise levels for the proposed FlexGen development.

Relevant noise legislation from OEE Guidance for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) was reviewed, and a noise survey in January 2019 was conducted by HMPL to assess the existing noise environment.

Noise predictions for the proposed development have been carried out at two locations around the site based on noise data supplied by ESB, with further consideration given to the existing noise generated by Corduff Substation.

It was found that the predicted noise levels are within relevant noise limits, and no noise mitigation measures are necessary. Furthermore, it was determined that there would be no cumulative noise issues from the existing Corduff Substation at any of the nearby dwellings.

4.3.6 Cultural Heritage

The Cultural Heritage Assessment Report which has been prepared to accompany this Report is included as **Appendix 8**.

The subject site is bounded to the west by a stream, which incorporates some mature willow tree planting. An open drain (possible ha-ha ditch) which runs northwards within the eastern area of the site before turning north-westwards to link with a section of stream which then runs south-westwards to link into the western boundary stream. The drain/ditch is very much overgrown, and the base was dry at the time of visit. Access across the feature is a modern concrete bridge at the west. It is considered that this feature is of Cultural Heritage Interest and it is designated Site CH-1; where identifiable, it is up to 4 m wide at top and up to 2 m deep

The townland name, Goddamendy, is one of a few townland names derived from a prayer ('God amend thee'). Following the Anglo-Norman invasions, the lands in the region were granted to Hugh de Lacy, who in turn granted the area of Castleknock to Hugh Tyrrell, who built a castle and held the title Baron of Castleknock. Goddamendy, although in the parish of Mulhuddart, was assigned to the Prebend of Castleknock. The lands formed part of the estates of the Luttrell family in the sixteenth and seventeenth centuries, and the townland was subsequently owned by a Major Thompson in the nineteenth century.

There are no significant historical events associated with the subject development area which have the ability to be impacted upon by the construction, and subsequent operation, of the proposed development. The ha-ha ditch feature (CH-1) will be retained as part of the overall proposed development; although it will be crossed by the proposed access road from the east, such crossing will be by means of a clear-span bridge and no direct impact to the feature will occur.

There are four previously identified individual monuments of archaeological interest/potential, located within the defined study area associated with the project (overall extent of site +500 m surrounding such). Three of these – CH-3, CH-4 and CH-5 – are located between 320 m – 500 m outside the extent (redline boundary) of the subject development lands. One monument – (CH-2; Field System) is indicated on the 1837 OS 6-inch map as an irregular pattern of small fields located 10 m – 50 m to the south of the subject proposed development lands. This is considered by the Archaeological Survey of Ireland (ASI) to be part of a potential medieval settlement. The field system was subsequently levelled/destroyed but is visible on aerial photography taken in 1971 and subsequently built over. It is possible that the ha-ha ditch feature (CH-1) may be associated with the former field system and there is potential that it may have previously extended into the subject development site.

A limited programme of archaeological monitoring associated with Corduff Substation to the north uncovered a number of pits/depressions containing burnt material; limited investigations of these did not result in a date for the features and an interpretation was not possible due to the limited nature of the investigations. At a minimum, it is suggested that these features are indicative of potential subsurface

archaeological activity in the immediate environs of the site. In addition, the discovery of hitherto unidentified archaeological features to the north of the site (cremation pits, corn-drying kilns and medieval agricultural activity) indicates human activity in the immediate area in prehistoric, medieval and post-medieval periods. Furthermore, the subject lands and surrounding landscape offer many opportunities for the location of Fulachta Fiadh (prehistoric cooking sites); these sites are location specific, generally located close to streams and rivers or in wet marshy areas, and sometimes occur in groups.

Given the general archaeological background to the site and environs, it is considered there is moderate potential for the discovery of subsurface archaeological features/deposits within the proposed subject development area. In that regard, it is considered, in general, that ground reductions associated with a development of this kind, have the ability to uncover and disturb hitherto unrecorded subsurface features, deposits, structures and finds of archaeological interest and potential. Without the adoption and implementation of a suitable mitigation strategy, any subsurface archaeological features or artefacts that might be located within the site during the construction phase of the development might not be identified and recorded. Consequently, given the existing topographical nature of the site, it is suggested that all topsoil stripping associated with the development be monitored by a suitably qualified archaeologist and under licence to the Department of Culture, Heritage and the Gaeltacht. This will ensure that any subsurface features or artefacts that might be encountered can be dealt with in an appropriate manner.

There are no structures located within the subject study area listed as being of architectural interest by the National Inventory of Architectural Heritage (NIAH). The only structure listed in the Record of Protected Structures (RPS) of the Fingal County Development Plan 2017-2023 is Cloghran Church (in ruins & Graveyard (RPS No: 0674) which is also a Recorded Monument and designated Site CH-3 under Archaeological Heritage. This is only partially extant and located 320m to the southeast of the subject site. It is considered that there are no predicted impacts with respect to Architectural Heritage with regard to the proposed construction and post-construction/operational phases of the development. Consequently, it is considered that no mitigation measures are required.

4.4 AA Screening Assessment

As noted in this report, this application is accompanied by an AA Screening Report (Refer to **Appendix 2**).

Given the contained nature of the proposed development, the separation distance from European Sites and the absence of any significant impact pathways, the proposed development is not expected to have a negative impact on any European Sites.

This AA Screening Report has established that the proposed development is not likely to have any significant effects on the Conservation Objectives of any European Site, alone or in combination with other projects or plans. Therefore, an Appropriate Assessment is not required for the proposed development.

4.5 EIA Screening Assessment

As noted in this report, this application is accompanied by an EIA Screening Report (Refer to **Appendix 1**).

4.5.1 European Communities Directives & Domestic Legislation

European Communities Directive 85/337/EEC, on the assessment of the effects of certain public and private projects on the environment, was adopted on 27th June 1985. It was later amended by Directives 97/11/EC, 2003/35/EC and 2009/31/EC.

The 1985 Directive and its amendments were codified in 2011 by Directive 2011/92/EU. The current Directive 2014/52/EU amends the 2011 codified Directive but does not replace it.

The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2001 (as amended by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018)) transpose the requirements of the 2014 EIA Directive into existing planning consent procedures.

4.5.1 EIA Screening Process

The proposed development has been assessed in accordance with the EIA screening process as set out in the *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (2017) and in accordance with Schedule 5 (Parts 1 and 2) of the Planning and Development Regulations 2001 (as amended).

While the FlexGen development is of a class of development which constitutes a 'project' for EIA, the project itself does not exceed the mandatory thresholds or meet the classes of development as defined in Schedule 5 of the Regulations relating to EIA, nor is it considered a sub-threshold project requiring EIA, as set out in Schedule 7 of the same Regulations.

The general area for the proposed development is in a location which has accommodated industrial and electrical infrastructure for a significant period, being zoned for industrial / energy installations, and is considered suitable for development of this scale and character. The proposed FlexGen development is not considered to present a risk of significant environmental impacts during either its construction, operation or decommissioning stage.

As with all construction works there is potential for short term minor impacts including the generation of dust, noise, traffic and waste however these will be managed through the implementation of a CEMP and routine good practice construction measures to ensure that any potential impacts will be not significant, short term and temporary in nature.

During the operational stage, all aspects with the potential for environmental impacts will be managed accordingly, and in compliance, with the relevant EPA IE licensing for the proposed development.

It is concluded that an EIAR is not required as part of the planning application.

4.6 SID Screening with ABP

4.6.1 Legislative Requirements

An Bord Pleanála (ABP) Electricity Transmission Guidelines, and ABP Strategic Infrastructure Development (SID) Guidelines for Planning Authorities and Strategic Infrastructure Provisions provide guidance in relation to Strategic Infrastructure Development Screening.

The guidelines outline the strategic infrastructure provisions of the Planning and Development Act 2000, as amended. Electricity transmission development referred to in Section 182A (1) is strategic infrastructure development. The Act indicates that Strategic Infrastructure should be assessed directly by ABP.

In relation to electricity transmission, transmission is defined in the 2000 Act as being construed in accordance with section 2(1) of the Electricity Regulation Act 1999, but for the purpose of this section of the Act, the forgoing expression, in relation to electricity, shall also be construed as meaning the transport of electricity by means of:

> (a) high voltage line where the voltage would be 110 kilovolts or more, or
>
> (b) an interconnector, whether ownership of the interconnector would be vested in the undertaker or not.

4.6.2 Exporting Electricity to the Grid

Electrical equipment proposed for the export of the generated electricity to the existing 220/110 kV Corduff substation, which is a node on the national electricity transmission grid, will be via the following:

- Transformer compound; and

- Underground (UG) grid connection cables.

One main step up transformer will be required on site. This will step up the voltage for export to the national grid system from medium voltage (MV) to high voltage (HV). This transformer will have an appropriate bund constructed and fire protection including blast walls, if necessary. It should be noted that the electrical components associated with the FlexGen project do not function as part of the electricity transmission system, as operated by EirGrid, they merely allow power to be transformed to appropriate voltages so that the generator can export electricity into the Corduff Substation for onward transmission.

The proposed development will connect internally through ESB lands into the existing Corduff substation via an underground cable. Corduff Substation is a node on the national electricity transmission grid. High voltage circuits transmit electricity from this substation along the national electricity grid to other nodes. The cable will be a “private wire” feeding power generated in the Flexgen plant into the transmission system but does not in itself form part of the transmission system.

4.6.3 SID Screening Conclusions

Having regard to the above, it is the view of the applicant that the proposed development does not transmit electricity in accordance with section 2(1) of the Electricity Regulation Act 1999, and therefore does not constitute strategic development in the context of electricity transmission and accordingly Section 182 of the Act does not apply to the proposed development.

However, pursuant to Section 182A of the Planning and Development Act, 2000 (as amended) confirmation of this is being sought from ABP (Reg. Ref. 306729-20).

It is noted that the Act sets out general criteria that the Board must normally consider in determining whether a proposed development would constitute Strategic Infrastructure, namely:

- The proposed development is of strategic economic or social importance to the State or the region in which it would be situated;
- The proposed development would contribute substantially to the fulfillment of any of the objectives of the National Spatial Strategy or in any regional spatial and economic strategy in respect of the area or areas in which the development would be situate;
- The proposed development would have a significant effect on the area of more than one planning authority.

ESB can confirm that the proposed electrical works does not satisfy any of the above criteria, as its sole purpose is to connect a proposed generating unit to an existing ESB substation.

ESB are aware that ABP have previously assessed and considered numerous cases of a similar nature and determined that those developments did not constitute Strategic Infrastructure under the Act. Having regard to these cases, ESB submit that the proposed electrical works required to connect the proposed

FlexGen plant to the existing Corduff substation, do not constitute Strategic Infrastructure.

Confirmation has been sought from ABP in relation to this view (ABP Reg. Ref. 306729). At the time of writing of this report a decision from ABP is awaited, however it is expected that this will be issued whilst this application is under consideration by FCC.

5 Conclusion

The proposed development will help to maintain the long term stability of the electricity system in Ireland and support the increased reliance of the grid on electricity generated from renewable sources. It will facilitate the ongoing increase in generation from renewable resources whilst also contributing security of supply in particular during peak demand periods.

The general area for the proposed development is in a location which has accommodated industrial and electrical infrastructure for a significant period and is zoned for industrial/electricity generation uses. It is adjacent to established electricity related activities. This PECR has confirmed that the proposed development, will not result in significant impact on the receiving environment.

The proposed development, at this location, is in-line with the prevailing zoning for the area and the principles of proper planning and sustainable development.

Appendix 1

Environmental Impact Assessment (EIA) Screening Report

Appendix 2

Appropriate Assessment (AA) Screening Report

Appendix 3

Air Quality Assessment

Appendix 4

Flood Risk Assessment

Appendix 5

Drainage & Services Report

Appendix 6

Landscape Impact Assessment

Appendix 7

Noise Impact Assessment

Appendix 8

Cultural Heritage Assessment

Appendix 9

Development Framework Area 2 (Cherryhound LAP)