ENVIRONMENTAL PERMIT APPLICATION

Beaufort Power Limited

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NON TECHNICAL SUMMARY

Introduction

This application for an environmental permit has been prepared on behalf of the Operator, Beaufort Power Limited (BPL), in accordance with the requirements of the Environmental Permitting (England and Wales) (Amendment) Regulations 2018.

The application seeks to permit the operation 14 natural gas fired engines. 5 engines will have a thermal input of 2.999 MW_{th} (1.247 MWe output), and 9 engines will have a thermal input of 3.570 MW_{th} (1.48 MWe). The gas engines shall be run to provide reserve services to the National Grid. The total capacity of the fourteen engines will be 18.263 MW_e with a net thermal input of approximately 44.851 MW.

The operation would not be continuous but would be limited to less than 1,500 hours of operation per engine per year on a 5 year rolling average with no more than 2,250 hours in any one year.

Site Location

The site is located at the Rassau Industrial Estate, Ebbw Vale, NP23 5SD. The site is centred at National Grid Reference SO 14254 11780.

Operations

Natural gas will be delivered to the plant via a dedicated gas supply. The 14 No. engines are to be housed in separate containers and each provided with 9.1 m high exhaust stacks. The engine NOx emission concentrations are to be to a maximum of 95 mg/Nm^3 (at 15% O_2, dry conditions). The electrical output from the plant will be exported to the 33kV distribution network via a step-up transformer. The plant would be able to reach full load in less than ten minutes from cold. Cooling for the gas engines will be provided by engine jacket cooling water system.

Management of Activities

Environmental Management System (EMS) will be produced and put in place upon construction and commissioning of the site. All staff and external contractors will be made aware of the EMS as part of the induction training and a copy will be made available on site. BPL will also implement a record keeping system on site as part of its management system.

Air Quality

Emissions to air will result from the combustion of natural gas within the gas engines, which will be released into the atmosphere via dedicated exhaust stacks.

Detailed dispersion modelling has been carried out. The air quality assessment concludes that operation of the facility at 7,000 hours or less per annum does not give rise to significant impacts at human health or ecological receptors.

As the facility will be limited to 2,250 hours maximum operation in any year and less than 1,500 hours as a 5 year rolling average, the predicted impacts from the proposed operations will be much lower than those reported in the air quality assessment.

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1 INTRODUCTION

1.1 Overview

1.1.1 This document and associated appendices form the application for an Environmental Permit to operate a gas fired peaking plant under the Environmental Permitting Regulations 2016 (EPR 2016).

1.1.2 The application is made by Beaufort Power Limited (BPL) which is the legal entity that will be responsible for operating the plant. The plant operation will provide up to 18.623 MW of electricity to provide short term operating reserve to the local electricity distribution network.

1.1.3 The site has planning consent for the construction of a standby reserve power plant comprising 14 No. gas reciprocating engine generators with an office and storage building, security and acoustic fencing, other ancillary structures and associated works.

1.1.4 The engines have not been commissioned and is therefore classed as a new tranche B specified generator for the purposes of compliance with the Medium Combustion Plant Directive. The site has a net thermal input of approximately 44.851 MW_{th}. Operation would not be continuous but would run as a flexible back up supply for less than 1,500 hours of operation per engine per year on a 5 year rolling average with no more than 2,250 hours in any one year.

1.1.5 The facility consists of 14 engines of which 9 will be derated to a thermal input of 2.999 MW_{th} before the plant is commissioned. The derating will be restricted by software installed by an external contractor which the BPL operational team will not be able to modify. This is a similar system that has been accepted at the Operators other permitted sites. The remaining 5 engines will have a thermal input of 3,570 MW_{th}.

1.2 Site Location

1.2.1 The site is located at the Rassau Industrial Estate, Ebbw Vale, NP23 5SD. The site is centred at National Grid Reference SO 14254 11780 as shown in Drawing 2.

1.2.2 The surrounding area is mainly industrial in nature to the east and residential housing in the town of Rassau, and residential housing to the south. To the north of the site is a vast area of open moorland beyond Twyn Bryn March cairn.

1.2.3 The closest residential properties are located about 375 m to the south of the site at Coates Row. The residential locations which have been considered are in Table 1-1 below.

Table 1-1: Residential Receptors

Receptor	Approximate distance from the Site (m)
Coates Row	215
Nant-Y-Croft	500
Rassau Road	700

1.2.4 The closest statutory designated site is Mynydd Langynidr SSSI located approximately 2 km to the north. A list of ecological receptors considered is in Table 1-2 below.

Table 1-2: Ecological Receptors

Receptor	Designation	Distance from the Site (m)
Mynydd Llangynidr	SSSI	2,000
Mynydd Llangatwg	SSSI	3,300

Receptor	Designation	Distance from the Site (m)
Usk Bat Site / Safleodd Ystlumod Wysg	SAC	3,000

1.3 Applicant Details

1.3.1 Beaufort Power Limited is listed on Companies House with company number 09111808.

2 MANAGEMENT AND OPERATIONS

2.1 Management Systems

2.1.1 An Environmental Management System (EMS) will be in place at the site. It details the procedures for all communications, access, inductions, health and safety, environmental and quality management on site to minimise the risk of pollution from the activities covered by the permit.

2.1.2 The EMS shall cover the elements required by the Environmental Permit; this shall include details of the site operations, maintenance procedures, accident and incident management; non-conformances and complaints procedures; staff training and records management.

2.1.3 All staff and external contractors shall be given information on the requirements of the EMS as part of the induction training and a copy will be made available on site. BPL will also implement a record keeping system on site as part of its management system.

2.2 Accident Prevention and Management Plan

2.2.1 The EMS shall contain environmental incident and emergency response procedures. These shall be included in the health and safety section of the plan. This will include an emergency response plan, HAZOP study and risk assessment.

2.2.2 The plan shall identify incidents with the potential for a risk to the environment, the cause and consequences; measures taken to avoid the accident happening and actions to minimise the impacts to the environment from the accident. It shall include details of how accidents shall be reported, investigated and what the response shall be.

2.2.3 Spill response kits and other facilities shall be made available on site to deal with any such incidents should they occur.

2.2.4 In the event of a fire, the site will have an automated detection system which will trigger the fire alarm and notify a 24/7 monitoring company who will contact the fire brigade straight away.

2.2.5 The site has been assessed for flood risk and is located in an area with a low probability of flooding.

2.2.6 The site shall be kept secure by wooden fencing and gates shall be locked at all times the site is not staffed. There shall be CCTV which is monitored on site. There will be no direct public access to the site.

2.2.7 A copy of the EMS shall be kept at the site for use by staff when required.

2.3 Complaints Procedure

2.3.1 A complaints procedure shall be produced as part of the site EMS. Staff shall be trained on the requirements of the procedure should a complaint be received.

2.3.2 A contact number for complaints shall be included in the site identification board at the entrance to the site.

2.3.3 A complaint report shall be completed for any complaint received at the site. A site engineer is immediately available to visit site in the event of an urgent complaint.

2.4 Staff Competence and Training

2.4.1 Staff will be sufficiently trained to ensure that they are technically competent to operate the plant according to the manufacturer’s recommendations.

2.4.2 All staff and contractors shall receive training on the EMS requirements as part of their induction, this will include environmental awareness covering appropriate environmental topics.

2.4.3 Copies of relevant plans, procedures and the environmental permit shall be kept at the site for reference.

2.4.4 Records will be maintained by the Site Manager of all the training provided to staff. Records shall be available for inspection as required.

2.5 Records

2.5.1 The operator shall maintain records of any incident, accident, emergency or non-compliances shall be kept. All monitoring including samples and analysis results shall be recorded.

2.5.2 Records of the type and quantity of fuel used and the total annual hours of operation for each generator shall be kept.

2.5.3 A copy of all documents will be held in the site office and made available upon request. All records required by the environmental permit shall be kept for at least six years.

2.6 Monitoring

2.6.1 Emissions monitoring shall be carried out for the parameters, at the locations and at the frequency specified in Table 2-1 below using MCERTS monitoring methods and qualified contractors. This shall be done for each individual generator and carried out according to guidance on monitoring stack emissions: low risk MCPs and specified generators[1].

Table 2-1: Summary of Monitoring of Emissions to Air

Emission Point	Pollutant	Monitoring Method	Emission Limit mg/Nm^3	Monitoring Frequency	MCERTS certified?
As per table 4.1 below	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	BS EN 14792	95	Every three years	Yes
As per table 4.1 below	Carbon Monoxide (CO)	BS EN 15058	-	Every three years	Yes

2.6.2 Monitoring shall be undertaken for the parameters, at the locations and at the frequency specified in the environmental permit.

2.6.3 All monitoring shall be recorded and reported to Natural Resources Wales as required by the environmental permit.

2.7 Other Emissions

2.7.1 Under normal operations there shall be no process emissions to surface water, sewer or land. The surface water run-off will be clean.

2.8 Site Infrastructure Plans

2.8.1 A site layout plan can be found in Drawing 2.

[1] Monitoring stack emissions: low risk MCPs and specified generators - GOV.UK (www.gov.uk)

2.9 Site Operations

2.9.1 Natural gas will be delivered to the peaking plant via a dedicated gas supply. The 14 No. spark ignition gas reciprocating engines are to be housed in separate containers and each provided with 9.1 m high exhaust stacks. The engine NOx emission concentrations are to be to a maximum of 95 mg/Nm^3 (at 15% O_2, dry conditions).

2.9.2 The electrical output from the plant will be exported to the 33kV distribution network via a step-up transformer. The plant would be able to reach full load in less than five minutes from cold. Cooling for the gas engines will be provided by fin-fan coolers which will operate in a closed-circuit cooling water system.

2.9.3 Periods of start-up and shut down of the generators shall be kept as short as possible. Procedures will be developed for routine operations and planned maintenance activities upon commissioning of the site.

2.9.4 The operations and maintenance contractors will implement their own RAMS covering the operational procedure.

2.9.5 Tanks containing clean and waste oil are located outdoors. These are bunded and will be maintained and checked periodically by the operation and maintenance contractor.

2.9.6 Pipework connecting the oil tanks to the gas engines enclosure (container) is located outdoors. Generally, the pipework is empty apart from times of filling and emptying. Both pumping operations are expected to be done with a frequency of monthly for the fill-in and every 3 months for the oil empty approx. Both operations are carried out manually by the operation and maintenance engineer, who will supervise any leakage and correct functionally, being able to stop the pumping if required.

2.9.7 The 700l lube oil (daily) tank and associated equipment is all located within the engine enclosure (container) thus giving additional protection from leakage/spillage and acting as a bund. The lube oil pipework will always contain product due to the daily usage.

2.9.8 The site is normally un-staffed but is visited on a daily basis for scheduled maintenance checks. Emergency phone numbers and contact details shall be displayed on boards at the site entrance.

2.10 Control System

2.10.1 The site will be remotely controlled and under normal day to day operation will be controlled via feedback from the automatic control system and visual monitoring of the site via the CCTV camera system. This system can be operated 24/7.

2.10.2 Site engineers also have access to the system via laptops and apps. A site engineer can access the site immediately in the event of an incident.

2.10.3 In the event that either of these systems is not fully functioning, the facility will not be brought into operation. In the event of a failure of these systems whilst the plant is in generating mode, the system will either be automatically or manually put into shutdown.

2.11 Site and Equipment Maintenance Plan

2.11.1 The operator has a long-term parts supply agreement in place with Clarke Energy Limited. This shall ensure that all plant and equipment is maintained to the manufacturers or supplier's recommendations.

3 ENVIRONMENTAL RISKS AND EFFECTS

3.1 Environmental Risk Assessment

3.1.1 The plant will be monitored remotely using CCTV 24/7 which will allow visual monitoring of the oil storage systems. Spill kits will be available for clean-up of all chemicals and oils stored and used within the facility and will be located in proximity to the relevant storage area(s) and/or delivery points. Site procedures will detail those actions that should be followed in the event of a spillage.

3.1.2 Potential fugitive releases to surface water, sewer and groundwater are likely to occur only as a result of an incident or accident.

3.1.3 Lube oil and waste oil tanks will have a bund capable of holding 110% of the capacity of the relevant tank; the gas engines are located in a bunded area and the container have a step up which provides spillage containment.

3.2 Energy Efficiency

3.2.1 The plant selected are high efficiency gas engines. The engines achieve a gross electrical efficiency of approximately 41.7%.

3.2.2 The electricity generation development at the facility does not exceed the threshold of 1,500 hours of operation per engine per year on a 5 year rolling average , and is therefore not required to carry out a cost benefit assessment (CBA) under Article 26 of the Energy Efficiency Directive (EU/2023/1791)[2] (EED).

3.3 Raw Materials, Water and Waste

3.3.1 The main materials used within the plant will include natural gas for fuel, transformer oil within the transformer (minimal usage) and lubrication oil. No routine water use is required for the facility.

3.3.2 Waste generation from the plant is anticipated to be low and will result primarily from maintenance activities.

3.4 Emissions to Air

3.4.1 Emissions to air will result from the combustion of natural gas within the gas engines, which will be released into the atmosphere via dedicated exhaust stacks. The stacks will be 9.1 m in height and the effects on air quality from the peaking plant have been assessed on this basis. Detailed dispersion modelling has been carried out and can be found in Appendix B.

3.4.2 The air quality assessment concludes that operation of the facility at 7,000 hours or less per annum does not give rise to significant impacts at human health or ecological receptors.

3.4.3 As the facility will be limited to a maximum of 2.250 hours operation in any one year and less than 1,500 hours as a 5 year rolling average the predicted impacts from the proposed operations will be much lower than those reported in the air quality assessment.

[2] Directive - 2023/1791 - EN - EUR-Lex

4 MEDIUM COMBUSTION PLANT CHECKLIST

4.1 Information

4.1.1 Table 4-1 below, contains the information to be provided by the operator to the competent authority for each Medium Combustion Plant as identified in Annex I of Medium Combustion Plant Directive (EU/2015/2193) which is unique to each engine. Table 4-2 below contains the necessary information which is relevant to all engines.

Table 4-1: Medium Combustion Plant Checklist Individual Engine Information

MCP specific identifier	1353934	1357880	1354011	1353990	1354730	1354661	1354642	1357025	1357062	1357326	1357082	1357018	1354730	1354703
12-digit grid reference or latitude/longitude	314269.6, 211769.8	314267.8, 211775.5	314266.0, 211781.3	314264.3, 211787.0	314262.5, 211792.7	314260.8, 211798.5	314259.0, 211804.2	314257.2, 211810.0	314246.0, 211807.7	314247.8, 211801.9	314249.5, 211796.2	314251.3, 211790.5	314253.1 211784.7	314254.8, 211779.0
Rated thermal input (MW) of the MCP	3.570	2.999	3.570	2.999	3.570	2.999	3.570	2.999	2.999	2.999	3.570	2.999	2.999	2.999
Type of MCP (diesel engine, gas turbine, other engine or other MCP)	Gas Engine													
Type of fuels used: gas oil (diesel), natural gas, gaseous fuels other than natural gas	Natural Gas													
Date when the new MCP was first put into operation (DD/MM/YYYY)	TBC - 2025													
Sector of activity of the MCP or the facility in which it is applied (NACE code**)	35.1.1													
Expected number of annual operating hours of the MCP and average load in use	<1,500 hours as a 5 year rolling average and no more than 2.250 hours in any one year, 100%													
Where the option of exemption under Article 6(8) is used the operator (as identified on Form A) should sign a declaration here that the MCP will not be operated more than	N/A													

the number of hours referred to in this paragraph	

Table 4-2: Specified Generator Checklist

SG specific identifier	1353934	1357880	1354011	1353990	1354730	1354661	1354642	1357025	1357062	1357326	1357082	1357018	1354370	1354703
Rated thermal input of generator in MW thermal	3.570	2.999	3.570	2.999	3.570	2.999	3.570	2.999	2.999	2.999	3.570	2.999	2.999	2.999
Total rated thermal input of all generators on site in MW thermal	44.481 MW													
Grid reference of the location of the SG (either NGR or Latitude/Longitude)	314269.6, 211769.8	314267.8, 211775.5	314266.0, 211781.3	314264.3, 211787.0	314262.5, 211792.7	314260.8, 211798.5	314259.0, 211804.2	314257.2, 211810.0	314246.0, 211807.7	314247.8, 211801.9	314249.5, 211796.2	314251.3, 211790.5	314253.1 211784.7	314254.8, 211779.0
Commissioning date	TBC - 2025													
Fuel	Natural Gas													
Stack height (m)	9.1													
Technology (engine/turbine)	Gas Engine													
Annual hours	<1,500 hours as a 5 year rolling average and no more than 2.250 hours in any one year, 100%													
Annual load (%)	100													
Distance to nearest human receptor (m)	215													
Distance to nearest ecological receptor (m)	2,000													

Background NO_2 ($\mu g/m^3$)	8.7
If your generator is in an AQMA please give details	N/A
Details of any capacity agreement(s) or balancing service agreement(s) for each individual generator, for example if they are Tranche A or Tranche B generators	N/A
Will the aggregated operating hours for all Tranche A generators be restricted to 50 hours or less per year?	N/A
Will the NOx emissions of any individual Tranche A generator be greater than 500mg/Nm^3 per year (STP, 15% O_2)?	N/A

REFERENCES

1. Medium Combustion Plant Directive and Specified Generator Regulations Consultation – https://consult.environment-agency.gov.uk/psc/mcp-and-sg-regulations/
2. The Environmental Permitting (England and Wales) (Amendment) Regulations 2018 - https://www.legislation.gov.uk/ukdsi/2018/9780111163023/introduction
3. Energy Efficiency Directive Directive - 2023/1791 - EN - EUR-Lex

Drawing 1 Site Location Plan

Drawing 2 Site Layout Plan

Appendix A
AIR QUALITY ASSESSMENT

Appendix B
TECHNICAL SPECIFICATION

ENVIRONMENTAL PERMIT APPLICATION

Beaufort Power Limited

2024-06-03

794-ENV-EPC-20161Z

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