Flexible Generation Limited Pentref Y Groes Decision Document

Rev No1

Bespoke permit

The application number is: PAN-005837

The Applicant / Operator is: Flexible Generation Limited

The Facility is located at: Flexible Generation Limited - Pentref Y Groes, Croespenmaen, Crumlin, Newport, NP11 3BT

National Grid Reference: ST 19954 97865

We have decided to grant the permit for Pentref Y Groes operated by Flexible Generation Limited.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Table of contents
- Key issues

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Key issues of the decision

1 Our decision

We have decided to grant a permit for Flexible Generation Limited – Pentref Y Groes.

We consider that, in reaching that decision, we have taken into account all relevant considerations and legal requirements and that the permit will ensure that a high level of protection is provided for the environment and human health.

This Application is to operate a regulated facility which is subject principally to the Specified Generator (SG) regulations and Schedule 1, Part 2, Chapter 1, Section 1.1, Part B as includes compression ignition engines with an aggregated thermal input of >20 MWth and <50 MWth.

The permit contains many conditions taken from our standard Environmental Permit template including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations (EPR) and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the permit, we have considered the Application and accepted the details are sufficient and satisfactory to make the standard conditions appropriate.

2 How we reached our decision

2.1 Receipt of Application

The Application was accepted as duly made on **10/07/2019.** This means we considered it was in the correct form and contained sufficient information for us to begin our determination, but not that it necessarily contained all the information we would need to complete that determination.

The Applicant made **no claim for commercial confidentiality**. We have not received information in relation to the Application that appears to be confidential in relation to any party.

2.2 Consultation on the Application

There was no requirement to carry out a consultation on the Application.

2.3 Requests for Further Information

No requests for further information were made as part of this application.

3 The Legal Framework

The Permit will be granted, under Regulation **13** of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- plant as described by Schedule 25B covering the Specified Generator (SG) regulations;

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- activity as described by Schedule 1, Part 2, Section 1.1; Part B regulations (a) (iv) a compression ignition engine with an aggregate net rated thermal input of 20 or more megawatts, but a rated thermal input of less than 50 megawatts;
- subject to aspects of the Well-Being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016 which also have to be addressed.

We address the legal requirements directly where relevant in the body of this document. NRW is satisfied that this decision is consistent with its general purpose of pursuing the sustainable management of natural resources (SMNR) in relation to Wales, and applying the principles of SMNR. In particular, NRW acknowledges that it is a principle of sustainable management to take action to prevent significant damage to ecosystems. We consider that, in granting the Permit a high level of protection will be delivered for the environment and human health through the operation of the Facility in accordance with the permit conditions. NRW is satisfied that this decision is compatible with its general purpose of pursuing the sustainable management of natural resources in relation to Wales and applying the principles of sustainable management of natural resources.

4 The Facility

4.1 Description of the Facility and related issues

4.1.1 The permitted activities

The Facility is subject to the EPR because it carries out an activity as described in Schedule 25B of the EPR:

- One combined Tranche B Specified Generator/existing Medium Combustion Plant aggregated to <50MWth at a specified location

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The Facility is subject to the EPR because it carries out an acitivity as described in Schedule 1, Part 2, Section 1.1, Part B of the EPR:

- (a) burning any fuel in (iv) a compression ignition engine with a net rated thermal input of 20 or more megawatts, but a rated thermal input of less than 50 megawatts

A Generator means any combustion plant generating electricity. The regulations use the term ‘specified generator’ to encompass both individual generators and multiple generators at the same location or site, operated by the same Operator and for the same purpose. The “same purpose” means that having a different function does not stop individual generators being treated as part of a specified generator, e.g. generators with a capacity market agreement or providing a balancing service whether they are under the same contract or not would be classed as operating for the “same purpose” as they generate electricity. Similarly generators with different fuels or technologies are also classed as operating for the “same purpose”.

The specified generator permit will apply to the site, rather than its constituent individual generators. All specified generators equal to or more than 1 MWth will also be Medium Combustion Plant (MCP) and must also meet the requirements of the MCP Directive.

Specified Generators are also divided into Tranche A and Tranche B sites, which will determine the relevant permitting date. A site is a Tranche A site if it meets the following criteria:

• It came into operation before 1 December 2016, or

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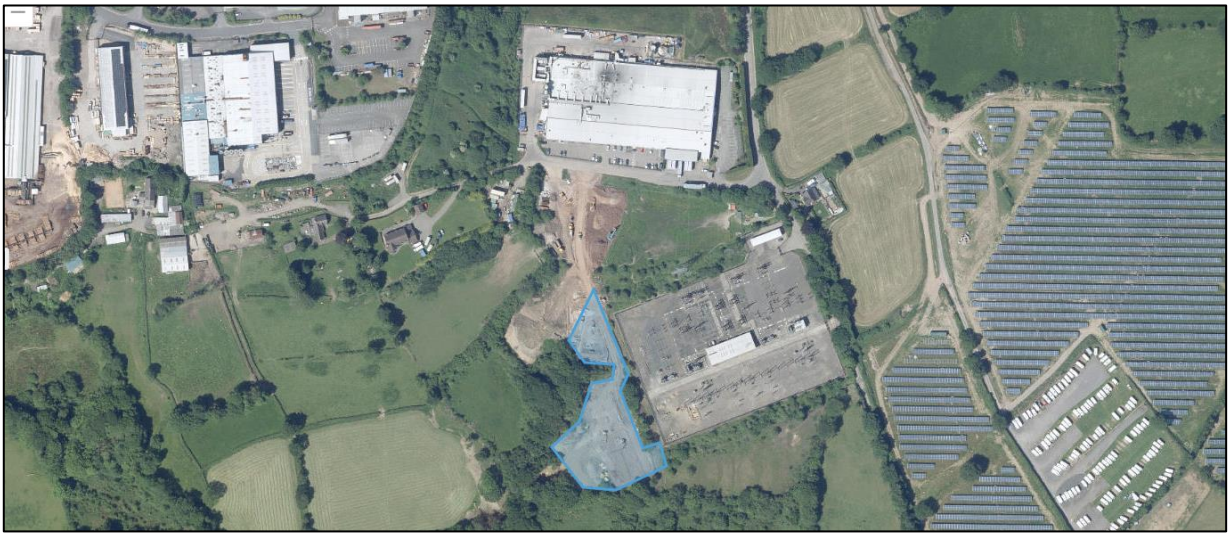
• It is the subject of a capacity agreement arising from the 2014 or 2015 capacity auctions

A generator with a rated thermal input of less than 1MWth will be classed as Tranche A if:

• It is the subject of a capacity agreement arising from the 2014, 2015 or 2016 capacity auctions, or
• A FiT preliminary accreditation application was received by OfGEM before 1 December 2017, or
• Is the subject of an agreement to provide balancing services entered into before 31 October 2017.

Tranche B generators are all those that are not Tranche A.

4.1.2 The Site



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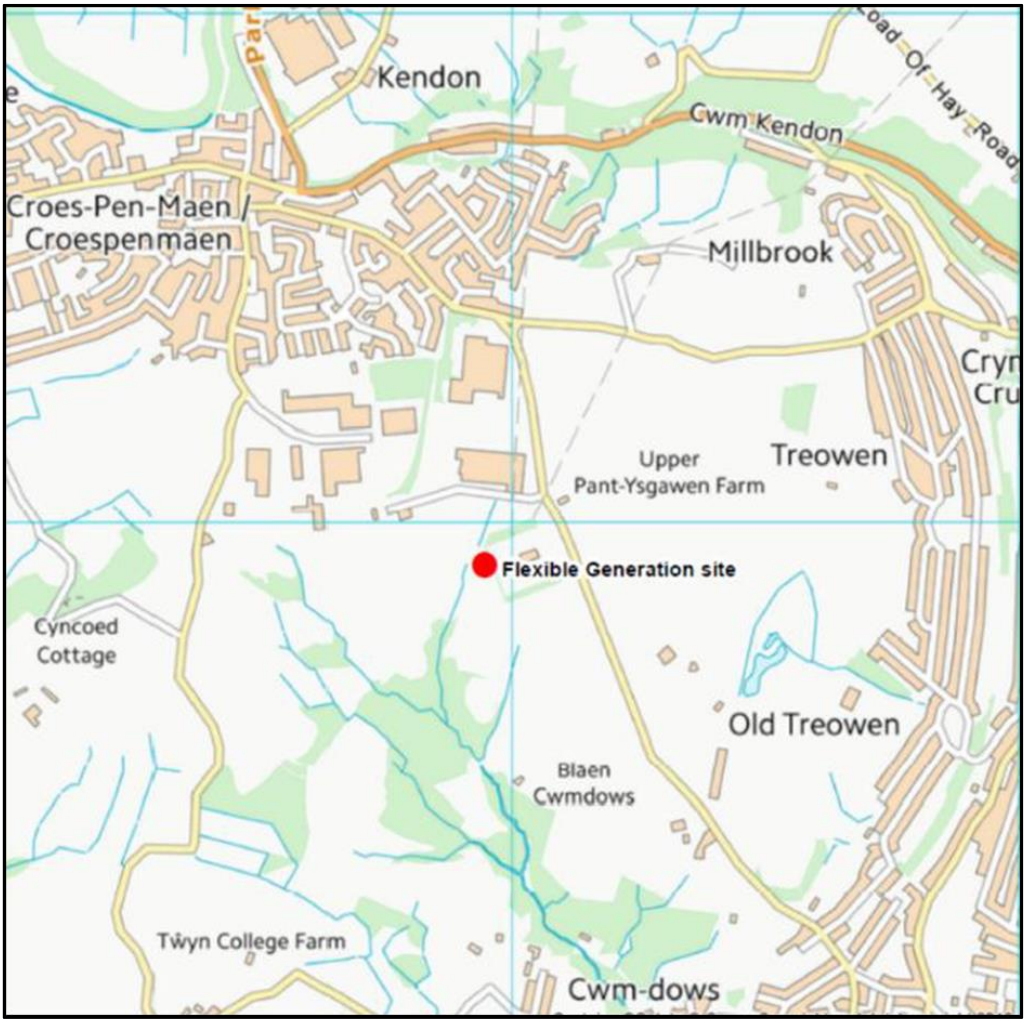
Flexible Generation Limited – Pentref Y Groes is a small site located approximately 0.5 km south of Croespenmaen. The site is situated close to Brace's Bakery to the north west and Unilever foods to the north, directly adjacent to the east is Western Power Distribution Crumlin Substation and neighbouring Upper Pant-Ysgawen solar farm. The site was commissioned in 2017 and operational before December 2018.



4.1.3 What the Facility does

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The facility comprises of fourteen identical 3.5 MWth diesel fuelled compression ignition engines making one 49 MWth Tranche B specified generator. The engines are model P1700 by Perkins and have a maximum output of 1.45 MWe. The engines operate by compression ignition combustion mechanism and have an electrical efficiency of approximately 40 %. These engines were selected due to their reliability and efficiency of operation during the expected infrequent nature of the operational periods.

The facility operates on a short-term basis via a balancing services contract to supply electricity to the grid to meet peak demands or short falls in electricity generation. Expected operational hours based on operational experience are 1-2 hours on winter weekdays (November – February) which equates to approximately 50 hours per year however the site is permitted up to 500 hours per year.

4.1.4 Key Issues in the Determination

The key environmental and human health issues considered during the determination of this variation were:

- **Air quality – Oxides of Nitrogen, CO, Particulate Matter, SO_2**

This will be discussed separately in this decision document.

4.2 Operation of the Facility – general issues

4.2.1 Administrative issues

The Applicant is the sole Operator of the Facility. We are satisfied that the Applicant is the person who will have control over the operation of the Facility if the Permit were

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to be granted; and that the Applicant will be able to operate the Facility so as to comply with the conditions included in the Permit, if issued.

Relevant Convictions

NRW's COLINS Database has been checked to ensure that all relevant convictions have been declared. No relevant convictions were found. The operator satisfies the criteria in RGN 5 on Operator Competence.

Financial Provision

There is no known reason to consider that the operator will not be financially able to comply with the permit. The decision was taken in accordance with RGN 5 on Operator Competence.

4.2.2 Management

We are satisfied that appropriate management systems and management structures will be in place for this Facility, and that sufficient resources are available to the Operator to ensure compliance with all the Permit conditions.

4.2.3 Operating techniques

The operator has stated that they will implement the following quality assurance techniques and maintenance schedule, in order for the generators to achieve and retain optimal performance. In order to enable each generator and the power plant in general to achieve and retain optimal performance in both efficiency and emissions, the plant will engage in the following best available operational management techniques:-

(i) **General Management:** The operator will have management systems in place which will be continually reviewed for compliance with BAT. Staff will

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have defined roles and responsibilities and will receive appropriate training which will be recorded by the use of a training matrix. Senior staff members will undertake regular audits of the management systems and results will be recorded and corrective actions taken if required.

(ii) **Planned Maintenance:** All regular maintenance will be completed on the timescale specified by the equipment manufacturer and practical experience in the field. The maintenance team or approved contractor (engine manufacturer or authorised maintenance team) will undertake all maintenance of the engine and generators. Any waste generated during maintenance will be removed from site. Chemical analysis of the engine oil will be carried out on a regular basis to indicate any defects to the engine components and determine when the lubricating oil requires changing.

(iii) **Unplanned Maintenance:** Any divergence from normal operating parameters will be identified by operators and an appropriate response initiated.

(iv) **Process Monitoring:** Process monitoring will be carried out using a generic programmable logic controller (PLC) control system using a dashboard to display monitored information. Operating parameters will be monitored by the automated control systems and records will be stored for a period of at least 4 years. Parameters will include number of hours each engine is operational and electrical output.

(v) **Emission Monitoring:** All 14 engines have key features in order to reduce emissions: mechanisms to control the combustion processes, abatement system for emission reduction and automated response to address serious fault conditions. Measurements will be taken in accordance with Environment Agency Technical Guidance Note M5 (Medium Combustion Plant Directive and Generators Controls: monitoring point source emissions). Monitoring testing will be undertaken either by a MCertS

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accreditated test team or staff with MCertS approved test equipment. Sampling sockets in accordance with Environment Agency Technical Guidance Note M1 (Sampling requirements for stack emission monitoring) for small vertical circular stacks (<3.6 m in diameter) will be incorporated. Proposed monitoring methodologies for NOx, CO, SO_2, PM will all meet BS EN.

We have reviewed the techniques used by the operator and compared these with the relevant guidance notes. The proposed techniques/emission levels for priorities for control are in line with the benchmark levels contained in TGN M5 and we consider them to represent appropriate techniques for the facility. These are specified in the Operating Techniques table in the permit.

We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process.

5 Minimising the Facility's environmental impact

For this kind of regulated activity, the principal emissions are emissions to air. There are no permit conditions for water, land, energy efficiency or noise. As the facility is regulated for Schedule 1, Part 2 (1.1) Part B activity BAT does apply but only to air emissions.

The next sections of this document explain how we have approached the critical issue of assessing the likely impact of air emissions from the SG on human health and the environment and what measures we are requiring to ensure a high level of protection.

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We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory. The assessment shows that, applying the conservative criteria in our guidance on Environmental Risk Assessment, all emissions may be categorised as environmentally insignificant.

We will discuss the operators risk assessment in more detail as follows:

5.1 Assessment of Impact on Air Quality

This section of the decision document deals primarily with the dispersion modelling of emissions to air from the stacks and its impact on local air quality.

The Applicant has assessed the Installation's potential emissions to air against the relevant air quality standards, and the potential impact upon human health. These assessments predict the potential effects on local air quality from the installation's stack emission.

The air impact assessments, and the dispersion modelling has been based on the installation operating on a rolling average of up to 500 hours per year at the relevant long-term or short-term emission limit values, i.e. the maximum permitted emission rate. The air impact assessment included the assessment of short-term and long-term emissions against the relevant critical level of the following pollutants: CO, NO_2, SO_2, $PM_{2.5}$, PM_{10} and NH_3. All pollutant emissions apart from NO_2 screened out at this stage and were classed as insignificant in accordance with Environment Agency Air emission risk assessment guidance. Detailed air dispersion modelling was submitted for NO_2 emissions for further assessment.

We are in agreement with this approach. The assumptions underpinning the model have been checked and are reasonably precautionary.

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The results indicate that at all receptor locations within the study area the relevant air quality standard, which is the Air Quality Strategy (AQS) objective level for annual mean NO_2 concentrations (40 µg m^{-3}) will not be exceeded. The highest annual Process Contribution (PC) is 0.6 % of the objective level, therefore in accordance with NRW guidance is considered insignificant.

The results indicate that at all receptor locations within the study area the relevant air quality standard, which is the Air Quality Strategy (AQS) objective level for hourly mean NO_2 concentrations (200 µg m^{-3}). The objective level includes 18 allowable exceedances of this level within a year. There are predicted to be no exceedances of the objective level at any of the receptor locations.

The site is situated approximately 1.8 km from the Air Quality Management Area (AQMA) Hafod-yr-ynys which is declared for Annual mean NO_2. The highest annual PC is 0.6 % of the objective level therefore in accordance with NRW guidance the impact from the operation on this AQMA is considered insignificant, in addition the there is a significant separation distance between the site and the AQMA.

All long term and short term impacts regarding the human health assessment are predicted to be below limit values at receptor locations where the Air Quality Directive states that they must be applied.

With regards to the impacts regarding ecological receptors, this will be discussed in more detail below.

5.2 Impact on Habitats sites, SSSIs, non-statutory conservation sites etc

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In accordance with Specified Generator dispersion modelling assessment the applicant must assess NOx impacts on SPAs, SACs, RAMSAR sites within 5 km and SSSIs within 2 km. The applicant assessed SACs, SPAs and RAMSAR sites within 10 km which is precautionary and above and beyond the guidance.

There are no SSSIs within 2 km of the site.

5.3 European Sites

There is one Natura 2000/Ramsar site located within 10 km of the site (the relevant screening distance used). Aberbargoed Grasslands (SAC UK0030071) is situated approximately 3.6 km to the north-west.

A OGN200 FORM 1 has been completed with regards to a Habitats Regulations Assessment (HRA). This is required because there is a conceivable impact pathway to the SAC.

The maximum predicted ground level concentrations of NOx have been compared to the relevant critical level thresholds, above which damage may be sustained to sensitive plants and animals. The impact of Nitrogen deposition and Acid deposition using predicted concentrations of NOx was assessed by comparison to site specific critical load values obtained from APIS.

The significance criteria provided by the Environment Agency states that for SACs the impact can be considered to be insignificant if the long term process contribution (PC) is less than 1 % of the long term critical level and the short term PC is less than 10 % of the short term critical level. Regarding deposition, the impact can be considered to be insignificant if the process contribution is less than 1 % of the minimum critical load.

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The impact of the operation on the ecological site with regards to airborne NOx concentrations is considered to be insignificant as the short and long term PCs are both less than 1 % of the relevant critical levels. The impact of the operation on the ecological site with regards to nitrogen deposition and acid deposition is considered to be insignificant as the process contribution is less than 1 % of the relevant critical load.

In accordance with OGN200, an in-combination assessment was completed and found no significant in-combination effect. Therefore this project is considered not likely to have a significant effect on any Natura 2000 sites, either alone or in-combination with other plans and projects.

Assessment of Likely Significant Effect:

The project has been screened for likelihood of significant effects and, taking account of the advice received from protected sites advisors, is considered not likely to have a significant effect on any Natura 2000/Ramsar site (As documented in section 3.2 of OGN 200 form 1, or section 5 if applicable).

Appropriate assessment:

In light of the conclusions of an appropriate assessment, and taking account of the advice received from protected sites advisors, it has been established that the project will not adversely affect the integrity of any Natura 2000/Ramsar site, taking into account any conditions or restrictions as applicable, either alone or in-combination with other plans and projects. (As documented in section 4 of OGN 200 form 1, and section 5 if applicable)

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HRA Overall conclusion:

Long term and short term impacts on human receptors are not predicted to exceed limit values. An assessment of the impact on nearby sensitive ecological sites has also been completed. The impact on annual and hourly airborne NOx concentrations, nitrogen deposition and acid deposition at the one statutory European site was determined to be insignificant. There are no SSSIs within 2 km of the installation site.

6 Setting ELVs and other Permit conditions

We have decided that emission limits should be set for the parameters listed in the permit. Emissions Limit Values (ELVs) are in line with those set out in the MCP Directive.

6.1 Monitoring

We have decided that monitoring should be carried out for the parameters listed in Schedule 3 of the permit using the methods and to the frequencies specified in those tables. These monitoring requirements have been imposed in order to demonstrate compliance with the emissions limits in the permit, as per the ELV and monitoring frequency requirements specified within the EPR Schedule 25B Regulations.

For a Tranche B Specified Generator and Schedule 1, Part 2, Chapter 1, Section 1.1, Part B as includes compression ignition engines with an aggregated thermal input of >20 MWth and <50 MWth, the monitoring requirements are as follows:

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Pollutant	Type of Specified Generator	Fuel Type	Emission Limit Value (mg/Nm^3)	Monitoring Required[1]
NOx	Compression ignition engine	Diesel	190*	Periodic – every year
SO_2	Compression ignition engine	Diesel	S content of fuel limited to 0.1 % w/w	Periodic – every year
Dust	Compression ignition engine	Diesel	10	Periodic – every year
CO	Compression ignition engine	Diesel	No Limit	Periodic – every year

*380 mg/Nm3 for dual fuel engines in gas mode.

Notes:

1: For plants which operate for less than 500 hours per year, the minimum monitoring frequency is once every 500 operating hours or once every 5 years, whichever comes first.

Emission limit values are defined at a temperature of 273,15 K, a pressure of 101.3 kPa and after correction for the water vapour content of the waste gases and at a standardised O_2 content of 15% for engines (and gas turbines).

For emissions to air, the methods for continuous and periodic monitoring are in accordance with the Environment Agency's Techical Guidance Note M5 for monitoring of stack gas emissions from medium combustion plants and specified generators.

Based on the information in the Application and the requirements set in the conditions of the permit we are satisfied that the monitoring techniques, personnel and equipment

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employed by the Operator will have either MCERTS certification or MCERTS accreditation as appropriate.

6.2 Other Permit Conditions

As a Specified Generator the facility must adhere to the following operating techniques for SG.

As a Specified Generator (SG), these are:

(a) Each generator must be operated in accordance with the manufacturer's instructions and records must be made and retained to demonstrate this.

(b) The operator must keep periods of start-up and shut down of the generators as short as possible

(c) There must be no persistent emission of 'dark smoke' as defined in section 3(1) of the Clean Air Act 1993.

(d) Where secondary abatement is required to ensure compliance with the NOx ELV it must be met within 10 minutes from when the generator commences operation or within 20 minutes when the generator was a Tranche A and is now a Tranche B generator.

(e) The stack must be vertical and unimpeded by cowls or caps.

(f) The operating regime of the generator must be in line with document reference 40131-WOD-XX-XX-TN-O-0002_A_C01 dated June 2019 submitted as part of permit application PAN-005837.

As a compression ignition engine with an aggregated thermal input of >20 MWth and <50 MWth, the facility must adhere to the following operating techniques:

(a) Unless otherwise agreed in writing, the combustion plant must comply with the requirements of Environmental Permitting Technical Note 1/1 (18), which

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will serve as statutory guidance under Regulation 65 of The Environmental Permitting Regulations 2016 once finalised.

6.3 Reporting

We have specified the reporting requirements in Schedule 4 of the Permit to ensure data is reported to enable timely review by Natural Resources Wales to ensure compliance with permit conditions.

7 SG Charges and Subsistence Fees

The type of application regarding Specified Generators will have an associated charge. The Specified Generator application type will also form the basis for ongoing subsistence fee's. More information on this can be found in our charging scheme on our website.

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