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Natural Resources Wales permitting decisions

Cadoxton Power Limited Decision Document

Rev No1

Bespoke permit

The application number is: PAN-004134
The Applicant / Operator is: Cadoxton Reserve Power Limited
The Facility is located at: Sully Moors Road, Barry, Vale of Glamorgan,
CF64 5RP

We have decided to grant the permit for Cadoxton Reserve Power Limited operated by Cadoxton Reserve Power 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 Cadoxton Reserve Power Limited.

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.

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 **11th April 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 a **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

Further information was requested by way of a Schedule 5 Notice requiring an updated air quality modelling report considering all protected sites within the relevant buffer distance. The Schedule 5 Notice was sent on 27/06/2019 with a response date of 26/07/2019. The Applicants response to the Schedule 5 Notice was provided on 24/07/2019. The additional information supplied satisfied the requirements of the Schedule 5 notice issued on 27/07/2019.

A copy of the information notice and e-mails requesting further information were placed on our public register as were the responses when received.

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 25A and Schedule 25B covering the Medium Combustion Plant Directive (MCPD) and Specified Generator (SG) regulations respectively;
- 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 aggregated to <50MWth at a specified location

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 once these requirements apply from 01/01/2024.

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
- 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 1MW_{th} 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

Cadoxton Reserve Power Limited is a small 16MW_e Flexible Power Plant (FPP) in the industrial area situated between the settlements of Barry and Sully, Cadoxton, South Wales. The site lies within the administrative area of the Vale of Glamorgan Council. The FPP comprises of eight 2MW_e engines to feed into the local distribution network owned and operated by Western Power Distribution. The peaking plant will operate for up to 2500 hours per year. No activities other than the generation of electricity from natural gas will take place on site. The unit is fully enclosed by a perimeter fence.

4.1.3 What the Facility does

The power plant itself is made up of 8 gas fuelled spark ignition reciprocating engines manufactured by MWM, Germany. Each engine, model TCG 2020, has a maximum output of 2MW_e. They are best available technology operating with an electrical efficiency of approximately 43%. The electricity is generated by burning the gas within the spark ignition engines exporting the electricity produced at 33,000 volts onto the local distribution network owned and operated by Western Power Distribution.

Gas is supplied to the power plant via a dedicated gas pipeline connected to the medium pressure gas network owned by Wales and West Utilities. The gas engines and all associated equipment are contained within a portal steel framed building and have a combined thermal input of 37.2 MW(th). The plant is designed to operate intermittently at short notice on short duration runs. The plant has been designed as a backup power generation facility providing electricity to the grid during times of low renewable energy output and peak winter demand.

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**

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 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.

4.2.2 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.

4.2.3 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.

4.2.4 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.

4.2.5 Operating techniques

The operator has stated that they will implement the following quality assurance techniques and maintenance schedule, in order to 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.

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, odour or noise and BAT does not apply.

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

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 stack 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 continuously at the relevant long-term or short-term emission limit values, i.e. the maximum permitted emission rate.

We are in agreement with this approach. The assumptions underpinning the model have been checked and are reasonably precautionary. The way in which the Applicant used dispersion models, its selection of input data, use of background data and the assumptions it made have been reviewed by Natural Resources Wales modelling specialists to establish the robustness of the Applicant's air impact assessment. The output from the model has then been used to inform further assessment of health impacts.

The outcome of the Tranche B Screening Tool risk assessment tool has resulted and indicated the risk to air quality to be high, with further detailed quality modelling and impact assessment required (for human health and designated habitat sites) as part of a complex bespoke permit application.

The closest existing residences to the FPP are approximately 540m to the south east in Meadow View Court. All long-term impacts at human receptors are either predicted to be below limit values at locations where the Air Quality Directive states that they must be applied, or are not significant (i.e. below 1% and 10% of their relevant objectives). The maximum short-term NO₂ impact is not at a location where

members of the public would reasonably be expected to spend an hour or more. The impact of the FPP at sensitive habitats within the Study Area is predicted to be negligible.

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

There are eight SSSIs within 5km of the site:

- Cog Moors SSSI – 1.2km northeast
- Cosmeston Lakes SSSI – 2.6km east
- Penarth Coast SSSI – 3km east
- Hayes Point SSSI – 1km south
- Fferm Walters SSSI – 4.4km west
- Barry Island SSSI – 3.3km southwest
- Barry Woodland SSSI – 2.4km northwest
- Sully Island SSSI – 2.5km southeast

As a result, an Appendix 4 form - CRoW Act 2000: Natural Resources Wales application for permission - Formal Notice, has been completed in conjunction with this application.

Detailed air quality modelling impact assessment has been carried out with regards to any potential impact from the Peaking facility on the designated SSSI sites within 5km of the facility. The significance criteria provided by the EA/NRW states that for SSSI's the air quality impact can be considered to be insignificant if the long-term process contribution (PC) is less than 1% of the Critical Level. Detailed air quality impact assessment modelling shows that the impact of the operation of Cadoxton's Peaking Plant on all SSSI's are less than 1% of the Critical Level for daily and

annual mean Nitrogen Dioxide concentrations and is therefore considered to be insignificant.

A cumulative impact assessment of the neighbouring PeakGen Diesel Flexible Power Plant has been undertaken using assumed emissions data and maximum operation of 500 hours per year. Impacts are predicted to be insignificant.

In summary, the air quality impact of the proposed facility is considered to be below limits at relevant human or ecological receptor locations.

5.3 European Sites

The following Natura 2000 sites are located within the relevant screening distance (3.5km) of the main site emission point to air:

- Severn Estuary SAC / SPA / Ramsar (SAC Code UK0013030)

A 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 Natura 2000 sites listed above.

Detailed air quality modelling has been carried out with regards to the potential impact from the peaking plant facility. The maximum predicted ground level concentrations of NO_x have been compared with relevant critical level thresholds above which damage may be sustained to sensitive plants and animals. For European sites within 5km, an assessment of deposition impacts has also been completed. Critical loads refer to the threshold beyond which deposition of pollutants to water or land results in measurable damage to vegetation and habitats. Predicted concentrations of NO_x can be used to determine nutrient nitrogen deposition rates,

using typical deposition velocities. The maximum predicted deposition rates have been identified with site specific critical loads obtained from APIS.

The significance criteria provided by the EA/NRW for these designated ecological sites states that the impact can be considered to be insignificant if the long-term PC (annual mean) is less than 1% of the annual average Critical Level and 10% of the 24-hour average critical level. Impacts on annual mean NO_x concentrations at the designated sites are below the screening criteria (below 1% of the critical level of 30 µg/m³) at all receptor points. The impact of the peaking plant at the Cadoxton Reserve Power site on the designated ecological sites with regards to airborne NO_x concentrations is therefore considered to be insignificant.

At all of the sensitive habitat sites, the impacts are insignificant when compared with the Air Quality Assessment Level (AQAL) with regards to nutrient nitrogen deposition rates. Acid Deposition critical loads do not apply to these ecological sites. The impact of the Cadoxton Reserve Power plant on the designated ecological sites with regards to airborne NO_x concentrations is therefore considered to be insignificant.

This project complies with NRW agreed criteria for ruling out significant effects without conducting a project-specific LSE test. 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)

HRA Overall conclusion:

In light of the conclusions of the appropriate assessment, it has not been ascertained that the project will not adversely affect the integrity of any Natura 2000/Ramsar site, as documented in section 4 of OGN 200 form 1, and section 5 is applicable.

SSSI Assessment

For all sites, the process contribution of the site is less than 1% of the relevant critical load. Based on EA guidance this level of impact on nitrogen deposition is 'insignificant'.

A cumulative impact assessment of the neighbouring PeakGen Diesel Flexible Power Plant has been undertaken using assumed emissions data and maximum operation of 500 hours per year. Impacts are predicted to be insignificant.

In summary, the air quality impact of the proposed facility is considered to be below limits at relevant human or ecological receptor locations.

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 combined Tranche B Specified Generator, that is an engine fuelled on natural gas, the monitoring requirements are as follows:

Pollutant	Type of Specified Generator	Fuel Type	Emission Limit Value (mg/Nm ³)	Monitoring Required
NOx	Spark Ignition Engine	Natural Gas	190*	Periodic – every 3 years

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

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 O₂ 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 Technical 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 employed by the Operator will have either MCERTS certification or MCERTS accreditation as appropriate.

6.2 Other Permit Conditions

As a combined Specified Generator/Medium Combustion Plant, the facility must adhere to the following operating techniques for both MCP and SG.

As a Medium Combustion Plant (MCP) these are:

- (a) Each MCP 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 each MCP 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.

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 NO_x 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.

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 Specified Generator Charges and Subsistence Fees

The type of application regarding MCPD and SG will have an associated charge. The MCPD/SG 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.