Permitting Decisions- Bespoke Permit

We have decided to grant the permit for Protos Gas Generation Plant operated by Baker Street Generation Limited.

The permit number is EPR/UP3228SW.

The application is for the following scheduled activity:

Section 1.1 Part A(1) (a) – Burning any fuel in an appliance with a rated thermal input of 50 or more megawatts. The installation comprises 11 natural gas fired 10MWth engines. The engines use lean burn principles to operate as peaking plant for less than 1,500 hours per year as a rolling average over a period of five years and with operation in any individual year limited to a maximum of 2,250 hours.

We consider in reaching this 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.

1. Purpose of this document

This decision document provides a record of the decision-making process. It:

- summarises the decision making process in the Decision considerations section to show how the main relevant factors have been taken into account
- highlights Key issues of the decision in the determination
- shows how we have considered the Consultation Responses

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

Read the permitting decisions in conjunction with the environmental permit.

2. Key issues of the decision

Description of the main features of the installation

The main features of the permit are as follows.

The installation is located at National Grid Reference SJ 46601 76109 approximately 7 km to the east of Ellesmere Port.

The Environmental Permit is for the following scheduled activity:

Section 1.1 Part A(1) (a) – Burning any fuel in an appliance with a rated thermal input of 50 or more megawatts.

The installation comprises 11 natural gas fired 10MWth engines. Each engine will be housed inside a prefabricated concrete cell with a 12m high stack (from ground level) for exhaust emissions. The 11 emission points are referenced A1 – A11.

Lubrication oil, for the engines, will be stored in a bunded double skinned 8,000l storage tank.

Operating Hours

The engines will use lean burn principles to operate as peaking plant for less than 1,500 hours per year as a rolling average over 5 years, with operation in any individual year limited to a maximum of 2,250 hours.

We have restricted the operating hours of the installation by setting a specific condition in the permit.

The purpose of the installation is to provide security of electricity supply by operating at times when there is a peak demand for electricity. The site is connected to the National Grid via the local distribution network and will operate when called upon to fill the gap in capacity for supply and demand of electricity. The installation will be operated remotely and remain unmanned the majority of the time.

Best Available Techniques Assessment

The assessment of the proposed operating techniques against the relevant BAT reference documents for this type of application is set out in the application document ‘Environmental Permit Application for a Bespoke Installation at Protos Generation Plant - Appendix B Best Available Techniques (BAT) Assessment’, received on 14/08/2023 and available on the Public Register. On review, we are satisfied that the proposal meets BAT for peaking plant operating less than 1,500 hours per year. We discuss in the following how the key aspects of the proposal meet BAT.

<u>Fuel choice</u>

The Applicant has chosen to operate their proposal using mains natural gas. The Applicant stated that non-renewable natural gas is considered to be a low carbon fuel choice and the cleanest for combustion currently available. The use of natural gas means that there will be negligible emissions of sulphur dioxide and

particulates. The choice of mains gas also minimises the requirement to store significant quantities of raw materials on site. We are satisfied that, at present, natural gas represents BAT in terms of fuel choice for this installation.

Combustion technology

The Applicant has proposed the use of reciprocating engines. We consider that, for peaking plant, reciprocating engines are well suited to fast reserve as they are capable of quick start up and shut down times and that small individual engines can be run at optimum loading. Furthermore, they provide the necessary flexibility required for the peaking plant.

Emissions and emissions controls

The engines will operate using the principle of lean burn combustion to offer high rate of efficiency and a primary method of minimising exhaust emissions to air.

There will be no selective catalytic reduction (SCR) fitted as the generators will achieve the BAT Emission Limit Value (ELV) for emissions of NOx by using lean burn technology as a primary emission control measure: using the advanced lean burn concept, the generators will meet the relevant ELV for NOx, 95mg/Nm^3 (15% O_2), set by the Medium Combustion Plant Directive.

The Applicant has justified that the use of selective catalytic reduction would not be BAT for this installation due to the intended operational profile to provide balancing services for fewer than 1,500 hours per year on average. We agree that the proposal meets BAT: although we would not consider this type of plant BAT for operation over 1,500 hours as a rolling average, as this site will operate as peaking plant below this threshold, we are satisfied that it is appropriate technology for the mode of operation.

The Applicant has stated that the combustion of the plant will be optimised to ensure efficiency and minimise the levels of CO, non-methane volatile organic compounds (NMVOC) and methane emissions. As the emissions of methane have not been quantified in the application, we have decided to set out improvement conditions (IC3) requiring the operator to establish emissions of methane.

Energy efficiency

Each engine at the proposed installation will operate for less than 1,500 hours per year, therefore it is not subject to the requirements of Article 14 of the Energy Efficiency Directive. The limited operating hours and the mode of operation of balancing plant as short-term operating reserve justify the non-inclusion in the proposal of waste heat recovery in the form of combined heat and power (CHP) or combined cycle operation.

The proposed generators have a nameplate efficiency of 45.3%. Although the proposed engines are not large combustion plant (LCP), the Applicant compared

this efficiency levels achieved by the proposed engines against the BAT associated energy efficiency levels (BAT-AEEL) for LCP, as a relevant source of information. The LCP BAT-AEEL for new engines fired on natural gas is 39.5-44%.

We are satisfied that the proposed energy efficiency levels are consistent with BAT, when taking into account the capped operating hours and the mode of operation of the proposed installation.

The Applicant has stated that the generators will be performance tested during the commissioning process in line with relevant standards to confirm the net electrical efficiency. We have specified improvement condition IC2, requiring the Operator to submit a written report to the Environment Agency on the commissioning of the installation, which shall provide a review of the environmental and energy efficiency performance of the plant as installed against the design parameters set out in the application.

Soil and groundwater protection

The proposed installation is set to arise on undeveloped land. In order to minimise any future contamination risk, all operational areas on site will be covered in hardstanding.

Lubricating oil will be used in the engines and stored in an 8,000 L double skinned tank sited within a concrete bund which will hold 110% of the capacity of the tank, constructed in accordance with CIRIA 736 guidance. Transfer of the oil from the tanks for use in the Installation will be carried out by trained operatives over hardstanding to minimise any potential environmental risk from spills in accordance with the procedure detailed in the Environmental Management System (EMS). Spill kits will be on site to provide a rapid response to any spillage via a procedure detailed in the EMS.

There will be no other hazardous materials stored on site.

Used lubricating oil will be the predominant waste stream generated on site and will be stored in a double skinned tank sited within a concrete bund, constructed in compliance with CIRIA 736 guidance.

The baseline data referenced in the site condition report did not include analysis for hydrocarbons. However, the Applicant confirmed they will carry out testing for hydrocarbons before developing the site. We have therefore set out a pre-operational condition (PO2) requiring the Applicant to provide information necessary to determine the state of the soil and groundwater and update the site condition report.

We consider that the type of activities carried out by the installation (operation of gas engines) and the soil and groundwater protection measures proposed by the operator are adequate for the risk posed by the regulated activities.

Emissions to air

The methodology for risk assessment of point source emissions to air is set out in our web guidance, along with the definitions of the parameters we look at to carry out the assessment and the significance criteria.

The Applicant provided an assessment of the impact of emissions to air with the application which is detailed in document titled 'Gas-Fired Standby Electricity Generation Facility Protos, Land off Ash Road, Air Quality Assessment.' Report reference 01.0197.011 v2' and is available on the Public Register.

This assessment predicts the potential effect on local air quality from the Installation's stacks emissions of oxides of nitrogen (NOx), using Breeze AERMOD 11 dispersion model software. The model used five years of meteorological data collected from the Manchester meteorological station between 2018 and 2022.

We have reviewed the assessment and are satisfied that it has taken into account all relevant statutorily protected ecological receptors, human health receptors, that the model and its inputs are appropriate and that the assessment has been carried out in accordance with our guidance.

We agree with the applicant's conclusions that the impacts of the emissions at human receptors are not significant:

NO_2 – human health

- The long-term process contribution (PC) of NO_2 associated with the emissions from the proposed installation is 0.26 $\mu g/m^3$ at the discrete human receptor where the maximum prediction occurs (receptor HR4: Coppice Green), corresponding to 0.6% of the long-term air quality standard (AQS) for NO_2. When taking into account the background concentration of NO_2, the long-term predicted environmental concentration (PEC) is 15.0 $\mu g/m^3$, corresponding to 37.5% of the long-term AQS for NO_2. This shows that there is adequate headroom between the PEC and the AQS to indicate that an exceedance of the long-term AQS is unlikely.

- The short-term PC of NO_2 associated with the emissions from the proposed installation is 25.9 $\mu g/m^3$ at the discrete human receptor where the maximum prediction occurs (HR3 March Lane 1), corresponding to 13% of the short-term AQS for NO_2. When taking into account the background concentration of NO_2, the short-term PEC is 55.4 $\mu g/m^3$, corresponding to 27.7% of the short-term AQS for NO_2. This shows that there is adequate headroom between the PEC and the AQS to indicate that an exceedance of the short-term AQS is unlikely.

Formaldehyde – human health

Formaldehyde background levels are not routinely measured for UK air quality purposes. A conservative background concentration of 2.37 $\mu g/m^3$ has been used to assess the emissions. Taken from the Air Quality Expert Group report Non-methane Volatile Organic Compounds 2020.

- The long-term PC of formaldehyde associated with the emissions from the proposed installation is 0.25 $\mu g/m^3$ at the discrete human receptor where the maximum prediction occurs (receptor HR3: March Lane), corresponding to 5% of the long-term EAL for formaldehyde. When taking into account the background concentration of formaldehyde, the long-term predicted environmental concentration (PEC) is 2.62 $\mu g/m^3$, corresponding to 52.4% of the long term EAL for formaldehyde. This shows that there is adequate headroom between the PEC and the EAL to indicate that an exceedance of the long-term EAL is unlikely.

- The short-term PC of formaldehyde associated with the emissions from the proposed installation is 6 $\mu g/m^3$ at the discrete human receptors where the maximum prediction occurs (HR2: Mimosa Close 2 and HR3: March Lane 1), corresponding to 6% of the short-term EAL for formaldehyde. When taking into account the background concentration of formaldehyde, the short-term predicted environmental concentration (PEC) is 10.7 $\mu g/m^3$, corresponding to 10.7% of the long-term EAL for formaldehyde. This shows that there is adequate headroom between the PEC and the EAL to indicate that an exceedance of the short-term EAL is unlikely.

NO_2 – ecology

The following statutorily protected European habitats are within relevant screening distance from the installation:

Mersey Estuary SPA (UK9005131)

Mersey Estuary Ramsar (UK11041)

Midland Meres and Mosses Phase 1 Ramsar (UK11043)

Midland Meres and Mosses Phase 2 Ramsar (UK11080)

We have concluded that the proposed installation will not cause likely significant effects on these ecological receptors in that:

- The highest process contribution from the emissions of NO_2 associated with the proposed operations is <10% of the short-term critical level for NO_2

- The highest predicted environmental concentration is < 70% of the long-term critical level

- The highest process contributions from nutrient nitrogen deposition and the associated acidification contribution are <1% of relevant critical loads for the qualifying features of the protected conservation sites which are sensitive to these risks.

We have also determined that the proposed permission is not likely to damage any of the flora, fauna or geological or physiological features which are of special interest at the Mersey Estuary SSSI.

Emissions of Noise

The primary source of noise from the Installation are the gas engines. Noise emissions are produced from the engines during their operation.

Therefore, the application included a noise impact assessment completed in accordance with BS 4142:2014 (reference: application document 'Appendix G Noise Impact Assessment', dated August and available on the Public Register).

The application states that the engines will be housed within individual prefabricated concrete cells that will mitigate noise emissions.

Based upon the noise emissions from the proposed plant, the Applicant undertook noise modelling to assess the noise emissions and the impacts at the nearest residential properties, on Mimosa Close, which lies at a distance of approximately 400m to the south east of the proposed installation.

The Applicant's assessment indicated that the proposed plant will contribute 1 dB below the existing background sound level during the night-time period at the nearest residential receptor. Since the rating level is below the background, the Applicant concluded that, in accordance with BS 4142, the noise generated by the installation will have a low impact on the receptors.

We have reviewed the requirement for a Noise Impact Assessment using our qualitative noise screening criteria. These indicate that noise is unlikely to be an issue because of the nature of the installation and its location in relation to the closest residential receptors. We therefore agree with the conclusions of the assessment submitted by the Applicant and we consider the proposed noise mitigation measures sufficient to control the noise generated from the permitted activities carried out at the installation.

We have applied standard noise conditions within the permit which we consider impose sufficient control should any issues arise with noise.

Emissions to Surface Water

Uncontaminated surface water will discharge to the land drainage network, then onto the Manchester shipping Canal, via an on-site surface water attenuation system designed to manage flows to prevent flooding of the site. The system will assist with the removal of sedimentation from the rainwater runoff.

The proposal submitted by the Applicant did not include the installation of an oil interceptor prior to discharging uncontaminated surface water. However, the Applicant confirmed they would install an oil interceptor. We have therefore set out a pre-operational condition requiring the Applicant to design, specify and confirm the installation of an adequately sized oil interceptor, prior to commencing the operations of the installation.

Emissions to Sewer

There will be no generation of process water from the activities and therefore no emissions to foul sewer.

3. Decision considerations

Confidential information

A claim for commercial or industrial confidentiality has not been made.

Identifying confidential information

We have not identified information provided as part of the application that we consider to be confidential.

The decision was taken in accordance with our guidance on confidentiality.

Consultation

The consultation requirements were identified in accordance with the Environmental Permitting (England and Wales) Regulations (2016) and our public participation statement.

We consulted the local authority. No response was received.

The application was publicised on the GOV.UK website.

We consulted the following organisations:

- Director of Public Health & UK Health Security Agency
- National Grid.

The comments and our responses are summarised in the consultation responses section.

Operator

We are satisfied that the applicant (now the operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with our guidance on legal operator for environmental permits.

The regulated facility

We considered the extent and nature of the facility at the site in accordance with RGN2 ‘Understanding the meaning of regulated facility’, Appendix 2 of RGN2 ‘Defining the scope of the installation’ and Appendix 1 of RGN 2 ‘Interpretation of Schedule 1’.

The extent of the facility is defined in the site plan included the permit. The activities are defined in table S1.1 of the permit.

The site

The operator has provided a plan which we consider to be satisfactory.

This shows the extent of the site of the facility.

The plan is included in the permit.

Site condition report

The operator has provided a description of the condition of the site. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive.

Nature conservation, landscape, heritage and protected species and habitat designations

We have checked the location of the application to assess if it is within the screening distances we consider relevant for impacts on nature conservation, landscape, heritage and protected species and habitat designations. The application is within our screening distances for these designations.

We have assessed the application and its potential to affect sites of nature conservation, landscape, heritage and protected species and habitat designations identified in the nature conservation screening report as part of the permitting process. Refer to the Key issues of the decision section for further details.

We consider that the application will not affect any site of nature conservation, landscape and heritage, and/or protected species or habitats identified.

We have not consulted Natural England, but we have informed them of our assessment and decision. The decision was taken in accordance with our guidance.

Environmental risk

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 the emissions from the proposed installation are not environmentally significant**.**

General operating techniques

We have reviewed the techniques proposed by the operator and compared these with the relevant technical guidance and we consider them to represent appropriate techniques for the facility.

We consider the proposed operating techniques are BAT for the proposed installation. Refer to the Key issues of the decision section for further details.

The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.

Operating techniques for emissions that screen out as insignificant

Emissions of NOx have been screened out as insignificant, and so we agree that the applicant's proposed techniques are Best Available Techniques (BAT) for the installation.

We consider that the emission limits included in the installation permit reflect the BAT for the sector.

National Air Pollution Control Programme

We have considered the National Air Pollution Control Programme as required by the National Emissions Ceilings Regulations 2018. By setting emission limit values in line with technical guidance we are minimising emissions to air. This will aid the delivery of national air quality targets. We do not consider that we need to include any additional conditions in this permit.

Pre-operational conditions

Based on the information in the application, we consider that we need to include pre-operational conditions. We have specified the following pre-operational conditions.

- **PO1:** Confirmation that an oil interceptor will be installed
- **PO2:** Review baseline monitoring and update the SCR.

Improvement programme

Based on the information on the application, we consider that we need to include an improvement programme.

We have included an improvement programme to ensure that**:**

- **IC1:** The air emissions monitoring locations meet the requirements of standard BS EN 15259;

- **IC2:** The performance of the plant as installed is consistent with the design parameters set out in the Application;

- **IC3:** The Operator establishes the emissions of methane from the engines and proposes a plan to assess any methane slip over their operational life. Refer to the Key issues of the decision section for further details on emissions of methane

Emission Limits

Emission Limit Values (ELVs) have been specified for the following substances:

- Oxides of Nitrogen (NO_x) (NO and NO_2 expressed as NO_2**)**

ELVs for oxides of nitrogen were set according to MCPD and our assessment of BAT for the proposed operation mode.

Monitoring

We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified.

These monitoring requirements have been included in order to demonstrate compliance with the emission limits set out in the permit for oxides of nitrogen; and in order to comply with the monitoring requirements set out within the MCPD for carbon monoxide.

We have specified annual monitoring frequency for these parameters: this is more frequent than the frequency specified by MCPD for MCP below 20 MWth input and that proposed by the Applicant. We consider that the increased frequency is required by and proportionate to the increased environmental risk entailed by the higher aggregated thermal input in the scope of the installation (i.e. 110 MWth), compared to the requirement set out by MCPD for individual combustion plants below 20 MWth input.

Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate.

Reporting

We have specified reporting in the permit, according to the specified monitoring frequencies and parameters that we consider relevant to the proposed operation.

Management System

We are not aware of any reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.

The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.

We only review a summary of the management system during determination. The applicant submitted their full management system. We have therefore only reviewed the summary points.

A full review of the management system is undertaken during compliance checks.

Financial competence

There is no known reason to consider that the operator will not be financially able to comply with the permit conditions.

Growth duty

We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.

Paragraph 1.3 of the guidance says:

"The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation."

We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.

We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.

4. Consultation Responses

The following summarises the responses to consultation with other organisations and our notice on GOV.UK for the public and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section:

Response received from the UK Health Security Agency (UKHSA).

Brief summary of issues raised: The UKHSA responded that, having reviewed the submitted documentation, they were satisfied that the assessment methodology was appropriate and accepted the conclusion that air quality impacts will not be significant. Hence, they did not have significant concerns regarding the risk to the health of the local population from the installation.

Summary of actions taken: No action taken.