

Natural Resources Wales permitting decisions

# GP Biotec Limited

## Decision Document

(Great Porthamel Anaerobic Digestion Plant)

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## Variation and Consolidation of a bespoke Permit

The application permit variation number is: EPR/AB3233DW/V008.

The applicant / operator is: GP Biotec Limited.

The Installation is located at: Great Porthamel Farm, Talgarth, Brecon, Powys, LD3 0DL.

We have decided to issue the variation for Great Porthamel Anaerobic Digestion Plant operated by GP Biotec 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.

It is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our position.

Unless the decision document specifies otherwise we have accepted the applicant's proposed changes to the permit.

## **Key issues of the decision**

### **Application Receipt and duly making**

In order for us to be able to consider the Application duly made, we needed more information. We requested further information relating to capacity of the proposed new boiler, details of ancillary equipment associated with the proposed new gas upgrading plant, clarification on inconsistencies within supporting information, as well as requesting additional funds to cover the remaining balance for the application fee. Upon receipt of this information, we were able to consider the application Duly Made.

The application was accepted as duly made on 21 June 2022. This means we considered it was then in the correct form and contained sufficient information to begin our determination, but not that it necessarily contained all the information we would need to complete that determination.

### **Requests for Further Information**

Further information was also requested by way of a Schedule 5 Notice requiring a revised Noise Impact Assessment (NIA). The Schedule 5 Notice was sent on 11 August 2022 with a response date of 8 September 2022. The Applicant requested more time to complete the assessment. NRW agreed to extend the deadline to 23 September 2022. A response to the Schedule 5 Notice was provided by the Applicant on 21 September 2022. The additional information supplied satisfied the requirements of the Schedule 5 notice issued.

In addition to the Schedule 5 Notice response, the Applicant also provided updating documents including a copy of the current Continued Competency Certificate for the sites Technical Competent Manager, as well as an updated site boundary and emissions plan.

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

### **Confidential information**

No claims for commercial or industrial confidentiality have been made by the Operator. We have not received information in relation to the application that appears to be confidential in relation to any party.

## Consultation

There was no requirement to carry out a consultation on this application, as this is a normal variation, and the site is not registered as a Site of High Public Interest (HPI Site). This decision was taken in accordance with RGN 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements.

## The facility

This current permit allows the operator to carry out Anaerobic Digestion (AD) of wastes and the combustion of the resultant biogas. Permitted wastes are non-hazardous biodegradable wastes including those controlled by the Animal-By-Products Regulations (ABPR). The Operator also grows its own energy crops as additional feedstock. Hazardous wastes are not permitted. The total permitted annual throughput is 75,000 tonnes a year. The biogas generated by the AD process is currently used by two combined heat and power plants (CHPs) to generate renewable energy in the form of heat to the process and electricity for export to the National Grid. When these primary gas consumers are unavailable biogas is sent to an emergency flare for disposal.

The permitted schedule 1 listed activity is described below:

- S5.4A(1)(b)(i) Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving one or more of the following activities: Biological Treatment.

The above activity has several Directly Associated Activities (DAA's) linked to the primary activity. These include biogas storage and supply system, the emergency flare and the two combustion engines.

## Legislation

The variation will be issued, under Regulation 20 of the Environmental Permitting (England & Wales) Regulations 2016 (as amended) (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 an installation as described by the Industrial Emissions Directive (IED).

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 variation notice and consolidated permit a high level of protection will continue to 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.

All applicable European directives have been considered in the determination of the application.

A copy of the application and all other documents relevant to our determination (see below) are available for the public to view. Anyone wishing to see these documents can arrange for copies to be made.

### **The site**

The facility is situated to the west of the A4078 road in an area of predominantly agricultural land and rural setting. The installation site is located on a plot, sloping in a Southerly direction from approximately 140m – 130m above ordnance datum (AOD). At the bottom of the slope approximately 600m to the North-eastern perimeter of the site is the River Wye / Afon Gwy, which is a designated Special Area of Conservation (SAC). The Afon Llynfi is located 514m North-west of the site, and is designated as a Site of Special Scientific Interest (SSSI). The nearest off site residential properties to the Installation are the residential properties located in Bryn Derwen in Talgarth 650m to the South.

## Proposed Changes

Biogas produced within the existing anaerobic digesters is currently collected and transported to the two existing primary gas consumers (two CHP units). When these primary gas consumers are unavailable, biogas is sent to the emergency flare.

This variation will add two additional gas consumers to the permit (to be listed as Directly Associated Activities (DAA) to the existing primary activity). These are:

- A new Biogas Upgrading Plant (BUP) and associated equipment; and
- A new standby biogas boiler which will have a thermal input of 0.928MW. As the capacity of the standby biogas boiler is less than 1MWth, it is not classified as a Medium Combustion Plant (MCP) and therefore falls outside the scope of the Medium Combustion Plant Directive.

The permit boundary has been extended to include an additional piece of land which will accommodate the new BUP.

The main built elements of the BUP comprise of the following:

- Biogas chilling equipment (used to remove moisture from the biogas, which is captured and then sent back to the anaerobic digesters);
- Activated carbon filtration skid equipment (No3. Carbon filters will be housed in a filtration skid and used remove impurities such as H<sub>2</sub>S from the biogas, prior to upgrading process below);
- Compressor unit (to compress the gas to pressure required for grid injection);
- Biogas upgrading unit (utilising membrane technology to primarily separate CO<sub>2</sub> from the biogas, to produce biomethane);
- Propane storage (propane is added to increase the calorific value of the gas-to-grid where required, in order to meet National Grid Gas Standards);
- Gas blending with propane metering;
- Grid Entry Unit (GEU); and
- Pipelines to transport biogas to and from the BUP; transport biomethane out to the National Gas Grid; and transport condensate removed from the biogas back to the AD process.

There are minimal emissions from the proposed new BUP in normal operation. The emissions identified are from a new stack (A8), which consists of residual waste products removed from the raw biogas. The removed gas principally consists of CO<sub>2</sub>, removed by membrane separation. The membrane separation follows H<sub>2</sub>S removal by activated carbon filtration of the biogas, so other pollutants in the waste gas are minimised before the separation stage. Nevertheless, other than CO<sub>2</sub>, the residual emitted pollutants contain trace amounts of H<sub>2</sub>S, non-methane VOCs, and methane slip.

Condensate removed from the biogas at the BUP will be captured in sealed drainage and routed back to the anaerobic digesters as per the current drainage arrangements on site.

The CO<sub>2</sub> would in any case be emitted via the existing CHP engines were the BUP not there. The H<sub>2</sub>S and VOCs would be combusted (SO<sub>2</sub>, CO<sub>2</sub>, Water, NO<sub>x</sub>) and emitted – so removal with carbon filtration is considered “BAT”, as it prevents the emissions at source, both of the more polluting SO<sub>2</sub>, but also of their combustion products.

Removal of non-combustible gases (water and CO<sub>2</sub>) and impurities increases the Calorific Value (CV) of the gas to the point where it can be considered “biomethane” suitable for injection into the gas grid, following suitable compression/pressurisation etc. There is provision to add propane to further supplement the CV to meet grid requirements, if the biomethane produced from the upgrading plant is not fully to specification.

The installation must demonstrate “BAT” for the proposed new process. We have determined BAT for the DAA as the BAT Reference Conclusions for the Waste Treatment Sector, published in 2018, and How to comply with your environmental permit guidance published in 2014.

### **Biodiversity, Heritage, Landscape and Nature Conservation**

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 changes proposed and their 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.

We consider that the proposed changes will not affect any site of nature conservation, landscape and heritage, and/or protected species or habitats identified as the primary emission parameters from the BUP stack ( $\text{H}_2\text{S}$  and  $\text{CO}_2$ ) are not habitats pollutants. The need for further assessment has been screened out.

This decision was taken in accordance with our guidance.

## Environmental Risk Assessment

### Air

This section of the decision document deals primarily with assessments for the new point source emissions to air from the BUP. This includes the main biogas upgrading unit stack and additional emergency Pressure Relief Valves (PRVs).

The Applicant completed an H1 assessment, assessing predicted emissions to air from the main stack against relevant air quality standards.

To predict the Process Contributions (PCs), BAT Emission Limit Values (ELVs) for Anaerobic Digestion were used in the H1 assessment. Using these figures provides a conservative / worst case modelling scenario, as Hydrogen Sulphide ( $\text{H}_2\text{S}$ ) and Total Volatile Organic Compounds (TVOC) emissions from the upgraded biomass plant are expected to be minimal. The total organic compound is a measure of the volatile organic compounds (VOC's), however there are no air quality standards for TVOC's. Therefore, as a worst-case, the Operator assumed that the VOC's comprise entirely of benzene ( $\text{C}_6\text{H}_6$ ).

Hydrogen Sulphide ( $\text{H}_2\text{S}$ ) – Results from the H1 assessment showed that the long-term PC to be  $0.018 \mu\text{g}/\text{m}^3$ , and the short-term PC as  $0.43 \mu\text{g}/\text{m}^3$ , which is 0.01% and 0.28% of the long and short term Air Quality Objectives (AQO) respectively and the Operator therefore assessed this emission parameter as not significant.

Benzene ( $\text{C}_6\text{H}_6$ ) – Results from the H1 assessment showed the short-term PC as  $14.8 \mu\text{g}/\text{m}^3$  which is 7.7% of the AQO and was therefore assessed as insignificant. For the

long-term impacts, the PC was 0.61 µg/m<sup>3</sup> which is 12.2% of the AQO, and was thus not screened out as insignificant. However, given that the PEC was shown as 13.66% of the AQO the Operator concluded that it can be considered unlikely that the AQO would be exceeded.

We are in agreement with this approach. The assumptions underpinning the H1 assessment have been checked and are reasonably precautionary.

An Improvement Condition (IC9) has been included within Table S1.3 of the permit to require the Operator to carry out monitoring once the BUP has been fully commissioned to verify the assumptions made in the H1 assessment.

### **Emission limits**

No emission limits have been set for the new point source emissions to air from either the standby biogas boiler (A7) or the main BUP stack (A8).

A typographical error was noted during within Table S3.1. One of the footnotes listed at the bottom of the table (Note 1: certification to the MCERTS performance standards indicates compliance) was referenced in error. This mistake has been corrected, and the footnote reference removed.

### **Water**

There will be no new point source emissions to surface water, sewer or land as a result of the new BUP. The new BUP and standby biogas boiler will not generate any liquid process emissions other than condensate, which will be recirculated back to the digestion process.

Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent pollution of ground and surface water.

### **Soil**

The new BUP will be located on an additional segment of land to be included within the permit. The operator has provided a description of the condition of the additional land.

We consider this description is satisfactory. The decision was taken in accordance with our guidance on site condition reports – guidance and templates (H5).

The site boundary and emissions layout plan within Schedule 7 of the permit has been updated to include the additional footprint of land within the red line boundary.

### **Odour**

The site has an existing Odour Management Plan (OMP) in place.

We consider that the applicant's proposals represent appropriate measures to prevent/minimise odour from the proposed new activities.

This includes proposed monitoring of VOCs including methane and Hydrogen Sulphide every 6 months from the BUP stack.

An improvement condition (IC11) has also been included to require the operator to update their existing OMP to incorporate all potential odour sources from the BUP.

### **Noise**

We consider that the equipment associated with the new BUP has the potential to cause noise and/or vibration, that might cause pollution beyond the site boundary. The Operator submitted a Noise Impact Assessment which has undergone technical review.

We agree with the consultants approach and conclusions made within their assessment. As predicted results of the assessment were below both measured daytime and night-time background sound levels, we agree that no further mitigation is required, and that appropriate measures will be in place to prevent or where that is not practicable to minimise noise emissions from the site.

### **Fugitive emissions**

Whilst we consider appropriate measures will be in place to prevent or where that is not practicable to minimise fugitive emissions and to prevent pollution from fugitive emissions, we also consider it appropriate to include an Improvement Condition (IC10) to require the Operator to produce a Leak detection and repair (LDAR) programme (in accordance with BAT Conclusion 14(h) of the Waste Treatment BREF Conclusions Document) for the new BUP.

## Reporting

We have updated the specified reporting in the permit to include reporting of annual volumes of biomethane production and export as well as total propane used. We made these decisions in accordance with BAT for this sector.

Table S4.1 has also been updated to include an additional row entry, which references reporting requirements for process monitoring. This was omitted from the previous variation in error, so is now included.

## Operating techniques

We have reviewed the techniques proposed by the operator and compared these with the relevant guidance notes, including the BAT Reference Conclusions for the Waste Treatment Sector, published in 2018 and How to comply with your environmental permit guidance published in 2014. We are satisfied that the techniques proposed are appropriate.

Details of proposed operational techniques and control measures to be implemented on site in relation to the new BUP have been reference within Table 1.2 of the permit. The Operators Management System will need to be updated to include these documents.

## The permit conditions

### Waste types

There are no changes proposed to the waste types accepted at the AD Facility, as a result of this variation application.

### Improvement conditions

Based on the information provided within the variation application, we consider that we need to impose improvement conditions. We have included three improvement conditions to ensure that emissions to air and potential odours from the BUP are insignificant.

- Improvement Condition 9 (IC9) - The first improvement condition to be added to the permit relates to emissions to atmosphere from the main BUP stack. As the BUP is not yet built or operational, assumptions have been made within the application on the expected pollutants to be emitted from the BUP stack (A8), as well as expected volumes and concentrations. This improvement condition requires the operator to undertake an emissions monitoring study to verify the assumptions made in the application in relation to the releases of pollutants to air from the Biogas Upgrading Plant.
- Improvement Condition 10 (IC10) - The second improvement condition to be included relates to requirements specified within BAT Conclusions of the Waste Treatment BREF Document (EU 2018), and the operator demonstrating compliance with BAT 14(h) Leak detection and repair (LDAR) programme.
- Improvement Condition 11 (IC11) – The third and final improvement condition added requires the Operator to update their existing Odour Management Plan to incorporate all potential odour sources identified from the BUP.

The exact wording of the new improvement conditions is provided within Annex 1 to this document.

## Operator Competence

### Technical competence

Technical competency is required for the permitted activities. The operator is a member of an agreed scheme. A copy of the CoTC Holders continued competency WAMITAB certificate was submitted in support of the variation application.

### Relevant convictions

Our Enforcement Database has been checked to ensure that all relevant convictions have been declared. Relevant convictions were found and declared in the application.

Records show a single offence against Regulation 38(1)(a) and 39 Water Quality, relating to contamination of a borehole resulting from land spreading activities. Date of conviction was March 2019, which means the offence is now spent.

As the conviction (discharge to water) is not relevant to this application, the operator satisfies the criteria in RGN 5 on Operator Competence.

### Opra

There are no changes to the Opra score for the site, as a result of this variation. The OPRA score at permit issue remains 72.

## ANNEX 1: Improvement Conditions

As described above, based on the information provided within the variation application, we consider it necessary to impose several improvement conditions. The improvement conditions to be added within Table S1.3 of the permit are repeated below.

| Table S1.3 Improvement programme requirements |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                          |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Reference                                     | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Date                                                                                                                                     |
| IC9                                           | <p>The operator shall provide results of a monitoring study to verify the assumptions made in the application in relation to the releases of pollutants to air from the Biogas Upgrading Plant. The study shall include the monitoring of point source releases to air from the biogas upgrading plant emission point A8 during normal operation, having regard to technical guidance, Monitoring stack emissions: environmental permits and to MCERTS standards. The pollutants to be monitored shall include:</p> <ul style="list-style-type: none"> <li>total volatile organic compounds including methane; and</li> <li>hydrogen sulphide.</li> </ul> <p>The report shall assess whether the assumptions made in the application in respect of the emissions from A8 are reasonable, and if actual emissions are higher, shall propose a timetable of actions to reduce emissions and re-assess impact. If required, those actions will be completed within a timescale agreed in writing with NRW.</p> | <p>Within 6 months following commissioning of the biogas upgrading plant or otherwise agreed in writing with Natural Resources Wales</p> |
| IC10                                          | <p>The Operator shall submit to Natural Resources Wales a written procedure(s) in accordance with requirements specified within BAT Conclusions of the Waste Treatment BREF Document (EU 2018) in relation to:</p> <ul style="list-style-type: none"> <li>BAT 14(h) Leak detection and repair (LDAR) programme</li> </ul> <p>The procedure(s) should describe the LDAR programme for the Biogas Upgrading Plant. Details are to be included within the Operators Environmental Management System</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Within 3 months of permit issue or otherwise agreed in writing with Natural Resources Wales</p>                                       |
| IC11                                          | <p>The operator shall review the sites existing Odour Management Plan and submit for written approval from Natural Resources Wales an updated version having incorporated all potential odour sources from the Biogas Upgrading Plant along with associated odour control measures.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Within 6 months of permit issue or otherwise agreed in writing with Natural Resources Wales</p>                                       |