

## Permitting Decisions - Bespoke Permit

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We have decided to grant the permit for Evercreech Renewable Energy AD Site operated by BioConstruct NewEnergy Ltd.

The permit number is EPR/ZP3609MP/A001.

The application is for an anaerobic digestion (AD) facility designed to process up to 90,000 tonnes of waste per year received as either packaged or unpackaged solid wastes, or pumpable liquid wastes. Permitted waste will be delivered to the site in covered vehicles and deposited in an enclosed reception building.

All solid and liquid wastes will be offloaded inside the reception building. Packaging will be removed from wastes via a de-packaging machine located inside the building and the de-packaged waste will be blended in a mixing pit and/or feeder unit to form a pumpable substrate that can be pumped via an enclosed pumping line into the digesters.

Wastes will be fed into the digesters for biological treatment at a maximum rate of 246 tonnes a day, and an average retention time of 60 days. Following digestion, the by-product from the process (whole digestate) will be transferred to one of three pasteurisation tanks for heat treatment at 70°C for a minimum of one hour in accordance with the Animal By-Product Regulations.

The by-product from the process (digestate) will be separated into the solid and liquid fraction in the enclosed reception building. The reception building is equipped with an extraction ventilation system which extracts air to an odour abatement system consisting of a Centri Air abatement system and carbon filters that will treat odour emissions prior to discharge to atmosphere. The liquid fraction will be transferred to a digestate storage tank prior to re-circulation within the process to assist with pumpability of substrate or despatched off site for landspreading. The solid fraction of the digestate will be despatched off site for landspreading. This environmental permit does not authorise the spreading of digestate on any land.

The biogas produced will be stored in gas holders in the roof space of the digesters and digestate storage tank. Biogas will be diverted to the CHP engine, boiler and upgrading unit via the gas line and gas blowers, where it will be combusted to produce electricity or heat or upgraded to produce biomethane that can be injected to the national grid. The heat produced from the CHP engine and boiler will be recovered and integrated into the process heating requirements. Electricity generated by the CHP will be used for on-site operations at the AD plant as will heat generated by the biogas boiler.

The emergency flare will operate to deal with any excess biogas or situations where there is a risk of excess pressure building up within the system, especially when the gas upgrading plant and CHP engine /auxiliary boiler are not running due to routine maintenance or breakdown.

Air emissions include point source emissions from the CHP engine, the emergency flare, boiler, odour abatement stacks, gas upgrading plant stack and tank pressure relief valves. All emissions have been assessed in line with our technical guidance and appropriate emissions limits set in the permit.

There are no process discharges to controlled waters or sewer. Site surface water run-off is directed to a sump for re-use on site or discharged to surface waters.

The installation is located on industrial land at National grid reference ST 63542 37112. The installation is bound to the north and west by arable farmland and to the east and south by industrial units and warehouses. The A371 lies to the west of the installation. The closest designated habitat site to the installation is Mendip Woodlands SAC, approximately 10 km northeast of the site. There are three Local Wildlife Sites (Ditcheat Gully, Bagborough Farm and Baytree Cottage) within 2 km of the installation.

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 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](#) 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.

# Key issues of the decision

## Choice of odour abatement technology

We asked the applicant (now the Operator) to provide a detailed justification for the choice of odour abatement technology proposed for the installation during the determination.

The Operator reported that a Centri air odour abatement system has been proposed for the site. The abatement system will be used to treat process and building air prior to discharge to atmosphere via a dedicated stack (emission point A1). The system will comprise three different control elements which are summarised as follows:

- A ColdOx UV and activated carbon system (unit 1) which will be used to treat air from the digestate separation area and tanker hall, as well as air which has been pre-treated using a DEO-500 regenerative catalytic conversion and Sulphared pellet unit;
- A higher dimensioned ColdOx UV and activated carbon system (unit 2) which will be used to treat air extracted from the reception hall, filling station/ mixing pit room and switchboard room; and
- A DEO-500 regenerative catalytic conversion system and Sulphared pellet unit which will be used to pre-treat air displaced from digestate vacuum tankers during filling and air extracted from the mixing pit prior to final conditioning using the lower dimensioned ColdOx UV and activated carbon plant (unit 1).

### ColdOx Ultra Violet and Activated Carbon System

The site will feature two separate ColdOx UV and activated carbon systems which will be used to treat building extract air prior to discharge via emission point A1. The odour removal technique is based on preliminary treatment using UV radiation in order to fragment organic molecules and oxidise odorous compounds through ozonolysis and photolysis. A secondary activated carbon stage then provides final absorption of residual odours prior to release to atmosphere.

### DEO-500 Regenerative Catalytic Conversion

A DEO-500 regenerative catalytic conversion system will be used to pre-treat air extracted from the mixing pit prior to final conditioning using the lower dimensioned ColdOx UV and activated carbon plant (unit 1). The DEO unit will comprise a single stage wire mesh catalyst which when heated will facilitate oxidation of reduced sulphur compounds, ammonia, aromatic components and VOCs. The DEO-500 is typically more energy efficient than other methods such as Regenerative Thermal Oxidation (RTO) as destruction of odorous compounds occurs at lower temperatures. In addition, recovery of exhaust gases via heat

exchangers allows pre-heating of air and further reductions in energy consumption.

### Sulphared Pellet Unit

The Sulphared pellet unit will be used to treat air displaced from digestate vacuum tankers during filling prior to final conditioning using the lower dimensioned ColdOx UV and activated carbon plant (unit 1). This will comprise a unit containing oxidised iron pellets to capture sulphur compounds such as H<sub>2</sub>S. The system will also include bag filters in order to reduce the potential for dust blinding of the media.

### Compliance with BATc 34

As detailed in the previous Section, odour emissions from all sources and process areas within the reception building will be subject to final treatment using activated carbon prior to discharge to atmosphere. Absorption using activated carbon is specified as a suitable abatement technique in BATc 34 and is identified as an effective control option within the EC 'Best Available Techniques (BAT) Reference Document for Waste Treatment with reported reduction efficiencies between 70% and 99%.

A DEO-500 regenerative catalytic conversion system will be used to provide pre-treatment of air extracted from the mixing pit prior to final conditioning using ColdOx UV and activated carbon.

The DEO-500 system uses the same principle of treatment as Thermal Oxidation (TO) which is specified as a suitable abatement technique in BATc 34. However, it has the ability to effectively reduce emissions at lower operating temperatures resulting in improved energy efficiency, a key consideration when determining BAT. Regenerative catalytic oxidation is also recognised as an appropriate technology for the treatment of waste process gases within EC guidance, with reported reduction efficiencies between 80% and 95%.

Based on the above, the Operator considered that suitable justification has been provided to demonstrate that the proposed odour abatement system complies with the requirements of BATc 34.

However, the Operator reports that the following factors applicable to the ColdOX UV and Sulphared pellet units should also be noted which further support selection of the technology:

- Ozone generated by UV systems such as the ColdOX units is recognised within EA guidance as appropriate for the treatment of emissions generated by biowaste processes; and,
- Iron oxide adsorption, which is the abatement process utilised by the Sulphared pellet unit, is recognised as an appropriate technology for the treatment of H<sub>2</sub>S emissions within EA guidance. This states that systems have the capability to reduce inlet concentrations by up to 2,000 ppm.

### Compliance with BAT-AELs

Information provided by Centri air indicates that the proposed abatement system will be capable of achieving the final treated air pollutant concentrations specified in Table 1.

**Table 1 Treated Air Pollutant Concentrations**

Ammonia	<1.4 mg/m <sup>3</sup>
Hydrogen sulphide	<0.2 mg/m <sup>3</sup>
Odour	1,000 ouE/m <sup>3</sup>
Dust	<5 mg/m <sup>3</sup>
TVOC	data not available

As shown in Table 1, the treated air pollutant concentrations achievable by the system are below or equal to the relevant BAT-AELs in all cases. Although an outlet TVOC concentration is not specified, information provided by Centri air indicates that the system will be capable of achieving >90% reduction in levels between untreated inlet and treated outlet air, which is consistent with the efficiencies stated in EC guidance for the technology types that comprise the system.

Evidence to support the ability of the proposed system to achieve the treated air pollutant concentrations specified in Table 1 is provided based on the results of recent performance monitoring undertaken at two other biowaste treatment sites, which utilise similar abatement plant supplied by Centri air in order to control odour emissions.

Following completion of a programme of remedial works at one biowaste plant in 2021 to improve and optimise the performance of the existing abatement system, a programme of emissions monitoring was undertaken in order to assess treated air odour concentrations. The results showed that the geometric mean odour concentration at the outlet to the DEO-500 unit installed at the site was 300 ouE/m<sup>3</sup>. Further testing was undertaken at the site in January 2022 and the results indicated that the average odour concentration at the main outlet to the abatement system was 876 ouE/m<sup>3</sup>. These concentrations are below the achievable treated air level specified by Centri air and the relevant BAT-AEL.

The results of emissions monitoring another biowaste plant in October 2021 indicated the average NH<sub>3</sub> concentration at the main outlet to the abatement system was <0.04mg/m<sup>3</sup>. This is below the achievable treated air level specified by Centri air and the relevant BAT-AEL. In addition, the results of emissions monitoring undertaken in February 2022 following completion of a programme of remedial works to optimise the performance of the system indicated that the geometric mean odour concentration at the outlet was 401 ouE/m<sup>3</sup>. This is below achievable treated level specified by Centri air and the relevant BAT-AEL.

As stated above, the results of monitoring undertaken at the two biowaste plants indicate that when optimised, the Centri air systems have the ability to achieve the treated air pollutant concentrations specified in Table 1 and the relevant BAT-AELs. The Operator states that a programme of monitoring and maintenance will

be undertaken at the Evercreech facility in order to ensure that optimum efficiency is achieved by the abatement plant.

We are in agreement with the Operator's justification of BAT at this installation.

## **Decision considerations**

### **Consultation**

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

The application was publicised on the GOV.UK website. We consulted the following organisations:

- Local Authority – Environmental Health
- Local Planning Authority
- Director of Public Health
- UK Health Security Agency
- Local Fire & Rescue
- Food Standards Agency
- Health & Safety Executive
- 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' and Appendix 2 of RGN2 'Defining the scope of the installation'.

### **The site**

The Operator has provided a plan which we consider to be satisfactory. The plan is included in the permit.

## **Site condition report**

The Operator has provided a description of the condition of the site, which we consider is satisfactory. 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.

We consider that the application will not affect any site of nature conservation. We have not consulted Natural England. The decision was taken in accordance with our guidance, AQTAG 14.

## **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, all emissions may be screened out as environmentally not significant.

## **General operating techniques**

We have reviewed the techniques used by the Operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility (Waste Treatment BREF and BAT Conclusions).

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

## **Operating techniques for emissions that do not screen out as insignificant**

Emissions of nitrogen oxides cannot be screened out as insignificant. We have assessed whether the proposed techniques are Best Available Techniques (BAT).

The proposed techniques/ emission levels for emissions that do not screen out as insignificant are in line with the techniques and benchmark levels contained in the technical guidance and we consider them to represent appropriate techniques for the facility. The permit conditions enable compliance with relevant BAT reference documents (BREFs) and BAT Conclusions, and Emission Limit Values (ELVs) deliver compliance with BAT-Associated Emission Levels (AELs)].

## **Operating techniques for emissions that screen out as insignificant**

Emissions of sulphur dioxide, carbon monoxide and volatile organic compounds have been screened out as insignificant, and so we agree that the Operator'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.

## **Odour management**

We have reviewed the odour management plan in accordance with our guidance on odour management. We consider that the odour management plan is satisfactory and we approve this plan.

We have approved the odour management plan as we consider it to be appropriate measures based on information available to us at the current time. The Operator should not take our approval of this plan to mean that the measures in the plan are considered to cover every circumstance throughout the life of the permit.

The Operator should keep the plans under constant review and revise them annually or if necessary sooner if there have been complaints arising from



operations on site or if circumstances change. This is in accordance with our guidance 'Control and monitor emissions for your environmental permit'. The plan has been incorporated into the operating techniques S1.2.

## **Noise and vibration management**

We have reviewed the noise and vibration management plan in accordance with our guidance on noise assessment and control. We consider that the noise and vibration management plan is satisfactory and we approve this plan.

We have approved the noise and vibration management plan as we consider it to be appropriate measures based on information available to us at the current time. The Operator should not take our approval of this plan to mean that the measures in the plan are considered to cover every circumstance throughout the life of the permit.

The Operator should keep the plans under constant review and revise them annually or if necessary sooner if there have been complaints arising from operations on site or if circumstances change. This is in accordance with our guidance 'Control and monitor emissions for your environmental permit'.

## **Waste types**

We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility.

We are satisfied that the Operator can accept these wastes for the following reasons:

- they are suitable for the proposed activities
- the proposed infrastructure is appropriate; and
- the environmental risk assessment is acceptable.

We made these decisions with respect to waste types in accordance with Framework Guidance Note – *Framework for assessing suitability of wastes going to anaerobic digestion, composting and biological treatment* (July 2013).

## **Pre-operational conditions**

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

### Management

The Operator has stated in the Application that they will implement an Environmental Management System (EMS). Pre-operational condition 1 in Table

S1.4A has been included in the Permit which requires the Operator to provide the final EMS prior to commissioning of the Installation and to make available for inspection all EMS documentation.

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

### Commissioning

The proposed Installation will undergo a period of commissioning before becoming fully operational. The IED and the conditions set out in the permit cover activities at the Installation once operational – accepting wastes for treatment.

At the commissioning stage, Operators are required to demonstrate that the plant (including any odour abatement system) is working effectively and that appropriate measures are in place to protect the environment and human health during this period (prior to the commencement of operations). As the plant is undergoing construction, we have included pre-operational condition 2 in Table S1.4A which requires the Operator to submit a commissioning plan to the Environment Agency for approval.

The commissioning plan will include the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the measures to be taken to protect the environment and report to us in the event that actual emissions exceed expected emissions. Commissioning can only be undertaken in accordance with the approved commissioning plan. As the impact of odour emissions was the main concern during the determination, we expect the Operator to pay particular attention to this issue in the commissioning plan.

### Characterisation of waste types

The Operator has proposed the following wastes (EWC 03 03 10, 03 03 11 and 04 01 01) for biological treatment. The waste streams are not listed in our revised biowaste treatment permit templates. We have retained these wastes in the permit provided the Operator undertakes a detailed characterisation of the wastes prior to acceptance for treatment at the site in accordance with BATc 2a. Pre-operational condition 1 in Table S1.4B has been included in the permit to ensure a detailed characterisation of the waste is undertaken.

We made this decision with respect to waste types in accordance with the Framework Guidance Note – *Framework for assessing suitability of wastes going to anaerobic digestion, composting and biological treatment* (July 2013).

## Improvement programme

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

### Biogas upgrading plant

The Operator submitted an assessment to consider the impact of air emissions from the biogas upgrading plant. The emissions of hydrogen sulphide and volatile organic compounds (VOCs) were screened out as insignificant, in that process contributions were <1% of the long term ES and <10% of the short term ES. We conclude that emissions of hydrogen sulphide and VOCs are unlikely to have a significant impact on human health.

The emissions data (H<sub>2</sub>S and VOCs) from the biogas upgrading plant were obtained from the manufacturer and not based on real-time operational monitoring data. We consider it appropriate to set an Improvement Condition (IC1) which requires the Operator to undertake a monitoring survey following the commencement of operations at the biogas upgrading plant to obtain actual (real-time) operational monitoring data.

Improvement Condition 2 (IC2) requires the Operator to undertake an air emissions impact assessment (H1 software tool) using the results of the monitoring survey and compare the long and short term impacts of pollutants in accordance with the Environment Agency Guidance – Air emissions risk assessment for your environmental permit. Following the review of results from the monitoring survey and impact assessment, the Environment Agency shall consider whether or not emission limits are appropriate at emission point A8. We have used this approach for biowaste treatment facilities proposing to install biogas upgrading plants across England.

### Methane slip via CHP engine and other sources

We have included improvement condition 3 in the permit which requires the Operator to assess methane slip resulting from the combustion of biogas via the CHP engines. Following an assessment of the data, the Environment Agency shall consider whether or not emission limits for volatile organic compounds are applicable for this installation.

As part of the Environment Agency approach to reduce methane emissions in the biowaste treatment sector, we have included Improvement condition 4 which requires the Operator to review all sources of methane leaks from the site using leak detection and repair (LDAR) programme. Where leaks are identified, the Operator is required to implement measures to mitigate the identified leaks.

## Review of odour abatement plant

As part of the Environment Agency approach to reduce emissions in the biowaste treatment sector, we have included Improvement condition 5 which requires the Operator to review abatement plant on site, in order to determine whether existing measures have been effective and adequate to prevent and/or minimise emissions released to air. Where further improvements are identified, the operator is required to implement these measures.

## **Emission Limits**

We have decided that emission limits are required in the permit. Emission Limit Values (ELVs) and technical measures based on Best Available Techniques (BAT) have been added for the following substances:

### Emission points to air

- Nitrogen oxides
- Sulphur dioxide
- Carbon monoxide
- Total volatile organic compounds
- Ammonia

### Emission points to water

- Total organic carbon (TOC)
- Chemical oxygen demand (COD)
- Total nitrogen
- Total phosphorus
- Total suspended solids

Please refer to Tables S3.1 and S3.2 of the permit for further details.

## **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 comply with the Waste Treatment BAT Conclusions. We made these decisions in accordance with Waste Treatment BAT Conclusions.

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. Please refer to Tables S3.1 and S3.2 of the permit for further details.

## **Reporting**

We have specified reporting in the permit. We made these decisions in accordance with Waste Treatment BAT Conclusions. Please refer to Tables S3.1 and S3.2 of the permit for further details.

## **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. We have therefore only reviewed the summary points. A full review of the management system is undertaken during compliance checks.

## **Technical Competence**

Technical competence is required for activities permitted. The Operator is a member of the CIWM/WAMITAB scheme. We are satisfied that the Operator is technically competent.

## **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.

# Consultation Responses

The following summarises the responses to consultation with other organisations, 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 UK Health Security Agency.

### Brief summary of issues raised:

The main emissions of potential concern are dust, aerosols fugitive gas emissions and odour. We note that whilst the air quality exposures from the plant have been modelled the assessment has not been included with the documentation provided to UKHSA. The documentation provided assesses impacts as being adequately controlled with low residual risk, but the lack of full documentation means that we cannot undertake a comprehensive public health risk assessment at the present time.

UKHSA is generally satisfied that this type of process can operate without any significant risks to public health.

The lack of air quality modelling data does however mean that we are unable to fully assess the impact of the installation on public health. In this instance, based on the submitted material, UKHSA is willing to accept the applicants' assurances that air quality impacts will not be significant, subject to the environment agency being satisfied that:

1. The submitted modelling report confirms this position and;
2. That the modelling and risk assessment fully considers emissions from the plant, CHP, backup boilers, emergency flare, dual fuel boiler and backup generator.

This consultation response is based on the assumption that the permit holder shall take all appropriate measures to prevent or control pollution, in accordance with the relevant sector guidance and industry best practice.

### Summary of actions taken:

We have considered the applicant's air quality modelling and risk assessment and we agree with the results, that there will be no exceedance of Air Quality Objectives which are protective of human health. We have set emission limits based on the modelling provided. We confirm that permit conditions and monitoring requirements have been set based on industry best practice and Best Available Techniques (BAT).

No responses were received from the other organisations consulted.

This proposal was publicised on the Environment Agency's website between 22/02/2022 and 22/03/2022. No representations other than from UKHSA were received during this period.