

## Permitting Decisions - Variation

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We have decided to grant the variation for Attleborough Anaerobic Digestion Plant operated by Eco Verde Energy Limited.

The variation number is EPR/XP3102MJ/V002

The variation is for the transition of the existing facility from a standard rules installation to a bespoke installation. The variation also seeks to extend the site boundary to add land to the permitted area for a food waste anaerobic digestion facility (Waste AD Plant).

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

- highlights [key issues](#) in the determination
- summarises the decision making process in the [decision considerations](#) section to show how the main relevant factors have been taken into account
- explains why we have also made an Environment Agency initiated variation
- 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 and the variation notice.

## **Changes introduced by this variation notice**

### Crop-AD Plant

The current facility is an on-farm Crop AD plant. Site infrastructure includes silage clamps, two feeders, two primary digesters, a secondary digester, a separator, a covered digestate storage lagoon, a flare and a combined heat and power engine (CHP). The Mississippi Dryer, boiler and dirty water lagoon are being decommissioned.

The feedstocks for the existing Crop AD plant are energy crops namely maize and rye silage in addition to silage effluent and dirty water generated on-site. The Crop AD plant processes about 30,295 tonnes per year, operating in the thermophilic temperature range.

### Waste AD Plant

The Waste AD plant shall comprise a building for food waste reception and processing and digestate separation and fibre storage, three pasteurisers, three primary digesters and a secondary digester, covered digestate lagoon, surface water lagoon, new dirty water lagoon, gas upgrade equipment, grid entry unit, back-up boiler and a dual fuel flare. The new infrastructure for treating food waste and the resultant biogas is termed the 'Waste-AD Plant'.

The Crop-AD plant will operate separately to the new Waste-AD plant with respect to feedstocks, digestate and biogas management, however the CHP engine will provide heat and power for both AD plants. Together, the Crop AD Plant and the Waste AD Plant will form an Installation.

The Waste AD Plant has been designed to process up to 100,000 tonnes of waste per year of solid and liquid food waste, operating in the mesophilic temperature range. Permitted waste will be delivered to the site in covered vehicles and deposited in an enclosed reception building.

Following digestion, the by-product from the process (whole digestate) will be transferred to three pasteurisation tanks for heat treatment at 70°C for a minimum of one hour in accordance with the Animal By-Product Regulations.

The digestate from the Waste AD plant will be separated into the solid and liquid fraction in the enclosed reception building. The separated fibre will be stored within the reception building and the liquor will be stored in a purpose-built covered digestate lagoon. The 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. Digestate derived from the Crop-AD Plant is separated externally and the fibre falls from the separator via a covered chute into a covered trailer and despatched off site. This environmental permit does not authorise the spreading of digestate on any land.

The biogas produced on site will be stored in gas holders in the roof space of the digesters. Biogas will be diverted to the CHP engine, boiler and upgrading unit, where it will be combusted to produce electricity or heat or upgraded to produce biomethane that can be injected into 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 engine will be used for on-site operations at both AD plants. There is also a generator used for site operations in emergency events.

There are two emergency flares which 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 and/or boiler are not running due to routine maintenance or breakdown.

Air emissions include point source emissions from the CHP engine, the emergency flares, boiler, odour abatement stack, 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 surface water attenuation pond for re-use on site.

The installation is located at National Grid Reference TM 03300 95600. It lies approximately 250 metres to the north-west of the A11 dual carriageway, immediately beyond which lies the town of Attleborough, Norfolk. A tributary of the River Thet lies approximately 120 metres to the south of the site. Norfolk Valley Fens SAC and Breckland SPA, are located within 10 km of the site. Attleborough Wood (Local Wildlife Site and Ancient Wood Lands) is located within 2 km of the installation.

### **Changes introduced by the Waste Treatment BAT Conclusions**

The Industrial Emissions Directive (IED) came into force on 7 January 2014 with the requirement to implement all relevant Best Available Techniques (BAT) Conclusions as described in the Commission Implementing Decision. Article 21(3) of the IED requires the Environment Agency to review conditions in permits that it has issued and to ensure that the permit delivers compliance with relevant standards, within four years of the publication of updated decisions on Best Available Techniques (BAT) Conclusions. The BAT Conclusions for Waste Treatment (the BREF) was published on 17 August 2018 following a European Union wide review of BAT, implementing decision (EU) 2018/1147 of 10 August 2018.

This variation has been issued to update some of the conditions following a statutory review of the permits in the industry sector for biowaste treatment.

# 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 Centriair odour abatement system has been proposed for the site. The abatement system will be used to treat air from the reception building prior to discharge to atmosphere via a dedicated stack (emission point A01).

The Operator reports that the abatement system will incorporate DEO technology, targeted treatment for sources with high odour concentrations, which applies the same principle of treatment as Thermal Oxidation (TO). All odour emissions from the reception building will be further treated using ultra-violet (UV) light and activated carbon prior to discharge.

### Compliance with BAT-AELs

The applicant reports that both techniques are listed as appropriate in BATc 34 of the Waste Treatment BAT Conclusions. The applicant confirms that information provided by Centriair, indicates that the proposed abatement system will achieve the final treated air pollutant concentrations specified in BAT-AELs for NH<sub>3</sub>, H<sub>2</sub>S, odour and dust. Monitoring of the Centriair odour system has been undertaken on a comparable food waste AD facility (see Table 1).

**Table 1 Treated Air Pollutant Concentrations**

Parameter	LHS monitoring point	RHS monitoring point
Ammonia	<0.14 mg/m <sup>3</sup> (LHS inlet)	<0.14 mg/m <sup>3</sup> (RHS inlet)
	<0.07 mg/m <sup>3</sup> (LHS outlet)	<0.10 mg/m <sup>3</sup> (RHS outlet)
Hydrogen sulphide	<0.42 mg/m <sup>3</sup> (LHS inlet)	<0.41 mg/m <sup>3</sup> (RHS inlet)
	<0.40 mg/m <sup>3</sup> (LHS outlet)	<0.41 mg/m <sup>3</sup> (RHS outlet)
Odour	1,757 ouE/m <sup>3</sup> (LHS inlet)	977 ouE/m <sup>3</sup> (RHS inlet)
	1,105 ouE/m <sup>3</sup> (LHS outlet)	74 ouE/m <sup>3</sup> (RHS outlet)
TVOC	data not available	TVOC

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.

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, ammonia and volatile organic compounds (benzene) 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 PM<sub>10</sub>, PM<sub>2.5</sub> and H<sub>2</sub>S 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 S1.4 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.



## Secondary containment

The operator reports that the Crop-AD plant did not previously benefit from secondary containment. As part of the current improvement and expansion works a concrete secondary containment system is being retrofitted around the Crop-AD plant and built around the new Waste AD plant.

The operator confirms that the proposed secondary containment was designed in accordance with the relevant guidance (CIRIA C736). The containment capacity is designed in accordance with CIRIA C736, with the calculations demonstrating 25% of the combined volume to be a greater volume than 110% of the largest tank volume. The proposed footprint of the containment area allows for the walls to be constructed to a minimum height of 1.75 metres, which includes 250 mm freeboard capacity as specified in CIRIA C736.

All pipes, ducts and cables are fixed on cable trays and stanchions positioned above the concrete containment, to not penetrate the containment floor or walls. This has been designed in accordance with CIRIA C736 to ensure any potential leakages are visible to onsite, operational staff whilst carrying out daily inspections of the containment bund structure.

We have included pre-operational condition 2 in Table S1.4 which requires the submission of a report confirming the construction and integrity of the proposed secondary containment is fit for purpose and in accordance with industry standards prior to operation of the installation. This will ensure that the proposed secondary containment is properly designed to minimise risks to the environment and reduce the risks of accidents and their consequences.

## Characterisation of waste types

The Operator has proposed the following wastes (EWC 04 01 01 and 20 01 38) 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 3 in Table S1.4 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 Biological waste treatment: appropriate measures for permitted facilities (published 21 September 2022).

## 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.

### Storage lagoon design

The applicant did not provide pre-commissioning certificates for the digestate storage lagoon during the determination. We have therefore set improvement condition 3 (IC3) which requires the operator to ensure that a review of the design, method of construction and integrity of the proposed digestate storage lagoon is carried out by a qualified structural or civil engineer prior to the use of the lagoon. The review shall compare the constructed lagoon against the standards set out in CIRIA C736 and/or any other relevant industry standards. This will ensure that the storage lagoons are fit for purpose and have been constructed in accordance with industry standards.

### Lagoon cover and digestate storage capacity

The applicant confirms that the digestate storage lagoons and the dirty water lagoon will be covered. The digestate storage lagoon has a capacity of 10,000 m<sup>3</sup>. Current best practice is to have a minimum operational lagoon storage of two

months storage to take account of the periods where landspreading is not permitted. The applicant did not provide detailed information in response to type of lagoon cover and operational digestate storage capacity on site.

We have therefore set an improvement condition 4 (IC4) in the permit to address this issue.

#### 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 (IC5) 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.

#### Methane slip via CHP engine and other sources

We have included improvement condition 6 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 6 (IC6) 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.

## **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

Please refer to Table S3.1 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 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 Table S3.1 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 UK Health Security Agency note that the following plans were not included within the permit variation application, and request that the Environment Agency satisfy themselves that these plans are available:

- Daily Inspection (ATT-MP-01)
- The Odour Management Plan (ATT-OD-04)
- Fugitive Emissions Plan (ATT-SOP-05)
- Complaints procedure (EVE-SOP-02)
- Secondary Containment Checking & Emptying Procedure (ATT-SOP-14)
- Spill Control Procedure (EVE-SOP-07)
- Process Monitoring Procedure (ATT-SOP-03)

Based on the information contained in the application supplied to us, UKHSA has no significant concerns regarding the risk to the health of the local population from the installation. 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 odour management plan in the determination and we have approved it. The other documents are part of the applicant's Environmental Management System (EMS). We have included a pre-operational condition in the permit which requires the operator to provide the final EMS prior to the commencement of site operations. 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 25/03/2022 and 26/04/2022. No representations other than from UKHSA were received during this period.