Permitting Decisions- Variation

We have decided to grant the variation for Sandhill Biogas Plant operated by GWE BIOGAS LTD.

The variation number is EPR/TP3835KE/V011

The permit was issued on 05/03/2025.

Changes introduced by this variation notice/statutory review

- Construction of two additional primary digesters, termed Digester 6 and Digester 7
- Installation of an additional low temperature flare and upgraded desulphurisation plant
- Installation of a Modular Carbon Capture and upgrade System (CCUS) including storage
- Installation of vehicle refuelling equipment
- An increase in capacity up to 211,000 tonnes per annum
- Construction of an Agricultural Silage Clamp

This variation will enable the on-site storage of up to 15,000 tonnes of whole crop silage. The installation of the two additional digesters will facilitate the increase of the processing capacity of the AD facility to 211,000 tonnes per annum. This increase in anaerobic digestion capacity necessitates the installation of an additional new low temperature flare and higher capacity desulphurisation plant to support the increased volume of biogas to be produced. The proposed installation of the vehicle refuelling equipment enables the facility to address the issues of increasing energy prices by mitigating the reliance on external providers and have the convenience of being able to refuel onsite using its own compressed biogas. The proposed installation of the CCUS technology enables the facility to capture the CO2 produced as part of the anaerobic decomposition process. It is anticipated that the system will capture approximately 8,000 tonnes of CO2 per annum from the biogas to biomethane upgrading process. The captured CO2 will be utilised within the food and beverage industryWe 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
- 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.

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Key issues of the decision

Modular Carbon Capture and upgrade System (CCUS)

The CO_2 recovery unit implements a series of process steps to remove other trace gases from the CO_2 and to transform the CO_2 to a liquified state. The CO_2 is subject to compression, cooling and drying and the resulting liquid CO_2 is passed through a distillation column to remove any traces of methane. The final purified liquid CO2 is stored in a vacuum tank pending removal for use by tanker offtake.

All of the removed trace gasses and impurities are pumped back into the gas upgrading system.
In terms of the alteration of emission to air from the carbon capture plant there should be no additional risk as it is being installed as part of the gas upgrading plant i.e. it is not a combustion process. The carbon capture process simply removes carbon dioxide from the emissions produced by upgrading the gas and does not alter or produce any relevant emissions itself(relevant for ecological receptors as indicated in our guidance).

Following final confirmation of Modular Carbon Capture and upgrade System (CCUS) its specification and location on the site we are satisfied that the PO measure for future development complies with current guidance for the inclusion of this DAA at the facility

Increase in capacity up to 211,000 tonnes per annum

There addition of two primary digesters can accommodate the increase in annual throughput and there will be no significant impact on the local environment. We are satisfied that the facility will be complying with current guidance; Biological waste treatment: appropriate measures for permitted facilities.

Decision considerations

Confidential information

A claim for commercial or industrial confidentiality has not been made. The decision was taken in accordance with our guidance on confidentiality

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.

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

The application was publicised on the GOV.UK website.

We consulted the following organisations:

- Local Authority – Environmental Protection Department
- Fire & Rescue
- Director of PH/UKHSA
- Food Standards Agency
- National Grid

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

The site

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

These show the extent of the site of the facility including the discharge points

The plans show the location of the part of the installation to which this permit applies on that site.

The plan is included in the permit.

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.

Environmental risk

The proposed permission is not likely to damage these features of interest.

Exposure: The changes brought about by this variation increase the risk of fugitive emissions due to the additional silage clamp, increase in throughput, installation of new digesters and refuelling infrastructure. It will also alter point source emissions to air via the installation of carbon capture and a new flare.

Mechanism/Pathway: The risk of fugitive emissions in the form of dust, noise and run off/spills may be increased as a result of this variation, however the applicant has shown their management procedures are in line with best available techniques (BAT) for the waste industry and are sufficient to comply with their permit conditions which prohibit significant release of fugitive emissions. This includes the containment of potentially polluting liquids (fuel etc) and containment of the digester tanks, which must be sufficiently bunded so that there will be no fugitive emissions even in the unlikely event that there is a catastrophic failure of the tanks. The features of the SSSI are also not sensitive to noise and are 1800 metres away from the nearest part of the designated site. The site also has specific accident, noise and fugitive (dust) management plans which we have assessed and found to be appropriate for the risks on site. The pathway for damage to occur has therefore been removed for those risks.

Point source emission to air on the other hand do have a pathway as the compounds released by the flare and carbon capture unit could potentially reach the designated area, the closest unit of the SSSI is unit 38 which is characterised by Swamps along the Elmswell Beck West of Little Driffield. The plant assemblage is mainly made up of Reed Sweet Grass swamp (NVC S5) with

smaller areas other swamp vegetation such as Typha, Greater Willowherb, Water Mint etc.

Scale of effect: As mentioned above there should be no damage/effect from fugitive emissions in line with BAT and the permit conditions which are simply characteristics of this type of regulated facility.

The applicant has assessed their emissions to air in an air quality assessment. Additional emissions from the flare combined with other emissions from the site have screened out (<10% of the EQS) for short term NOx impacts. The impacts should therefore be insignificant and not cause any damage to the features of the SSSI. As the flare is only used periodically to alleviate the risk of accidental explosions or equipment failure long term critical levels and loads could not be modelled accurately and are not relevant for assessment.

In terms of the alteration of emission to air from the carbon capture plant there should be no additional risk as it is being installed as part of the gas upgrading plant i.e. it is not a combustion process. The carbon capture process simply removes carbon dioxide from the emissions produced by upgrading the gas and does not alter or produce any relevant emissions itself(relevant for ecological receptors as indicated in our guidance).

We therefore conclude the proposed variation is not likely to damage any features of special interest.

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 or similar methodology supplied by the operator and reviewed by ourselves, all emissions may be screened out as environmentally insignificant**.**

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.

The relevant guidance notes are as follows:

- Biological waste treatment: appropriate measures for permitted facilities, 21 September 2022, GOV.UK

- Best available techniques (BAT) for Waste Treatment as detailed in document reference 2010/75/EU

- Best Available Techniques (BAT) Conclusions for Waste Treatment as detailed in document reference C (2018) 5070

- Medium Combustion Plant Directive (MCPD)

The operating techniques that the applicant 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, sulphur dioxide, carbon monoxide and volatile organic compounds (VOCs) 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.

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 applicant 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 applicant 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 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 applicant 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 applicant 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.

Fire prevention plan

We haven't requested a Fire Prevention Plan at this time, but we will request one in the future if we consider the site poses a risk of fire.

The facility has been designed according to a Hazard and Operability Study (HAZOP), and subject to a full Dangerous Substances and Explosive Atmospheres (DSEAR) assessment in order to inform suitable infrastructure and management of operational activities at the installation. Permitted waste types are non-hazardous, and process material is in the form of liquid animal slurries, energy crops and solid farm feedstock, and we consider they do not pose a high fire risk.

Updating permit conditions during consolidation

We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit.

Raw materials

We have specified limits and controls on the use of raw materials and fuels.

Emission limits

No emission limits have been added, amended or deleted as a result of this variation.

Reporting

We have specified reporting in the permit. We made these decisions in accordance with Waste Treatment BAT Conclusions. Please refer to S4.1 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

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.

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 variation.

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 East Riding of Yorkshire Council

Brief summary of issues raised:

“”I confirm that I have no comments to offer in respect of noise or nuisance.””

Summary of actions taken: NA

Response received from UKSA.

Brief summary of issues raised: The main emissions of potential concern are fugitive releases to air and odour due to activities on site. Although a Generic Environmental Risk assessment has been submitted by the Applicant which outlines various risks and mitigation measures in place to minimise risk to receptors for any releases, particularly NOx (Oxides of Nitrogen) and CO (Carbon Monoxide) from Combined heat and power (CHPs), no Air Quality Impact Assessment has been submitted within the documentation. Therefore, UKHSA is unable to comment on potential fugitive emissions from the site and the impact on air quality.

The EA may wish to liaise with the Applicant to confirm that all fugitive emissions to air from the site, namely NOx (Oxides of Nitrogen) and CO (Carbon Monoxide) from the Combined heat and power (CHPs) meets all regulatory air quality standards and that mitigation measures are in place to minimise the impact of such emissions to the local population. 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: Response focuses on fugitive emissions to air from the site, namely NOx (Oxides of Nitrogen) and CO (Carbon Monoxide) from the Combined heat and power (CHPs) which has not been increased as part of this variation, no action was needed.