

Permitting Decisions- Variation

We have decided to grant the variation for Murrow Farm AD Plant operated by Murrow AD Plant Ltd.

The variation number is EPR/FB3133AW/V006.

The permit was issued on 09/10/2024.

The variation involves changes, that fall outside the current Standard Rules permit and will therefore vary the permit to a Bespoke permit. Key changes include:

- An increase in the permitted installation boundary to include additional storage areas and one digestate storage lagoon
- The addition of a carbon dioxide (CO2) recovery unit and associated storage
- An increase to annual throughput of the listed activity processed at the installation, from 100,000 tonnes to a maximum of 125,000 tonnes per annum
- Additional waste codes, as set out in the Standard Rules 2021 No.8
- Authorises the release of uncontaminated surface water from defined low points within non-operational areas of the facility (surplus to requirements of the AD plant) to nearby surface waters.

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 <u>decision considerations</u> section to show how the main relevant factors have been taken into account
- shows how we have considered the consultation responses

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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.

Key issues of the decision

CO2 liquefaction plant

The CO₂ recovery unit implements a series of process steps to remove other trace gases from the CO₂ and to transform the CO₂ to a liquified state. The CO₂ is subject to compression, cooling and drying and the resulting liquid CO₂ 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.

The operator has yet to finalise the specifications in accordance with BAT selecting equipment for the CO_2 recovery unit, and as such, assumed noise levels have been applied to the impact modelling assessment for the risk of noise arising from the new unit at the installation. The initial modelling assessment indicates that the noise rating level of the proposed plant is predicted to result in a low impact, concluding no adverse impacts, based on assumed values, if the noise emission of the proposed carbon capture plant is limited to 68 Db $L_{Aeq. T}$ at 1m.

Following final confirmation of CO₂ upgrading plant specification and commissioning of the new carbon capture unit, further iterations of the model will be undertaken to verify that the equipment concerned will achieve the required noise ratings to ensure no impacts. The NIA and in turn the NMP will be updated in light of this, and these measures are reflected in the improvement programme in the permit (See PO1 Table S1.4b).

We are satisfied that the PO measure for future development complies with current guidance for the inclusion of this DAA at the facility

Containment area interface barrier installation

The operator has constructed a large containment area adjacent to feedstock storage and processing areas and main digester tank process area at the facility. This containment area is surfaced by an impermeable HDPE liner and has been over sized for future developments, which are not intended in the foreseeable future. No processing of feedstocks of any kind takes place in this area and the area cannot be traversed by vehicles The area in question is subject to the improvement programme in the permit (See IC 4 and IC5 Table S1.3).

The area currently provides containment in the event of a catastrophic loss of containment. As the area by design constitutes an impermeable catchment area, clean rainwater accumulates during normal operations. The operator cannot install a drainage arrangement for gravity drainage of this clean surface water to the adjacent ditch as the area is designed to provide containment if catastrophic spill conditions occur. Any drainage system would compromise the purpose of the structure.

Clean surface water accumulating in this area, if not removed, will reduce the areas containment capacity. The operator is authorized to discharge the clean surface water from defined low points to near surface waters, should the need arise and surplus to water requirements in the AD plant. The surface discharge is subject to an improvement condition (See IC 9 Table S1.3) that requires a permanent barrier interface to be installed at the location.

The raised barrier installed across the interface area between the feedstock storage and handling area and the large containment area will prevent any possibility for any such contaminated run-off. Therefore, ensuring the water discharge to surface waters is clean and uncontaminated.

We are satisfied that the area is not for processing and that any risk of run off from the adjacent feedstock storage and treatment areas can be managed by the installed barrier arrangement, at the interface between the feedstock storage/treatment area and the HDPE containment area.

Suitability of site digestate storage lagoon

The operator will accept additional waste types (Table S2.3). This change to waste acceptance will result in the inclusion of an existing digestate storage lagoon to accept digestate that is categorised as not-end-of waste.

Following further information to schedule 5 notice response 26/07/2024, the digestate storge lagoon has been included within the installation boundary.

The pre-operational condition states the requirement of evidence of secondary containment measures, in line with the risk assessment methodology detailed within CIRIA C736 before the storage, treatment, and /or handling of digestate in relation to waste types listed in table S2.3. 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 <u>consultation responses</u> section.

The application was publicised on the GOV.UK website.

We consulted the following organisations:

- Local Authority Environmental Protection Department
- UK Health Security Agency (UKHSA)
- Health and Safety Executive (HSE)
- Food Standards Agency (FSA)
- Animal and Plant Health (APHA)

The comments and our responses are summarised in the <u>consultation responses</u> section.

The regulated facility

We considered the extent and nature of the facility at the site in accordance with RGN2 'Understanding the meaning of regulated facility', Appendix 2 of RGN2 'Defining the scope of the installation'.

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.

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.

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

Emissions to Air

The Applicant has assessed the Installation's potential emissions to air against the relevant air quality standards, and the potential impact upon local conservation and habitat sites and human health. These assessments predict the potential effects on local air quality from the Installation's stack emissions using the ADMS-6 Version 6.0.0.1 dispersion model, which is a commonly used computer model for regulatory dispersion modelling. The model used 5 years of meteorological data (years 2017 to 2021) collected from the Wittering weather station located approximately 32km west of the facility.

The consultant has assessed emissions of nitrogen oxides (NOx), sulphur dioxide (SO₂), VOC's as Benzene (C_6H_6) and Carbon Monoxide (CO) from these sources against their relevant short term and long term Environmental Standards (ES) for human health receptors, as well as emissions of NOx, Nitrogen deposition and acid deposition against their relevant critical loads and levels for sensitive ecological receptors.

Assessment of Air dispersion modelling Outputs

Human Health:

The Applicant's modelling predictions for Human Health impacts are summarised in Table 1.

The Applicant's modelling predicted peak ground level exposure to pollutants in ambient air and at discreet receptors. Table 1 shows the maximum predicted ground level concentrations at the most impacted receptor.

Whilst we have used the Applicant's modelling predictions in the table below, we have made our own simple verification calculation of the percentage process contribution and predicted environmental concentration. These are the numbers shown in the tables below and so may be very slightly different to those shown in the Application. Any such minor discrepancies do not materially impact on our conclusions.

Table 1

Pollutant	Pollutant EQS / EAL µg/m³		Back- ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
			μg/m³	μg/m³	% of EAL	μg/m³	% of EAL
NO ₂	40	1	6.04	1.97	4.93	8.01	20.02
	200	2		11.78	5.89	23.86	11.93
	125	4		2.88	2.30	7.58	2.30
	300	5		6.50	1.86	11.12	3.73
SO2	266	6	2.31	10.37	3.90	14.99	0.86
	5	7	0.16	0.0015	0.030	0.1575	3.15
VOC	24	8	0.16	0.008	0.03	0.320	1.30
СО	10,000	3	237	69.58	0.70	543.58	5.43

- 1 Annual Mean
- 2 99.79th %ile of 1-hour means
- 3 Maximum daily running 8-hour mean
- 4 24hr mean
- 5 1hr mean
- 6 15 minute mean
- 7 Annual Mean
 - 8 24hr mean

(i) Screening out emissions which are insignificant

Table 1 shows that all emissions apart from NO_2 can be screened out as insignificant in that short term process contribution are <10% of the relevant short term ES and <1% of the Long Term ES.

Therefore, we consider the Applicant's proposals for preventing and minimising the emissions of these pollutants to be BAT for the Installation.

(i) Screening out emissions which are not insignificant

Table 1 shows that emissions of NO₂ cannot be screened out as insignificant in that the Long-Term Process contribution is greater than 1% at 4.93%. Emissions of NO₂ are further addressed below

Emissions unlikely to give rise to significant pollution

(i) Nitrogen dioxide (NO₂)

The impact on air quality from NO₂ emissions has been assessed against the EQS of 40ug/m3 as a long-term annual average and a short term hourly average of 200ug/m3. The model assumes a 70% NO_x to NO₂ conversion for the long term and 35% for the short-term assessment in line with Environment Agency guidance on the use of air dispersion modelling.

Table 1 shows that the peak long-term PC of NO₂ is greater than 1% at 4.9% of the EQS and therefore cannot be screened out as insignificant. Even so, from the table above, the emission is not expected to result in the EQS being exceeded, the PEC is very low at approximately 20.03% of the relevant EQS. The peak short term PC is less than 10% at 5.89% of the EQS and so can be screened out as insignificant and is not expected to result in the EQS being exceeded.

Habitats:

The applicant has presented their modelling predictions at ecological receptors in Table 38 to Table 45 of the air quality assessment for annual mean NO_X , 24-hour mean NO_X , Annual Mean SO_2 , nutrient nitrogen deposition and acid deposition.

All pollutants of concern are shown to be insignificant at all sensitive receptors at <1% of the relevant Cle or Clo.

For the above emissions to air, for those emissions that do not screen out as insignificant, we have carefully scrutinised the Applicant's proposals to ensure that they are applying the BAT to prevent and minimise emissions of these substances. We consider the Applicant's proposals for preventing and minimising emissions to be BAT for the Installation.

The way in which the Applicant used dispersion models, its selection of input data, use of background data and the assumptions it made have been reviewed by the Environment Agency (using our AQMAU auditing tool, source check tool and screening tool) to establish the robustness of the Applicant's air impact assessment. The output from the model has then been used to inform further assessment of health impacts and impact on habitats and conservation sites.

The Applicant has stated that impacts will not be significant. As part of our detailed audit of the Applicant's modelling assessment, we agree with the Applicant's conclusions in this respect taking modelling uncertainties into account.

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

We have not consulted Natural England.

The decision was taken in accordance with our guidance.

Environmental risk

We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory.

The assessment shows that, applying the conservative criteria in our guidance on environmental risk assessment or similar methodology supplied by the operator and reviewed by ourselves, all emissions may be screened out as environmentally insignificant with the exception of the Noise emissions generated from the proposed carbon capture plant.

As such, a `pre-operational measure for future development` (see PO1Table S1.4B in the permit) has been included for the CO₂ liquefaction plant, as part of this variation

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 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 \$1.2.

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

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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.

A fire risk assessment has been undertaken and is reviewed on a regular scheduled basis. The sites Environmental Management System includes an accident management plan that considers the potential for fires and includes preventative aspects to manage the ongoing health and safety.

A firewater retention lagoon is located on the wider Somerset farm with a capacity of 121,500 litres to ensure that adequate supplies of water are available at the installation at all times should this be needed for fire suppression purposes

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.

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.

Pre-operational conditions

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

CO₂ liquefaction plant

The applicant proposes to add a carbon capture plant to the facility, within which includes implementing infrastructure yet to be specified. The process will involve removing CO₂ from the biogas upgrading process, by liquefaction (CO₂ compression to a liquefied state), then store in associated storage tanks as a final product before removing off site from the facility by tanker for use in the food and drink industry.

The pre-operational condition states the measures necessary before which, such activity can be authorised at the installation. This condition can be found in Table S1.4b Pre-operational measures for future development.

Suitability of site digestate storage lagoon

Before acceptance of additional waste types as seen in Table S2.3. The operator will provide evidence of suitability of containment in accordance with the risk assessment methodology detailed within CIRIA C736 or equivalent standard.

The pre- operational condition states the measures necessary for the storage, treatment, and /or handling of digestate in relation to waste types listed in table S2.3. This condition can be found in Table S1.4b Pre-operational measures for future development.

Improvement programme

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

<u>Improvement condition IC1and IC2 – assessing BUP emissions.</u>

We have set condition IC1 and IC2 in the permit to address this aspect of the point source emissions at the installation.

<u>Improvement condition IC3 – assessment of methane slip.</u>

We have set condition IC3 in the permit to monitor such emissions from the combustion of biogas in the gas engines at the installation.

<u>Improvement condition IC4 and IC5 – Secondary containment assessment and improvement</u>

We have set conditions IC4 and IC5 in the permit to address the deficiencies in the existing site secondary containment bund (not currently compliant with BAT guidance and CIRIA C736 for secondary containment). Conditions have been included in the permit to demonstrate maintaining the integrity of the temporary HDPE membrane liner bund, and a further condition for a proposal of works to improvements to the bund for the prevention of pollution in line with CIRIA C736.

Improvement condition IC6 - Liquid waste storage cover

We have set condition IC6 in the permit to address waste storage infrastructure that must be appropriately sealed /covered in line with our technical standards.

Improvement condition IC7 – Site Condition Report

We have set condition IC7 in the permit to address the inclusion of the `Digestate storage lagoon 2` in the Site condition report. Although small changes to the permitted boundary for storage, to reflect the built footprint of the site, (see green shaded areas on the site plan in schedule 7 of the permit) were included as part of the site plan revision – the Digestate storage lagoon 2, part of the wider Somerset farm, had not been incorporated.

Previously their inclusion was not necessary given the feedstock accepted at site (purposed grown crops, manures & slurries-digestate output regarded as not waste), however given the additional waste types accepted to include waste as listed in Standard Rules 2021 No.8, the digestate output then becomes waste, and as such the storage lagoon used for the storage of digestate must fall within the site boundary

<u>Improvement condition IC8 – Updating the Digestate storage plan</u>

We have set condition IC8 in the permit to address an updated storage plan to demonstrate sufficient site capacity for the storage of waste outputs (digestate) generated at the facility, given the increase of annual tonnage.

<u>Improvement condition IC9 – Containment area interface barrier installation</u>

We have set condition IC9 in the permit to address the potential effluent run off between the feedstock storage and handling area, and the over-sized containment bund area surfaced by a HDPE liner (see Schedule 5 Notice response 26/07/2024, CB2107 - Surface water discharge area). In line with our technical standards for site design and pollution prevention.

<u>Improvement condition IC10 – Manging surface water accumulating in the</u> concreated bunded area

We have set condition IC10 in the permit to address water storage measures for accumulating surface water in the concreated bunded area.

Emission limits

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

Monitoring

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

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

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.

Please refer to Table 3.1 of the permit for further details.

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

Reporting

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

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 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 UKSA.

Brief summary of issues raised: The main concerns outlined, are those associated with the combustion activities on site (nitrogen dioxide, sulphur dioxide, volatile organic compounds and carbon monoxide) plus bioaerosols and odours. The application indicates that the installation has mitigation measures and management plans in place as such that these off-site risks are anticipated to be either low or insignificant. Therefore, the UKHSA has no concerns regarding the risk to the health of the local population from the installation.

<u>Summary of actions taken</u>: 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 confirm that permit conditions and monitoring requirements have been set based on industry best practice and Best Available Techniques (BAT). Robust management plans have been approved in accordance with our guidance, and we are satisfied that the site design and operational management is compliant with the emissions associated.

Response received from Local Authority (Cambridge County Council).

<u>Brief summary of issues raised:</u> Concerns on whether the relevant planning permission, as outlined in the National Planning Policy Framework (NPPF) were in place with regards to the annual volume of waste for the proposed development.

<u>Summary of actions taken</u>: With respect to the comments concerning relevant planning permissions, the permitting regime are not obligated to consult the planning authorities, and as such confirm we are satisfied that the site design and operational management is compliant with annual volume of wastes proposed.

Brief summary of issues raised: Information within the Noise management Plan (NMP) with regard to; (i) no reference to a standard noise assessment methodology (such as BS41442), (ii) the nearest receptor is missing from the chart on nearest premises and (iii) ambiguity on whether or not past Noise complaints (logged in table 2 – NMP) had been resolved.

Summary of actions taken:

Regarding the noise assessment methodology - the operator has undertaken a Noise Impact Assessment (NIA) in accordance with BS41142 and in line with our guidance. As such we are satisfied with the Noise Management Plan conclusions.

Regarding the nearest receptors – we are satisfied that the nearest receptors have been included in the Noise Management Plan (section 3.1 Receptors and Impacts and table 1) as somerset Farm 212 m (R23) and Coronation House 270m (R6). This information should be made clearer in the NMP, and this has been raised with the operator. (Please see DMS record – Noise Email - 22/07/2024)

Regarding the complaints log – we have investigated and liaised with the Area Officer (AO) confirming that past complaints have been resolved with no on-going issues. (Please see DMS record – Area Officer Noise Email - 22/07/2024). We agree the content of the NMP complaints log introducers an element of confusion, and as such this has been raised to the operator to provide clarity to the complaints section, for future iterations. (Please see DMS record – Noise Consultation Email to operator- 22/07/2024)

A comprehensive NMP have been approved in accordance with our guidance, and we are satisfied that the site design and operational management is compliant with the emissions associated.

No further responses have been received from the other organisations consulted.