

Environment Agency permitting decisions

Variation

We have decided to issue the variation for Cedar Maltings operated by Muntons PLC.

The variation number is EPR/FP3132PH/V005.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Key issues; Storage, Bunding and Containment; Air emissions; Odour; Habitats Assessment; Operator Competence
- Annex 1 the decision checklist
- Annex 2 the consultation responses

Key issues of the decision

Storage, Bunding and Containment

The bunding assessment has been produced following Ciria guidelines C736: *Containment systems for the prevention of pollution*. The digester tank will receive Malted Ingredients (MI) effluent from the manufacturing process on site. This consists of malt extract and water washing, with a small trace amount of caustic soda from the Clean in Place (CIP) systems (categorised with the EWC code of 02 03 05).

MI Effluent will be directed to a new 650 m³ buffer tank, before entering a small 64 m³ stainless steel conditioning tank to pH condition and temperature adjust the effluent, prior to the main 2,047 m³ stainless steel bio-reactor tank.

The main Anaerobic Digestion (AD) bio-reactor and conditioning tank are made of high grade stainless steel, to increase the integrity of the tank to corrosion. Collision barriers are installed on the side nearest the roadway to prevent accidental damage from road transport. The existing effluent storage on the site is 2,405 m³ (125% of largest tank), and will be re-used as the bunding for the AD plant, and also will provide bunding for the aerobic waste water treatment plant that is currently un-bunded.

All storage tanks are made of concrete. The existing drainage system will be extended with clear isolation points and sumps, each provided with duty/standby pump systems. The AD plant sump will be fully isolatable, and be backed up with a standby diesel pump connection, in the event of power failure of the electric system. All tanks on the new AD plant have tanker take off points installed to allow tankering off site, in the event of adverse process conditions/failures.

The drainage systems have all been upgraded to accommodate the extra loading and for emergency conditions. The clay fraction from the construction is used to fill in between the tanks to decrease the permeability between the tanks to the ground.

Consultation with our local groundwater contaminated land (GWCL) team has confirmed that they are satisfied with the sites bunding and containment proposals. In summary:

- A local GWCL officer visited the site and is satisfied with the practices and construction on site;
- The site is underlain by low permeability clay, confirmed with laboratory testing;
- The feedstock is relatively granular and will have a relatively low flow rate in comparison to typical digestate;
- The site falls to the south and they have modelled that any escape of feedstock if there were a catastrophic failure would be contained on site;
- The site is manned 24/7 which will enable the reporting of incidents and cleaning up of spillages throughout operation;
- The tank base has a leak detection system;

- The maintenance regime (checking tank thickness for abrasion etc) is satisfactory and should give advance warning of problems.

Air Emissions

Sources of emissions to air are from the gas engine Combined Heat and Power (CHP) plant that will utilise the biogas resulting from the anaerobic digestion.

The new biogas engine exhaust will be released to atmosphere via a new 6.5m stack (emission reference A43) above the CHP, approximately 200 metres away from the closest offsite receptor.

The operator has undertaken an air quality screen using the Environment Agency H1 Risk Assessment tool. The modelling parameters and output predictions of this study and assessment have been validated using the Environment Agency air quality modelling and assessment unit (AQMAU) Screening Tool. We agree with the conclusion that there will be no likely exceedance of the air quality objectives for nitrogen dioxide or carbon monoxide. Further detail is provided below.

The following parameters were used to carry out the assessment:

Stack Parameter	Proposed biogas engine stack (A43)
Stack height (m)	6.5m
Diameter (m)	0.2m
Location (x,y)	606245, 257512
Emission rate of NO _x as NO ₂ (g/s)	0.29
Emission rate of CO (g/s)	0.378
Efflux velocity (m/s)	25
Efflux temperature (°C)	120

The closest site building considered high enough to have a significant effect on dispersion from the main stack is the AD bioreactor. Input parameters for this building are shown below:

Co-ordinates of building centre		Height (m)	Length (m)	Width (m)	Angle of length to north (°)
x	y				
606267	257593	8	60	60	0

We are satisfied that dispersion effects from this building have been suitably considered in the modelling assessment.

Background concentrations of NO₂ and SO₂ were obtained from the Department for Environment, Food and Rural Affairs (DEFRA) Local Air Quality Management (LAQM) website.

The nearest residential receptor is the shopping centre approximately 215m to the west of the CHP stack.

NO₂

Air Quality Objective	Objective value (µg/m ³)	PC (NO ₂) (µg/m ³)	PC / AQS (%)	x, y (closest offsite receptor)	Background (µg/m ³)	PEC (NO ₂) (µg/m ³)
Short-term AQS	200	12.3	6.15	606046, 257590	17.235	46.77
Long-term AQS	40	1.2	3		17.235	18.435

PC – Process concentration; AQS - National UK Air Quality Standard; PEC – Predicted Environmental Concentration

The short term modelling results at the closest offsite receptor maximum calculated concentration demonstrates that NO₂ can be considered insignificant according to our H1 criteria because the process contribution (PC) is less than 10% of the short-term environmental standard.

The long term modelling results at the closest offsite receptor maximum calculated concentration demonstrates that NO₂ can not be considered insignificant according to our H1 criteria as the PC is more than 1% of the long-term environmental standard. However, having taken into account the background concentration, we have concluded that emissions are unlikely to result in an exceedence of the relevant AQS because the Predicted Environmental Contribution (PEC) for this pollutant is less than 70% of the long term air quality standard.

PC long term < 70% standard long term
[18.435 µg/m³ < 28 µg/m³]

Carbon monoxide

The short term modelling results at the closest offsite receptor maximum calculated concentration of CO (µg/m³) for a stack height of 6.5m are shown below. There is no long-term air quality standard for CO.

Air Quality Objective	Objective value (µg/m ³)	PC (CO) (µg/m ³)	PC / AQS (%)	x,y (closest offsite receptor)
Short-term AQS	10,000	63.1	0.631	606046, 257590

PC – Process concentration; AQS - National UK Air Quality Standard

The short term modelling results at the closest offsite receptor maximum calculated concentration demonstrates that CO can be considered insignificant because the PC is less than 10% of the short-term environmental standard.

The engine is 0.499 MWth. The Environment Agency does not normally set Emission Limit Values (ELVs) for engines of this size. The Combustion Sector Guidance Note identifies benchmarks for boilers of less than 100MW

thermal input, but these are not generally applied to small boilers. Due to this the Environment Agency has determined not to set ELVs for emissions from the CHP engine. This decision is in line with the approach taken at similar installations elsewhere in the UK.

Odour

Areas on site with the potential to cause odour have been identified in the application. The closest receptor to the site is the Cedars Hotel and Conference Centre 350m west of the new AD facility. The closest residential receptors are located 450m west of the AD facility.

The operator has undertaken a qualitative odour risk assessment and prepared an Odour Management Plan for the site (reference: *Odour Management Plan: Anaerobic Digestion Plant at Cedar Maltings, Stowmarket*. ADAS. February 2015). The risk assessment of the local impact of odour emissions at the nearest receptors show that provided the operator achieves and maintains the emission rates and flow rates presented in the report, the process contributions at the most sensitive receptors will not exceed the indicative odour threshold for the most offensive odours. The operator has confirmed that they will maintain the optimum parameters for the abatement system to maintain the effectiveness of its performance.

The potential sources of odour on site have been identified in the Odour Management Plan (OMP). These sources include the maltings effluent in the preliminary tanks and anaerobic reactor, reject malt within the malt extract tank, coarse solids within the compactor/waste bin, digestate during the Dissolved Air Flotation (DAF) process and de-watering, digestate during pasteurisation, solid digestate in processing/storage building, solid digestate during transport, and venting of displaced air from the tanks.

Muntons PLC have proposed the following control measures to minimise odour. We are satisfied that these are adequate to minimise the potential impacts from the operation:

- The AD process operates in a fully enclosed system with limited potential for odours to escape;
- All effluent storage tanks and pipes are fully sealed throughout the process;
- An odour control system is in place in the AD reactor, conditioning and buffer tanks. This includes an air extraction system and wet scrubbing in the main anaerobic treatment reactor tank;
- The compressor in the scrubbing system is rated at 400m³/hr;
- The biogas store regulates the flow of gas to the CHP and is used to control the output of the CHP plant at the optimum level. This will prevent odorous gases from venting to the atmosphere;
- All pipelines are polyethylene to reduce the risk of corrosion;
- The AD reactor has collision barriers around to prevent accidental damage from road transport;
- The plant is monitored 24 hours 7 days a week via the factory supervisory control and data acquisition (SCADA) control system;

- Daily operator monitoring and plant inspections take place;
- The feedstock has very low sulphur compounds, therefore hydrogen sulphide concentrations were very low in pilot trials run by the operator;
- A full Odour Complaints Procedure has been put in place on site. This includes monitoring and contingency procedures;
- The odour management plan will be reviewed at least annually.

We are satisfied that the operator has risk-assessed and minimised odour emissions from the site.

Habitats Assessment

There are no Habitats Regulations sites within 10 km of the CHP stack. There is one Site of Special Scientific Interest (SSSI) within 2 km of the stack.

At 0.499 megawatts, the thermal input of the CHP engine will be less than 5MW_{th} and therefore is not relevant for habitats assessment in accordance with Environment Agency guidance AQTAG14 due to size.

This installation is not considered '*relevant*' for assessment under the Agency's procedures which cover the Conservation (Natural Habitats &c.) Regulations 1994 (Habitats Regulations). This was determined by referring to the Agency's guidance 'AQTAG014: Guidance on identifying '*relevance*' for assessment under the Habitats Regulations for installations with combustion processes.' As a result of this risk assessment, the Environment Agency can conclude that there is No Likely Impact on features for which the SSSI has been designated. An Appendix 4 form has been saved to EDRM for information.

Operator Competence

The operator is required to achieve the relevant WAMITAB qualification for Anaerobic Digestion ref: 4MBTAD6 (Digestion Facility including use of the resultant biogas) within a year of the variation being issued.

Annex 1: decision checklist

This document should be read in conjunction with the Duly Making checklist, the application and supporting information and permit/ notice.

Aspect considered	Justification / Detail	Criteria met Yes
Consultation		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with Regulatory Guidance Note (RGN) 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements.	✓
Responses to consultation and web publicising	The web publicising and consultation responses (Annex 2) were taken into account in the decision. The decision was taken in accordance with our guidance.	✓
Operator		
Control of the facility	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 EPR RGN 1 Understanding the meaning of operator.	✓
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application. This variation and consolidation implements the requirements of the European Union Directive on Industrial Emissions.	✓
The site		
Extent of the site of the facility	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility A plan is included in the permit and the operator is required to carry on the permitted activities within the site boundary.	✓
Site condition report	The operator has provided a description of the condition of the site.	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	<p>We consider the description as satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under Industrial Emissions Directive (IED) – guidance and templates (H5). See key issues for further information.</p>	
Biodiversity, Heritage, Landscape and Nature Conservation	<p>The application is within the relevant distance criteria of a site of nature conservation.</p> <p>A full assessment of the application and its potential to affect the sites has been carried out as part of the permitting process. We consider that the application will not affect the features of the site.</p> <p>The individual combustion plant sizes are less than 5MW and therefore under the Environment Agency's Air Quality Technical Advisory Group (AQTAG) 14 <i>Guidance on identifying 'relevance' for assessment under the Habitats Regulations for PPC installations with combustion processes'</i> no assessment is required due to the size of the combustion plant.</p> <p>See Key Issues section above for further information.</p> <p>We have not formally consulted on the application. The decision was taken in accordance with our guidance.</p>	✓
Environmental Risk Assessment and operating techniques		
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility.</p> <p>The operator's risk assessment is satisfactory.</p>	✓
Operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes:</p> <ul style="list-style-type: none"> • How to comply with your environmental permit; • Sector Guidance Note EPR S6.10 Food and drink general; • Sector Guidance Note EPR S5.06: Guidance on the recovery and disposal of hazardous and non-hazardous waste; 	✓

Aspect considered	Justification / Detail	Criteria met Yes
	<ul style="list-style-type: none"> • Sector Guidance Note EPR 1.01 – Combustion Activities; • Horizontal Guidance 4 – Odour Management. <p>The key measures proposed by the operator include the following:</p> <ul style="list-style-type: none"> • All plant will be subject to regular inspection and maintenance programme; • Alarms in place for critical operations; • Liquid storage tanks are located within secondary containment in line with Ciria C736 <i>Containment Systems for the Prevention of Pollution</i>; • Accident and Emergency procedures in place; • An odour management plan is in place for the site. <p>The proposed techniques and emission levels for priorities for control are in line with the benchmark levels contained in the Technical Guidance Note and we consider them to represent appropriate techniques for the facility.</p> <p>We consider that the emission limits included in the permit reflect the Best Available Techniques (BAT) for the installation.</p>	
The permit conditions		
Updating permit conditions during consolidation	<p>We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation.</p> <p>The operator has agreed that the new conditions are acceptable.</p>	✓
Incorporating the application	<p>We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process.</p> <p>These descriptions are specified in the Operating Techniques table in the permit.</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
Emission limits	<p>We have decided that emission limits should be set for the parameters listed in the permit.</p> <p>The following substances have been identified as being emitted in considerable quantities from the CHP engine and Emission Limit Values have been set for those substances for an hourly average.</p> <p>Oxides of nitrogen - 500 mg/m³ (NO and NO₂ expressed as NO₂)</p> <p>Carbon monoxide (CO) – 1,400 mg/m³</p> <p>Sulphur dioxide - 350 mg/m³</p> <p>Total volatile organic compounds (VOCs) – 1,000 mg/m³</p>	✓
Monitoring	<p>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.</p> <p>We made these decisions in accordance with EPR 1.01 – Combustion Activities.</p> <p>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.</p>	✓
Reporting	<p>We have specified reporting in the permit.</p> <p>We made these decisions in accordance with EPR 1.01 – Combustion Activities.</p>	✓
Operator Competence		
Environment management system	<p>There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
Financial provision	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.	✓

Annex 2: Consultation

Summary of responses to consultation and the way in which we have taken these into account in the determination process.

Response received from
Mid Suffolk District Council Planning Department – Response dated 22/12/2014
Brief summary of issues raised
<ol style="list-style-type: none">1. Planning permission includes a three year time limit condition, such that the proposal needs to be implemented before 16th March 2015.2. No comments with regards to noise, amenity, enforcement or other issues.
Summary of actions taken or show how this has been covered
No action necessary.

The following organisations were also consulted, however no response was received:

- Mid Suffolk District Council – Environmental Health Department;
- Health and Safety Executive.

This proposal was also publicised on the Environment Agency's website between 15/12/2014 and 14/01/2015, but no representations were received during this period.