

Environment Agency permitting decisions

Bespoke permit

We have decided to grant the permit for Welbeck Anaerobic Digestion Plant operated by Biogas Meden Ltd.

The permit number is EPR/KP3631AK.

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

- Description of main features of the installation
- Key issues
- Annex 1 the decision checklist
- Annex 2 the consultation and web publicising responses

Description of the main features of the Installation

The facility will process approximately 43,000 tonnes of materials each year, comprising mainly locally grown maize (30,000t/year) and sugar beet (3,500 t/year) with smaller quantities of waste vegetables (2,500 t/year) and farm yard manure (7,000 t/year).

The biogas produced by the Anaerobic Digestion (AD) system will be processed to remove trace gases and increase its heat value by removing CO₂ and adding Liquid Petroleum Gas (LPG) The majority of the resulting 'biomethane' will then be injected into the national gas grid. Some of the biogas will be burnt in a combined heat and power (CHP) unit on the site to generate heat and electricity to operate the AD process.

The AD process will also produce solid and liquid 'digestate'. This is a nutrient-rich organic fertiliser which

will be used by farmers in the local area, reducing the need for imported inorganic fertilisers and also creating a 'closed loop' of organic materials in the local economy.

Key issues of the decision

ODOUR

The applicant (now the operator) has submitted a satisfactory odour assessment with the application, using conservative assumptions based on the expected odour emissions from the facility.

The main assumptions are: 247 m² of the silage clamp exposed at any one time, 75 m² of vegetable waste on the silage clamp exposed at any one time, 54 m² solid digestate exposed at any one time and the farmyard manure exposed on the silage clamp for 4 hours twice per week whilst awaiting acceptance testing. (It should be noted that in the response to the Schedule 5 notice, the operator confirmed that farmyard manure will be delivered directly to the sealed feed hopper). It is also assumed that the liquid digestate collection tanker will vent to air whilst being filled twice per day.

The operator used the ADMS-5 dispersion model with appropriate meteorological data (five years, 2008 to 2012, hourly sequential data) from the nearest station at Nottingham Watnall, approximately 26 km from the site. The results show that the concentration of odour units at all sensitive receptors will be below 1.5 OU_e/m³ and therefore the impact is insignificant.

The operator has submitted an Odour Management Plan (OMP) in accordance with the Environment Agency Guidance H4: Odour Management.

The purpose of the OMP is to:

Establish the likely sources of odour arising from the AD plant;
Set out the procedures followed at the plant in order to prevent or minimise odour emissions; and,

Formalise the procedures for dealing with any odour complaints.

In accordance with Environment Agency (EA) guidance H4: Odour Management¹, this OMP has been designed to:

Employ appropriate methods, including monitoring and contingencies, to control and minimise odour pollution;

Prevent unacceptable odour pollution at all times; and,

Reduce the risk of odour releasing incidents or accidents by anticipating them and planning accordingly.

We consider the Odour Management Plan to be satisfactory.

BIOAEROSOLS

The Environment Agency publication "Guidance for developments requiring planning permission and environmental permits" states that "*We do not consider that bioaerosols from anaerobic digestion are a serious concern. However, some anaerobic digestion operations have attached composting*

facilities. In these cases, the applicant should refer to the guidance for composting below. “

No composting is taking place at the facility. The raw material is stored under cover and is only moved by mechanical shovel for loading into the feed hoppers.

Monitoring for bioaerosols has not been required.

NOISE

The operator has submitted a noise assessment, British Standard 4142:1997 “Method for rating industrial noise affecting mixed residential and industrial areas” and BS8233:1999 ‘Sound insulation and noise reduction for buildings – Code of practice’. A survey of the current noise levels at the nearest residential receptor was carried and a calculation of the sound level resulting from the facility, using the International Standard ISO 9613-2:1996 Acoustics - - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation. The results of this assessment indicate that the noise generation as a result of the proposed development will have a low impact on the nearest noise sensitive receiver. This meets the requirements of the National Planning Policy Framework (NPPF).

WATER

There are no discharges of process effluent to water or land. All contaminated rainwater or leachate is collected in a sealed drainage system and stored in the 242 cubic metre pre-storage tank from which it is mixed with the solid material, in the mixing pump for use in the anaerobic digesters. The pre-storage tank is fitted with a sealed lid and is mixed to avoid separation of suspended solids. Uncontaminated rainwater will be collected, stored and checked before being pumped to the surface water drain.

AIR EMISSIONS

Although the CHP unit has a thermal input of less than 1 MW and would normally be considered insignificant, the operator carried out dispersion modelling using Aermid for all emissions to air. They assumed a worst case scenario of the CHP unit operating at full power 24 hours per day for a full year and emissions at the maximum allowed by the permit.

The modelling showed the following emissions to have Process Contributions (PC) above 1% of the Environmental Assessment Level (EAL) at the location of maximum ground level concentration. The Predicted Environmental Concentrations (PEC) all fall within 70% of the EAL and are therefore considered acceptable.

Pollutant	PC ug/m ³	EAL	PC % EAL	PEC ug/m ³	PEC % EAL
NO ₂ annual	5.1	40	13	15.7	39
NO ₂	44.8	200	22	66	33

1 hr					
CO 8 hr	10,000	192.4	2	327.4	3
SO ₂ 15 min	15.8	266	6	29.6	11
SO ₂ 1 hr	11.8	350	3	25.6	7
SO ₂ annual	0.7	50	0.7	7.6	15

The predicted concentrations at all sensitive receptors fall well below the figures for the point of maximum ground level concentration.

The emissions from the biogas upgrade unit consist of carbon dioxide with traces of methane and hydrogen sulphide. Hydrogen sulphide generation is minimised by the use of ferric chloride in the digesters. Sulphur compounds and VOCs are removed from the biogas in activated carbon filters before the gas enters the separation membranes. Ammonia is removed by a sealed water scrubber, the water being returned to the digester system.

Emissions from the biogas unit and auxiliary boiler are insignificant.

The application is within the relevant distance criteria sites of heritage, landscape or nature conservation . Birklands and Bilhaugh SAC is 3 km to the SE, Welbeck Lake SSSI is 1.9 km to the N, The Carrs LNR is 2 km to the SW and the Bottoms LNR is 560 m to the S

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 sites.

Annex 1: decision checklist

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

Aspect considered	Justification / Detail	Criteria met
		Yes
Receipt of submission		
Confidential information	A claim for commercial or industrial confidentiality has not been made.	✓
Identifying confidential information	We have not identified any information provided as part of the application that we consider to be confidential. The decision was taken in accordance with our guidance on commercial confidentiality.	✓
Consultation		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with RGN 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements. For this application we consulted the following bodies: <ul style="list-style-type: none"> • Nottinghamshire County Council-Director of Public Health • Public Health England • Food Standards Agency • Health and Safety Executive 	✓
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 our guidance on what constitutes a legal operator	✓
The facility		
The regulated facility	The nature of the facilities taking place at the site required clarification. The operator applied for a permit to operate a disposal activity described in Schedule 1 as 5.4 Part A (1) a (i). We believe the activity is more accurately described as a recovery activity under 5.4 Part A (1) b (i).	✓

Aspect considered	Justification / Detail	Criteria met Yes
	<p>The operator was asked to confirm his agreement in a Schedule-5 Notice. Confirmation was received on 02/03/2016</p> <p>The regulated facility is an installation which comprises the following activities listed in Part 2 of Schedule 1 to the Environmental Permitting Regulations and the following directly associated activities.</p> <ul style="list-style-type: none"> • 5.4 Part A (1) b (i). • Storage of waste pending recovery or disposal • Physical treatment for the purpose of recycling • Heat and electrical power supply • Emergency flare operation • Gas upgrading • Raw material storage • Gas storage • Digestate storage • Surface water collection and storage 	
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application.	✓
The site		
Extent of the site of the facility	<p>The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility including emission points</p> <p>A plan is included in the permit and the operator is required to carry on the permitted activities within the site boundary.</p>	✓
Site condition report	<p>The operator has provided a description of the condition of the site.</p> <p>We consider this description is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under IED – guidance and templates (H5).</p> <p>The SCR includes the results of site investigations including boreholes and excavations.</p> <p>An improvement condition has been included, requiring the operator to update the SCR on completion of the construction phase.</p>	✓
Biodiversity, Heritage, Landscape and Nature	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat:	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
Conservation	<p>Birklands and Bilhaugh SAC is 3 km to the SE Welbeck Lake SSSI is 1.9 km to the N The Carrs LNR is 2 km to the SW The Bottoms LNR is 560 m to the S</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>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. The operator's risk assessment is satisfactory. Further detail is given in the Key issues section above.</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"> Developing a management system Controlling and monitor your emissions for an environmental permit How to Comply-Additional Guidance for Anaerobic Digestion: Ref LIT 8737 Sector guidance note S5.06 Horizontal guidance H3, H4 and H5. Environmental Permitting Core Guidance Seeding of anaerobic digestion plants. <p>The proposed techniques/ emission levels for priorities for control are in line with the benchmark levels contained in the TGN and we consider them to represent appropriate techniques for the facility. The permit conditions ensure compliance with relevant BREFs and BAT Conclusions, and ELVs deliver compliance with BAT-AELs.</p> <p>We consider that the emission limits included in the installation permit reflect the BAT for the sector.</p> <p>Odour Management Plans</p> <p>We, the Environment Agency, have reviewed and approved the Odour Management Plan and consider it</p>	✓

Aspect considered	Justification / Detail	Criteria met Yes
	<p>complies with the requirements of our H4 Odour management guidance note. We agree with the scope and suitability of key measures but this should not be taken as confirmation that the details of equipment specification design, operation and maintenance are suitable and sufficient. That remains the responsibility of the operator.</p>	
The permit conditions		
Raw materials	<p>We have specified limits and controls on the use of raw materials and fuels. The raw material for anaerobic digestion is limited to Maize Silage, 30,000 tonnes /year and Sugar Beet, 3,500 tonnes /year.</p>	✓
Waste types	<p>We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility. The only wastes permitted are: 02 01 03 Plant tissue; 2,500 tonnes/year 02 01 06 Farmyard manure. 7,000 tonnes per year We are satisfied that the operator can accept these wastes for the following reason: All wastes are suitable for anaerobic digestion. We made these decisions with respect to waste types in accordance with our guidance – Framework for assessing suitability of wastes going to anaerobic digestion, composting and biological treatment.</p>	✓
Pre-operational conditions	<p>Based on the information in the application, we consider that we need to impose pre-operational conditions. POM1-Standard condition for review of secondary containment. POM2-Standard condition for submission of site EMS. POM3-Standard condition requiring submission of commissioning plan. POM4-Standard condition requiring written confirmation of the technically competent person on site.</p>	✓
Improvement conditions	<p>Based on the information on the application, we consider that we need to impose an improvement condition. We have imposed improvement conditions to ensure that the site investigation carried out during the construction phase is incorporated in the site condition report.</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</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	determination process. These descriptions are specified in the Operating Techniques table in the permit.	
Emission limits	We have decided that emission limits should be set for the parameters listed in the permit. The following substances have been identified as being emitted in significant quantities from the CHP plant and ELVs have been set for those substances. NO ₂ , SO ₂ and CO. Emissions from the biogas upgrade plant and auxiliary boiler are insignificant.	✓
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 imposed in order to meet the requirements of the TGN. (How to Comply-Additional Guidance for Anaerobic Digestion: Ref LIT 8737) We made these decisions in accordance with the TGN.	✓
Reporting	We have specified reporting in the permit in accordance with the TGN.	✓
Operator Competence		
Environment management system	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 our guidance on what constitutes a legal operator	✓
Technical competence	Technical competency is required for activities permitted. The operator is a member of an agreed scheme.	✓
Relevant convictions	The National Enforcement Database has been checked to ensure that all relevant convictions have been declared. No relevant convictions were found. The operator satisfies the criteria in our guidance on what constitutes a legal operator	✓
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 our guidance on what constitutes a legal operator .	✓

Annex 2: Consultation and web publicising responses

Summary of responses to consultation and web publication and the way in which we have taken these into account in the determination process. (Newspaper advertising is only carried out for certain application types, in line with our guidance.)

Response received from
Public Health England
Brief summary of issues raised
"Based on the information contained in the application supplied to us, Public Health England has no significant concerns regarding the risk to the health of the local population from the installation"
Summary of actions taken or show how this has been covered
No action required.

Response received from
Nottinghamshire County Council
Brief summary of issues raised
Is not aware of any public health information about the local population to suggest an exceptional vulnerability to emissions from the process.
Summary of actions taken or show how this has been covered
No Action Required

No response was received from

- Food Standards Agency
- Health and Safety Executive