Environment Agency permitting decisions

Variation

We have decided to issue the variation for Melton Ross Lime Works operated by Singleton Birch Limited.

The variation number is EPR/BL8805IZ/V006

The application was duly made on 31/03/2014.

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 Annex 1 the decision checklist

This variation incorporates an Anaerobic Digestion (AD) plant processing non-hazardous waste and agricultural crops. The resultant biogas will be fed into five new combined heat and power (CHP) units to generate electricity which will be used by the operator for the operation of the lime manufacturing process. This permit allows the acceptance of three non-hazardous waste codes for processing within the AD facility. During the digestion process 80 percent of the solid matter of the feedstock is converted to either gas or liquid. The operator will utilise the energy at the installation, any excesses will be fed back to the national grid. Any liquid and solid digestate produced from the AD will be removed by the farmers to spread to land for agricultural benefit. There is no change to the permit boundary as a result of this variation.

Key issues of the decision

Technical Summary

The AD plant will have two digesters, digester 1 and 2 with an average 30 and 34 day retention time respectively. Each digester is 3,000m^3 in volume and will process approximately 6,074 tonnes of waste per annum producing gas (total gas storage 2,980m^3) for five CHP units running at 96 percent availability totalling 1.25MW, 588m^3/hr. The electricity produced will be used by the operator in the lime manufacturing process.

The operator has confirmed they can comply with the conditions of Standard Rules permit 'SR 2012 No.12 Anaerobic digestion facility with the use of resultant biogas', with the exception of storing raw wastes within an enclosed building. Wastes will alternatively be stored on hardstanding with tarpaulin covers for solid wastes and within tanks for liquid wastes. Comparable conditions to mirror SR 2012 No.12 have been included where necessary in this variation.

Lagoon

Dirty water and spent digestate liquor is sent to the 16,900m^3 covered lagoon. The lagoon has a storage capacity of approximately 8.5 months with a 1m free board. The final destination is for use by farmers who must comply with nitrate protection zone conditions and cannot spread to land between October and January annually therefore a retention time greater than 4 months is necessary. The lagoon has a high density polyethylene (HDPE) lining which was electrically leak tested in December 2013, the report was submitted with the permit application. Nine leaks were found and repaired. The lagoon is covered with a 1mm low density polyethylene (LDPE) liner.

Emissions to air (H1 risk assessment)

The operator has completed a H1 risk assessment for the emission to air from the five CHP units. Five stacks for combustion of biogas were screened for nitrogen dioxide, carbon monoxide and sulphur dioxide using H1. The table below shows the result of the H1 assessment.

Substance	Short Term			Long Term		
	EAL µg/l	PC µg/l	% of EAL	EAL µg/l	PC µg/l	% of EAL
Nitrogen Dioxide	200	61.0	**30.5%**	40	6.17	**15.5%**
Carbon Monoxide	10,000	371	3.71%	-	-	-
Sulphur Dioxide	350	4.23	1.21%	-	-	-

Our guidance document H1 Annex F states that process contributions can be considered insignificant if:

- the long term process contribution is <1 percent of the long term environmental standard

- the short term process contributions is <10 percent of the short term environmental standard.

Using the guidance both carbon monoxide and sulphur dioxide screen out as an insignificant emission to air from the combustion of biogas generated from the anaerobic digestion process. Nitrogen dioxide does not screen out as insignificant for short or long term process contributions against the relevant standards.

However taking the existing background concentration of 19 ug/m^3 for nitrogen dioxide into account and the conservative nature of H1 we are confident that there is sufficient headroom such that there will not will not be any breach of the relevant air quality standard for either short or long term nitrogen dioxide.

Habitats
The combined total of the five new combustion processes is 1.25MW. Our guidance document 'AQTAG014: Guidance on identifying '*relevance'* for assessment under the Habitats Regulations for installations with combustion processes' states that combustion processes less than 5MW do not need assessment irrelevant of the distance from a European site due to the size of the combustion process.

The combustion process at the PPC 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.' Thus no detailed assessment of the effect of the releases from this installation is required.

We have adopted the emission limits to air from the standard rules permit SR 2012 No.12. We are confident the CHP engine performance burning biogas can achieve these standards for Oxides of Nitrogen, Carbon Monoxide, Volatile Organic Carbons and Sulphur Dioxide.

Odour Management plan (OMP)
There is no history of odour emissions or odour complaints from the site.

The operator submitted an OMP with the application, dated January 2014. The OMP identifies nearby potential receptors to the site, the closest receptor is offices located 430m from the site and the nearest residential receptors are 610m from the installation boundary. The OMP has identified potential odour sources from the AD plant and identified appropriate mitigation methods where possible. The plant will operate 24 hours per day, 7 days per week.

Wastes
The waste will be delivered in contained tankers for liquid wastes and covered vehicles for solid waste. The waste will be recieved within days from crop cutting or within a week for chicken manures. The wastes will be treated using

a first in first out system and discrete storage areas will be allocated to each waste consignment to facilitate this. Material that is incorrectly supplied will be turned away before unloading at the weighbridge (incorrect paper work or unexpected load). Loads that are deemed unfit (oozing putrefying waste) after unloading will be removed as soon as possible. If applicable the supplier will be investigated and no further loads accepted without a suitable resolution to the issues raised. Unacceptable wastes will be collected by the supplier or disposed through an appropriate waste contractor.

Solid waste material will be placed in segregated piles on hard standing, only one load will be stored at any one time for any one waste type, maximum storage capacity 28 tonnes. Waste will not be stored for a period of more than 14 days. Solid wastes will be covered with tarpaulin to prevent water ingress and suppress odour and dust, only partially removed when extracting / loading wastes. Leachate from the storage area will be captured within the drainage system and fed into the dirty holding tank which will then be pumped into the AD plant as feedstock.

Liquid wastes will be fed into the plant feeder from a tanker. Odours from displaced air will be controlled by carbon filters. The feeder has a cover to minimise odour which will only be opened when the feeder is being loaded. All spillages within the waste handling area will be captured within the dirty holding tank, which will then be eventually fed back into the AD process as feedstock.

The site will manage stock levels, wastes will only be stored in amounts that can be easily removed from site with a maximum of three loads. In the event of a prolonged breakdown wastes can therefore be removed from the site minimising the potential for odour issues.

Process monitoring
The biogas carbon filter which protects the gas engines is monitored continuously, and the passive filter in the lagoon membrane is monitored on a weekly basis. A competent, trained operator will be on the site up to 10 hours per day. The AD plant will be fully automated and linked into an alarm system which will alert (text and email) operatives if a problem occurs. Temperature, gas pressure flows and engine performance are all linked into the operating system. The systems can also be remotely logged into from any PC. A daily routine boundary fence olfactory test will be carried out to identify odours at the perimeter of the site. The odour complaint procedure states a response to the event will be made by the operator within 12 hours.

Digestate
The digestate from the digester passes through a screw separator which separates the liquid and the fibre element of the digestate. Liquid digestate is primarily stored within the digesters (tanks) and covered lagoon. The solid digestate is covered and stored in the silage clamps. The anticipated storage time is typically six months with a maximum of 9 months.

Cake and Liquor Storage
The liquor digestate is stored in digesters or covered lagoon, cake storage is in a covered bund, is the storage of fuel crop feeds.

Summary
We have reviewed the OMP in accordance with our guidance (H4 Odour Management – How to comply with your environmental permit). We are satisfied the OMP supplied with the application and all subsequent information received addresses all potential sources of odour from the AD and appropriate methods have been identified to mitigate odour where possible. We consider the risk of odour at the closest residential receptors to be low.

Noise impact assessment
There is no history of noise complaints at the site. The operator has identified the new potential noise sources following the implementation of the AD process:-

- the operation of the AD plant and CHP units
- loading materials into the AD feeder.

The new AD plant is to be located within the existing lime manufacturing facility and quarrying operations which have un-restricted operating hours. Therefore, background noise levels are currently relatively high at this location within the installation boundary.

The AD feed hopper will be loaded at a frequency of once per day within daytime working hours it is anticipated that loading will take up to two hours. This may increase to two times a day at full capacity therefore exposure of this noise source is low. There are similar processes from the existing teleporters operational throughout the day at the site.

The nearest sensitive receptor for the CHP engines is 600 meters away. The CHP units will be located within an acoustic enclosure, achieving a maximum noise level of 62dB(A) at 10 meters. Using the rule of a 6dB reduction in sound for each doubling of distance the operator has calculated the noise weighting of the CHP units at the nearest receptor would be reduced to around 30dB(A).

Given the location of the AD and CHP units, the relatively high background noise from the existing lime manufacturing process and noise calculations from the new CHP units in regards to proximity of the sensitive receptors and history of no previous complaints we consider the appropriate mitigating methods have been identified by the operator and conclude that complaints are unlikely from the operation of the AD process.

Fugitive Emissions
Dust
The waste materials to be fed into the AD plant have a high moisture content (sludges, animal wastes and plant wastes) for which dust is not perceived to be a problem. Sludges will be stored within a silo upon arrival and high solid wastes (plant and animal wastes) will be stored within storage bays and

covered with a tarpaulin to minimise odour, and dusts. We consider the operator has considered necessary measures to minimise dust from the installation.

Bioaerosols
A Site Specific Bioaerosol Risk Assessment (SSBRA) may be required for sites whereby sensitive receptors are located within 250m of the installation boundary. There are no sensitive receptors located within 250m of the AD facility, and the maximum quantity of waste handled at any one time will not exceed 500 tonnes. We do not consider a SSBRA necessary for the installation.

Accident Risks
The liquid storage tanks are fitted with high level alarms to prevent overfilling. There are also emergency overflows diverting into the digestate storage or rain water tanks. The area within which the AD is located is bunded and all rainwater is directed into the rainwater tank and fed as a raw material into the AD process. The rainwater runoff system can pump rain water to the AD for immediate use or to the water storage tank for use by other operations within the installation boundary. In the event of an emergency the plant would be shut down and protected by the flare and pressure relief valves on the tanks.

Attenuation storage calculations
The operator has submitted an attenuation storage report for the proposed AD with the application dated January 2013. The report includes drainage calculations to determine necessary volumes for attenuation. The site will be split into two areas with regards to surface water run-off, clean water and dirty water. Both areas will be constructed to prevent process effluent or rainwater from the site entering the ground.

Clean water will be rainfall runoff from the AD plant storage tanks and associated equipment located within the North section of the site. This will then run through a porous gravel surface under-lined by an impermeable membrane, through a drainage channel into a lower area sump of 100m^3. From the sump it will be pumped into the Lime manufacturing process for reuse. The operator has provided calculations for bunding capacities of the clean water, the bund holds 7,670m^3 and the total tank volume is 6,100m^3, the bund exceeds 110 percent of the total volume and considered significant storage capacity.

The dirty water area will contain the AD digester store and tanks, energy crops and process residue. Runoff from this area is anticipated to be small and the rainfall will be prevented from mixing with the waste by the use of covers. All dirty water collected (192m^3 storage tank with interceptor trap) will be pumped into the digester tanks. Where it will be mixed with solids, the tank is scheduled to be emptied bi-annually in autumn and spring. The operator has calculated the storage capacity for plant process water generated and surface water from rainfall, the tanks within the ‘dirty water’ area are 12,200m^3 and 192m^3, which has been calculated to hold a 6.7 month capacity. Therefore the operator plans for a six month emptying of the tanks. The

calculations also take into consideration a 30 percent increase in average annual rainfall for climate change reasons.

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
Operator		
Control of the facility	We are satisfied that 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.	✓
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. There is no change to the site boundary as a result of this variation.	✓
Biodiversity, Heritage, Landscape and Nature Conservation	The application is within the relevant distance criteria of a site of nature conservation, and protected habitat . One Site of Special Scientific Interest (SSSI) is located within 2,000m of the installation, Kirmington Pit. Two Local Wildlife Sites (LWS) are located within 2,000m of the installation: Melton Ross Pit and Melton Ross Quarry. An Appendix 4 was completed for information only as we concluded no likely significant effect.	✓

Aspect considered	Justification / Detail	Criteria met Yes
	The combustion process at the PPC 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.' We consider that the application will not affect the features of the site and habitat. We have not formally consulted on the application. The decision was taken in accordance with our guidance.	
Environmental Risk Assessment and operating techniques		
Environmental risk	We have carried out a risk assessment on behalf of the operator. The operator considers this risk assessment is satisfactory. See key issues section for further information.	✓
Operating techniques	We have reviewed the techniques used by the operator and compared these with the relevant guidance notes. • How to comply with your environmental permit: additional guidance for the cement industry (EPR 3.01a) • How to comply with your Environmental Permit: additional guidance for combustion activities (EPR 1.01) • Sector guidance note 5.06: recovery and disposal of hazardous and non-hazardous waste. • Standard rules SR2012 No.12 Anaerobic digestion facility with the use of resultant biogas 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. The following operating techniques are proposed by the operator to minimise environmental impact of the activities carried out at the installation:	✓

Aspect considered	Justification / Detail	Criteria met Yes
	• Acoustic enclosure around the CHP units • Loading of the AD hopper will only take place once or twice per day within daylight working hours. • Solids wastes will be covered to prevent odours, dust emissions and water ingress • The lagoon is lined and covered • Rainwater will be captured and either reused or sent offsite for disposal.	
The permit conditions		
Raw materials	We have specified limits and controls on the use of raw materials and fuels. Raw materials have been added to table S2.1 to incorporate purpose grown crops to be processed within the Anaerobic Digestion plant.	✓
Waste types	We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility. Three waste codes have been added to the permit shown in table S2.2 of the variation. We are satisfied that the operator can accept these wastes for the following reasons: These wastes will be part of the feed stock for the AD process. The processing of waste codes 02 01 01 and 02 01 03 within the AD plant will require a mobile plant permit to spread digestates to farmland. We made these decisions with respect to waste types in accordance with Standard rules SR2012 No.12 Anaerobic digestion facility with the use of resultant biogas	✓
Incorporating the application	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.	✓

Aspect considered	Justification / Detail	Criteria met Yes
	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. We have set limits for Oxides of Nitrogen, Carbon Monoxide, Sulphur Dioxide and Total Volatile Organic Compounds for the four CHP engine stacks. The limits mirror those within our Standard Rules SR2012 No.12 Anaerobic digestion facility with the use of resultant biogas. See key issues for further information.	✓
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 annually monitor emission to air from the four new CHP engine stacks. The monitoring requirements mirror our standard rules requirements for SR2012 No.12 Anaerobic digestion facility with the use of resultant biogas. Based on the information in the application we 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. Reporting form Air 1 has been updated for the permit variation to include the new emission points to air.	✓
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 RGN 5 on Operator Competence.	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	A copy of the ISO 14001 certificate was submitted with the application, with the expiry date 02/07/16.	
Technical competence	Technical competency is required for activities permitted. The operator is a member of an agreed scheme. A copy of the registration confirmation was submitted with the application for two individuals for WAMITAB 'Waste & Resource Management' qualification, dated 28/01/14.	✓
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 RGN 5 on Operator Competence.	✓