

# Environment Agency permitting decisions

## Bespoke permit

We have decided to grant the permit for Olleco Biogas Upgrading Unit operated by Olleco.

The permit number is EPR/EP3335RY/A001

This permit is for a Directly Associated Activity to Aylesbury Dairy operated by Arla Foods Limited. The permit number for Aylesbury Dairy is EPR/XP3039ZS.

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.

## Description of the main features of the Installation

This multi Operator Installation is located in a mixed industrial, rural and residential area at Samian Way, approximately 6 km to the east of Aylesbury town centre in Buckinghamshire. The site is located at National Grid Reference (NGR) 487885, 213610.

The Installation comprises activities operated by Arla Foods Limited and Olleco. Olleco operate a biogas upgrading plant to process the biogas produced by Arla Foods Limited's anaerobic digestion facility. The Olleco part of the Installation is separately permitted as part of this Installation and constitutes a Directly Associated Activity (DAA) to the Arla Foods Limited food manufacturing and anaerobic digestion activities.

The principal activity for the part of the Installation operated by Olleco, and covered by this Permit, is treating biogas to produce a gas of suitable quality for injection into the national natural gas distribution system. Biogas is transferred along a pipeline from the Arla anaerobic digestion plant to a 'handshake point' within the Olleco site boundary. The gas upgrading plant has the capacity to process up to 1,200 Nm<sup>3</sup>/h of raw biogas, and includes the following process steps:

- compression and cooling of raw gas;
- water scrubbing to remove carbon dioxide;
- treatment of scrubbing water to allow its re-use;
- gas drying to ensure water removal; and,
- secondary gas cleaning to remove volatile organic compounds and siloxanes.

The product gas is analysed continuously for methane, carbon dioxide, oxygen and water content, as well as temperature, pressure and flow. The treated biomethane gas is piped to a grid entry unit where the gas is enriched with propane, odourised and the pressure is regulated to the requirements of the network operator.

There will be two point source emissions to air from this part of the installation. Waste gas will be produced during the gas upgrading process, originating from a vent at the top of the desorption column. The waste gas will then pass through the waste gas treatment system which comprises of; a catalytic iron filter, desulphurisation unit, UV filter, and an active carbon filter. The treated waste gas is then emitted via a single chimney at a height of 6.5m with a fan capacity rated at 3,000 m<sup>3</sup>/h. When emitted from the stack, the waste gas will predominantly comprise of carbon dioxide, nitrogen and oxygen with trace amounts of hydrogen sulphide and methane.

Following the gas upgrading processes including the addition of propane, any biomethane that does not then meet the required specification will be flared off using a temporary flare. This approach will only be used for the commissioning phase which is estimated to last approximately one hour in total. For the second phase of the development, the reject biomethane will be returned to the digestate/gas storage tanks.

There are no point source emissions to surface water drains or to sewer. Condensate and process water generated from the biogas upgrade plant will be containerised and disposed of off-site. All surface water drains serving the concrete plinth and foul water drains carrying waste water will be directed to a below ground cesspool which will be removed and disposed of.

This part of the installation will use potable water supplied from a bowser and propane from a mobile tank. Power will be supplied to the biogas upgrading plant from a mobile generator.

The Grand Union Canal is located to the north of the biogas upgrade plant, with agricultural land beyond this. The other part of the Aylesbury Dairy installation is directly south of the biogas upgrade plant. To the west is the area which has planning consent for Olleco to develop an anaerobic digestion facility and Materials Recycling Facility. The closest residential properties are Monks Court approximately 200m to the north-east. Canal Farm is also located 180m to the north east of the site. It is understood to have permitted development rights for residential development.

No sites with a statutory or non-statutory designation for protected habitats have been identified within a 2km radius of this part of the installation. The nearest European Site is Chilterns Beechwoods SAC, 5.2Km to the South-East. The nearest SSSI is Tring Reservoir, which is 2.3 km to the east. The nearest Local Wildlife site is a section of the Grand Union Canal 0.4km to the East.

## **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
- Annex 2 the consultation and web publicising responses

## Key issues of the decision

### Emissions to Air

#### Waste Gas

Waste gas will be produced during the gas upgrading process, originating from a vent at the top of the desorption column. The waste gas will then pass through the waste gas treatment system which comprises of; a catalytic iron filter, desulphurisation unit, UV filter, and an active carbon filter. The treated waste gas is then emitted via a single chimney at a height of 6.5m with a fan capacity rated at 3,000 m<sup>3</sup>/h. When emitted from the stack, the waste gas will predominantly comprise of carbon dioxide, nitrogen and oxygen with trace amounts of hydrogen sulphide and methane.

The composition of the waste gas following treatment is expected to be:

- Carbon dioxide - 12.3%
- Nitrogen - 67.8%
- Oxygen - 18%
- Water vapour - 1.7%
- Hydrogen sulphide - 1 ppm
- Methane - 2,100 ppm

The emissions of potential concern are those of hydrogen sulphide (H<sub>2</sub>S) which can have implications both for human health and odour.

In respect of the waste gas emissions from the Olleco Biogas Upgrading Unit, process contributions can be considered insignificant if:

- the long term process contribution (PC) is <1% of the long term environmental standard; and,
- the short term PC is <10% of the short term environmental standard.

The applicant has assessed the contributions of the point source emissions using the Environment Agency's H1 tool. The parameters used and results of the H1 assessment are shown in Table 1.

**Table 1: H1 Screening Parameters**

Parameter	Long-Term	Short-Term
Stack Height (m)	6.5	6.5
Effective Stack Height, U <sub>eff</sub> (m)	0	0
H <sub>2</sub> S Release Rate, RR (g/s)	0.0012	0.0012
Dispersion Factor, DF (µg/m <sup>3</sup> /g/s)	148	3900
H <sub>2</sub> S Process Contribution, PC (µg/m <sup>3</sup> )	0.18	4.7
EAL (µg/m <sup>3</sup> )	140	150
<b>PC as a percentage of the EAL (%)</b>	<b>0.13%</b>	<b>3.1%</b>

At 0.13% the long term PC is <1% of the long term environmental standard, and at 3.1% the short term PC is <10% of the short term environmental standard. Therefore the H<sub>2</sub>S releases from the Olleco Biogas Upgrading Unit are unlikely to have a significant impact on local air quality.

In accordance with current guidance, emission limits for off gas from the stack will not be included within the permit. Improvement Conditions IC1 and IC2 have been included in the permit requiring the operator to carry out two rounds of monitoring after 6 and 12 months of plant operation. Following the monitoring survey, the operator is required to complete an assessment using our H1 software tool and inputting the actual monitoring data.

### Reject Biomethane

Following the gas upgrading processes including the addition of propane, any biomethane that does not meet the required specification will be flared off using a temporary flare. The biomethane gas will pass through an activated carbon filter for VOC and siloxane removal as the final stage of the upgrading process. The temporary flare will only be used during the estimated 1 hour commissioning period.

The temporary flare is a high temperature enclosed flare designed to meet the specified Emission Limit Values (ELVs) based on Best Available Techniques (BAT). After the estimated 1 hour commissioning period the temporary flare will not be used and reject biomethane will be returned to the Arla Dairy gas storage tanks.

The permit has emissions limits on the temporary flare. The ELVs based on Best Available Techniques (BAT) and have been taken from Table “A” of our guidance note ‘*LFTGN 05 Guidance for monitoring enclosed landfill gas flares*’. Any flaring carried out will be measured and recorded on site, and reported to the Environment Agency during the commissioning period. Monitoring for this period has also been included in the permit. The temporary use of the flare designed to meet BAT emissions requirements is not expected to impact the nearest receptors.

**Table 2: Temporary Flare Emissions Limit**

Emission	Emission Limit Value
Oxides of Nitrogen	150 mg/m <sup>3</sup>
Carbon Monoxide	50 mg/m <sup>3</sup>
Total VOCs	10 mg/m <sup>3</sup>

The monitoring requirements identified in Table S3.1 have been imposed in order to ensure ongoing compliance in accordance with BAT and to ensure a high level of protection for the environment.

## **Odour Impacts**

### Waste Gas

The waste gas stream from the gas upgrading plant has the potential to contain odourous compounds. The closest receptors are identified as the residential properties at Monks Court approximately 200m to the north-east, and Canal Farm located 180m to the north east of the site.

The applicant has identified that the gas treatment system is designed to provide abatement to reduce the concentration of odourous compounds H<sub>2</sub>S and volatile organic compounds (VOCs). Photo oxidation and a dual bed carbon filter abatement are used to remove VOCs from emissions.

Waste gas is expected to have a maximum H<sub>2</sub>S concentration of 1ppm, which allowing for dispersion, should be below the limit of detection at the site boundary. This was established by the H1 assessment which identified that the short-term process contribution 4.7µg/m<sup>3</sup> is within the World Health Organisation's guideline value of 7µg/m<sup>3</sup> for detection of H<sub>2</sub>S.

#### Reject Biomethane

Reject biomethane that does not meet the required specification will be flared and should not result in any odours being emitted. The biomethane gas will pass through an activated carbon filter for VOC and siloxane removal as the final stage of the upgrading process. The temporary flare will only potentially be in use during the 1 hour commissioning period.

#### Odourant Chemical

An uncontained release of the odourant chemical for the biomethane has the potential to have a far reaching effect as a leak of odourant could be interpreted as a gas leak. The odourant gas is supplied in pressurised containers with full CoSHH data including an action plan in the unlikely event of loss of containment. A specialist Spill Response Procedure for the chemical odourant has been included in the Accident Management Plan (reference: Olleco Aylesbury Biogas Upgrading Plant Environmental Accident Management Plan Stage 1 Commissioning, date November 2015). All staff working with the odourant injection system will be trained in the procedure. Before the odourant is introduced to the system, methanol is used as a checking/testing fluid to ensure accidental emissions or leaks are minimised.

#### Monitoring and Future Management

During commissioning olfactory monitoring will be carried out twice per day at the site boundary and recorded in the site construction diary. If an odour is detected at the site boundary immediate action will be taken to identify the cause and stop the operation giving rise to the emissions.

In accordance with the Environment Agency's H4 Odour Management Guidance, Olleco have identified the potential sources of odour from the DAA and have provided evidence and suitable mitigation to ensure emissions from the activities are free from odour at levels likely to cause pollution outside the site. A detailed Odour Management Plan (OMP) for the AD Plant is currently being developed and the control measures for the Gas Upgrade Plant will be incorporated into this. The OMP will document monitoring and inspection programmes for all odour control systems. Improvement Condition IC3 has been included in the permit to ensure that the Operator submits the Odour Management Plan within 9 months of the permit issue.

### **Technically competent manager (TCM)**

We require sites handling waste to demonstrate an appropriate level of technical competence. The Aylesbury Dairy Installation has a technically competent manager with the appropriate WAMITAB certificates. The WAMITAB diploma for anaerobic digestion does not cover the biogas upgrading process, which is a specialist activity. As the DAA carried out at the Olleco Biogas Upgrading Unit is not a standalone waste activity the operator is not required to have a technically competent manager.

## 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
<b>Receipt of submission</b>		
Confidential information	A claim for commercial or industrial confidentiality has not been made.	✓
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 commercial confidentiality.	✓
<b>Consultation</b>		
Scope of consultation	<p>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.</p> <p>For this application we consulted the following bodies:</p> <ul style="list-style-type: none"> <li>• Aylesbury Vale District Council Environmental Health</li> <li>• Health And Safety Executive</li> <li>• Public Health England</li> <li>• Director of Public Health</li> </ul>	✓
Responses to consultation and web publicising	<p>The web publicising and consultation responses (Annex 2) were taken into account in the decision.</p> <p>The decision was taken in accordance with our guidance.</p>	✓
<b>Operator</b>		
Control of the facility	We are satisfied that the applicant (now the operator) is the person who will have control over the operation of part of the facility after the grant of the permit. The decision was taken in accordance with EPR RGN 1 Understanding the meaning of operator.	✓
<b>The facility</b>		
The regulated facility	<p>This permit applies to only one part of the existing Arla Dairy installation (EPR Ref EPR/XP3039ZS).</p> <p>The principal activity for the part of the Installation operated by Olleco, and covered by this Permit, is treating biogas to produce a gas of suitable quality for injection into the national natural gas distribution system.</p> <p>The names and permit numbers of the operators of other parts of the installation are detailed in the permit's introductory note.</p>	✓
<b>European Directives</b>		

Aspect considered	Justification / Detail	Criteria met
		Yes
Applicable directives	All applicable European directives have been considered in the determination of the application.	✓
<b>The site</b>		
Extent of the site of the facility	<p>The operator has provided plans which we consider are satisfactory, showing the extent of the site of the facility including the location of the part of the installation to which this permit applies on that site.</p> <p>Plans are 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 (reference: H5 Site Condition Report – Olleco Biogas Upgrading Unit, dated November 2015).</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 Site Condition Report identified that there has been no previous development on the site, and that the site was under agricultural usage as arable and pasture land. There are no known pollution incidents or spills.</p> <p>The eastern portion of the site is concrete surfaced and has been used by Arla Dairy under the EPR Reference EPR/XP3039ZS as a lorry park and contractors storage area for the previous 12 months.</p> <p>Suitable measures have been taken to ensure protection of the land. This includes suitable chemical storage on spill pallets.</p> <p>Surface water from the concrete plinth and process water will be drained to an underground cesspool prior to disposal.</p>	✓
Biodiversity, Heritage, Landscape and Nature Conservation	<p>No sites with a statutory designation for protected habitats have been identified within a 2km radius of this part of the installation. The nearest European Site is Chilterns Beechwoods SAC, 5.2Km to the South-East. The nearest SSSI is Tring Reservoir, which is 2.3 km to the east. The nearest Local Wildlife site is a section of the Grand Union Canal 0.4km to the East.</p> <p>We consider that the application will not affect any habitats as the air emissions from the activities were established as insignificant. See key issues for further details. Emission limits have been placed on the permit to mitigate any effects from the temporary flare.</p> <p>We have not formally consulted on the application. The</p>	✓



Aspect considered	Justification / Detail	Criteria met
		Yes
	decision was taken in accordance with our guidance. An Appendix 11 has been produced and submitted to Natural England for 'information only'.	
<b>Environmental Risk Assessment and operating techniques</b>		
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory.</p> <p>The assessment shows that, applying the conservative criteria in our guidance on Environmental Risk Assessment, all emissions may be categorised as environmentally insignificant.</p> <p>Olleco undertook a H1 screening assessment to determine the significance of the potential impact of the H<sub>2</sub>S emissions from the waste gas stack on local air quality. See key issues section on air and odour for further details.</p> <p>There will be no direct discharges to surface waters and no direct or indirect discharges of wastewater or chemicals to soil or groundwater at the installation.</p> <p>The operator has provided an Accident Management Plan which provides a suitable review of the main environmental risks resulting from accidents and the mitigation which has been put in place to address these risks.</p>	✓
Operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes. We have referred to our draft technical guidance note '<i>How to comply with your environmental permit. Additional guidance for: Anaerobic Digestion.</i>'</p> <p>The Operator will meet the following requirements in accordance with BAT:</p> <ul style="list-style-type: none"> <li>• Gas flow and flow rates are continuously monitored and composition of the principal biogas components, methane and carbon dioxide are monitored or periodically tested.</li> <li>• All equipment in contact with biogas is ATEX certified.</li> <li>• Isolating valves are incorporated to enable inspection and maintenance</li> <li>• An enclosed biogas flare with a minimum residence time of 0.3 seconds at 1000°C has been provided to burn collected biogas where the biogas upgrading or energy recovery plant becomes</li> </ul>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	<p>unavailable.</p> <p>We consider that the operator will be using BAT.</p>	
<b>The permit conditions</b>		
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>	✓
Emission limits	<p>We have decided that emission limits should be set for the parameters listed in Table 3.1 of the permit.</p> <p>In accordance with our current guidance there are no emissions limits for the biogas upgrading plant stack. The temporary flare has emissions limits based on BAT.</p> <p>See key issues for further details.</p>	✓
Monitoring	<p>We have decided that monitoring should be carried out for the parameters listed in table S3.1 and S.3.2 of the permit, using the methods detailed and to the frequencies specified.</p> <p>Monitoring requirements have been imposed in order to prevent pollution from the flare (Table S3.1) in accordance with guidance note '<i>LFTGN 05 Guidance for monitoring enclosed landfill gas flares</i>'.</p> <p>The objective is to ensure continued efficient operation of the control systems and continued compliance with relevant legislation.</p> <p>Process monitoring requirements have been incorporated (Table S3.2) which is proportionate to the process and in accordance with Environment Agency Guidance.</p>	✓
Reporting	<p>We have specified reporting in the permit. As the monitoring of point source emissions to air is only required annually, reporting is also required annually.</p> <p>Reporting forms have been prepared to facilitate reporting of data in a consistent format. These reporting requirements are deemed sufficient and proportional for the DAA. We made these decisions in accordance with our guidance How to Comply with your Environmental Permit.</p>	✓
<b>Operator Competence</b>		
Environment	There is no known reason to consider that the operator	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
management system	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.	
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.	✓
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. The financial provision arrangements satisfy the financial provisions criteria.	✓

## Annex 2: External 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.

The following organisations were consulted, however no responses were received:

- Health and Safety Executive (HSE)

This proposal was also publicised on the environment Agency's website between 11/11/2015 and 11/12/2015, but no representations were received during this period.

<i>Response received from</i>
Brett Warren – District Environmental Health Officer Local Authority Environmental Health Department - Aylesbury Vale District Council
<i>Brief summary of issues raised</i>
It was recommended that the conditions in relation to Pollution Control and specifically operational odour and noise control as set out in planning permission condition 14,15,16 and 18 (reference CM/78/14), are included in any Environment Agency permit conditions to ensure consistency for the operator and enforcement authorities.  These conditions apply to noise and odour management.
<i>Summary of actions taken or show how this has been covered</i>
A letter was sent to Brett Warren in response. This letter identified that the current permit will only include the biogas upgrading plant which is a small part of the planning permission (reference CM/78/14), and this permit will not include the anaerobic digestion facility (AD) or materials recovery facility (MRF). The impacts for noise and odour are therefore going to be limited compared to that identified in the planning permission.  Olleco are expected to make a further permit application in 2016 for the AD and MRF facilities, and it would be better to ensure that planning permission conditions 14,15,16 and 18 are addressed in this permit. We have assured that there is suitable noise and odour management at the site for the biogas upgrading plant, and included relevant conditions in the permit.

<i>Response received from</i>
Dr Rebecca Gay - Specialist Environmental Public Health Scientist Public Health England
<i>Brief summary of issues raised</i>
The main risks from this activity with respect to human health appear to be risk of odours from hydrogen sulphide emissions and odorant additives, and risk of explosion. These risks have been assessed and appear to have been addressed satisfactorily.
<i>Summary of actions taken or show how this has been covered</i>
No response required.

<i>Response received from</i>
Sally Taylor on behalf of Jane O'Grady, Director of Public Health for Buckinghamshire County Council.
<i>Brief summary of issues raised</i>
Buckinghamshire Public Health have no concerns over the permit application.
<i>Summary of actions taken or show how this has been covered</i>
No response required.