

## **Environment Agency permitting decisions**

### **Variation**

We have decided to issue the variation for Davyhulme Wastewater Treatment Works operated by United Utilities Water Limited.

The variation number is EPR/HP3931LJ/V009.

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 changes introduced by the Variation**

This is a normal variation. This variation permits the installation of a biogas upgrading plant (BUP). The plant will treat the biogas by removal of moisture, carbon dioxide, hydrogen sulphide so it meets the requirements of the biomethane quality protocol and can be injected into the National Grid. This variation makes the following changes to the permit:

- Changes to table S1.1 to include a new directly associated activity – upgrading of biogas to biomethane;
- Changes to Table S1.2 to include operating techniques for the BUP;
- Changes to Table S1.3 to add two new improvement conditions relating to emissions from the BUP; and
- Changes to Table S4.1 to include two new emission points from the BUP – the emergency flare and the stack from the odour control unit.

## **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

## Key issues of the decision

### Emissions to air

As a result of this variation, there are additional point source emissions to air at the installation. These include the exhaust from the odour control unit and a dedicated flare, which is expected to operate for less than 200 hours per year (approx. 2.3% of the time). The flare has therefore not been included in the assessment of potential impact. The emissions from the odour control unit will mainly comprise air with trace elements of hydrogen sulphide ( $< 1\text{mg}/\text{m}^3$ ). This low concentration will be achieved by the operational techniques employed in the installation.

These techniques include the operation of an odour control unit which comprises a bioscrubber and activated carbon polishing filter. The bioscrubber uses a bed of pumice stone to support the microorganisms to remove 98% of hydrogen sulphide. The final activated carbon filter has been designed to reduce the hydrogen sulphide levels to less than  $1\text{mg}/\text{m}^3$ . The treated exhaust gases will be discharged to the atmosphere via a 3m high stack placed above the carbon filter. An air sampling point will be provided in the stack to allow periodic sampling for odour and hydrogen sulphide.

There will be a number of fugitive release points like safety valves, bursting disks, etc, however these are not used in normal operation and are safety features. The operator reports that releases from these points will be negligible as they will only operate in abnormal operation and for very short periods.

Fugitive releases of biogas, propane and potentially odorous substances such as the odorant added to the biogas before injection to National Grid (tertiary butyl mercaptan/dimethyl sulphide) and hydrogen sulphide will be controlled via inspection and maintenance regime. The odorant will be stored in very small quantities on site (10kg) in a liquid form within a locked cabinet to prevent fugitive emissions. The propane will be stored as a liquid in a purpose built storage tanks. The total storage will be 12 tonnes.

Our assessment of the proposed operating techniques and in-process controls shows that the EQS is unlikely to be breached, provided that the proposed abatement techniques are operated at optimal levels.

We also consider it prudent to include a monitoring survey following the commissioning of the biogas upgrading plant to verify the operator's assertion that the emissions from the odour control unit are unlikely to lead to any significant impact. Following the review of the results from the monitoring assessment, the Environment Agency shall consider whether emission limits are appropriate at emission point A59. We have therefore included improvement conditions IP1 and IP2 in the permit to ensure the assessment is undertaken and submitted to the Environment Agency.

## **Odour abatement**

The operation of the biogas upgrading plant will result in the release of hydrogen sulphide which has a high potential of odour impact. Odour from the biogas upgrading plant will be controlled and mitigated by the use of the odour control unit (OCU). OCU will treat the exhaust gases (primarily CO<sub>2</sub> and H<sub>2</sub>S) produced during the biogas upgrading stage with a biological odour treatment system and a final activated polishing filter. The emissions from the OCU have been subject to dispersion modelling and the H1 criteria have been applied to the results. The operator's modelling results indicate that significant impact or offsite nuisance as a consequence of odour is unlikely.

We have assessed the modelling report and agree with its findings – emissions of odour are unlikely to have a significant impact on nearby receptors based on the stated low concentrations of hydrogen sulphide.

We therefore consider the BAT assessment for odour abatement to be appropriate, provided that the operation of the odour control unit demonstrate their effectiveness in abating the impact of odour. This will be evidenced by zero complaints from neighbouring residential and work-place receptors.

## **Emissions to surface water**

There are no point source emissions to surface water from the biogas upgrading plant.

The condensate from the dehumidifier section of the BUP, condensate from the upgrading stage and irrigation system for the OCU bioscrubber will be directed and returned for full treatment to the adjacent Wasterwater Treatment Works downstream of the storm overflows. The total process condensate discharge is approx. 43 m<sup>3</sup>/day. The design treatment at the Wastewater Treatment Works is 714,000 m<sup>3</sup> per day. This capacity of WwTW is sufficient to treat this additional load. Given the small volume of discharge, it is unlikely that potential fugitive emissions to surface water from the facility will have a significant impact on surface waters.

## 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	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 no consultation was required.	✓
<b>European Directives</b>		
Applicable directives	All applicable European directives have been considered in the determination of the application.	✓
<b>The site</b>		
Biodiversity, Heritage, Landscape and Nature Conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat . An assessment of the application and its potential to affect the site has been carried out as part of the permitting process. The emissions from biogas upgrading plant will constitute mainly VOCs and H <sub>2</sub> S. These emissions will not have a negative impact on the site. We consider that the application will not affect the features of the site. We have not formally consulted on the application. The decision was taken in accordance with our guidance.	✓
<b>Environmental Risk Assessment and operating techniques</b>		
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, all emissions may be categorised as environmentally insignificant.	✓
Operating	We have reviewed the techniques used by the operator	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
techniques	<p>and compared these with the relevant guidance notes.</p> <p>We, the Environment Agency, have reviewed and approved the Odour Management Plan and consider it 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> <p>Emissions of relevant pollutants have been screened out as insignificant, and so the Environment Agency agrees that the applicant's proposed techniques are BAT for the installation.</p> <p>We consider that the emission limits included in the installation permit reflect the BAT for the sector.</p>	
<b>The permit conditions</b>		
Improvement conditions	<p>Based on the information on the application, we consider that we need to impose improvement conditions.</p> <p>We have imposed improvement conditions IP1 and IP2 that require a monitoring survey to be undertaken following the commissioning of the biogas upgrading plant to verify the operator's assertion that the emissions from the odour control unit are unlikely to lead to any significant impact. Following the review of the results from the monitoring assessment, the Environment Agency shall consider whether emission limits are appropriate at emission point A59.</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>	✓
<b>Operator Competence</b>		
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>	✓