Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Dwr Cymru Cyfyngedig

Five Fords WwTW Gas to Grid Facility
Cefn Road
Abenbury
Wrexham
Clwyd
LL13 0PA

Permit number

EPR/AP3139FT

Five Fords WwTW Gas to Grid Facility
Permit number EPR/AP3139FT

Introductory note

This introductory note does not form a part of the permit

The main features of the permit are as follows.

This permit is to allow biogas produced from the existing sludge treatment and anaerobic digestion process (previously used in Combined Heat and Power (CHP)) units in order to produce renewable power and hot water for process heating) to be upgraded for injection to the national gas grid.

Given the nature of the proposed biogas to biomethane conversion process, the activity meets the definition of a Part A(1) installation under Section 1.2 of Schedule 1 of the EPR 2013, Gasification, Liquefaction and Refining Activities, namely: Part A(1) (a) “Refining gas where this is likely to involve the use of 1,000 or more tonnes of gas in any 12-month period”.

The Biomethane Injection Plant (BIP) comprises three main packages; Biogas Upgrade Plant (BUP); Grid Entry Unit (GEU), and; Propane Storage and Transfer Plant (PSTP). The BIP is intended to take biogas produced from the anaerobic digestion (AD) of sewage sludge for enhancement to allow direct injection of biomethane into the national grid.

The BUP has a maximum design capacity to handle 930 Nm^3/hr of biogas. However based on current sewage sludge throughputs and capacity of the AD plant, the existing AD process is technically limited to producing 300 Nm3/hr. The BUP will clean the biogas of contaminants deemed harmful to the natural gas grid and reduce carbon dioxide content, thereby increasing the calorific value (CV) of the gas so that it can be designated as biomethane. The pressure of the biogas (~ 62% methane, 37% carbon dioxide and trace concentrations of other gases (nitrogen and oxygen)) entering the BUP shall initially be increased, by a gas booster, before being passed into two sets of activated carbon filters (ACFs) configured in series.

The first set of ACFs removes volatile organic compounds (VOCs) and siloxanes from the biogas and the second set hydrogen sulphide. The biogas is then compressed, cooled and dried before being passed through a set of membranes which separate the methane from the carbon dioxide. Two product streams leave the membrane plant; the product gas stream comprising mainly methane (97%) with a very small amount of carbon dioxide and other gases (3%); and the waste gas stream comprising mainly carbon dioxide.

The biomethane is then passed to the grid entry unit where a small amount of propane is added to produce enriched biomethane with a CV compatible with that required by the Gas Network Operator (GNO). Prior to injection into the gas grid network, the enriched biomethane is monitored, analysed and odorised in the GEU. The odorisation of the enriched biomethane is a legal requirement. Two Combined Heat Power (CHP) engines with a combined thermal input capacity of 2.82 MW will be retained and operated as waste operations carried out at this installation. Biogas unsuitable to be sent directly to the national grid may be combusted within the two gas engines that make up the CHP's and drive electrical generators. Heat will be recovered for use within the Five Fords WwTW for sewage sludge treatment. Cooling water from the CHP engines will pass through heat exchangers to produce hot water. Also part of the facility is a dual fuel – Biogas and Natural Gas, standby boiler, with a maximum thermal input capacity of 1.5 MW, which is available to produce hot water if required. The connection to the sewage sludge digesters shall remain for use during periods where the upgrade plant is offline. In future, it is proposed that the CHP plant will be operated on natural gas fuel only.

All emissions to air have been screened out as environmentally insignificant using the H1 screening tool.

There will be no direct discharges of wastewater to the public sewer or to controlled water. Any liquid waste stream from the installation will either be reused or discharged to the drainage system of the adjacent Five Fords WwTW and will undergo treatment through the works before discharge to the River Dee.

Dwy Cymru Cyfyngedig (DCWW) have an Environmental Management System (EMS) that is registered to ISO 14001 for waste water operational sites. Five Fords forms part of the scope of the EMS. The management system will apply to all DCWW operations and will be co-ordinated with the DCWW Quality Management System in relation to the management and operation of the Five Fords site.

The status log of the permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/AP3139FT/A001	Duly made 14/11/11	Application for CHP facility
Additional information received	08/12/11	Aermod data input file for the detailed air dispersion modelling
Additional information received	08/02/12	Related to the operation of siloxane removal plant
Permit determined	10/02/12	Permit issued to Dwr Cymru Cyfyngedig
Agency variation determined EPR/AP3139FT/V002	26/02/13	Agency variation to implement the changes introduced by IED
Variation Application EPR/AP3139FT/V003	Duly made 17/12/14	Variation Application for adding gas refining activity to enable injection of biogas to national grid
Additional information received	05/02/15	Clarification of throughput and revised risk assessment .
Permit determined	25/03/2015	Consolidated Permit issued

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number
EPR/AP3139FT

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/AP3139FT/V003 authorising,

Dwr Cymru Cyfyngedig ("the operator"),

whose registered office is

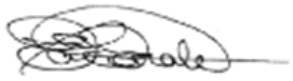
Pentwyn Road
Nelson
Treharris
Mid Glamorgan
CF46 6LY

company registration number **02366777**

to operate an installation at

Five Fords WwTW Gas to Grid Facility
Cefn Road
Abenbury
Wrexham
Clwyd
LL13 0PA

to the extent authorised by and subject to the conditions of this permit.

Name	Date
	**25 March 2015**

Eirian Macdonald

Authorised on behalf of Natural Resources Wales

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances , closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

1.2.1 The operator shall:

(a) take appropriate measures to ensure that energy is used efficiently in the activities;

(b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

1.3.1 The operator shall:

(a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;

(b) maintain records of raw materials and water used in the activities;

(c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and

(d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

1.4.1 The operator shall take appropriate measures to ensure that:

(a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and

(b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

(c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.

2.3 Operating techniques

2.3.1 (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by Natural Resources Wales.

(b) If notified by Natural Resources Wales that the activities are giving rise to pollution, the operator shall submit to Natural Resources Wales for approval within the period specified, a revision of any plan or other documentation ("plan") specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan , and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

2.3.2 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.3 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:

(a) the nature of the process producing the waste;

(b) the composition of the waste;

(c) the handling requirements of the waste;

(d) the hazardous property associated with the waste, if applicable; and

(e) the waste code of the waste.

2.3.5 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by Natural Resources Wales.

2.4.2 Except in the case of an improvement which consists only of a submission to Natural Resources Wales, the operator shall notify Natural Resources Wales within 14 days of completion of each improvement.

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1 and S3.2.

3.1.2 The limits given in schedule 3 shall not be exceeded.

3.1.3 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:

(a) if notified by Natural Resources Wales that the activities are giving rise to pollution, submit to Natural Resources Wales for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of Natural Resources Wales, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.

3.3.2 The operator shall:

(a) if notified by Natural Resources Wales that the activities are giving rise to pollution outside the site due to odour, submit to Natural Resources Wales for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;

(b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of Natural Resources Wales, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.4.2 The operator shall:

(a) if notified by Natural Resources Wales that the activities are giving rise to pollution outside the site due to noise and vibration, submit to Natural Resources Wales for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by Natural Resources Wales, undertake the monitoring specified in the following tables in schedule 3 to this permit:

(a) point source emissions specified in tables S3.1 and S3.2;

(b) process monitoring specified in table S3.3.

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.3.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by Natural Resources Wales.

3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1 and S3.2 unless otherwise agreed in writing by Natural Resources Wales.

4 Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by Natural Resources Wales, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by Natural Resources Wales.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to Natural Resources Wales using the contact details supplied in writing by Natural Resources Wales.

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31 January (or other date agreed in writing by Natural Resources Wales) each year. The report(s) shall include as a minimum:

(a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;

(b) the annual production /treatment data set out in schedule 4 table S4.2; and

(c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by Natural Resources Wales, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

(a) in respect of the parameters and emission points specified in schedule 4 table S4.1;

(b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and

(c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to Natural Resources Wales, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.2.5 Within 1 month of the end of each quarter, the operator shall submit to Natural Resources Wales using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter, if during that quarter the total amount accepted exceeds 100 tonnes of non-hazardous waste or 10 tonnes of hazardous waste.

4.2.6 The operator shall submit an annual solvent management plan in order to demonstrate compliance with the requirements of the Industrial Emissions Directive, by 31 January each year in respect of the previous year.

4.3 Notifications

4.3.1 (a) In the event that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—

(i) inform Natural Resources Wales,

(ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and

(iii) take the measures necessary to prevent further possible incidents or accidents;

(b) in the event of a breach of any permit condition the operator must immediately—

(i) inform Natural Resources Wales, and

(ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;

(c) in the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.

4.3.2 Any information provided under condition 4.3.1 [(a)(i), or 4.3.1 (b)(i) where the information relates to the breach of a limit specified in the permit,] shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where Natural Resources Wales has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform Natural Resources Wales when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to Natural Resources Wales at least 14 days before the date the monitoring is to be undertaken.

4.3.4 Natural Resources Wales shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

(a) any change in the operator's trading name, registered name or registered office address; and

(b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

(a) any change in the operator's name or address; and

(b) any steps taken with a view to the dissolution of the operator.

In any other case:

(a) the death of any of the named operators (where the operator consists of more than one named individual);

(b) any change in the operator's name(s) or address(es); and

(c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

(a) Natural Resources Wales shall be notified at least 14 days before making the change; and

(b) the notification shall contain a description of the proposed change in operation.

4.3.6 Natural Resources Wales shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.3.7 Where the operator has entered into a climate change agreement with the Government, Natural Resources Wales shall be notified within one month of:

(a) a decision by the Secretary of State not to re-certify the agreement;

(b) a decision by either the operator or the Secretary of State to terminate the agreement; and

(c) any subsequent decision by the Secretary of State to re-certify such an agreement.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

Schedule 1 - Operations

Table S1.1 activities			
Activity reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
A1	Section 1.2 A (1) (a) – Refining gas where this is likely to involve the use of 1000 or more tonnes of gas in any 12 month period.	Refining of bio-gas produced from Anaerobic Digestion of Sewage Sludge prior to direct injection into National Gas Grid.	From receipt of raw bio-gas to entry to the National Grid including gas odorisation.
Directly Associated Activity			
A2	Propane Storage and Transfer Plant	Additon of propane to bio-methane to enhance calorific value of gas.	Storage and transfer of Propane.
	Description of activities for waste operations	**Limits of activities**	
A3	R1: Use principally as a fuel or other means to generate energy.	Treatment operations shall be limited to: 1. Burning of waste as a fuel for combined heat and power (CHP) production of hot water and electricity, from the receipt of raw materials to the despatch of products and waste. 2. Operation of a Waste Gas Burner (flare stack) from the receipt of biogas to the release of combustion products. 3. Storage of biogas arising from the anaerobic digestion process at Five Fords WwTW prior to combustion in the CHP engines and supplementary firing in the boilers or flaring. 4. Siloxane removal using a granular activated carbon filter, which will remove siloxane from the biogas deriving from the anerobic digester prior to its combustion in the CHP's and the boiler. 5. Discharge of condensate from the gas pipelines and gas storage bag and from the siloxane removal media regeneration process, from collection to the point of discharge to the adjacent WwTW. Waste types as specified in Table 2.2	

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application EPR/AP3139FT/A0001	Environmental permit supporting information document and Site Condition report	31/08/11
Additional information	Revised Air Quality Assessment and H1 Risk Assessment	08/11/11
Additional information	Email dated 08/02/12 providing further information relating to the operation of the siloxane removal plant	08/02/12
Application EPR/AP3139FT/V003	Environmental permit variation application, supporting information and Site Condition report	17/12/14
Additional information	Clarification regarding risk assessment and throughput at site	05/02/15

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC 1	The Operator shall incorporate Biomethane Injection Plant Accident Management arrangements into the existing Accident Management Plan.	31/06/2015
IC 2	The Operator shall update its existing Environmental Management System to incorporate the new activities carried out by the Biomethane Injection Plant. The Operator shall submit the updated EMS to Natural Resources Wales for approval.	31/06/2015

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Natural Gas	-
Bio gas	-
Corrosion inhibitor	-
Lubricating Oil	-
Carbon Filters	-

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements

Emission point ref. & location	Parameter	Source	Limit[1] (including unit) -these limits do not apply during start up or shut down	Reference period	Monitoring frequency	Monitoring standard or method[3]
A1 CHP Stack (1) (Point A1 on the Site Installation Boundary plan in schedule 7)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	1.41 MW CHP engine exhaust stack	500 mg/m^3	Hourly average	Annual	BS EN 14792
	Carbon Monoxide		1400 mg/m^3			BS EN 15058
	Sulphur Dioxide		No limit set[2]			BS EN 14791
	Total VOC's		1000 mg/m^3			BS EN 12619[4] BS EN 13526[5]
	NMVOC's		No limit set[2]			BS EN 13649
A2 CHP Stack (2) (Point A2 on the Site Installation Boundary plan in schedule 7)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	1.41 MW CHP engine exhaust stack	500 mg/m^3	Hourly average	Annual	BS EN 14792
	Carbon Monoxide		1400 mg/m^3			BS EN 15058
	Sulphur Dioxide		No limit set[2]			BS EN 14791
	Total VOC's		1000 mg/m^3			BS EN 12619[4] BS EN 13526[5]
	NMVOC's		No limit set[2]			BS EN 13649
A3 (Point A3 on the Site Installation Boundary plan in schedule 7)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	1.5 Dual fuel stand by boiler exhaust stack – operating on Biogas	500 mg/m^3	Hourly average	Annual	BS EN 14792
	Carbon Monoxide		1400 mg/m^3			BS EN 15058
	Sulphur Dioxide		No limit set[2]			BS EN 14791
	Total VOC's		1000 mg/m^3			BS EN 12619[4] BS EN 13526[5]
	NMVOC's		No limit set[2]			BS EN 13649
	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	1.5 Dual fuel stand by boiler exhaust stack – operating on Natural gas	No Limit set			BS EN 14792
	Carbon Monoxide		No Limit set			BS EN 15058

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit[1] (including unit) -these limits do not apply during start up or shut down**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method[3]**
A4 (Point A4 on the Site Installation Boundary plan in schedule 7)	Siloxanes	Siloxane removal unit	No Limit Set	-	--	
A5 (Point A5 on the Site Installation Boundary plan in schedule 7)	Combustion gases	Waste gas burner (Flare stack)	No Limit Set	-	-	-
A6 Biomethane plant (Point A6 on the Site Installation Boundary plan in schedule 7)	Nitrogen Oxygen Carbon Dioxide Methane H_2S Odour	Biomethane Plant Stack	No limit set	-	-	-

***Emission points A1 – A3. Monitoring is only required if CHP plant operates >10% of the time.**

(1). Reference conditions for SI engines are dry air, 273K, at a pressure of 101.3 kPa with an oxygen content of 5%.
(2). The Environment Agency may set emission limit values on completion of IC2 and IC4.
(3). Certification to the MCERTS performance standards indicates compliance with BS EN 15267-3
(4). At sites with low total VOC concentrations (up to 20 mg/m^3).
(5). At sites with low to moderate total VOC concentrations (> 20 mg/m^3).

Table S3.2 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. Unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
W1 (Point W1 on the Site Installation Boundary plan in schedule 7 – discharged to Five Fords WwTW)	-	Condensate from the gas pipelines and gas storage bag	No limit set	-	-	-
W2 (Point W2 on the Site Installation Boundary plan in schedule 7)	-	Condensate from the siloxane removal media regeneration process	No limit set	-	-	-

Table S3.3 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter [Note 1]**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Biogas as supplied to the engines	Hydrogen sulphide and Methane	continuous	Continuous in line monitor	Monitoring point in biogas feed line within the installation boundary
Gas Holder leak detection	Methane	continuous	Continuous in line monitor	Monitor detects between the two membranes of the gas holder

Note 1: There is no requirement to report process monitoring data. This information shall be made available at the installation for inspection.

Schedule 4 - Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Emissions to air Parameters as required by condition 3.5.1.	A1, A2, A3	Annual	1 January
Hydrogen sulphide concentrations in biogas feed above 1500 ppm	Monitoring point in biogas feed line within the installation boundary	Every 3 months	1 January

Table S4.2: Annual production/treatment	
Parameter	**Units**
Electrical energy generated	MWh
Thermal energy generated	MWh
Biomethane fed into National Grid	Tonnes

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Fuel input to installation (biogas)	Annually	m^3
Fuel input to installation (Natural Gas)	Annually	Tonnes
CHP engine efficiency	Annually	%
Hours of operation for both engines and hours that engines operated in CHP mode	Annually	Hours
Hours run on biogas (steam raising boiler)	Annually	Hours
Hours run on Natural gas (steam raising boiler)	Annually	Hours
Operational hours of waste gas burner	Annually	Hours
Biogas burnt by waste gas burner	Annually	m^3
Operational hours of biomethane Injection Plant	Annually	Hours

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air	Form air 1 or other form as agreed in writing by Natural Resources Wales	DD/MM/YY
Other performance indicators	Form performance 1 or other form as agreed in writing by Natural Resources Wales	DD/MM/YY

Schedule 5 - Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any activity that gives rise to an incident or accident which significantly affects or may significantly affect the environment	
To be notified Immediately	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a permit condition	
To be notified immediately	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	**Notification period**

(c) In the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment:	
To be notified immediately	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 - Interpretation

"authorised officer" means any person authorised by Natural Resources Wales under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

"background concentration" means such concentration of that substance as is present in:

- for emissions to surface water, the surface water quality up-gradient of the site; or
- for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.

"disposal". Means any of the operations provided for in Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

EP Regulations" means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"emissions to land" includes emissions to groundwater.

"emissions of substances not controlled by emission limits" means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit**.**.

"groundwater" means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

"hazardous property" has the meaning given in Schedule 3 of the Hazardous Waste (England and Wales) Regulations 2005 No.894 and the Hazardous Waste (Wales) Regulations 2005 No. 1806 (W.138).

"Industrial Emissions Directive" means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions

MCERTS" *means the Environment Agency's Monitoring Certification Scheme*.

"recovery" means any of the operations provided for in Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"Waste Framework Directive" or "WFD" means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste

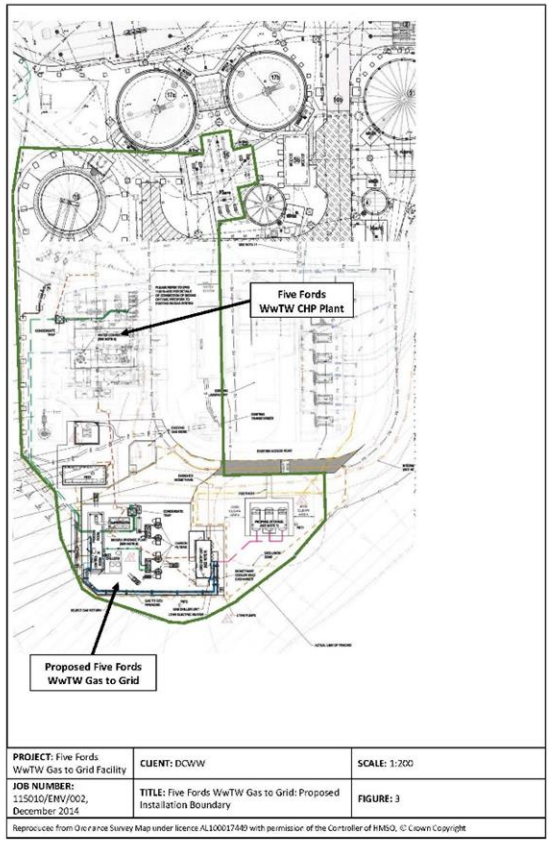
Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

(a) in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or

(b) in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

Schedule 7 - Site plan



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END OF PERMIT

Permit Number: AP3139FT Operator: Dwr Cymru Cyfyngedig

Facility: Five Fords Gas to grid facility Form Number: Air1 / DD/MM/YY

Reporting of emissions to air for the period from DD/MM/YYYY **to** DD/MM/YYYY

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result [1]	Test Method [2]	Sample Date and Times [3]	Uncertainty [4]
A1	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	500 mg/m^3	Hourly Average		BS EN 14792		
A1	Carbon monoxide	1400 mg/m^3	Hourly Average		BS EN 15058		
A1	Sulphur dioxide	No limit	Hourly Average		BS EN 14791		
A1	Total VOC's	1000 mg/m^3	Hourly Average		BS EN 12619 BS EN 13526		
A1	NMVOC's	No limit set	Hourly Average		BS EN13649		
A2	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	500 mg/m^3	Hourly Average		BS EN 14792		
A2	Carbon monoxide	1400 mg/m^3	Hourly Average		BS EN 15058		
A2	Sulphur dioxide	No limit	Hourly Average		BS EN 14791		
A2	Total VOC's	1000 mg/m^3	Hourly Average		BS EN 12619 BS EN 13526		
A2	NMVOC's	No limit set	Hourly Average		BS EN13649		
A3		500 mg/m^3	Hourly Average		BS EN 14792		

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result [1]	Test Method [2]	Sample Date and Times [3]	Uncertainty [4]
	Oxides of nitrogen (NO and NO_2 expressed as NO_2)						
A3	Carbon monoxide	1400 mg/m^3	Hourly Average		BS EN 15058		
A3	Sulphur dioxide	No limit	Hourly Average		BS EN 14791		
A3	Total VOC's	1000 mg/m^3	Hourly Average		BS EN 12619 BS EN 13526		
A3	NMVOC's	No limit set	Hourly Average		BS EN13649		

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with Natural Resources Wales is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.

[3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.

[4] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed ……. Date……..

(Authorised to sign as representative of Operator)

Permit Number: AP3139FT Operator: Dwr Cymru Cyfyngedig

Facility: Five Fords Gas to Grid Facility Form Number: Performance1/ DD/MM/YY

Reporting of other performance indicators for the period DD/MM/YYYY **to** DD/MM/YYYY

Parameter	Units
Fuel input to installation (biogas)	m^3
Fuel input to installation (Natural Gas)	Tonnes
CHP engine efficiency	%
Hours of operation for both engines and hours that engines operated in CHP mode	Hours
Hours run on biogas (steam raising boiler)	Hours
Hours run on Natural gas (steam raising boiler)	Hours
Operational hours of waste gas burner	Hours
Biogas burnt by waste gas burner	m^3
Operational hours of biomethane Injection Plant	Hours

Operator's comments :

Signed ……. Date……..
(Authorised to sign as representative of Operator)