



Business Management System

# Annual permit report

Installation	Bryn Pica
Permit reference	XP3436SY
Reporting period	Jan - Dec 2021
Permit Operator	Novera Energy

Author: Kate Phillips

Authorised to sign as representative of the Operator

Date: 20-Jan-22

Bryn Pica

XP3436SY

<b>Fugitive Emissions Review (4.1.4)</b>	<b>Jan - Dec 2021</b>
<b>Substances Released/Potentially Released</b>	<b>Description of event and any contamination/decontamination of the site which has occurred</b>
Landfill gas	Details of any notifiable events have been submitted to NRW in accordance with our notification procedure
Spillages	No significant spillages, contamination or decontamination to report for this installation

**Raw Materials (& Water) Assessment Table (S4.2 / 2.4)**

<b>Site:</b> Bryn Pica	<b>Reporting period:</b> Jan - Dec 2021	<b>Permit Reference:</b> XP3436SY
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Raw Materials	Application	Current Measures to Ensure Efficiency and Waste Minimisation	Annual Quantity Used	Fate of Material	Environmental Impact Potential	Reason Alternatives are Not Practicable	Details of Process Modifications which Could Result in Savings
Landfill gas	Fuel for engines to produce electricity	Kilowatt generation from volumes processed is maximised through effective operation, maintenance and servicing of plant	Variable depending on site conditions	Combustion	Potentially flammable, explosive, toxic, asphyxiant, ecotoxic, corrosive and odorous, greenhouse gas	N/A - Combustion of landfill gas essential for environmental control	N/A - environmental benefits to be gained from conversion of methane to CO2
Lubricating oils	To ensure efficiency of utilisation plant is maintained in accordance with manufacturer's instructions	Efficient use of lubricating oil is maximised through oil analysis to identify requirement for oil changes	Oil use is reviewed as part of the budgeting process	Reprocessing	Ecotoxic and odorous	Specification determined by engine manufacturer to ensure maximum performance and efficiency	Oil used is specialised for landfill gas fuel as recommended by the OEM. Oil change intervals are based on oil analysis therefore maximising efficiency and minimising use
Water	Coolant for engine block and domestic water supply	Cooling water is recirculated around the engines to maximise efficiency and minimise consumption	No water supply on site. Water is supplied to the compound by bowser from the landfill supply.	Treatment	Inert	N/A - Inert therefore best practicable environmental option	Re-use of water for coolant purposes ensures volumes used are as low as reasonably practicable. Cleaning practices assessed and minimal volumes used, cleaning practices are infrequent.
	Hygiene purposes	handwashing and (where available) toilet facilities		where installed toilet waste is removed from site and treated as sewerage	Inert	n/a	n/a
Glycol	Antifreeze for use in coolant water	Glycol is recirculated around the engines to maximise efficiency and minimise consumption	Glycol contained within enclosed-loop system is drained into a container for re-use. OEM* recommends change of glycol every 20,000 hours. Infnis policy is to change following natural depletion or contamination.	Reprocessing	Toxic, ecotoxic	Specification determined by engine manufacturer to ensure maximum performance and efficiency	Antifreeze mix is specific to engine type and pre-determined by the OEM*. Levels are topped-up following natural depletion or contamination
Battery Acid	In batteries used for engine start-up and to provide back-up power to ensure rapid restart following any loss of mains power supply	Battery use is essential minimised to the applications listed (see left)	Typically less than 10 batteries removed from each site per year	Recycled	Corrosive	Portable electrical supply required for start-up	Minimal use of battery during start-up only therefore opportunity for savings is insignificant

\*OEM: Original Engine Manufacturer

## Waste Minimisation, Recovery and Disposal Assessment (2.6.2)

<b>Installation Name:</b> Bryn Pica Gas Utilisation Plant	<b>Permit Reference:</b> XP3436SY	<b>Reporting period:</b> Jan - Dec 2021
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Waste Stream	Application/Source	Current Measures to Ensure Efficiency and Waste Minimisation	Fate of Material	Reason Alternatives are Not Practicable	Details of Process Modifications which Could Result in Savings
Oil Filters (205ltr Drum)	Engine maintenance	Predetermined by manufacturers' recommendations to ensure efficiency	Reprocessing	Oil and filtration devices predetermined by manufacturers to ensure efficiency	Not applicable: oil filters changed at pre-determined life based on oil analysis and differential pressure
Oil Contaminated Rags & Absorbents (205ltr Drum)	Engine maintenance and housekeeping	Control measures in place to prevent spillage	Reprocessing	As above	No further modifications considered possible: Preventative maintenance and procedural practices minimise spillage and the requirement for oil absorbancy products
Waste Engine Oil (Bulk)	Engine maintenance	Efficient use of lubricating oil is maximised through oil analysis to identify requirement for oil changes	Reprocessing	As above	No further modifications considered possible: Oil used is specific to the landfill gas fuel in use and as recommended by the OEM*. Oil change intervals are based on oil analysis therefore maximising efficiency and minimising use
Batteries	Engine maintenance	Recharged	Recycled	Batteries essential for engine start-up and ensuring rapid restart	Batteries only replaced when they no longer hold a charge. Maintenance practices are in place to lengthen battery life
Fluorescent Tubes	Lighting	Replacement when faulty or damaged	Reprocessing	Alternatives not considered practicable due to warm-up time of energy saving bulbs	Tubes are only replaced when they have expired
General Waste	Packaging	Waste streams which can be reprocessed or recycled are identified and segregation facilities provided where appropriate	Disposal	Materials not segregated/ reprocessed are produced in small quantities only making alternatives not viable	Not applicable as a result of small quantities only being produced
Waste water/effluent	Welfare facilities	Facilities are maintained to ensure minimal water usage	Road tanker to treatment plant	Connection to mains sewer not practical - quantities produced are small.	Not applicable as a result of small quantities only being produced

\*Original Engine Manufacturer

Annual Reporting of Other Performance Indicators		
<b>Installation:</b>	Bryn Pica Landfill Gas Utilisation Plant	<b>Permit Reference:</b> XP3436SY
<b>Parameter</b>	<b>Jan - Dec 2021</b>	<b>Units</b>
Flare operation hours	296	hrs
Gas engine downtime hours	289	hrs
Gas engine operation hours	8,471	hrs
Volume of LFG utilised	3,520,163	m3 (treated by engines)

Operator's Comments:
Engine 2 was removed from site in January 2019 as part of a downsizing project for the site. Only one engine remains. Gas utilised has reduced in comparison to 2020. This is in line with expectations for declining gas production with site age.

Reporting of Performance Indicators (Form Ref: PI1)		
<b>Installation:</b>	Bryn Pica Landfill Gas Utilisation Plant	<b>Permit Reference:</b> XP3436SY

Annual Production/Treatment (MWh)	Jan - Dec 2021
<b>Total production of energy</b>	6288

Environmental Performance Indicators (Schedule 3: Table S3)				
Parameter	Annual Average Jan - Dec 2021	Units	Trends in Environmental Performance	
			2019	2020
Total oxides of nitrogen (expressed as NO2) emission	2.1	Kg/MWh	1.9	1.9
Total carbon monoxide emission	4.0	Kg/MWh	3.6	5.1
Total engine downtime (downtime hrs/available operation time in hrs)	3.4	%	11.0	7.0

Energy (Schedule 3: Table S3)					
Reporting period	Energy Imported (Primary Energy Usage) (MWh)	Parasitic (MWh)	Energy Exported (MWh)	Energy Used on Site (MWh)	Site Efficiency
Jan - Dec 2021	5.3	269	6019	274	25.8

\*Site efficiency has been calculated as follows: (Engine efficiency (%) x (gas to generation/total gas) x (power export / (power generation + imported power))). This calculation method has been revised since the previous years' reports as it is considered to more accurately reflect the overall energy efficiency at the site"

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<b>Accident Management Plan Review</b>		<b>Jan - Dec 2021</b>	
		<b>Reviewing details</b>	
		Reviewed monthly following a review of notifiable events	

(Permit condition 2.8.1)

<b>Operator's comments:</b>
No accidents occurred during this period which would require amendment to the Accident Management Plan for this installation.

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<b>Emissions to Air Reporting</b>	<b>Jan - Dec 2021</b>		
<b>Report Submission Date</b>			15-Apr-21
<b>Submitted to</b>			Richard Taylor & Elizabeth Parr

Emission reports required by the permit (condition 4.1.2 / 4.1.3) were submitted to the relevant officer in 2021. The results indicated compliance with the levels noted in the permit.