Annual permit report

Installation	Silent Valley
Permit reference	ZP3535SQ
Reporting period	Jan - Dec 2021
Permit Operator	Novera Energy

Author: Sam Morris & Kate Phillips Date: 27-Jan-22

Authorised to sign as representative of the Operator

Fugitive Emissions Review		Reporting period: Jan - Dec 2021
Installation Name:	Silent Valley Landfill gas utilisation plant	Permit reference ZP3535SQ

Substances Released/Potentially	Description of event and any contamination/decontamination of the site which has occurred
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 (1.3.1)					
Site:	Silent Valley	**Reporting period:**	Jan - Dec 2021	**Permit Reference:**	ZP3535SQ

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 regularly reviewed as part of the budgetting process	Reprocessing	Ecotoxic and odorous	Specification determined by engine manufacturer to ensure maximum performance and efficiency	Oil used is speciaised 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 to site. De-ionised water is supplied to site in IBCs and used to mix coolant	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
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. Infinis 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)	There are typically <10 batteries removed from each gas utilisation plant 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 (1.4.2)

Installation Name:	Silent Valley Gas Utilisation Plant	**Permit Reference:**	ZP3535SQ	**Reporting period:**	Jan - Dec 2021

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) (EWC 16-01-07)	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) (EWC 15-02-02)	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) (EWC 13-02-05)	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 (EWC 16-06-01)	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 (EWC 20-01-01)	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

Installation:	Silent Valley Landfill Gas Utilisation Plant	**Permit Reference:**	ZP3535SQ

Parameter	**Jan - Dec 2021**	**Units**
Gas engine downtime hours	271.2	hrs
Gas engine operation hours	8489.0	hrs
Volume of landfill gas combusted	74,054	m3 (treated by flare)
	2,317,967	m3 (treated by engines)
	2,392,022	m3 (total treated by engines & flare)

Operator's Comments:
Only one engine running since September 2015. The flare is not regulated by this gas utilisation plant permit.

Reporting of Performance Indicators (Form Ref: PI1)

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Annual Production/Treatment (MWh)	
Total production of energy	3512

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	1.9	Kg/MWh	1.7	2.0
Total carbon monoxide emission	3.9	Kg/MWh	1.6	2.5
Total engine downtime (downtime hrs/available operation time in hrs)	3.1	%	4.0	1.7

Energy (Schedule 3: Table S3)

Reporting period	**Energy Imported (Primary Energy Usage) (MWh)**	**Parasitics (MWh)**	**Energy Exported (MWh)**	**Energy Used on Site (MWh)**	**Site Efficiency**
Jan - Dec 2021	5.8	211	3301	217	35

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Accident Management Plan	**Jan - Dec 2021**
Current Review Date	
Reviewed monthly following a review of Notifiable Events	

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

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Emissions to Air Reporting	**Jan - Dec 2021**		
Report Submission Date		15-Apr-21	
Submitted to		Tyrone Ward & Liz Parr	

Emission reports required by the permit (condition 3.1.1) were submitted to the relevant officer in 2021. The results indicated compliance with the levels noted in the permit.