

Form Number : MR1 Reporting of Mass Emissions to Sewer for the period from ...1 January 2019.....to ...31 December 2019.....

Emission Point	Substance / Parameter	Emission Limit Value	Result [1]	Annual mass [2]
S1 and S2	Mercury and its compounds	0.005 mg/l	<0.00010mg/l	
S1 and S2	Mercury and its compounds	0.9 g		0.0000062 g/m ³
S1 and S2	Cadmium and its compounds	0.01 mg/l	<0.0006mg/l	
S1 and S2	Cadmium and its compounds	0.3 g		0.0000431 g/m ³

[1] The result is given as a mass balance calculation, definition as given in condition 6.1.1
[2] The Annual Mass is given as a mass balance calculation, definition as given in condition 6.1.1

Signed Date.....
(authorised to sign as representative of the Operator)

Form Number : R1 Reporting of Waste Disposal for the year2019.....

Waste Disposal & Recovery				Trends in Waste Disposal and Recovery			
Waste Description	Disposal		Recovery	Parameter		Total Waste	
	Route	Tonnes		Tonnes	per unit output ^[1]	Tonnes	per unit output ^[1]
1) Hazardous Wastes							
Lead and lead oxide waste	EnviroWales	916.0	916.0	1250.885	0.0719975	1542.276	0.0887692
Other hazardous waste	See below	130.445	18.892	686.0394	0.0429621	923.3654	0.0578243
Total hazardous waste		1046.445	934.892	1053.352	0.0542732	1264.863	0.0651712
				1054.71	0.0653937	1260.908	0.0781783
2) Non-Hazardous Wastes	See below	283.714	177.978	1088.849	0.0649330	1249.611	0.0745200
Total non-hazardous waste		283.714	177.978	1116.079	0.0649365	1276.536	0.0742724
				1404.312	0.0794441	1645.108	0.0930663
				1133.9434	0.0610909	1395.0634	0.0751587
TOTAL WASTE	-	1330.159	1112.87	1046.445	0.0575286	1330.159	0.0731259

[1] Waste per unit output should be quoted in units of waste produced from battery process / tonnes of battery produced per year.

Operator's comments :

A review of waste has again been undertaken throughout 2019 to ensure the accuracy of the figures reported.

Hazardous and total waste has reduced when compared with 2018, and a full description, along with an analysis of changes between 2018 and 2019 is appended to this report.

Signed Date 19/12/2020

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Form Number : WU1 Reporting of Water Usage for the year ...2019.....

Water Usage		
Water Source	Annual Usage (m³)	Water per unit output ^[1] (m³/t)
Abstraction Borehole	38976.0m³	
Mains water	24971.0m³	
Recycled Effluent	11360.0m³	
TOTAL WATER USAGE	75307.0m³	4.1400267

Trends in Water Usage		
Year	Parameter	Water per unit output ^[1]
2014	Total Water usage	3.7313187
2015	60181.0m³	4.3422321
2016	72814.0m³	5.0484031
2017	86768.0m³	5.5428841
2018	97980.0m³	4.8598272
2019	90206.0m³	4.1400267
	75307.0m³	

[1] Water per unit output should be quoted in units of total water use / tonnes of battery produced per year.

Operator's comments :

Abstracted water:-

Borehole A = 27,541m³ , Borehole B = 11435m³ , Total = 38,976m³

Total water consumption has decreased in 2019 by 14,899 m³.

The amount of recycled water also decreased by 11,713 m³ but has increased again from quarter 4, 2019.

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Form Number : E1 Reporting of Energy Usage for the year ...2019.....

Energy Usage			
Energy Source	Energy Usage		CO ₂ Produced (tonnes)
	Quantity	Primary Energy (MWh)	
Electricity *	21237.402 MWh	50969.7648	5842.621
Natural Gas	7606.995 MWh	7606.995	1395.959
TOTAL	28844.397 MWh	58576.7598	7238.58

Trends in Energy Usage			
Year	Parameter	CO ₂ produced	CO ₂ per unit output [1]
2015	Primary Energy usage	8699.995	0.5188205
2016	Primary Energy usage	9744.643	0.5669703
2017	Primary Energy usage	9095.797	0.5145636
2018	Primary Energy usage	7939.776	0.4277535
2019	Primary Energy usage	7238.58	0.3979432

* Conversion factor for delivered electricity to primary energy = 2.4

[1] CO₂ per unit output should be quoted in units of total CO₂ produced / tonnes of battery produced per year.

Operator's comments :

I would add that CO₂ emissions are calculated using the DEFRA CO₂ emission factors, including transmission and distribution emissions. Primary energy has continued to be calculated using the 2.4 conversion factor above.

Energy efficiency continues to be an objective and target for continued improvement.

Signed

(authorised to sign as representative of the Operator)

Date 21/2/2020

Form Number : PH1 Reporting of Performance Indicators for the year ...2019.....

Annual Production/Treatment	
Production of batteries produced per year	18189.979 tonnes

Environmental Performance Indicators

Performance Indicators		
Parameter [1]	Annual Mass	Units
COD	0.0977397	kg/tonne
Mass of lead released from A1 – A7 and A9 - A26	0.0025575	kg/tonne
Mass of lead released to sewer	0.0083109	kg/tonne

Trends in Environmental Performance		
Year	Parameter [1]	
2012	0.1057535	0.0037291
2013	0.0610321	0.0043773
2014	0.1252405	0.0048269
		0.0112394
2015	0.1387867	0.0051848
		0.0104550
2016	0.0687224	0.0028735
2017	0.1018004	0.0027847
2018	0.1076151	0.0023237
2019	0.0977397	0.0025575
		0.0083109

[1] Performance indicators should be quoted in units of parameter / tonnes of battery produced per year

- Operator's comments:
- COD mass to sewer = 1777.8839 kg/year / 18189.979 tonnes of battery produced = 0.0977397 kg/tonne.
 - Lead mass from stacks = 46.522 kg/year / 18189.979 tonnes of battery produced = 0.0025575 kg/tonne.
 - Lead mass to sewer = 151.1756 kg/year / 18189.979 tonnes of battery produced = 0.0083109 kg/tonne.
 - COD to Sewer:- I would add that the annual COD release has been calculated from the average of the maximum monthly figures recorded from both ALS and GS Yuasa quarterly samples. Samples were taken in each month of January to December inclusive for factory No. 2 (S1) and January, February, April, July and October for factory No. 4 (S2).
 - Stacks:- In 2019, there has been a small increase in the Lead mass from stacks against 2018, which relates mainly to stack operational hours increasing due to some weekend working being required.
As in previous years, all LEV systems continue to be shut-down at break times.
 - Lead to Sewer:- The annual Lead release for S1 and S2 has been calculated from the average of the maximum monthly GS Yuasa figures recorded for each month of 2019.
 - Total Lead to sewer has decreased in 2019 which is mainly due to a reduction in the total volume of trade effluent discharged along with a reduction in some monthly Lead results taken throughout the year. It is also affected by the processing of a large volume of rain water which is captured from the north perimeter road along with continuous flushing of a small number of process water systems to prevent the formation of bacteria in them..

Signed

(authorised to sign as representative of the Operator)

Date 29/12/2020

