

Operator: Dow Silicones UK Ltd
Installation: Barry Silicon-Based Manufacturing Installation

Permit Reference Number: BR96851X

2022 Annual Reporting for Dow Silicones UK Ltd

Parameters, for which reports are required, in accordance with conditions of the permit, are listed within this report.


Performance Parameter	Reporting Form	Page
Water – quarterly reporting of emissions	BR96851X / E1	2
Air – quarterly reporting of emissions	BR96851X / A2	4
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Air, A57 – annual reporting of chloromethane emissions	BR96851X / A5	11
Energy Usage	BR96851X / E1	12
Waste Returns	BR96851X / R1	13
Water usage	BR96851X / WU1	15
ERU availability	BR96851X / ERU1	16

Emission Point	Substance / Parameter	Emission Limit Value	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Accreditation/ Certification ^[4]	Uncertainty ^[5]
W1 via M1	Flow	11 000 m ³ /day	7218	Agreed ⁽¹⁰⁾	30-Dec	MCERT Approved	+/- 0.5%
W1 via M1	Flow	625 m ³ /hour	387.616897	Agreed ⁽¹⁰⁾	19-Dec	MCERT Approved	+/- 0.5%
W1 via M1	pH – Min pH - Max	≥ 6 ≤ 9	6.04	To be agreed ⁽¹¹⁾	11-Oct	Under Review ⁽¹¹⁾	+/- 0.2%
			9.13 (Note 16)		09-Nov		
W1 via M1	Temperature	40 °C ^[6]	27.10	RTD ⁽¹²⁾	29-Oct	MCERTS Equiv ⁽¹²⁾	+/- 0.55 °C
W1 via M1	Suspended solids	30 mg/l (Note 8)	24.6549999	SCA Blue Book 105	Q4 2022	Under Review	+/- 6mg/l
W1 via M1	BOD ₅	20 mg/l	21.00	SCA Blue Book 130	05-Dec	UKAS	+/- 21%
W1 via M1	Copper	0.1 mg/l (Note 8)	0.09786	Inductively Coupled Plasma	Q4 2022	In house validated method	+/- 0.0096 mg/l
W1 via M1	Zinc	0.5 mg/l (Note 8)	0.028415	Inductively Coupled Plasma	05-Dec	In house validated method	+/- 0.02 mg/l
W1 via M1	Hydrocarbon oil	No visible sheen	No visible sheen	Visual Check	Q4 2022	N/A	N/A
W1 via M1	TOC	100 mg/l	31.78099	EN 1484	Q4 2022 daily average	NA	NA
W2	pH	≥ 6, ≤ 9	No discharge from W2 in Q4	pH probe	No discharge from W2 in Q4	In house validated method	+/- 4%
W2	Suspended solids	30 mg/l (Note 15)		SCA Blue Book 105		Under Review	+/- 6mg/l
W2	BOD ₅	20 mg/l (Note 14)		SCA Blue Book 130		UKAS	+/- 21%
W2	COD	125 mg/l (Note 13)		Offsite Analysis		UKAS	Unknown
W2	Copper	0.15 mg/l (Note 7)		Inductively Coupled Plasma		In house validated method	+/- 0.0096 mg/l
W2	Zinc	0.25 mg/l (Note 7)		Inductively Coupled Plasma		In house validated method	+/- 0.02 mg/l
W2	Hydrocarbon oil	No visible sheen		Visual Check		N/A	N/A

- [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 the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. 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 accreditation status of the equipment and/or the monitoring organisation, as appropriate, for the methods used for both sampling and analysis.
- [5] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.
- [6] Not more than 5% of measurements in the reporting period shall exceed the limit value.
- [7] To be reported for each effluent transfer from W809 to W413.

Dow Silicones Notes:

- (8) The result is the 95%ile reading for the reporting period to demonstrate compliance with the emission limit value stated, which is a 95%ile limit.
- (10) Instrument and measurement technique has been reviewed under improvement item IP8. The final treated effluent Danfloss flow meter FT5098 has been MCERT approved. It has been agreed that from 1 October 2009 onwards that the dry flow rate discharge limit of 11,000 m³/day will apply and that reported flow data will relate purely to treated effluent with storm water flow (from W952 penstock valve) excluded from the totalised discharge from release point W1.
- (11) Instrument and measurement technique has been reviewed under improvement item IP10. Existing pH meters will be replaced by MCERT certified pH meter upon failure. Current meters deemed satisfactory in the interim.
- (12) Instrument and measurement technique was reviewed under Note 7 Table 2.2.5 and Agency responded. A New MCERT equivalent resistance thermometer was installed by Dow Silicones in Q4 2007.
- (13) No spot sample shall exceed the limit value by more than 50%. Limit is 125 mg/l so allowable spot sample result is 187.5 mg/l.
- (14) No spot sample shall exceed the limit value by more than 50%. Limit is 20 mg/l so allowable spot sample result is 30 mg/l.
- (15) No spot sample shall exceed the limit value by more than 50%. Limit is 30 mg/l so allowable spot sample result is 45 mg/l.
- (16) The uncertainty for this instrument is +/- 0.2 so having conversed with NRW this was not submitted as a Schedule 5.

Signed 

Date: ...26th Jan 2023.....

(authorised to sign as representative of Operator)

Quarterly Reporting of Emissions to Air for the period from **October 1 2022 to December 31 2022**

Emission Point	Substance / Parameter	Emission Limit Value	Result ^[1]		Test Method ^[2]	Sample Date and Times ^[3]	Accreditation/ Certification ^[4]	Uncertainty ^[5]
A26	Class B VOC's	No limit applies	0.4712	kg/hr	Gas chromatography	07/11/2022 12:05	In House Validated Method	3.6%
A26	Siloxanes	No limit applies ⁽⁶⁾	0.2660	kg/hr	Gas chromatography	07/11/2022 12:05	In House Validated Method	3.6%
A27	Siloxanes	No limit applies ⁽⁶⁾	0.1196	kg/hr	Gas chromatography	07/11/2023 12:20	In House Validated Method	3.6%
A43	Hydrogen chloride	10mg/m ³	See note 10	mg/m ³	Ion chromatography	N/A	In House Validated Method	3.6%
A44	Hydrogen chloride	10mg/m ³	See note 8		Ion chromatography	N/A	In House Validated Method	3.6%
A57	Hydrogen chloride	10mg/m ³	0.287200282	mg/m ³	Ion chromatography	14/11/2022 15:20	In House Validated Method	3.6%
A60	Class B VOC's	5000 kg/year ⁽⁷⁾	0.0255 115.7050	kg/hr kg	Gas chromatography	14/11/2022 15:15 2022 TOTAL	In House Validated Method	3.6%
A65	Siloxanes	No limit applies ⁽⁶⁾	0.0505	kg/hr	Gas chromatography	07/11/2022 10:55	In House Validated Method	3.6%
A68	Class B VOC's	5000 kg/year ⁽⁷⁾	0.0390 1148.4137	kg/hr kg	Gas chromatography	07/11/2022 11:15 2022 TOTAL	In House Validated Method	3.6%
A68	Siloxanes	No limit applies ⁽⁶⁾	2.0529	kg/hr	Gas chromatography	07/11/2022 11:15	In House Validated Method	3.6%
A78	Class A VOC's	No limit. Temperature (°C)	28.1221	°C	RTD	12/11/2022 13:42	Internally Calibrated	0.02%
A79	Siloxanes	No limit applies ⁽⁶⁾	0.3270	kg/hr	Gas chromatography	07/11/2022 11:40	In House Validated Method	3.6%
A85	Siloxanes	No limit applies ⁽⁶⁾	See note 10	kg/hr	Gas chromatography	N/A	In House Validated Method	3.6%
A123	Siloxanes	No limit applies	-	kg/hr	Gas chromatography	New vent not yet operational	In House Validated Method	3.6%
A124	Siloxanes	No limit applies	-	kg/hr	Gas chromatography	New vent not yet operational	In House Validated Method	3.6%

[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 the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. 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.

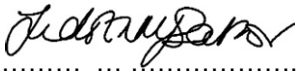
- [4] The accreditation status of the equipment and/or the monitoring organisation, as appropriate, for the methods used for both sampling and analysis.
- [5] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.
- [6] Emission limit to be agreed following completion of IP14. This was deferred for consideration with IP25. No limit applies.
- [7] Emission limit agreed following completion of IP4 (5000 kg/year).

Dow Silicones Notes:

(8) A44 is now decommissioned (vent is released via A43).

(9) Releases modelled as part of IP16. Agency agreed that releases do not require abatement and that limit no longer applies. Instead the vent temperature will be recorded on form A2 quarterly to ensure vent condenser performance does not deteriorate. A new temperature transmitter was installed in 2009 to give continuous temperature monitoring with operator alarm for elevated condenser outlet temperature to trigger condenser cleaning operations. Result recorded is the maximum temperature value obtained during the reporting period.

(10) These vent locations were not sampled in Q4, a Schedule 5 was entered.

Signed 

Date... .. 26th Jan 2023

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Annual Reporting of Emissions to Air for the period from **January 1 2022 to December 31 2022**

Emission Point	Substance / Parameter	Emission Limit Value	Result ^[1]	Units	Test Method ^[2]	Sample Date and Times ^[3]	Accreditation/ Certification ^[4]	Uncertainty ^[5]
A12, A33, A34, A40 ⁽¹⁰⁾	Chloromethane	60 000kg/year	12060.77	kg/yr	US EPA Method 18	2022	In House GC	A12 = 4% A33 = 24% A34 = 3% A40 = 3.6%
A12, A33, A34, A40 ⁽¹⁰⁾	Chloromethane	1000kg/day	795.59	kg/day	US EPA Method 18	25-Mar-22	In House GC	A12 = 4% A33 = 24% A34 = 3% A40 = 3.6%
A12, A33, A34, A40 ⁽¹⁰⁾	Chloromethane	250kg/hour	97.02	kg/hr	US EPA Method 18	25-Mar-22 03:00	In House GC	A12 = 4% A33 = 24% A34 = 3% A40 = 3.6%
A33	Methanol	60kg/hour	Note 16	kg/hr	US EPA Method 18	n/a	In House GC	42%
A34	Methanol	60kg/hour	30.97	kg/hr	US EPA Method 18	02-Sep-22	In House GC	1%
A12	Methane ^[6]	No limit applies	Note 16	kg/hr	US EPA Method 18	n/a	In House GC	1%
A12	Non-methane hydrocarbons ^[6]	No limit applies	Note 16	kg/hr	US EPA Method 18	n/a	In House GC	2%
A40	Silanes ^[6]	No limit applies	n/a	-	Gas chromatography	n/a	In House validated Method	3.6%
A40	Silanes ^[7]	No limit applies	n/a	-	Gas chromatography	n/a	In House validated Method	3.6%
A41	Particulates	10 mg/m ³	44.84 Note 17	mg/m ³	BS EN 13284	Time weighted average of all samples	UKAS & MCERTS	+/- 0.33
A41	Carbon monoxide	50mg/m ³	2.23	mg/m ³	ISO 12039	Time weighted average of all samples	In House validated Method	13%
A41	Oxides of nitrogen as NO ₂	100mg/m ³	26.98	mg/m ³	ISO 10849	Time weighted average of all samples	In House validated Method	11%
A41	Dioxins and furans	0.1ng/m ³	0.004678	ng/m ³	BS EN 1948	Time weighted average of all samples	UKAS & MCERTS	+/- 0.003

Emission Point	Substance / Parameter	Emission Limit Value	Result ^[1]	Units	Test Method ^[2]	Sample Date and Times ^[3]	Accreditation/ Certification ^[4]	Uncertainty ^[5]
A48	Oxides of nitrogen as NO ₂	No limit applies	78.1	mg/m ³	ISO 10849	13/7/2022	In House validated Method	11%
A48	Carbon monoxide	No limit applies	0.91	mg/m ³	ISO 12039	13/7/2022	In House validated Method	13%
A50	Oxides of nitrogen as NO ₂	200mg/m ³	33	mg/m ³	ISO 10849	7/12/2022	In House validated Method	11%
A50	Carbon monoxide	200mg/m ³	9.9	mg/m ³	ISO 12039	7/12/2022	In House validated Method	13%
A85	Hydrogen chloride ^[8]	10mg/m ³	Note 14	mg/m ³	BS EN 1911:1998	n/a		
A26	Class B VOC's ^[9]	No limit applies	1.166	kg/hr	BS EN 13649	Annual average	In House validated Method	3.6%
A60	Class B VOC's ^[9]	5,000 kg/yr ⁽¹¹⁾	0.041	kg	BS EN 13649	Annual total release	In House validated Method	3.6%
A68	Class B VOC's ^[9]	5,000 kg/yr ⁽¹¹⁾	0.185	kg	BS EN 13649	Annual total release	In House validated Method	3.6%
A26	Siloxanes ^[9]	An agreed limit ⁽¹²⁾	0.600	kg/hr	Gas chromatography	Annual average	In House validated Method	3.6%
A65	Siloxanes ^[9]	An agreed limit ⁽¹²⁾	0.073	kg/hr	Gas chromatography	Annual average	In House validated Method	3.6%
A68	Siloxanes ^[9]	An agreed limit ⁽¹²⁾	2.481	kg/hr	Gas chromatography	Annual average	In House validated Method	3.6%
A79	Siloxanes ^[9]	An agreed limit ⁽¹²⁾	0.527	kg/hr	Gas chromatography	Annual average	In House validated Method	3.6%

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

[6] Maximum kg/h obtained during the reporting period.

[7] Total release during the reporting period.

[8] Reporting only required if phosphonitrile production during reporting year.

[9] Average of quarterly reported values in reporting year.

[10] Based on an agreed emission factor

[11] Emission limit agreed following completion of IP4

[12] Emission limit to be agreed following completion of IP14. This has been deferred for consideration with IP25. No limit was agreed.

Dow Silicones Notes:

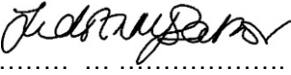
(13) There is no routine monitoring frequency required for A40 apart from the requirements listed in Table 2.10.1 under 'other requirements' and a method for such testing has not yet been agreed with the Agency. Dow Silicones has agreed with the Agency to use previously agreed IPC emission factors for silane releases from A40 for PI reporting purposes, as described in IPC improvement item 8.21. Under Improvement item IP3 the Environment Agency agreed to remove the requirement for silane monitoring at A41 when the ERU is not available for periods greater than 6 hrs.

(14) This is no longer made in W307.

(15) This was reported as a Schedule 5, no other exceedances during 2019

(16) No emissions from A12 and A33 in 2022 as plants not running

(17) Schedule 5 entered

Signed 

Date... .. 26th Jan 2023

(authorised to sign as representative of Operator)

Annual Reporting of Emissions to Air for the period from **January 1 2022 to December 31 2022**

Emission Point	Substance / Parameter	Emission Limit Value	Result ^[1] Mg/m ³	Test Method ^[2]	Sample Date and Times ^[3]	Accreditation/ Certification ^[4]	Uncertainty ^[5]
A41	Hydrogen chloride	15mg/m ³	2.34	US EPA Method 26	12/01/2022	UKAS & MCERTS	±36%
			6.23	US EPA Method 26	15/02/2022	UKAS & MCERTS	±36%
			0.14	US EPA Method 26	16/03/2022	UKAS & MCERTS	±36%
			0.83	US EPA Method 26	22/04/2022	UKAS & MCERTS	±36%
			0.72	US EPA Method 26	18/05/2022	UKAS & MCERTS	±36%
			0.72	US EPA Method 26	30/06/2022	UKAS & MCERTS	±36%
			0.42	US EPA Method 26	12/07/2022	UKAS & MCERTS	±36%
			0.48	US EPA Method 26	31/08/2022	UKAS & MCERTS	±36%
			-	US EPA Method 26	No sample in September due to shutdown not running	UKAS & MCERTS	±36%
			0.07	US EPA Method 26	31/10/2022	UKAS & MCERTS	±36%
			0.22	US EPA Method 26	03/11/2022	UKAS & MCERTS	±36%
		-	US EPA Method 26	No sample in December due to SWWT issues and unavailability of sampling company	UKAS & MCERTS	±36%	
	10mg/m ³	1.079		TW Annual average			

[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 the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. 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 accreditation status of the equipment and/or the monitoring organisation, as appropriate, for the methods used for both sampling and analysis.

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

Dow Silicones Notes:

HCl results are corrected for STP, ref 11% O₂, dry

Signed 

Date... .. 26th Jan 2023 .

(authorised to sign as representative of Operator)

Annual Reporting of Emissions to Air for the period from **January 1 2022 to December 31 2022**

Emission Point	Substance / Parameter	Emission Limit Value	Result ^[1] Mg/m ³	Test Method ^[2]	Sample Date and Times ^[3]	Accreditation/ Certification ^[4]	Uncertainty ^[5]
A41	Chlorine	15mg/m ³	0.48	US EPA Method 26	12/01/2022	UKAS & MCERTS	±36%
			11.14	US EPA Method 26	15/02/2022	UKAS & MCERTS	±36%
			0.0183	US EPA Method 26	16/03/2022	UKAS & MCERTS	±36%
			0.61	US EPA Method 26	22/04/2022	UKAS & MCERTS	±36%
			0.23	US EPA Method 26	18/05/2022	UKAS & MCERTS	±36%
			0.11	US EPA Method 26	30/06/2022	UKAS & MCERTS	±36%
			0.18	US EPA Method 26	12/07/2022	UKAS & MCERTS	±36%
			0.07	US EPA Method 26	31/08/2022	UKAS & MCERTS	±36%
			-	US EPA Method 26	No sample in September due to shutdown not running	UKAS & MCERTS	±36%
			0.22	US EPA Method 26	31/10/2022	UKAS & MCERTS	±36%
			0.1	US EPA Method 26	03/11/2022	UKAS & MCERTS	±36%
			-	US EPA Method 26	No sample in December due to SWWT issues and unavailability of sampling company	UKAS & MCERTS	±36%
			10mg/m ³	1.092		TW Annual average	

[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 the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. 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 accreditation status of the equipment and/or the monitoring organisation, as appropriate, for the methods used for both sampling and analysis.

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

Dow Silicones Notes:

Chlorine results are corrected for STP, ref 11% O₂, dry

Signed 

Date... .. 26th Jan 2023

(authorised to sign as representative of Operator)

Annual Reporting of Emissions to Air for the period from **January 1 2022 to December 31 2022**


There weren't any transfers of Spent bed into W348 TCS spend bed tank and therefore no potential for associated chloromethane releases in 2022

Emission Point	Substance / Parameter	Emission Limit Value	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Accreditation/ Certification ^[4]	Uncertainty ^[5]
A57	Chloromethane	2kg/h	N/A				

[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 the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. 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 accreditation status of the equipment and/or the monitoring organisation, as appropriate, for the methods used for both sampling and analysis.
 [5] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Dow Silicones Notes:

There weren't any transfers of Spent bed into W348 TCS spend bed tank and therefore no potential for associated chloromethane releases in 2019

Signed  Date... .. 26th Jan 2023


(authorised to sign as representative of Operator)

Reporting of Energy Usage for the year 2022

Energy Source	Energy Usage		
	Quantity	Primary Energy (MWh)	CO ₂ Produced (tonnes)
Steam (tonnes)	560,376	491,271	93,316
Electricity *(kWh)	135,224,438	324,539	53,892
Natural Gas (kWh)	87,788,577	87,789	16,675
Gas Oil (tonnes)		-	-
TOTAL		903,598	163,883

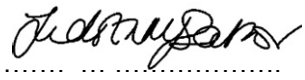
Trends in Energy Usage			
Year	Primary Energy usage	CO ₂ produced	CO ₂ per unit output
2008	1,101,571	207,755	
2009	1,066,743	183,110	
2010	1,018,415	191,869	
2011	1,040,640	195,636	
2012	1,044,862	197,154	
2013	1,039,643	196,913	
2014	1,080,683	204,686	
2015	1,060,647	200,560	
2016	1,065,704.1	200,195.5	
2017	1,040,379	196,834	
2018	1,123,088	211,053	
2019	1,009,656.98	187,789.38	
2020	1,058,178	195,995	
2021	950,738	177,922	
2022	903,598	163,883	

* Conversion factor for delivered electricity to primary energy = 2.4

Signed  Date... .. 26th Jan 2023
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Waste Description	Route	Disposal Tonnes	Recovery Tonnes
Filter Cartridge material	Landfill	3.48	
Food waste for composting	Composted		5.23
General Waste	Energy recovery		224.63
Glass	Energy recovery		3.4
Gypsum	Landfill	4.18	
Lagging	Energy recovery		52.22
Magnesium Oxide/Calcium Carbonate	Landfill	25.94	
Paint Tins	Recycling		7.4
Paper	Energy recovery		2.332
Plastic	Energy recovery		67.12
Rubber	Energy recovery		324.74
Scrap metal	Recycling		216.94
Shot Blast	Recycling		327.2
Wood	Recycling		201.88
Empty drums (tonnes)	Recycling		181.698
Empty IBC (tonnes)	Recycling		56.256
Pallets (Tonnes)	Recycling		0.65124
Spent catalyst containing palladium	Recovery		7.42
Cable scrap	Recycling		3.4
Excavation material - uncontaminated	Landfill	8.04	
Total Non Hazardous waste		3504.46	1861.43724
TOTAL WASTE		9528.75	21985.46

Trends in Waste Disposal and Recovery			
Year	Parameter		
<p>OPERATOR COMMENTS:</p> <p>Spent bed, Spent sulphuric acid and Haz DPR lower than last year due to lower production.</p> <p>More shot blast than last year due to an infrastructure project to replace fireproofing</p> <p>More calcium slurry to enable a full clean out of one of the clarifiers</p> <p>Biosludge back down to more normal levels for 2022 after removing a large amount in Jan / Feb 2021 to improve operation.</p>			

Signed 

Date... .. 26th Jan 2023

(authorised to sign as representative of Operator)


Reporting of Water Usage for the year 2022

Water Source	Usage (m ³)	Specific Usage (m ³ /t)
Towns water	510,953	
Bigliss well water	1,362,543	
Cadoxton river water	7,837	
TOTAL WATER USAGE	1,881,334	

Year	Trends in Water Usage				
	Parameter				
	Towns water	Bigliss well water	Cadoxton river water	Total water usage	Water per unit output
2009	121,193	821,102	899,394	1,851,689	
2010	237,014	986,518	748,770	1,972,302	
2011	273,504	932,737	925,974	2,132,215	
2012	187,886	826,251	1,058,541	2,072,658	
2013	230,623	933,912	899,926	2,064,461	
2014	230,189	768,111	551,771	1,550,071	
2015	244,473	785,203	564,798	1,594,474	
2016	276,011	993,693	442,702	1,712,406	
2017	245,697	1,248,673	863,303	2,357,673	
2018	418,725	1,267,630	681,722	2,368,077	
2019	533,863	1,613,548	43,995	2,191,407	
2020	436,123	1,604,408	61,033	2,101,565	
2021	357,393	1,508,081	19,981	1,885,454	
2022	510,953	1,362,543	7,837	1,881,334	

Operator's comments :

Towns water data obtained from invoices.
 River water and Biglis water is measured.
 The Biglis water consumption includes the supply to the CHP

Signed 

Date... 26th Jan 2023

(authorised to sign as representative of Operator)

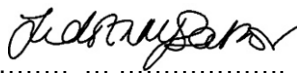
Annual Reporting of Energy Recovery Unit Availability for the period from **January 1 2022 to December 31 2022**

Process	Parameter	Month	Result ^[3] , %
Energy Recovery Unit W949	Availability	January	98.96%
		February	99.94%
		March	95.00%
		April	99.91%
		May	99.03%
		June	98.61%
		July	98.75%
		August	98.20%
		September	29.06%
		October	53.70%
		November	100.00%
		December	91.47%

[1] Based on the availability to process 100% of W714 FBR vent. Calculated using feed valve position and positive flows.

{2} 2021 the W714 unit was not operational.

[3] As W714 was not operational during 2022 – the availability has been calculated based on the availability to process vents from W931 and W930. This does include periods of lower venting due to online cleaning.

Signed 

Date... .. 26th Jan 2023

(authorised to sign as representative of Operator)