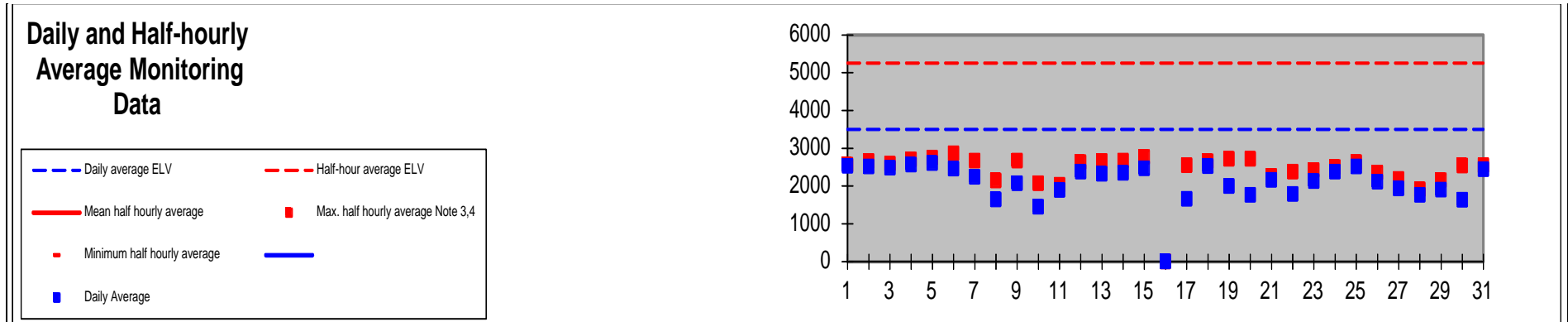


Reporting of Continuously Monitored Emissions to Air for Carbon Monoxide Emission Point A1 for the month of October 2014



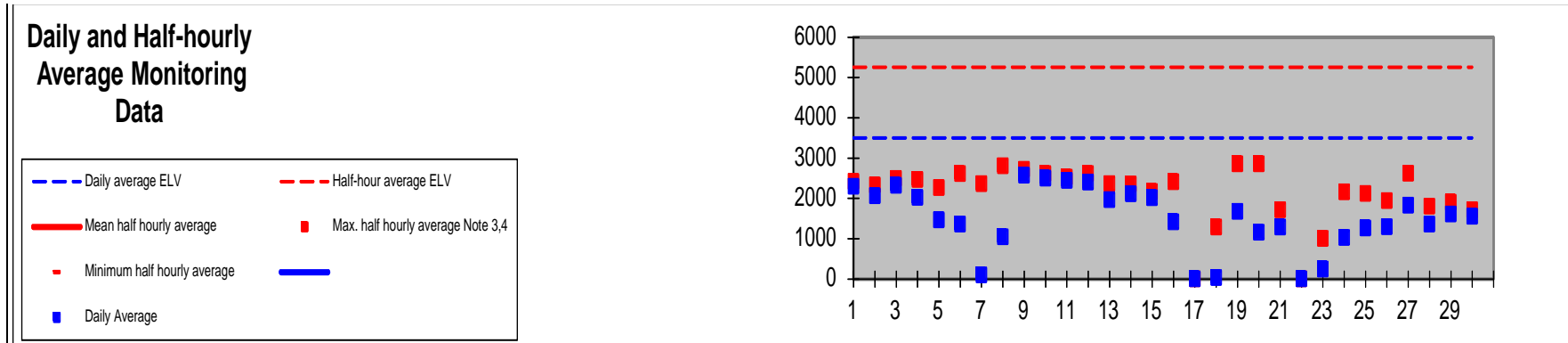
Monthly summary		Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Half-hourly average	Half-hour average ELV		5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	
	Monthly maximum	Max. half hourly average Note 3,4	2563	2662	2592	2704	2755	2861	2673	2142	2674	2070	2034	2631	2664	2674	2767	0	2553	2650	2723	2723	2264	2378	2423	2499	2633	2358	2184	1908	2153	2539	2549	
	Monthly mean	Mean half hourly average	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
	Monthly minimum	Minimum half hourly average	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
	Total invalid results	No. of invalid results	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
	Sum of exceedances	No. of exceedances of ELV Note 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Daily average	Daily average ELV		3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500		
	Monthly maximum	2602	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
	Monthly average	2087	Daily average Note 4	2532	2521	2485	2568	2602	2459	2242	1645	2069	1454	1893	2381	2321	2350	2467	0	1659	2522	2001	1767	2158	1792	2125	2377	2513	2115	1935	1764	1904	1639	2442
	Sum of exceedances Note 1	0	Value exceeds ELV (Y/N)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

Note 1: Not more than one calendar monthly average during any rolling twelve month period shall exceed the limit value by more than 10%.
 Note 2: Not more than one half hour period (commencing on the hour or half hour) during any 24 hour period shall exceed the daily average limit value of 3500mg/m³ by more than 50%.
 Note 3: Max. Half hourly averages to be reported in the event of an exceedance of 3500mg/m³.
 Note 4: All results corrected to 273K, 101.3kPa.
 Note 5: Plant down: 16th October 2014- A&B unit down for exploratory work

Signed (authorised to sign as representative of Operator)

Date: 30th January 2015

Reporting of Continuously Monitored Emissions to Air for Carbon Monoxide Emission Point A1 for the month of November 2014



Monthly summary		Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Half-hourly average	Half-hour average ELV		5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	
	Monthly maximum	Max. half hourly average Note 3,4	2421	2334	2494	2466	2265	2613	2363	2812	2723	2612	2527	2614	2364	2366	2169	2416	0	1290	2857	2857	1716	0	1006	2161	2117	1941	2624	1804	1902	1720
	Monthly mean	Mean half hourly average	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	Monthly minimum	Minimum half hourly average	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	Sum of exceedances	No. of exceedances of ELV Note 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daily average	Daily average ELV		3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	
	Monthly maximum	2573	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	Monthly average	1483	Daily average Note 4	2300	2068	2324	2022	1468	1360	98	1048	2573	2497	2446	2408	1967	2110	2018	1417	0	36	1680	1156	1291	0	248	1030	1261	1297	1829	1364	1616
Sum of exceedances Note 1	0	Value exceeds ELV (Y/N)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

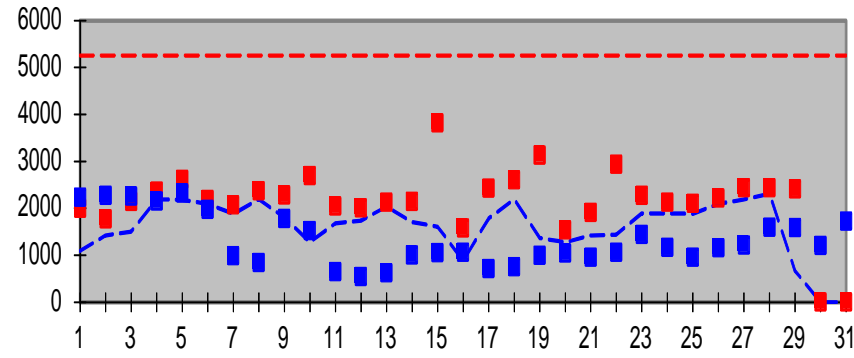
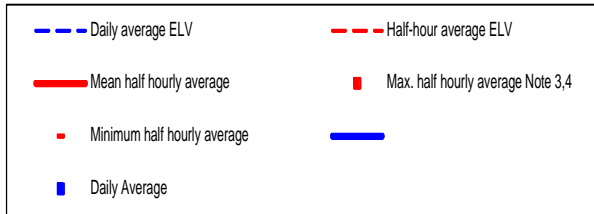
Note 1: Not more than one calendar monthly average during any rolling twelve month period shall exceed the limit value by more than 10%.
 Note 2: Not more than one half hour period (commencing on the hour or half hour) during any 24 hour period shall exceed the daily average limit value of 3500mg/m³ by more than 50%.
 Note 3: Max. Half hourly averages to be reported in the event of an exceedance of 3500mg/m³.
 Note 4: All results corrected to 273K, 101.3kPa.
 Note 5: Nov 6-8th A&B unit down: lack of feedstock. 17th-19th A&B unit DCL TCS planned work & limited feedstock supply, 19th - 21st A unit down for repair in tank farm, B unit down DCL TCS planned work & limited feedstock supply. 21st-24th A&B units down: Maint on steam leak & process conveying loop investigation. 28th - B unit down for 13hrs-condensate pump issue.

Signed *PS Boyd* (authorised to sign as representative of Operator)

Date: 30th January 2015

Reporting of Continuously Monitored Emissions to Air for Carbon Monoxide Emission Point A1 for the month of December 2014

Daily and Half-hourly Average Monitoring Data



Monthly summary		Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
Half-hourly average	Half-hour average ELV		5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	
	Monthly maximum	Max. half hourly average Note 3,4	2001	1772	2146	2366	2613	2190	2070	2369	2281	2695	2052	2006	2125	2148	3822	1578	2424	2609	3135	1538	1910	2940	2276	2132	2104	2217	2438	2433	2414	
	Monthly mean	Mean half hourly average	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
	Monthly minimum	Minimum half hourly average	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
	Total invalid results	No. of invalid results	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
	Sum of exceedances	No. of exceedances of ELV Note 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Daily average	Daily average ELV		1087	1423	1506	2187	2181	2091	1879	2186	1804	1278	1682	1736	2040	1701	1611	884	1782	2191	1364	1274	1419	1438	1891	1890	1883	2095	2190	2309	671	
	Monthly maximum	2309	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
	Monthly average	1602	Daily average Note 4	2230	2273	2256	2155	2326	1978	989	847	1778	1523	651	543	629	1004	1057	1063	718	756	999	1047	958	1061	1440	1167	958	1163	1218	1592	1589
	Sum of exceedances Note 1	0	Value exceeds ELV (Y/N)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

Note 1: Not more than one calendar monthly average during any rolling twelve month period shall exceed the limit value by more than 10%.

Note 2: Not more than one half hour period (commencing on the hour or half hour) during any 24 hour period shall exceed the daily average limit value of 3500mg/m³ by more than 50%.

Note 3: Max. Half hourly averages to be reported in the event of an exceedance of 3500mg/m³.

Note 4: All results corrected to 273K, 101.3kPa.

Note 5: Dec 7th B unit down: packaging issue. 10th- A&B unit down for 12hrs: gasket repair. 16-19th B unit down MUF issue. 22nd: Power dip, both units down for 4-10hrs. 29-31st both units down, orders/silo space issues.

Signed

(authorised to sign as representative of Operator)

Date: 30th January 2015

Installation: Barry Silicon-Based Manufacturing Installation

Form Number: A2 / Form Dated 1st February 2006

Reporting of Emissions to Air for the period from 1st January 2014 to 31st December 2014

Emission Point	Substance / Parameter	Emission Limit Value	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Accreditation/ Certification ^[4]	Uncertainty ^[5]
A1	Oxides of nitrogen as NO ₂	50mg/m ³ ^[6]	14.0	TGN M22 ^[8]	06/11/14, 1155-1255	MCERTS / UKAS	±7.5 mg/m3
A2	Oxides of nitrogen as NO ₂	200mg/m ³ ^[7]	64.4	BS EN 14792	07/11/2014 1204-1304 ^[9]	MCERTS / UKAS	± 24.1 mg/m3
A2	Carbon monoxide	200mg/m ³ ^[7]	1.5	BS EN 15058	07/11/2014 1204-1304 ^[9]	MCERTS / UKAS	± 29.1 mg/m3
A3	Oxides of nitrogen as NO ₂	None	149.8 (b)	BS EN 14792	07/11/2014 1057-1157	MCERTS / UKAS	± 25.0 mg/m3
A3	Carbon monoxide	None	2.8 (b)	BS EN 15058	07/11/2014 1057-1157	MCERTS / UKAS	± 29.1 mg/m3
A13	Formaldehyde	150g/hr ^[6]	0.04 (c) 3.9 (d)	BS EN 13649	(c) (d) 12/05/14: 1255-1355, 1405-1505,1510-1610	MCERTS / UKAS	±36% mg/m3
			0.02 (c) 2.8 (d)		(c) (d) 05/11/14:1145-1245,1250-1350,1355-1455	MCERTS / UKAS	±36% mg/m3

[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. Note: Result [1] are average values of sample results(where indicated), being more representative, as agreed with NRW

[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.

[3] For non-continuous measurements the date and time of the sample that produced 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. The basis of any other uncertainty figure needs to be stated. Where no figure is available the Agency will need to agree an appropriate uncertainty value.

[6] Corrected to 273K, 101.3Kpa.

[7] Corrected to 273K, 101.3KPa, 3% oxygen, dry.

(b) Results of site's only operational boiler B (A Boiler taken out of service) (c) – Scrubber discharge A13.1 (d) – TF 38 filter discharge A13.2

[8] Use of ASTM6348-03equivalent method used as previously agreed by the NRW is now obsolete. Method used is TGN M22

Signed



(authorised to sign as representative of Operator)

Date: 30th January 2015

Reference Number: BU2110IS

Operator: Cabot Carbon Limited

Installation: Barry Silicon-Based Manufacturing Installation

Form Number: A3 / Form Dated 1st February 2006

Reporting of Emissions to Air for the period 1 October 2014 to 31 December 2014

Emission Point	Substance / Parameter	Emission Limit Value ^[6]	Result ^[1] [Note A]	Test Method ^[2]	Sample Date and Times ^[3]	Accreditation/ Certification ^[4]	Uncertainty +/- ^[5]
A1	Chlorine	20mg/m ³ ^[8]	4.9 mg/m ³	US EPA Method 26A	06/11/2014 1150-1250, 1255-1355, 1400-1500hrs	MCERTS / UKAS	+/- 0.6 mg/m ³
A1	Chloromethanes (as methyl chloride)	50mg/m ³	7.6 mg/m ³	BS EN 13649	10/12/2014 0930- 0935,1030-1035,1130-1135	MCERTS / UKAS	+/- 1.9 mg/m ³
A1	Hydrogen chloride	10mg/m ³	3.4 mg/m ³	TGN M22 ^[2]	06/11/2014 1150-1250, 1255-1355, 1400-1500hrs	MCERTS / UKAS	+/- 1.6 mg/m ³

[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.

[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. Please note the Environment Agency change to the Monitoring Method for HCL, now TGN M22 (previously ASTM D6348 -03).

[3] For non-continuous measurements the date and time of the sample that produced 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. The basis of any other uncertainty figure needs to be stated. Where no figure is available the Agency will need to agree an appropriate uncertainty value.

[6] Corrected to 273K, 101.3Kpa.

[8] 20mg/m³ chlorine emission limit to be applied but revert to 10mg/m³ by an agreed date with NRW

[Note A]: Results are given as averages being more representative as agreed with NRW.

Signed



(authorised to sign as representative of Operator)

Date: 30th January 2015

Installation: Barry Silicon-Based Manufacturing Installation

Form Number: W1 / Form Dated 1st February 2006**Reporting of Emissions to Water (other than to Sewer) for the period from 1 October 2014 to 31 December 2014**

Emission Point	Substance / Parameter	Emission Limit Value	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Accreditation/ Certification ^[4]	Uncertainty ^[5]
W1	Oil and grease	5mg/l ^[6]	0.27	IR Spectrometry - EA Test 362 ISBN 0117517283	07/102014@09:00	UKAS	±3.21%
	BOD ₅	20mg/l ^[6]	1.61	ISBN 011 7522120	07/102014@09:00	UKAS	±3.72%
	pH	>5, <9 ^[7]	7.35	BS 6068-2.50:1995	07/102014@09:00	UKAS	± 1.23%
W2	Oil and grease	5mg/l ^[6]	0.26	IR Spectrometry - EA Test 362 ISBN 0117517283	07/102014@09:00	UKAS	±3.21%
	BOD ₅	20mg/l ^[6]	1.39	ISBN 011 7522120	07/102014@09:00	UKAS	±3.72%
	pH	>5, <9 ^[7]	7.69	BS 6068-2.50:1995	07/102014@09:00	UKAS	± 1.23%
W3	Oil and grease	5mg/l ^[6]	0.22	IR Spectrometry - EA Test 362 ISBN 0117517283	07/102014@09:00	UKAS	±3.21%
	BOD ₅	20mg/l ^[6]	1.05	ISBN 011 7522120	07/102014@09:00	UKAS	±3.72%
	pH	>5, <9 ^[7]	7.89	BS 6068-2.50:1995	07/102014@09:00	UKAS	± 1.23%

[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.

[3] For non-continuous measurements the date and time of the sample that produced 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. The basis of any other uncertainty figure needs to be stated. Where no figure is available the Agency will need to agree an appropriate uncertainty value.

[6] The emission limit value for Oil and grease, and BOD₅, is expressed as a maximum individual value.

[7] The emission limit values for pH are expressed as minimum and maximum individual values.

[8] The Environment Agency National Testing Laboratory at Shawcross in Exeter has obtained UKAS accreditation for the oil and grease test method.

Signed



(authorised to sign as representative of Operator)

Date: 30th January 2015

Permit Reference Number: BU2110IS

Operator: Cabot Carbon Limited

Installation: Barry Silicon-Based Manufacturing Installation

Form Number: R1 / Form Dated 1st February 2006

Reporting of Waste Disposal and Recovery for the year 2014 (01/01/14 – 31/12/14)

Waste Description	Disposal		Recovery
	Route	Tonnes	Tonnes
1) Hazardous Wastes			
Hazardous waste from production and maintenance activities	D15, R09,R13	9.3	50.99
Other hazardous wastes	N/A	N/A	
Total hazardous waste		9.3	
2) Non-Hazardous Wastes			
Non-Hazardous silica waste to landfill from production activities (including packaging)	D01	207.86	
Non-Hazardous waste from production and maintenance activities	D01, D15, R03,R12, R13	25.34	71.79
Non-Hazardous waste from construction activities (subsoil and hardcore)	R13		20.08
Total Non-Hazardous waste		233.20	91.87
TOTAL WASTE		242.50	142.85

Trends in Waste Disposal and Recovery			
Year	Parameter		
	Named Waste	Total Waste	Waste per unit output
2006	134.7	317.5	Report on PI1
2007	249.0	293.2	Report on PI1
2008	456.2	464.7	Report on PI1
2009	154.8	162.8	Report on PI1
2010	199.5	199.5	Report on PI1
2011	245.4	245.4	Report on PI1
2012	165.65	165.65	Report on PI1
2013	214.31	214.31	Report on P11
2014	242.50	242.50	Report on P11

Operator's comments: More hazardous waste recycled compared to CY13. New non haz waste stream introduced in October 2014: Dry Mixed Recycling on site (Landfill diversion). There has been increase in waste silica to landfill in CY14 though not generated via production failure modes but volumes of silica batches exceeding shelf life and therefore not fit for sale.



Signed

(authorised to sign as representative of the Operator)

Date: 30th January 2015

Permit Reference Number: BU2110IS

Operator: Cabot Carbon Limited

Installation: Barry Silicon-Based Manufacturing Installation

Form Number: WU1 / Form Dated 1st February 2006

Reporting of Water Usage for the year 2014 (01/01/14 – 31/12/14)

Water Source	Usage (m ³)	Specific Usage (m ³ /t)
Mains water	68,392	5.61
Dow Corning	41,828	3.43
TOTAL WATER USAGE	110,220	9.04

Trends in Water Usage				
Year	Parameter			
	Mains water	Dow Corning	Total water usage	Water per unit output
2006	103,892	94,047	197,939	Report on PI1
2007	92,671	87,424	180,096	Report on PI1
2008	49,805	73,734	123,539	Report on PI1
2009	52,229	47,656	99,885	Report on PI1
2010	58,643	43,664	102,307	Report on PI1
2011	73,172	44,154	117,326	Report on PI1
2012	76,828	42,204	119,032	Report on PI1
2013	76,004	49,040	125,044	Report on P11
2014	68,392	41,828	110,220	Report on PI1

Operator's comments: Reduction in water volumes attributed to combination of improved cooling tower packing efficiency plus better control of cooling tower with first stage implementation of TRASAR

Signed 

(authorised to sign as representative of the Operator)

Date: 30th January 2015

Permit Reference Number: BU2110IS

Operator: Cabot Carbon Limited

Installation: Barry Silicon-Based Manufacturing Installation

Form Number: E1 / Form Dated 1st February 2006

Reporting of Energy Usage for the year 2014 (01/01/14 – 31/12/14)

Energy Source	Energy Usage		CO ₂ Produced (Tonnes)
	Quantity	Primary Energy (MWh)	
Electricity *	MWh	38,737	6430
Natural Gas	MWh	46,712	8875
TOTAL		85,449	15306

Trends in Energy Usage			
Year	Parameter		
	Primary Energy usage	CO ₂ produced	CO ₂ per unit output
2006	108,936	19,884	Report on PI1
2007	107,011	19,531	Report on PI1
2008	99,904	18,219	Report on PI1
2009	95,570	17,445	Report on PI1
2010	99,165	18,055	Report on PI1
2011	97,179	17,681	Report on PI1
2012	93,540	17,004	Report on PI1
2013	84,074	15,040	Report on PI1
2014	85,449	15,306	Report on PI1

* Conversion factor for delivered electricity to primary energy = 2.4
 ** Conversion factor for Electricity CO₂ equivalent metric tonnes = MWh x 0.166
 *** Conversion factor for Gas CO₂ equivalent metric tonnes = MWh x 0.190

Operator's comments: Marginal increase on CY13 attributed to production volume increase.

Signed 

(authorised to sign as representative of the Operator)

Date: 30th January 2015

Permit Reference Number: BU2110IS

Operator: Cabot Carbon Limited

Installation: Barry Silicon-Based Manufacturing Installation

Form Number: PI1 / Form Dated 1st February 2006

Reporting of Performance Indicators for the year 2014 (01/01/14 – 31/12/14)

Annual Production/Treatment	
Production of fumed silica	12,817 tonnes

Environmental Performance Indicators

Parameter	Annual Average	Units
Carbon monoxide	21.69	kg/tonne
Water use	9.04	m ³ /tonne
Energy use	7,011	kWh/tonne
Carbon dioxide	0.73	tonne/tonne
Waste silica to landfill	17.06	kg/tonne
Chlorosilane	2.51	tonne/tonne
Hydrogen	503.51	Nm ³ /tonne

Trends in Environmental Performance							
Year	Parameter						
	CO	Water	Energy	CO ₂	Waste silica	Chloro-silane	H ₂
	kg/t	m ³ /t	kWh/t	t/t	kg/t	t/t	Nm ³ /t
2006	22.75	17.3	9,500	1.5523	4.16	2.65	580.14
2007	25.26	15.8	9,390	1.2285	8.31	2.57	571.87
2008	29.05	13.2	10,670	1.3855	8.30	2.73	694.81
2009	30.61	11.3	10,817	1.3790	4.87	2.60	766.64
2010	40.41	10.2	9,900	1.2640	7.56	2.59	604.20
2012	37.28	13.2	10,356	1.2990	8.63	2.83	628.90
2013	21.31	10.80	7,262	0.7401	11.89	2.41	575.30
2014	21.69	9.04	7,011	0.7282	17.06	2.51	503.51

Operator's comments: CO2 based on natural gas consumption only. There has been an increase in the annual quantity of waste silica disposed to landfill in CY14 due to stock material exceeding shelf life; reduction in off quality through a variety of initiatives continues to improve.



Signed

(authorised to sign as representative of the Operator)

Date: 30th January 2015