

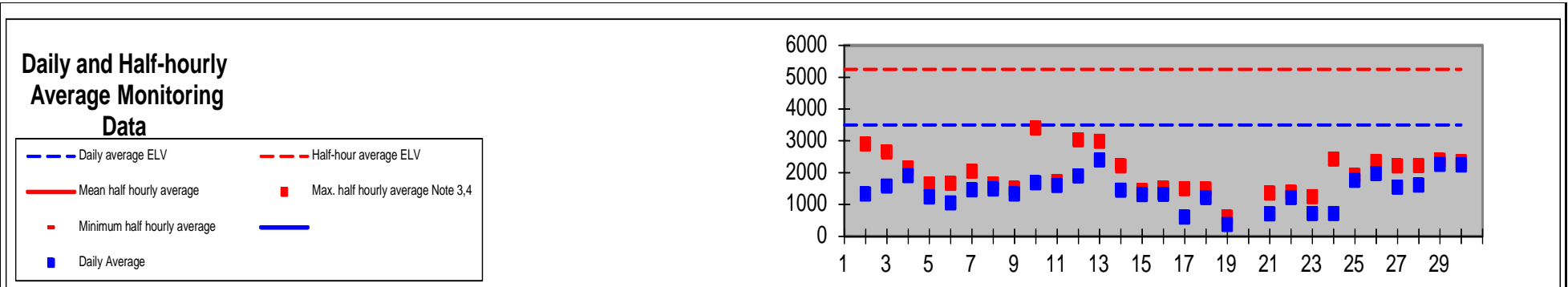
Reference Number: BU2110IS

Operator: Cabot Carbon Limited

Installation: Barry Silicon-Based Manufacturing Installation

Form Number: A1 / Form Dated 1st February 2006

Reporting of Continuously Monitored Emissions to Air for Carbon Monoxide Emission Point A1 for the month of April 2017



| 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 | 5250 | |
| | Monthly maximum | Max. half hourly average Note 3,4 | | 2898 | 2642 | 2145 | 1638 | 1659 | 2045 | 1645 | 1499 | 3397 | 1718 | 3029 | 2982 | 2205 | 1435 | 1508 | 1488 | 1486 | 597 | | 1351 | 1384 | 1240 | 2423 | 1909 | 2344 | 2205 | 2220 | 2388 | 2340 | |
| | 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 |
| 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 | 2398 | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | |
| | Monthly average | 1450 | Daily average Note 4 | | 1322 | 1573 | 1902 | 1235 | 1044 | 1457 | 1482 | 1321 | 1680 | 1595 | 1894 | 2398 | 1446 | 1305 | 1312 | 594 | 1211 | 361 | | 702 | 1208 | 706 | 712 | 1752 | 1964 | 1539 | 1608 | 2258 | 2235 |
| | 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 | |

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: 01.04.17 A&B down 24hr. ANHCL limitations 19.04.17 plant down D36 PRV replacement

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

Date: 12th July 2017

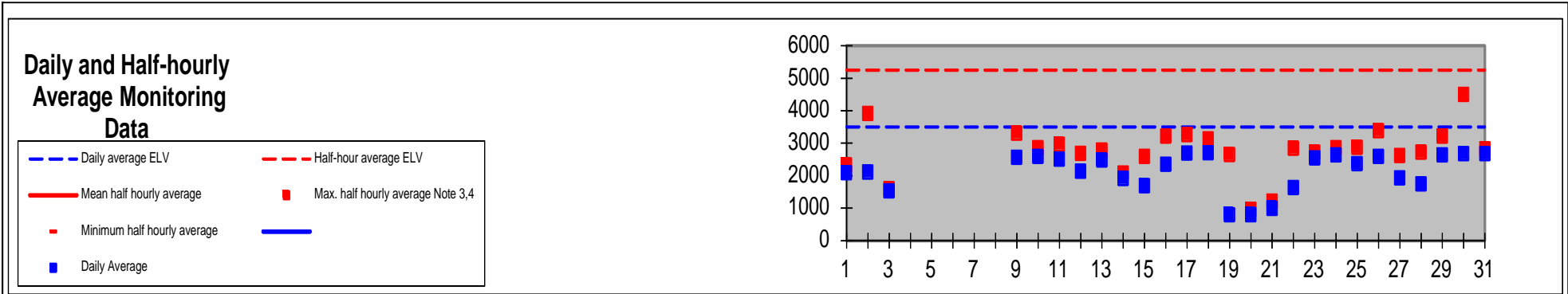
Reference Number: BU2110IS

Operator: Cabot Carbon Limited

Installation: Barry Silicon-Based Manufacturing Installation

Form Number: A1 / Form Dated 1st February 2006

Reporting of Continuously Monitored Emissions to Air for Carbon Monoxide Emission Point A1 for the month of May 2017



| 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 | 2334 | 3910 | 1590 | | | | | | | 3304 | 2863 | 2962 | 2687 | 2783 | 2075 | 2589 | 3216 | 3262 | 3127 | 2644 | 965 | 1216 | 2842 | 2719 | 2862 | 2867 | 3378 | 2620 | 2716 | 3212 | 4498 | 2821 | |
| | 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 | 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 | 3500 | 3500 | |
| | Monthly maximum | 2697 | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |
| | Monthly average | 2129 | Daily average Note 4 | 2083 | 2110 | 1532 | | | | | | 2564 | 2588 | 2508 | 2136 | 2474 | 1911 | 1689 | 2348 | 2695 | 2697 | 798 | 795 | 984 | 1629 | 2546 | 2639 | 2367 | 2594 | 1927 | 1741 | 2639 | 2678 | 2671 | |
| | 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 | 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 03.05.17-08.05.17 AMUF repair in gas compartment

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

Date: 12th July 2017

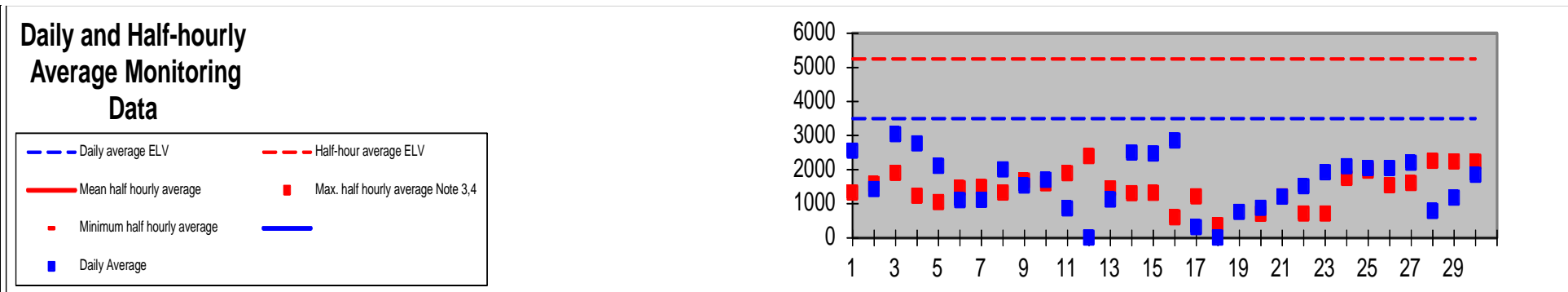
Reference Number: BU2110IS

Operator: Cabot Carbon Limited

Installation: Barry Silicon-Based Manufacturing Installation

Form Number: A1 / Form Dated 1st February 2006

Reporting of Continuously Monitored Emissions to Air for Carbon Monoxide Emission Point A1 for the month of June 2017



| 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 | 1322 | 1573 | 1902 | 1235 | 1044 | 1457 | 1482 | 1321 | 1680 | 1595 | 1894 | 2398 | 1446 | 1305 | 1312 | 594 | 1211 | 361 | 702 | 1208 | 706 | 712 | 1752 | 1964 | 1539 | 1608 | 2258 | 2235 | 2230 | | |
| | 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 | | 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 | 3039 | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | | | |
| | Monthly average | 1545 | Daily average Note 4 | 2554 | 1428 | 3039 | 2770 | 2107 | 1104 | 1112 | 2002 | 1529 | 1701 | 856 | 0 | 1119 | 2495 | 2470 | 2853 | 310 | 0 | 756 | 876 | 1198 | 1514 | 1919 | 2100 | 2040 | 2045 | 2196 | 785 | 1179 | 1844 |
| | 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: 12th 8hrs down A&B unit, 18th June A&B units ANHCL limitations

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

Date: 12th July 2017

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 April 2017 to 30 June 2017

| Emission Point | Substance / Parameter | Emission Limit Value ^{[6] [7]} | Result ^[1] [Note A] | Test Method ^[2] | Sample Date and Times ^{[3] [8]} | Accreditation / Certification ^[4] | Uncertainty ^{+/- [5]} |
|----------------|-------------------------------------|---|--------------------------------|----------------------------|--|--|--------------------------------|
| A1 | Chlorine | 10mg/m ³ | 3.5 mg/m ³ | US EPA Method 26A | Q2 31.05.2017 11:11-11:41, 11:46-12:16, 12:25-12:55, 13:00-13:30, 13:35-14:05hrs | MCERTS / UKAS | +/- 0.5 mg/m ³ |
| A1 | Chlorine | 10mg/m ³ | 6.1 mg/m ³ | US EPA Method 26A | Annual average of CY16Q3(8.9), CY16Q4(2.7), CY17Q1(9.5) CY17Q2 (3.5) | MCERTS / UKAS | +/- 0.8 mg/m ³ |
| A1 | Chloromethanes (as methyl chloride) | 50mg/m ³ | 10.2 mg/m ³ | BS EN 13649 | 31.05.17 11:11:11:16, 12:26-12:31,13:35-13:40hrs | MCERTS / UKAS | +/- 2.4 mg/m ³ |
| A1 | Hydrogen chloride | 10mg/m ³ | 2.0 mg/m ³ | TGN M22 | 31.05.17 11:45-12:45, 12:46-13:46, 13:47-14:47hrs | 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.
- [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] Reversion to 10mg/m³ chlorine emission limit as documented in EPR/BU2110IS/V007. Results calculated as the average of 5 consecutive, 30 minute samples taken every quarter.
- [8] Annual Average reported.
- [Note A]: Results are given as averages being more representative, as agreed with NRW.

PS Lloyd

Signed
(authorised to sign as representative of the Operator)

Date: 12th July 2017

Permit Reference Number: BU2110IS

Operator: Cabot Carbon Limited

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 April 2017 to 30 June 2017

| 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] | <0.2 | IR Spectrometry - EA Test 362 ISBN 0117517283 | 12/05/16@06:00 | UKAS | ±8.13% |
| | BOD ₅ | 20mg/l ^[6] | 6.3 | ISBN 011 7522120 | 12/05/16@06:00 | UKAS | ±15.97% |
| | pH | >5, <9 ^[7] | 7.59 | BS 6068-2.50:1995 | 12/05/16@06:00 | UKAS | ±0.95 % |
| W2 | Oil and grease | 5mg/l ^[6] | <0.2 | IR Spectrometry - EA Test 362 ISBN 0117517283 | 12/05/16@06:00 | UKAS | ±8.13% |
| | BOD ₅ | 20mg/l ^[6] | <2.75 | ISBN 011 7522120 | 12/05/16@06:00 | UKAS | ±15.97% |
| | pH | >5, <9 ^[7] | 7.54 | BS 6068-2.50:1995 | 12/05/16@06:00 | UKAS | ±0.95 % |
| W3 | Oil and grease | 5mg/l ^[6] | <0.2 | IR Spectrometry - EA Test 362 ISBN 0117517283 | 12/05/16@06:00 | UKAS | ±8.13% |
| | BOD ₅ | 20mg/l ^[6] | 1.90 | ISBN 011 7522120 | 12/05/16@06:00 | UKAS | ±15.97% |
| | pH | >5, <9 ^[7] | 7.08 | BS 6068-2.50:1995 | 12/05/16@06:00 | UKAS | ±0.95 % |

[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 the Operator)

Date: 12th July 2017