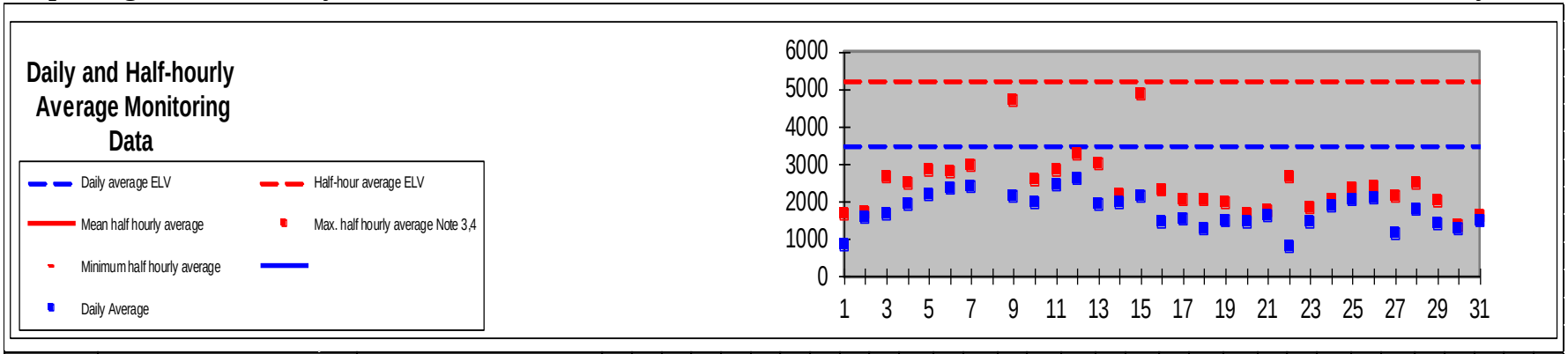
Reference Number: BU2110IS

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 January 2018**




| | 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 | 1670 | 1713 | 2655 | 2480 | 2845 | 2765 | 2945 | | 4670 | 2572 | 2820 | 3263 | 3016 | 2189 | 4854 | 2313 | 2040 | 2048 | 1944 | 1660 | 1756 | 2634 | 1826 | 2065 | 2366 | 2394 | 2138 | 2472 | 2025 | 1342 | 1633 |
| | 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 | 3500 |
| | Monthly maximum | 2595 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Monthly average | 1739 | Daily average Note 4 | 841 | 1584 | 1642 | 1938 | 2180 | 2337 | 2403 | | 2142 | 1961 | 2444 | 2595 | 1938 | 1968 | 2121 | 1437 | 1522 | 1250 | 1507 | 1429 | 1615 | 799 | 1430 | 1867 | 2044 | 2106 | 1135 | 1787 | 1412 | 1275 | 1469 |
| | 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 |

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/m$^3$ by more than 50%.
Note 3: Max. half hourly averages to be reported in the event of an exceedance of 3500mg/m$^3$.
Note 4: All results corrected to 273K, 101.3kPa.
Note 5: A&B unit down Jan 8th DC feed supply issues, Jan 26th -27th Maint. ANHCL line: A&B unit periodic outages throughout the 48hr window.

Signed ..... P S Lloyd .....

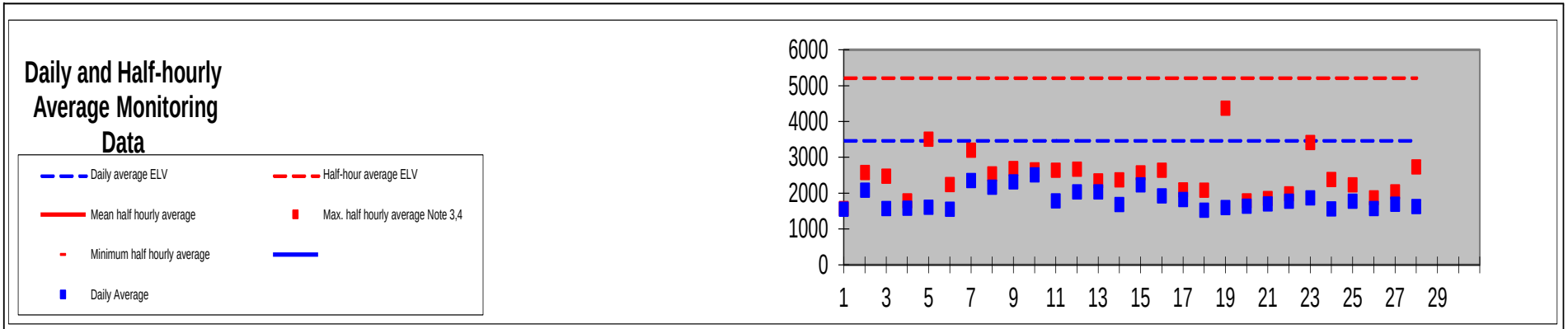
Date: 30th April 2018

(authorised to sign as representative of Operator)

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 February 2018**




| | 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 | | | |
| | Monthly maximum | | Max. half hourly average Note 3,4 | 1567 | 2572 | 2477 | 1783 | 3507 | 2242 | 3203 | 2541 | 2692 | 2652 | 2637 | 2668 | 2347 | 2370 | 2568 | 2644 | 2091 | 2080 | 4375 | 1782 | 1849 | 1982 | 3411 | 2383 | 2228 | 1870 | 2037 | 2731 | | | |
| | 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 | | | |
| 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 | 2510 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Monthly average | 1826 | Daily average Note 4 | 1556 | 2082 | 1575 | 1578 | 1607 | 1553 | 2348 | 2162 | 2312 | 2510 | 1785 | 2032 | 2035 | 1682 | 2233 | 1929 | 1823 | 1520 | 1598 | 1640 | 1704 | 1772 | 1867 | 1564 | 1776 | 1571 | 1689 | 1623 | | | |
| | 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/m$^3$ by more than 50%.
Note 3: Max. half hourly averages to be reported in the event of an exceedance of 3500mg/m$^3$.
Note 4: All results corrected to 273K, 101.3kPa.
Note 5 Feb 1st A& B down lack of feed , Feb 27th Running B Unit only (A Unit down 13hrs), lack of feed

Signed ..... P S Lloyd .....  Date: 30th April 2018

(authorised to sign as representative of Operator)

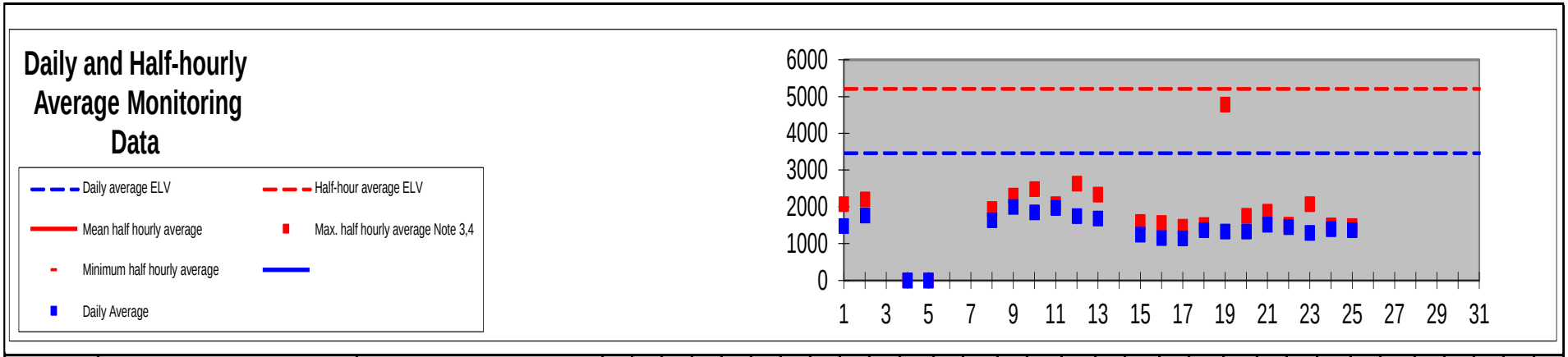
Reference Number: BU2110IS

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 March 2018**




| | 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 | 2073 | 2206 | | | | | | 1947 | 2308 | 2484 | 2072 | 2635 | 2330 | | 1585 | 1563 | 1459 | 1506 | 4782 | 1756 | 1866 | 1519 | 2070 | 1497 | 1475 | | | | | | |
| | 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 | 3500 |
| | Monthly maximum | 2001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Monthly average | 1511 | Daily average Note 4 | 1482 | 1763 | | | | | | 1638 | 2001 | 1848 | 1969 | 1745 | 1680 | | 1248 | 1150 | 1139 | 1370 | 1333 | 1328 | 1518 | 1450 | 1293 | 1394 | 1369 | | | | | | |

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/m$^3$ by more than 50%.
Note 3: Max. half hourly averages to be reported in the event of an exceedance of 3500mg/m$^3$.
Note 4: All results corrected to 273K, 101.3kPa.
Note 5: Plant down March 1st frozen RCW line, 3rd-8th DC site steam system down, 14th-17th, 25th-29th DC feed issue, 30th-31st frozen line Cabot.

Signed ..... P S Lloyd .....

Date: 30th April 2018

(authorised to sign as representative of Operator)

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 January to 31 March 2018**

| Emission Point | Substance / Parameter | Emission Limit Value[6] | Result [1] [Note A] | Test Method [2] | Sample Date and Times [3] [7] | Accreditation/ Certification [4] | Uncertainty +/- [5] |
|---|---|---|---|---|---|---|---|
| A1 | Chlorine | 10mg/m$^3$[8] | 0.5 mg/m$^3$ | US EPA Method 26A | 15/03/2018 11:33-12:03, 12:15-12:47,12:56-13:28, 13:37-14:07, 14:20-15:10 | MCERTS / UKAS | +/- 0.04 mg/m3 |
| A1 | Chloromethanes (as methyl chloride) | 50mg/m$^3$ | <1.5 mg/m$^3$ | BS EN 13649 | 15/03/2018,11:38-12:38, 12:40-13:40, 13:41-14:41 | MCERTS / UKAS | +/- 0.3 mg/m3 |
| A1 | Hydrogen chloride | 10mg/m$^3$ | 2.0 mg/m$^3$ | TGN M22 | 15/03/2018,11:40-12:40, 12:40-13:40, 13:40-14:40 | MCERTS / UKAS | +/- 0.9 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.
[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] The tests were carried out at scrubber pH (pH 8.8) to assist in maintaining the improvement in caustic scrubber efficiency to reduce chlorine emissions at A1 stack outlet.
[8] Calculated as the average of 5 consecutive 30 minute samples taken every quarter. Results above 14.6mg/m3 shall be removed from these calculations.
**[**Note A]: Results are given as averages being more representative, as agreed with NRW. Running 1 unit only due to feed supply issue.

P S Lloyd

Signed ……. Date: 30th April 2018

(authorised to sign as representative of the Operator)

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 January to 31 March 2018**

| 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 | 27/03/2018 0845hrs | UKAS | +/- 8.34% |
| | $BOD_5$ | 20mg/l[6] | 1.06 | ISBN 011 7522120 | 27/03/2018 0845hrs | UKAS | +/-16.28% |
| | pH | >5, <9 [7] | 7.30 | BS 6068-2.50:1995 | 27/03/2018 0845hrs | UKAS | +/- 0.94 |
| W2 | Oil and grease | 5mg/l [6] | <0.2 | IR Spectrometry - EA Test 362 ISBN 0117517283 | 27/03/2018 0845hrs | UKAS | +/- 8.34% |
| | $BOD_5$ | 20mg/l[6] | 1.00 | ISBN 011 7522120 | 27/03/2018 0845hrs | UKAS | +/-16.28% |
| | pH | >5, <9 [7] | 7.31 | BS 6068-2.50:1995 | 27/03/2018 0845hrs | UKAS | +/- 0.94 |
| W3 | Oil and grease | 5mg/l [6] | <0.2 | IR Spectrometry - EA Test 362 ISBN 0117517283 | 27/03/2018 0845hrs | UKAS | +/- 8.34% |
| | $BOD_5$ | 20mg/l[6] | 1.04 | ISBN 011 7522120 | 27/03/2018 0845hrs | UKAS | +/-16.28% |
| | pH | >5, <9 [7] | 7.30 | BS 6068-2.50:1995 | 27/03/2018 0845hrs | UKAS | +/- 0.94 |

[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.
[6] The emission limit value for Oil and grease, and $BOD_5$, 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.

P S Lloyd

Signed …… Date: 30th April 2018

(authorised to sign as representative of the Operator)