



CONCEPT LIFE SCIENCES  
DELIVERING SCIENCE

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# Concept Life Sciences

## Certificate of Analysis

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**Report Number:** 820797-1

**Date of Report:** 15-May-2019

**Customer:** Black Rock Environmental Associates Ltd  
16 Buckingham Crescent  
Clayton  
Bradford  
West Yorkshire  
BD14 6EJ

**Customer Contact:** Mr Hywel Wilcox

**Customer Job Reference:**

**Customer Site Reference:** JP LAND RECOVERY WARMFIELD

**Date Job Received at Concept:** 09-May-2019

**Date Analysis Started:** 10-May-2019

**Date Analysis Completed:** 15-May-2019

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Customers are responsible for information provided where, if incorrect, it could affect the validity of the results.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with QMSection 15 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked  
and authorised by :  
Aneta Dybek-Echtermeyer  
Customer Service Advisor

Issued by :  
Aneta Dybek-Echtermeyer  
Customer Service Advisor

|   |               |                    |            |              |             |      |
|---|---------------|--------------------|------------|--------------|-------------|------|
| <b>Concept Reference:</b> 820797                |               |                    |            |              |             |      |
| <b>Project Site:</b> JP LAND RECOVERY WARMFIELD |               |                    |            |              |             |      |
| <b>Customer Reference:</b>                      |               |                    |            |              |             |      |
| Soil Analysed as Soil                           |               |                    |            |              |             |      |
| MCERTS Preparation                              |               |                    |            |              |             |      |
| <b>Concept Reference</b>                        |               |                    |            | 820797 001   | 820797 002  |      |
| <b>Customer Sample Reference</b>                |               |                    |            | RAILBED 1    | RAILBED 2   |      |
| <b>Date Sampled</b>                             |               |                    |            | 07-MAY-2019  | 07-MAY-2019 |      |
| <b>Matrix Class</b>                             |               |                    |            | Topsoil      | Topsoil     |      |
| <b>Determinand</b>                              | <b>Method</b> | <b>Test Sample</b> | <b>LOD</b> | <b>Units</b> |             |      |
| Moisture @105C                                  | T162          | AR                 | 0.1        | %            | 16          | 16   |
| Retained on 10mm sieve                          | T2            | M40                | 0.1        | %            | <0.1        | <0.1 |

|   |               |                    |            |              |             |     |
|---|---------------|--------------------|------------|--------------|-------------|-----|
| <b>Concept Reference:</b> 820797                |               |                    |            |              |             |     |
| <b>Project Site:</b> JP LAND RECOVERY WARMFIELD |               |                    |            |              |             |     |
| <b>Customer Reference:</b>                      |               |                    |            |              |             |     |
| Soil Analysed as Soil                           |               |                    |            |              |             |     |
| Metals Suite                                    |               |                    |            |              |             |     |
| <b>Concept Reference</b>                        |               |                    |            | 820797 001   | 820797 002  |     |
| <b>Customer Sample Reference</b>                |               |                    |            | RAILBED 1    | RAILBED 2   |     |
| <b>Date Sampled</b>                             |               |                    |            | 07-MAY-2019  | 07-MAY-2019 |     |
| <b>Matrix Class</b>                             |               |                    |            | Topsoil      | Topsoil     |     |
| <b>Determinand</b>                              | <b>Method</b> | <b>Test Sample</b> | <b>LOD</b> | <b>Units</b> |             |     |
| Nickel  | T6            | M40                | 1          | mg/kg        | 35          | 30  |
| Zinc  | T6            | M40                | 1          | mg/kg        | 87          | 77  |
| Arsenic   | T6            | M40                | 2          | mg/kg        | 19          | 19  |
| Copper  | T6            | M40                | 1          | mg/kg        | 600         | 570 |
| Lead  | T6            | M40                | 1          | mg/kg        | 68          | 38  |
| Mercury   | T6            | M40                | 1          | mg/kg        | <1          | <1  |
| Chromium  | T6            | M40                | 1          | mg/kg        | 23          | 20  |
| Cadmium   | T6            | M40                | 1          | mg/kg        | <1          | <1  |

|   |               |                    |            |              |             |      |
|---|---------------|--------------------|------------|--------------|-------------|------|
| <b>Concept Reference:</b> 820797                |               |                    |            |              |             |      |
| <b>Project Site:</b> JP LAND RECOVERY WARMFIELD |               |                    |            |              |             |      |
| <b>Customer Reference:</b>                      |               |                    |            |              |             |      |
| Soil Analysed as Soil                           |               |                    |            |              |             |      |
| Miscellaneous                                   |               |                    |            |              |             |      |
| <b>Concept Reference</b>                        |               |                    |            | 820797 001   | 820797 002  |      |
| <b>Customer Sample Reference</b>                |               |                    |            | RAILBED 1    | RAILBED 2   |      |
| <b>Date Sampled</b>                             |               |                    |            | 07-MAY-2019  | 07-MAY-2019 |      |
| <b>Matrix Class</b>                             |               |                    |            | Topsoil      | Topsoil     |      |
| <b>Determinand</b>                              | <b>Method</b> | <b>Test Sample</b> | <b>LOD</b> | <b>Units</b> |             |      |
| Cyanide(free)                                   | T4            | AR                 | 1          | mg/kg        | <1          | <1   |
| pH  | T7            | A40                |            |              | 5.0         | 5.0  |
| Phenols(Mono)                                   | T4            | AR                 | 1          | mg/kg        | <1          | <1   |
| Chromium VI                                     | T6            | A40                | 1          | mg/kg        | <1          | <1   |
| Selenium  | T6            | M40                | 3          | mg/kg        | <3          | <3   |
| Asbestos  | T27           | AR                 |            |              | N.D.        | N.D. |
| Chromium (trivalent)                            | T85           | A40                | 2          | mg/kg        | 23          | 20   |

|   |               |                    |                    |                    |            |            |
|---|---------------|--------------------|--------------------|--------------------|------------|------------|
| <b>Concept Reference:</b> 820797                |               |                    |                    |                    |            |            |
| <b>Project Site:</b> JP LAND RECOVERY WARMFIELD |               |                    |                    |                    |            |            |
| <b>Customer Reference:</b>                      |               |                    |                    |                    |            |            |
| <b>Soil</b>                                     |               |                    | Analysed as Soil   |                    |            |            |
| <b>Total and Speciated USEPA16 PAH</b>          |               |                    |                    |                    |            |            |
| <b>Concept Reference</b>                        |               |                    | <b>820797 001</b>  | <b>820797 002</b>  |            |            |
| <b>Customer Sample Reference</b>                |               |                    | <b>RAILBED 1</b>   | <b>RAILBED 2</b>   |            |            |
| <b>Date Sampled</b>                             |               |                    | <b>07-MAY-2019</b> | <b>07-MAY-2019</b> |            |            |
| <b>Matrix Class</b>                             |               |                    | <b>Topsoil</b>     | <b>Topsoil</b>     |            |            |
| <b>Determinand</b>                              | <b>Method</b> | <b>Test Sample</b> | <b>LOD</b>         | <b>Units</b>       |            |            |
| Naphthalene                                     | T207          | M105               | 0.1                | mg/kg              | <0.1       | <b>0.1</b> |
| Acenaphthylene                                  | T207          | M105               | 0.1                | mg/kg              | <0.1       | <0.1       |
| Acenaphthene                                    | T207          | M105               | 0.1                | mg/kg              | <0.1       | <0.1       |
| Fluorene  | T207          | M105               | 0.1                | mg/kg              | <0.1       | <0.1       |
| Phenanthrene                                    | T207          | M105               | 0.1                | mg/kg              | <b>0.1</b> | <b>0.4</b> |
| Anthracene                                      | T207          | M105               | 0.1                | mg/kg              | <0.1       | <0.1       |
| Fluoranthene                                    | T207          | M105               | 0.1                | mg/kg              | <b>0.2</b> | <b>0.6</b> |
| Pyrene  | T207          | M105               | 0.1                | mg/kg              | <b>0.1</b> | <b>0.5</b> |
| Benzo(a)Anthracene                              | T207          | M105               | 0.1                | mg/kg              | <0.1       | <b>0.3</b> |
| Chrysene  | T207          | M105               | 0.1                | mg/kg              | <0.1       | <b>0.3</b> |
| Benzo(b/k)Fluoranthene                          | T207          | M105               | 0.1                | mg/kg              | <b>0.2</b> | <b>0.6</b> |
| Benzo(a)Pyrene                                  | T207          | M105               | 0.1                | mg/kg              | <0.1       | <b>0.3</b> |
| Indeno(123-cd)Pyrene                            | T207          | M105               | 0.1                | mg/kg              | <0.1       | <b>0.2</b> |
| Dibenzo(ah)Anthracene                           | T207          | M105               | 0.1                | mg/kg              | <0.1       | <0.1       |
| Benzo(ghi)Perylene                              | T207          | M105               | 0.1                | mg/kg              | <0.1       | <b>0.2</b> |
| PAH(total)                                      | T207          | M105               | 0.1                | mg/kg              | <b>0.6</b> | <b>3.6</b> |

|   |               |                    |                    |                    |                           |                           |
|---|---------------|--------------------|--------------------|--------------------|---------------------------|---------------------------|
| <b>Concept Reference:</b> 820797                |               |                    |                    |                    |                           |                           |
| <b>Project Site:</b> JP LAND RECOVERY WARMFIELD |               |                    |                    |                    |                           |                           |
| <b>Customer Reference:</b>                      |               |                    |                    |                    |                           |                           |
| <b>Soil</b>                                     |               |                    | Analysed as Soil   |                    |                           |                           |
| <b>TPH UKCWG</b>                                |               |                    |                    |                    |                           |                           |
| <b>Concept Reference</b>                        |               |                    | <b>820797 001</b>  | <b>820797 002</b>  |                           |                           |
| <b>Customer Sample Reference</b>                |               |                    | <b>RAILBED 1</b>   | <b>RAILBED 2</b>   |                           |                           |
| <b>Date Sampled</b>                             |               |                    | <b>07-MAY-2019</b> | <b>07-MAY-2019</b> |                           |                           |
| <b>Matrix Class</b>                             |               |                    | <b>Topsoil</b>     | <b>Topsoil</b>     |                           |                           |
| <b>Determinand</b>                              | <b>Method</b> | <b>Test Sample</b> | <b>LOD</b>         | <b>Units</b>       |                           |                           |
| Benzene   | T209          | M105               | 10                 | µg/kg              | <10 <sup>(13)</sup>       | <10 <sup>(13)</sup>       |
| Toluene   | T209          | M105               | 10                 | µg/kg              | <10                       | <10                       |
| EthylBenzene                                    | T209          | M105               | 10                 | µg/kg              | <10                       | <10                       |
| Methyl tert-Butyl Ether                         | T209          | M105               | 10                 | µg/kg              | <10                       | <10                       |
| O Xylene  | T209          | M105               | 10                 | µg/kg              | <10                       | <10                       |
| M/P Xylene                                      | T209          | M105               | 10                 | µg/kg              | <10                       | <10                       |
| TPH (C5-C6 aliphatic)                           | T209          | M105               | 0.100              | mg/kg              | <0.100                    | <0.100                    |
| TPH (C6-C8 aliphatic)                           | T209          | M105               | 0.10               | mg/kg              | <0.10                     | <0.10                     |
| TPH (C8-C10 aliphatic)                          | T209          | M105               | 0.10               | mg/kg              | <0.10                     | <0.10                     |
| TPH (C10-C12 aliphatic)                         | T206          | M105               | 1                  | mg/kg              | <1 <sup>(13)</sup>        | <1 <sup>(13)</sup>        |
| TPH (C12-C16 aliphatic)                         | T206          | M105               | 2                  | mg/kg              | <2 <sup>(13)</sup>        | <2 <sup>(13)</sup>        |
| TPH (C16-C21 aliphatic)                         | T206          | M105               | 1                  | mg/kg              | <b>3<sup>(13)</sup></b>   | <b>4<sup>(13)</sup></b>   |
| TPH (C21-C35 aliphatic)                         | T206          | M105               | 4                  | mg/kg              | <b>110<sup>(13)</sup></b> | <b>52<sup>(13)</sup></b>  |
| TPH (C35-C44 aliphatic)                         | T8            | M105               | 1                  | mg/kg              | <b>11<sup>(13)</sup></b>  | <b>16<sup>(13)</sup></b>  |
| TPH (Aliphatic) total                           | T85           | M105               |                    |                    | <b>120<sup>(13)</sup></b> | <b>72<sup>(13)</sup></b>  |
| TPH (C6-C7 aromatic)                            | T209          | M105               | 0.10               | mg/kg              | <0.10                     | <0.10                     |
| TPH (C7-C8 aromatic)                            | T209          | M105               | 0.10               | mg/kg              | <0.10                     | <0.10                     |
| TPH (C8-C10 aromatic)                           | T209          | M105               | 0.10               | mg/kg              | <0.10                     | <0.10                     |
| TPH (C10-C12 aromatic)                          | T206          | M105               | 1                  | mg/kg              | <1 <sup>(13)</sup>        | <1 <sup>(13)</sup>        |
| TPH (C12-C16 aromatic)                          | T206          | M105               | 1                  | mg/kg              | <b>2<sup>(13)</sup></b>   | <b>3<sup>(13)</sup></b>   |
| TPH (C16-C21 aromatic)                          | T206          | M105               | 1                  | mg/kg              | <b>10<sup>(13)</sup></b>  | <b>15<sup>(13)</sup></b>  |
| TPH (C21-C35 aromatic)                          | T206          | M105               | 1                  | mg/kg              | <b>31<sup>(13)</sup></b>  | <b>35<sup>(13)</sup></b>  |
| TPH (C35-C44 aromatic)                          | T8            | M105               | 1                  | mg/kg              | <1 <sup>(13)</sup>        | <1 <sup>(13)</sup>        |
| TPH (Aromatic) total                            | T85           | M105               |                    |                    | <b>43<sup>(13)</sup></b>  | <b>53<sup>(13)</sup></b>  |
| TPH (Aliphatic+Aromatic) (sum)                  | T85           | M105               |                    |                    | <b>170<sup>(13)</sup></b> | <b>130<sup>(13)</sup></b> |

## Index to symbols used in 820797-1

| Value | Description   |
|-------|---|
| A40   | Assisted dried < 40C  |
| M105  | Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C |
| AR    | As Received   |
| M40   | Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.  |
| N.D.  | Not Detected  |
| 13    | Results have been blank corrected.  |
| S     | Analysis was subcontracted  |
| M     | Analysis is MCERTS accredited   |
| U     | Analysis is UKAS accredited   |
| N     | Analysis is not UKAS accredited   |

### Notes

Samples submitted for GC/MS (Headspace) analysis were submitted in inappropriate containers. It is possible therefore that the results provided may be compromised.  
Asbestos was subcontracted to REC Asbestos.

### Method Index

| Value | Description                |
|-------|----------------------------|
| T8    | GC/FID                     |
| T85   | Calc                       |
| T209  | GC/MS (Head Space)(MCERTS) |
| T2    | Grav                       |
| T6    | ICP/OES                    |
| T27   | PLM                        |
| T162  | Grav (1 Dec) (105 C)       |
| T4    | Colorimetry                |
| T207  | GC/MS (MCERTS)             |
| T7    | Probe                      |
| T206  | GC/FID (MCERTS)            |

### Accreditation Summary

| Determinand             | Method | Test Sample | LOD   | Units | Symbol | Concept References |
|-------------------------|--------|-------------|-------|-------|--------|--------------------|
| Cyanide(free)           | T4     | AR          | 1     | mg/kg | U      | 001-002            |
| pH                      | T7     | A40         |       |       | M      | 001-002            |
| Phenols(Mono)           | T4     | AR          | 1     | mg/kg | U      | 001-002            |
| Chromium VI             | T6     | A40         | 1     | mg/kg | N      | 001-002            |
| Selenium                | T6     | M40         | 3     | mg/kg | M      | 001-002            |
| Asbestos                | T27    | AR          |       |       | SU     | 001-002            |
| Chromium (trivalent)    | T85    | A40         | 2     | mg/kg | N      | 001-002            |
| Benzene                 | T209   | M105        | 10    | µg/kg | M      | 001-002            |
| Toluene                 | T209   | M105        | 10    | µg/kg | M      | 001-002            |
| EthylBenzene            | T209   | M105        | 10    | µg/kg | M      | 001-002            |
| Methyl tert-Butyl Ether | T209   | M105        | 10    | µg/kg | M      | 001-002            |
| O Xylene                | T209   | M105        | 10    | µg/kg | M      | 001-002            |
| M/P Xylene              | T209   | M105        | 10    | µg/kg | M      | 001-002            |
| TPH (C5-C6 aliphatic)   | T209   | M105        | 0.100 | mg/kg | N      | 001-002            |
| TPH (C6-C8 aliphatic)   | T209   | M105        | 0.10  | mg/kg | N      | 001-002            |
| TPH (C8-C10 aliphatic)  | T209   | M105        | 0.10  | mg/kg | N      | 001-002            |
| TPH (C10-C12 aliphatic) | T206   | M105        | 1     | mg/kg | N      | 001-002            |
| TPH (C12-C16 aliphatic) | T206   | M105        | 2     | mg/kg | M      | 001-002            |
| TPH (C16-C21 aliphatic) | T206   | M105        | 1     | mg/kg | M      | 001-002            |
| TPH (C21-C35 aliphatic) | T206   | M105        | 4     | mg/kg | M      | 001-002            |
| TPH (C35-C44 aliphatic) | T8     | M105        | 1     | mg/kg | N      | 001-002            |
| TPH (Aliphatic) total   | T85    | M105        |       |       | N      | 001-002            |
| TPH (C6-C7 aromatic)    | T209   | M105        | 0.10  | mg/kg | N      | 001-002            |
| TPH (C7-C8 aromatic)    | T209   | M105        | 0.10  | mg/kg | N      | 001-002            |
| TPH (C8-C10 aromatic)   | T209   | M105        | 0.10  | mg/kg | N      | 001-002            |
| TPH (C10-C12 aromatic)  | T206   | M105        | 1     | mg/kg | M      | 001-002            |
| TPH (C12-C16 aromatic)  | T206   | M105        | 1     | mg/kg | M      | 001-002            |

| Determinand                    | Method | Test Sample | LOD | Units | Symbol | Concept References |
|--------------------------------|--------|-------------|-----|-------|--------|--------------------|
| TPH (C16-C21 aromatic)         | T206   | M105        | 1   | mg/kg | M      | 001-002            |
| TPH (C21-C35 aromatic)         | T206   | M105        | 1   | mg/kg | M      | 001-002            |
| TPH (C35-C44 aromatic)         | T8     | M105        | 1   | mg/kg | N      | 001-002            |
| TPH (Aromatic) total           | T85    | M105        |     |       | N      | 001-002            |
| TPH (Aliphatic+Aromatic) (sum) | T85    | M105        |     |       | N      | 001-002            |
| Arsenic                        | T6     | M40         | 2   | mg/kg | M      | 001-002            |
| Cadmium                        | T6     | M40         | 1   | mg/kg | M      | 001-002            |
| Chromium                       | T6     | M40         | 1   | mg/kg | M      | 001-002            |
| Copper                         | T6     | M40         | 1   | mg/kg | M      | 001-002            |
| Lead                           | T6     | M40         | 1   | mg/kg | M      | 001-002            |
| Mercury                        | T6     | M40         | 1   | mg/kg | M      | 001-002            |
| Nickel                         | T6     | M40         | 1   | mg/kg | M      | 001-002            |
| Zinc                           | T6     | M40         | 1   | mg/kg | M      | 001-002            |
| Moisture @ 105C                | T162   | AR          | 0.1 | %     | N      | 001-002            |
| Retained on 10mm sieve         | T2     | M40         | 0.1 | %     | N      | 001-002            |
| Naphthalene                    | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Acenaphthylene                 | T207   | M105        | 0.1 | mg/kg | U      | 001-002            |
| Acenaphthene                   | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Fluorene                       | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Phenanthrene                   | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Anthracene                     | T207   | M105        | 0.1 | mg/kg | U      | 001-002            |
| Fluoranthene                   | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Pyrene                         | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Benzo(a)Anthracene             | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Chrysene                       | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Benzo(b/k)Fluoranthene         | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Benzo(a)Pyrene                 | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Indeno(123-cd)Pyrene           | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Dibenzo(ah)Anthracene          | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| Benzo(ghi)Perylene             | T207   | M105        | 0.1 | mg/kg | M      | 001-002            |
| PAH(total)                     | T207   | M105        | 0.1 | mg/kg | U      | 001-002            |

