# Appendix 5

## Chemical Laboratory Test Results

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING 2183

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

# Amended Report

| | | | |
|---|---|---|---|
| **Report No.:** | 19-42075-5 | | |
| **Initial Date of Issue:** | 07-Jan-2020 | **Date of Re-Issue:** | 14-Jan-2020 |
| **Client** | Ground Engineering Limited | | |
| **Client Address:** | Newark Road<br>Peterborough<br>Cambridgeshire<br>PE1 5UA | | |
| **Contact(s):** | James Davies | | |
| **Project** | C14947 Hillingdon Hospital | | |
| **Quotation No.:** | | **Date Received:** | 17-Dec-2019 |
| **Order No.:** | C14947 | **Date Instructed:** | 18-Dec-2019 |
| **No. of Samples:** | 22 | | |
| **Turnaround (Wkdays):** | 17 | **Results Due:** | 17-Jan-2020 |
| **Date Approved:** | 14-Jan-2020 | | |

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager
Ken Scally, Technical Director

Chemtest
The right chemistry to deliver results

# Results - Soil

**Project: C14947 Hillingdon Hospital**

| Client: Ground Engineering Limited | | Chemtest Job No.: | | | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Quotation No.: | | Chemtest Sample ID.: | | | 944721 | 944722 | 944723 | 944724 | 944725 | 944726 | 944727 | 944728 |
| Order No.: C14947 | | Client Sample Ref.: | | | ES1 | ES2 | ES2 | ES1 | ES2 | ES3 | ES2 | ES4 |
| | | Client Sample ID.: | | | ES1 | ES2 | ES2 | ES1 | ES2 | ES3 | ES2 | ES4 |
| | | Sample Location: | | | WS1 | WS1 | WS2 | WS3 | WS3 | WS3 | WS4 | WS4 |
| | | Sample Type: | | | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL |
| | | Top Depth (m): | | | 0.30 | 0.60 | 0.60 | 0.20 | 0.40 | 0.80 | 0.50 | 1.10 |
| | | Date Sampled: | | | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 |
| | | Asbestos Lab: | | | DURHAM | DURHAM | DURHAM | DURHAM | | DURHAM | DURHAM | DURHAM |
| **Determinand** | **Accred.** | **SOP** | **Units** | **LOD** | | | | | | | | |
| pH | M | 2010 | | 4.0 | | 11.0 | | | 9.0 | | 8.7 | |
| Moisture | N | 2030 | % | 0.020 | | 7.1 | | | 16 | | 15 | |
| Boron (Hot Water Soluble) | M | 2120 | mg/kg | 0.40 | | 1.4 | | | 1.1 | | 0.90 | |
| Sulphate (Total) | M | 2430 | mg/kg | 100 | | 1200 | | | 4200 | | 850 | |
| Cyanide (Total) | M | 2300 | mg/kg | 0.50 | | < 0.50 | | | < 0.50 | | < 0.50 | |
| Sulphide (Easily Liberatable) | N | 2325 | mg/kg | 0.50 | | 22 | | | 2.1 | | 3.6 | |
| Arsenic | M | 2450 | mg/kg | 1.0 | | 16 | | | 8.9 | | 13 | |
| Cadmium | M | 2450 | mg/kg | 0.10 | | 0.17 | | | 0.16 | | 0.28 | |
| Chromium | M | 2450 | mg/kg | 1.0 | | 9.4 | | | 22 | | 29 | |
| Copper | M | 2450 | mg/kg | 0.50 | | 8.2 | | | 18 | | 25 | |
| Mercury | M | 2450 | mg/kg | 0.10 | | < 0.10 | | | 0.15 | | 0.27 | |
| Nickel | M | 2450 | mg/kg | 0.50 | | 9.3 | | | 17 | | 24 | |
| Lead | M | 2450 | mg/kg | 0.50 | | 21 | | | 43 | | 81 | |
| Selenium | M | 2450 | mg/kg | 0.20 | | < 0.20 | | | 0.32 | | 0.34 | |
| Zinc | M | 2450 | mg/kg | 0.50 | | 25 | | | 54 | | 74 | |
| Acenaphthene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Acenaphthylene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Anthracene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | 0.40 | | < 0.10 | |
| Benzo[a]anthracene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Benzo[a]pyrene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Benzo[b]fluoranthene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Benzo[g,h,i]perylene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Benzo[k]fluoranthene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Chrysene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Dibenz(a,h)Anthracene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Fluoranthene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | 2.3 | | 1.8 | |
| Fluorene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Indeno(1,2,3-c,d)Pyrene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Naphthalene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | < 0.10 | | < 0.10 | |
| Phenanthrene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | 1.7 | | < 0.10 | |
| Pyrene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | | 2.0 | | 1.7 | |
| Total Of 16 PAH's | M | 2700 | mg/kg | 2.0 | | < 2.0 | | | 6.4 | | 3.5 | |
| Total Phenols | M | 2920 | mg/kg | 0.30 | | < 0.30 | | | < 0.30 | | < 0.30 | |
| ACM Type | U | 2192 | | N/A | - | - | - | - | | - | Fibres/Clumps | - |
| Asbestos Identification | U | 2192 | % | 0.001 | No Asbestos Detected | No Asbestos Detected | No Asbestos Detected | No Asbestos Detected | | No Asbestos Detected | Chrysotile | No Asbestos Detected |

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# Results - Soil

**Project: C14947 Hillingdon Hospital**

| **Client: Ground Engineering Limited** | | | | | **Chemtest Job No.:** | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Quotation No.: | | | | | **Chemtest Sample ID.:** | 944721 | 944722 | 944723 | 944724 | 944725 | 944726 | 944727 | 944728 |
| Order No.: C14947 | | | | | Client Sample Ref.: | ES1 | ES2 | ES2 | ES1 | ES2 | ES3 | ES2 | ES4 |
| | | | | | Client Sample ID.: | ES1 | ES2 | ES2 | ES1 | ES2 | ES3 | ES2 | ES4 |
| | | | | | Sample Location: | WS1 | WS1 | WS2 | WS3 | WS3 | WS3 | WS4 | WS4 |
| | | | | | Sample Type: | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL |
| | | | | | Top Depth (m): | 0.30 | 0.60 | 0.60 | 0.20 | 0.40 | 0.80 | 0.50 | 1.10 |
| | | | | | Date Sampled: | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 |
| | | | | | Asbestos Lab: | DURHAM | DURHAM | DURHAM | DURHAM | | DURHAM | DURHAM | DURHAM |
| **Determinand** | **Accred.** | **SOP** | **Units** | **LOD** | | | | | | | | | |
| ACM Detection Stage | U | 2192 | | N/A | - | - | - | - | | - | Stereo Microscopy | - |
| Asbestos by Gravimetry | U | 2192 | % | 0.001 | | | | | | | 0.003 | |
| Total Asbestos | N | 2192 | % | 0.001 | | | | | | | 0.003 | |
| Soil Colour | N | 2040 | | N/A | | Brown, | | | Brown, | | Brown, | |
| Other Material | N | 2040 | | N/A | | Stones, | | | Stones, | | Stones, | |
| Soil Texture | N | 2040 | | N/A | | Sand, | | | Sand, | | Sand, | |
| Beryllium | U | 2450 | mg/kg | 1.0 | | < 1.0 | | | < 1.0 | | 1.0 | |
| Vanadium | U | 2450 | mg/kg | 5.0 | | 17 | | | 46 | | 54 | |
| Total Organic Carbon | M | 2625 | % | 0.20 | | 0.32 | | | 0.96 | | 1.6 | |
| TPH >C6-C8 | N | 2670 | mg/kg | 1.0 | | < 1.0 | | | | | < 1.0 | |
| TPH >C8-C10 | N | 2670 | mg/kg | 1.0 | | < 1.0 | | | | | < 1.0 | |
| TPH >C10-C12 | N | 2670 | mg/kg | 1.0 | | < 1.0 | | | | | < 1.0 | |
| TPH >C12-C16 | N | 2670 | mg/kg | 1.0 | | < 1.0 | | | | | 8.1 | |
| TPH >C16-C21 | N | 2670 | mg/kg | 1.0 | | 7.2 | | | | | 25 | |
| TPH >C21-C35 | N | 2670 | mg/kg | 1.0 | | 16 | | | | | 60 | |
| Total TPH >C6-C35 | U | 2670 | mg/kg | 10.0 | | 23 | | | | | 93 | |
| Total TPH >C6-C40 | M | 2670 | mg/kg | 10 | | 23 | | | | | 96 | |
| Aliphatic TPH >C5-C6 | N | 2680 | mg/kg | 1.0 | | | | | | < 1.0 | | |
| Aliphatic TPH >C6-C8 | N | 2680 | mg/kg | 1.0 | | | | | | < 1.0 | | |
| Aliphatic TPH >C8-C10 | M | 2680 | mg/kg | 1.0 | | | | | | < 1.0 | | |
| Aliphatic TPH >C10-C12 | M | 2680 | mg/kg | 1.0 | | | | | | 14 | | |
| Aliphatic TPH >C12-C16 | M | 2680 | mg/kg | 1.0 | | | | | | 16 | | |
| Aliphatic TPH >C16-C21 | M | 2680 | mg/kg | 1.0 | | | | | | < 1.0 | | |
| Aliphatic TPH >C21-C35 | M | 2680 | mg/kg | 1.0 | | | | | | 210 | | |
| Aliphatic TPH >C35-C44 | N | 2680 | mg/kg | 1.0 | | | | | | 190 | | |
| Total Aliphatic Hydrocarbons | N | 2680 | mg/kg | 5.0 | | | | | | 440 | | |
| Aromatic TPH >C5-C7 | N | 2680 | mg/kg | 1.0 | | | | | | < 1.0 | | |
| Aromatic TPH >C7-C8 | N | 2680 | mg/kg | 1.0 | | | | | | < 1.0 | | |
| Aromatic TPH >C8-C10 | M | 2680 | mg/kg | 1.0 | | | | | | < 1.0 | | |
| Aromatic TPH >C10-C12 | M | 2680 | mg/kg | 1.0 | | | | | | < 1.0 | | |
| Aromatic TPH >C12-C16 | M | 2680 | mg/kg | 1.0 | | | | | | 8.3 | | |
| Aromatic TPH >C16-C21 | U | 2680 | mg/kg | 1.0 | | | | | | 40 | | |
| Aromatic TPH >C21-C35 | M | 2680 | mg/kg | 1.0 | | | | | | 250 | | |
| Aromatic TPH >C35-C44 | N | 2680 | mg/kg | 1.0 | | | | | | 27 | | |
| Total Aromatic Hydrocarbons | N | 2680 | mg/kg | 5.0 | | | | | | 330 | | |
| Total Petroleum Hydrocarbons | N | 2680 | mg/kg | 10.0 | | | | | | 770 | | |

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# Results - Soil

**Project: C14947 Hillingdon Hospital**

| **Client: Ground Engineering Limited** | | | | | **Chemtest Job No.:** | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Quotation No.: | | | | | **Chemtest Sample ID.:** | 944729 | 944730 | 944731 | 944732 | 944733 | 944734 | 944735 | 944736 |
| Order No.: C14947 | | | | | Client Sample Ref.: | ES1 | ES2 | ES3 | ES1 | ES3 | ES1 | ES2 | ES1 |
| | | | | | Client Sample ID.: | ES1 | ES2 | ES3 | ES1 | ES3 | ES1 | ES2 | ES1 |
| | | | | | Sample Location: | WS5 | WS5 | WS5 | WS6 | WS6 | WS7 | WS7 | WS8 |
| | | | | | Sample Type: | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL |
| | | | | | Top Depth (m): | 0.20 | 0.50 | 0.90 | 0.20 | 0.75 | 0.05 | 0.50 | 0.20 |
| | | | | | Date Sampled: | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 |
| | | | | | Asbestos Lab: | DURHAM | | DURHAM | DURHAM | DURHAM | DURHAM | DURHAM | DURHAM |
| **Determinand** | **Accred.** | **SOP** | **Units** | **LOD** | | | | | | | | | |
| pH | M | 2010 | | 4.0 | | 8.7 | | 8.5 | | | 8.3 | 8.4 | |
| Moisture | N | 2030 | % | 0.020 | | 9.7 | | 10 | | | 15 | 18 | |
| Boron (Hot Water Soluble) | M | 2120 | mg/kg | 0.40 | | 0.96 | | 0.68 | | | 1.0 | 1.8 | |
| Sulphate (Total) | M | 2430 | mg/kg | 100 | | 1200 | | 480 | | | 330 | 880 | |
| Cyanide (Total) | M | 2300 | mg/kg | 0.50 | | < 0.50 | | < 0.50 | | | < 0.50 | < 0.50 | |
| Sulphide (Easily Liberatable) | N | 2325 | mg/kg | 0.50 | | 1.0 | | 2.7 | | | 2.5 | 0.90 | |
| Arsenic | M | 2450 | mg/kg | 1.0 | | 7.1 | | 8.6 | | | 11 | 16 | |
| Cadmium | M | 2450 | mg/kg | 0.10 | | 0.17 | | < 0.10 | | | 0.17 | 0.27 | |
| Chromium | M | 2450 | mg/kg | 1.0 | | 14 | | 21 | | | 25 | 15 | |
| Copper | M | 2450 | mg/kg | 0.50 | | 16 | | 7.6 | | | 17 | 20 | |
| Mercury | M | 2450 | mg/kg | 0.10 | | 0.14 | | < 0.10 | | | 0.22 | 0.13 | |
| Nickel | M | 2450 | mg/kg | 0.50 | | 15 | | 13 | | | 20 | 16 | |
| Lead | M | 2450 | mg/kg | 0.50 | | 62 | | 19 | | | 61 | 54 | |
| Selenium | M | 2450 | mg/kg | 0.20 | | 0.22 | | 0.38 | | | 0.33 | 0.27 | |
| Zinc | M | 2450 | mg/kg | 0.50 | | 54 | | 27 | | | 67 | 61 | |
| Acenaphthene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Acenaphthylene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Anthracene | M | 2700 | mg/kg | 0.10 | | 0.24 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Benzo[a]anthracene | M | 2700 | mg/kg | 0.10 | | 1.7 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Benzo[a]pyrene | M | 2700 | mg/kg | 0.10 | | 2.1 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Benzo[b]fluoranthene | M | 2700 | mg/kg | 0.10 | | 2.7 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Benzo[g,h,i]perylene | M | 2700 | mg/kg | 0.10 | | 1.3 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Benzo[k]fluoranthene | M | 2700 | mg/kg | 0.10 | | 1.2 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Chrysene | M | 2700 | mg/kg | 0.10 | | 1.7 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Dibenz(a,h)Anthracene | M | 2700 | mg/kg | 0.10 | | 1.3 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Fluoranthene | M | 2700 | mg/kg | 0.10 | | 3.0 | | < 0.10 | | | 0.61 | 0.86 | |
| Fluorene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Indeno(1,2,3-c,d)Pyrene | M | 2700 | mg/kg | 0.10 | | 1.6 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Naphthalene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | | | < 0.10 | < 0.10 | |
| Phenanthrene | M | 2700 | mg/kg | 0.10 | | 1.3 | | < 0.10 | | | < 0.10 | 0.48 | |
| Pyrene | M | 2700 | mg/kg | 0.10 | | 2.9 | | < 0.10 | | | 0.62 | 0.99 | |
| Total Of 16 PAH's | M | 2700 | mg/kg | 2.0 | | 21 | | < 2.0 | | | < 2.0 | 2.3 | |
| Total Phenols | M | 2920 | mg/kg | 0.30 | | < 0.30 | | < 0.30 | | | < 0.30 | < 0.30 | |
| ACM Type | U | 2192 | | N/A | - | | - | - | - | - | - | - | |
| Asbestos Identification | U | 2192 | % | 0.001 | No Asbestos Detected | | No Asbestos Detected | No Asbestos Detected | No Asbestos Detected | No Asbestos Detected | No Asbestos Detected | No Asbestos Detected | |

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# Results - Soil

**Project: C14947 Hillingdon Hospital**

| **Client: Ground Engineering Limited** | | | **Chemtest Job No.:** | | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Quotation No.: | | | **Chemtest Sample ID.:** | | 944729 | 944730 | 944731 | 944732 | 944733 | 944734 | 944735 | 944736 |
| Order No.: C14947 | | | Client Sample Ref.: | | ES1 | ES2 | ES3 | ES1 | ES3 | ES1 | ES2 | ES1 |
| | | | Client Sample ID.: | | ES1 | ES2 | ES3 | ES1 | ES3 | ES1 | ES2 | ES1 |
| | | | Sample Location: | | WS5 | WS5 | WS5 | WS6 | WS6 | WS7 | WS7 | WS8 |
| | | | Sample Type: | | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL |
| | | | Top Depth (m): | | 0.20 | 0.50 | 0.90 | 0.20 | 0.75 | 0.05 | 0.50 | 0.20 |
| | | | Date Sampled: | | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 |
| | | | Asbestos Lab: | | DURHAM | | DURHAM | DURHAM | DURHAM | DURHAM | DURHAM | DURHAM |
| **Determinand** | **Accred.** | **SOP** | **Units** | **LOD** | | | | | | | | |
| ACM Detection Stage | U | 2192 | | N/A | - | | - | - | - | - | - | - |
| Asbestos by Gravimetry | U | 2192 | % | 0.001 | | | | | | | | |
| Total Asbestos | N | 2192 | % | 0.001 | | | | | | | | |
| Soil Colour | N | 2040 | | N/A | | Brown, | | Brown, | | | Brown, | Black, |
| Other Material | N | 2040 | | N/A | | Stones, | | Stones, | | | Stones, | Stones, |
| Soil Texture | N | 2040 | | N/A | | Sand, | | Sand, | | | Sand, | Sand, |
| Beryllium | U | 2450 | mg/kg | 1.0 | | < 1.0 | | < 1.0 | | | < 1.0 | < 1.0 |
| Vanadium | U | 2450 | mg/kg | 5.0 | | 26 | | 38 | | | 51 | 29 |
| Total Organic Carbon | M | 2625 | % | 0.20 | | 1.8 | | 0.73 | | | 1.1 | 4.2 |
| TPH >C6-C8 | N | 2670 | mg/kg | 1.0 | | < 1.0 | | < 1.0 | | | < 1.0 | < 1.0 |
| TPH >C8-C10 | N | 2670 | mg/kg | 1.0 | | < 1.0 | | < 1.0 | | | < 1.0 | < 1.0 |
| TPH >C10-C12 | N | 2670 | mg/kg | 1.0 | | < 1.0 | | < 1.0 | | | < 1.0 | < 1.0 |
| TPH >C12-C16 | N | 2670 | mg/kg | 1.0 | | 1.6 | | < 1.0 | | | < 1.0 | < 1.0 |
| TPH >C16-C21 | N | 2670 | mg/kg | 1.0 | | 16 | | < 1.0 | | | 7.0 | < 1.0 |
| TPH >C21-C35 | N | 2670 | mg/kg | 1.0 | | 30 | | 30 | | | < 1.0 | < 1.0 |
| Total TPH >C6-C35 | U | 2670 | mg/kg | 10.0 | | 47 | | 31 | | | < 10 | < 10 |
| Total TPH >C6-C40 | M | 2670 | mg/kg | 10 | | 47 | | 37 | | | < 10 | < 10 |
| Aliphatic TPH >C5-C6 | N | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aliphatic TPH >C6-C8 | N | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aliphatic TPH >C8-C10 | M | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aliphatic TPH >C10-C12 | M | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aliphatic TPH >C12-C16 | M | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aliphatic TPH >C16-C21 | M | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aliphatic TPH >C21-C35 | M | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aliphatic TPH >C35-C44 | N | 2680 | mg/kg | 1.0 | | | | | | | | |
| Total Aliphatic Hydrocarbons | N | 2680 | mg/kg | 5.0 | | | | | | | | |
| Aromatic TPH >C5-C7 | N | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aromatic TPH >C7-C8 | N | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aromatic TPH >C8-C10 | M | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aromatic TPH >C10-C12 | M | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aromatic TPH >C12-C16 | M | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aromatic TPH >C16-C21 | U | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aromatic TPH >C21-C35 | M | 2680 | mg/kg | 1.0 | | | | | | | | |
| Aromatic TPH >C35-C44 | N | 2680 | mg/kg | 1.0 | | | | | | | | |
| Total Aromatic Hydrocarbons | N | 2680 | mg/kg | 5.0 | | | | | | | | |
| Total Petroleum Hydrocarbons | N | 2680 | mg/kg | 10.0 | | | | | | | | |

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# Results - Soil

**Project: C14947 Hillingdon Hospital**

| Client: Ground Engineering Limited | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Chemtest Job No.: | | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 |
| Quotation No.: | | | Chemtest Sample ID.: | | 944737 | 944738 | 944739 | 944740 | 944741 | 944916 |
| Order No.: C14947 | | | Client Sample Ref.: | | ES3 | ES1 | ES2 | ES3 | ES2 | ES1 |
| | | | Client Sample ID.: | | ES3 | ES1 | ES2 | ES3 | ES2 | ES1 |
| | | | Sample Location: | | WS8 | WS9 | FIP1 | FIP1 | FIP2 | WS2 |
| | | | Sample Type: | | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL |
| | | | Top Depth (m): | | 0.90 | 0.30 | 0.45 | 0.55 | 0.50 | 0.30 |
| | | | Date Sampled: | | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 |
| | | | Asbestos Lab: | | DURHAM | DURHAM | DURHAM | | DURHAM | DURHAM |
| **Determinand** | **Accred.** | **SOP** | **Units** | **LOD** | | | | | | |
| pH | M | 2010 | | 4.0 | | 8.0 | | 8.7 | 8.4 | 10.7 |
| Moisture | N | 2030 | % | 0.020 | | 9.8 | | 19 | 16 | 8.4 |
| Boron (Hot Water Soluble) | M | 2120 | mg/kg | 0.40 | | 0.72 | | 0.99 | 1.0 | 0.87 |
| Sulphate (Total) | M | 2430 | mg/kg | 100 | | 1700 | | 870 | 440 | 2200 |
| Cyanide (Total) | M | 2300 | mg/kg | 0.50 | | < 0.50 | | < 0.50 | < 0.50 | < 0.50 |
| Sulphide (Easily Liberatable) | N | 2325 | mg/kg | 0.50 | | 3.8 | | 1.0 | 2.6 | 1.5 |
| Arsenic | M | 2450 | mg/kg | 1.0 | | 17 | | 15 | 11 | 7.8 |
| Cadmium | M | 2450 | mg/kg | 0.10 | | 0.45 | | 0.29 | 0.12 | 0.71 |
| Chromium | M | 2450 | mg/kg | 1.0 | | 25 | | 21 | 25 | 14 |
| Copper | M | 2450 | mg/kg | 0.50 | | 18 | | 15 | 13 | 38 |
| Mercury | M | 2450 | mg/kg | 0.10 | | 0.15 | | 0.20 | 0.13 | < 0.10 |
| Nickel | M | 2450 | mg/kg | 0.50 | | 23 | | 15 | 19 | 15 |
| Lead | M | 2450 | mg/kg | 0.50 | | 140 | | 85 | 44 | 38 |
| Selenium | M | 2450 | mg/kg | 0.20 | | 0.29 | | < 0.20 | 0.28 | < 0.20 |
| Zinc | M | 2450 | mg/kg | 0.50 | | 86 | | 56 | 42 | 77 |
| Acenaphthene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | < 0.10 | < 0.10 |
| Acenaphthylene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | < 0.10 | < 0.10 |
| Anthracene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | 0.12 | 0.10 |
| Benzo[a]anthracene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | 0.47 | < 0.10 | < 0.10 |
| Benzo[a]pyrene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | < 0.10 | < 0.10 |
| Benzo[b]fluoranthene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | < 0.10 | < 0.10 |
| Benzo[g,h,i]perylene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | < 0.10 | < 0.10 |
| Benzo[k]fluoranthene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | < 0.10 | < 0.10 |
| Chrysene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | 0.50 | < 0.10 | < 0.10 |
| Dibenz(a,h)Anthracene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | < 0.10 | < 0.10 |
| Fluoranthene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | 1.1 | 0.66 | 0.71 |
| Fluorene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | < 0.10 | < 0.10 |
| Indeno(1,2,3-c,d)Pyrene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | < 0.10 | < 0.10 |
| Naphthalene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | < 0.10 | < 0.10 |
| Phenanthrene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | < 0.10 | 0.27 | 0.29 |
| Pyrene | M | 2700 | mg/kg | 0.10 | | < 0.10 | | 1.1 | 0.77 | 0.63 |
| Total Of 16 PAH's | M | 2700 | mg/kg | 2.0 | | < 2.0 | | 3.2 | < 2.0 | < 2.0 |
| Total Phenols | M | 2920 | mg/kg | 0.30 | | < 0.30 | | < 0.30 | < 0.30 | < 0.30 |
| ACM Type | U | 2192 | | N/A | - | - | - | | - | - |
| Asbestos Identification | U | 2192 | % | 0.001 | No Asbestos Detected | No Asbestos Detected | No Asbestos Detected | | No Asbestos Detected | No Asbestos Detected |

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# Results - Soil

**Project: C14947 Hillingdon Hospital**

| **Client: Ground Engineering Limited** | | | | | **Chemtest Job No.:** | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 | 19-42075 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Quotation No.: | | | | | **Chemtest Sample ID.:** | 944737 | 944738 | 944739 | 944740 | 944741 | 944916 |
| Order No.: C14947 | | | | | Client Sample Ref.: | ES3 | ES1 | ES2 | ES3 | ES2 | ES1 |
| | | | | | Client Sample ID.: | ES3 | ES1 | ES2 | ES3 | ES2 | ES1 |
| | | | | | Sample Location: | WS8 | WS9 | FIP1 | FIP1 | FIP2 | WS2 |
| | | | | | Sample Type: | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL |
| | | | | | Top Depth (m): | 0.90 | 0.30 | 0.45 | 0.55 | 0.50 | 0.30 |
| | | | | | Date Sampled: | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 | 16-Dec-2019 |
| | | | | | Asbestos Lab: | DURHAM | DURHAM | DURHAM | | DURHAM | DURHAM |
| **Determinand** | **Accred.** | **SOP** | **Units** | **LOD** | | | | | | | |
| ACM Detection Stage | U | 2192 | | N/A | - | - | - | | - | - | |
| Asbestos by Gravimetry | U | 2192 | % | 0.001 | | | | | | | |
| Total Asbestos | N | 2192 | % | 0.001 | | | | | | | |
| Soil Colour | N | 2040 | | N/A | | Brown, | | Brown, | Brown, | Brown, | |
| Other Material | N | 2040 | | N/A | | Stones, | | Stones, | Stones | Stones, | |
| Soil Texture | N | 2040 | | N/A | | Sand, | | Sand, | Sand, | Sand, | |
| Beryllium | U | 2450 | mg/kg | 1.0 | | 1.0 | | < 1.0 | < 1.0 | < 1.0 | |
| Vanadium | U | 2450 | mg/kg | 5.0 | | 57 | | 37 | 44 | 28 | |
| Total Organic Carbon | M | 2625 | % | 0.20 | | 1.0 | | 0.94 | | 1.2 | |
| TPH >C6-C8 | N | 2670 | mg/kg | 1.0 | | | | < 1.0 | < 1.0 | < 1.0 | |
| TPH >C8-C10 | N | 2670 | mg/kg | 1.0 | | | | < 1.0 | < 1.0 | < 1.0 | |
| TPH >C10-C12 | N | 2670 | mg/kg | 1.0 | | | | < 1.0 | < 1.0 | < 1.0 | |
| TPH >C12-C16 | N | 2670 | mg/kg | 1.0 | | | | < 1.0 | < 1.0 | 4.1 | |
| TPH >C16-C21 | N | 2670 | mg/kg | 1.0 | | | | < 1.0 | 5.0 | 42 | |
| TPH >C21-C35 | N | 2670 | mg/kg | 1.0 | | | | < 1.0 | < 1.0 | 310 | |
| Total TPH >C6-C35 | U | 2670 | mg/kg | 10.0 | | | | < 10 | < 10 | 360 | |
| Total TPH >C6-C40 | M | 2670 | mg/kg | 10 | | | | < 10 | < 10 | 820 | |
| Aliphatic TPH >C5-C6 | N | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aliphatic TPH >C6-C8 | N | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aliphatic TPH >C8-C10 | M | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aliphatic TPH >C10-C12 | M | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aliphatic TPH >C12-C16 | M | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aliphatic TPH >C16-C21 | M | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aliphatic TPH >C21-C35 | M | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aliphatic TPH >C35-C44 | N | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Total Aliphatic Hydrocarbons | N | 2680 | mg/kg | 5.0 | | < 5.0 | | | | | |
| Aromatic TPH >C5-C7 | N | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aromatic TPH >C7-C8 | N | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aromatic TPH >C8-C10 | M | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aromatic TPH >C10-C12 | M | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aromatic TPH >C12-C16 | M | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aromatic TPH >C16-C21 | U | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aromatic TPH >C21-C35 | M | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Aromatic TPH >C35-C44 | N | 2680 | mg/kg | 1.0 | | < 1.0 | | | | | |
| Total Aromatic Hydrocarbons | N | 2680 | mg/kg | 5.0 | | < 5.0 | | | | | |
| Total Petroleum Hydrocarbons | N | 2680 | mg/kg | 10.0 | | < 10 | | | | | |

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# Test Methods

| SOP | Title | Parameters Included | Method summary |
|---|---|---|---|
| 2010 | pH Value of Soils | pH | pH Meter |
| 2030 | Moisture and Stone Content of Soils(Requirement of MCERTS) | Moisture content | Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C. |
| 2040 | Soil Description(Requirement of MCERTS) | Soil description | As received soil is described based upon BS5930 |
| 2120 | Water Soluble Boron, Sulphate, Magnesium & Chromium | Boron; Sulphate; Magnesium; Chromium | Aqueous extraction / ICP-OES |
| 2192 | Asbestos | Asbestos | Polarised light microscopy / Gravimetry |
| 2300 | Cyanides & Thiocyanate in Soils | Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate | Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser. |
| 2325 | Sulphide in Soils | Sulphide | Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine. |
| 2430 | Total Sulphate in soils | Total Sulphate | Acid digestion followed by determination of sulphate in extract by ICP-OES. |
| 2450 | Acid Soluble Metals in Soils | Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc | Acid digestion followed by determination of metals in extract by ICP-MS. |
| 2625 | Total Organic Carbon in Soils | Total organic Carbon (TOC) | Determined by high temperature combustion under oxygen, using an Eltra elemental analyser. |
| 2670 | Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID | TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40 | Dichloromethane extraction / GC-FID |
| 2680 | TPH A/A Split | Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44 | Dichloromethane extraction / GCxGC FID detection |
| 2700 | Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID | Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene | Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds) |
| 2920 | Phenols in Soils by HPLC | Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded. | 60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection. |

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## Report Information

### Key

| | |
|---|---|
| U | UKAS accredited |
| M | MCERTS and UKAS accredited |
| N | Unaccredited |
| S | This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis |
| SN | This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis |
| T | This analysis has been subcontracted to an unaccredited laboratory |
| I/S | Insufficient Sample |
| U/S | Unsuitable Sample |
| N/E | not evaluated |
| < | "less than" |
| > | "greater than" |

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING 2183

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

# Amended Report

| | | | |
|---|---|---|---|
| **Report No.:** | 19-42068-4 | | |
| **Initial Date of Issue:** | 02-Jan-2020 | **Date of Re-Issue:** | 14-Jan-2020 |
| **Client** | Ground Engineering Limited | | |
| **Client Address:** | Newark Road<br>Peterborough<br>Cambridgeshire<br>PE1 5UA | | |
| **Contact(s):** | James Davies | | |
| **Project** | C14947 Hillingdon Hospital | | |
| **Quotation No.:** | | **Date Received:** | 17-Dec-2019 |
| **Order No.:** | C14947 | **Date Instructed:** | 18-Dec-2019 |
| **No. of Samples:** | 5 | | |
| **Turnaround (Wkdays):** | 17 | **Results Due:** | 17-Jan-2020 |
| **Date Approved:** | 14-Jan-2020 | | |
| **Approved By:** | | | |
| **Details:** | Glynn Harvey, Laboratory Manager | | |