

**PHASE 2 GEO-ENVIRONMENTAL INVESTIGATION  
of a site at  
UXBRIDGE INDUSTRIAL ESTATE, ARUNDEL ROAD,  
UXBRIDGE  
for  
CYRIL LEONARD LTD**



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| <b>D</b>                |                   |                                                   |

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## 1 EXECUTIVE SUMMARY

The phase 1 environmental report indicates that there is potential contamination of the site from its former and current industrial use. Study of the historical maps indicated that there are areas of landfill, artificial ground and former sludge beds within the near vicinity with the potential to produce ground gas.

The proposed site usage is Light Industrial with minimal soft landscaping.

In this investigation there was a single exceedance for benzo(a)pyrene in a sample from a borehole located inside the building. In all the other samples tested there were no recorded exceedances.

The benzo(a)pyrene exceedance identified was found in a sample under concrete slab inside the building, and this is a considerable distance from the very minor proposed soft landscaping on the western edge of site. Additionally, all the other samples, many in proximity to the soft landscaping strip, returned test results an order of magnitude below the screening value for benzo(a)pyrene. Other than the perimeter soft landscaping strip the proposed development will be entirely impermeable hard surfacing. It is therefore considered that there is no significant risk to on-site and off-site receptors from benzo(a)pyrene, and therefore no remediation is required.

Six samples were screened in the laboratory for the presence of asbestos fibres. No asbestos was identified in any of the samples.

Monitoring was undertaken for land gas. A maximum Carbon Dioxide concentration of 9.3 %v/v was detected in BH1 on the second visit. The Carbon Dioxide concentration of 9.3% v/v was used to calculate a GSV value of 0.0093 l/h. As this value is below the screening value for carbon dioxide gas protection measures are not required.

The subsoil profile encountered across the site was generally consistent with the geological survey map of the area, which suggested the site to be underlain by superficial Alluvium Deposits. Made Ground was encountered across the site to a maximum depth of approximately 1.30m with Silty/Sandy Clayey GRAVEL underlying the Made Ground.

The Made Ground was encountered to a maximum depth of 1.30m, and foundations should be taken at least 300mm past this to ensure natural ground is encountered, which means a minimum depth of 1.60m.

Therefore, in summary, we would suggest that conventional strip foundations could be utilised but may be economically unviable. The most suitable alternative foundation for this site would be a piled foundation taken down further into the superficial Alluvium or into the underlying London Clay bedrock.

Water was noted to be present from a depth of 2.20m which could reduce bearing capacities by up to 50%. Therefore, we would recommend using a bearing capacity of 67-173kN/m<sup>2</sup> across this site at 1.60m-3.00m depth.

The four boreholes drilled on this site were all found to contain standing water on completion of drilling, but water monitoring standpipes were installed to assess long term groundwater levels and allow for gas monitoring. However, in the short term this would indicate that excavations on this site are likely to be affected by water inflows, with the groundwater levels likely to be at a depth of 2.20m.

The material encountered on this site was found to be of a generally granular nature, which would indicate that sides of excavations are unlikely to be self-supporting, certainly in the long term. However, temporary support should be considered for all excavations where collapse is to be avoided, with heavy duty closed shoring in excavations below 1.20m where construction workers access is required.

## Risk Summary

|          |     |                |          |      |
|----------|-----|----------------|----------|------|
| Very Low | Low | Moderate / Low | Moderate | High |
|----------|-----|----------------|----------|------|

|         |                                                                                                                   | Receptors  |                |            |                   |         |             |                             |
|---------|-------------------------------------------------------------------------------------------------------------------|------------|----------------|------------|-------------------|---------|-------------|-----------------------------|
|         |                                                                                                                   | Site Users | Ground Workers | Neighbours | Proposed Building | Aquifer | River Colne | Grounds maintenance workers |
| Sources | Former & current industrial use of buildings & yard, including waste oil tank & electricity sub-station (On Site) |            |                |            |                   |         |             |                             |
|         | Naturally occurring contaminants (On Site)                                                                        |            |                |            |                   |         |             |                             |
|         | Current and former industrial use including sludge beds (Off Site)                                                |            |                |            |                   |         |             |                             |

## 2 BRIEF

Mr Jonathan Slater of Cyril Leonard Ltd instructed GO Contaminated Land Solutions to undertake a phase 2 geo-environmental investigation of the site.

This report should be read in conjunction with the phase 1 environmental report, ref 1833-P1E-1 by GO contaminated Land Solutions.

## 3 INVESTIGATION STRATEGY

The phase 1 environmental report shows There is potential contamination of the site from its former and current industrial use.

The principles of the strategy are to:

- Identify the nature and extent of any contamination in the made ground across the site.

Non-targeted sampling has been used where contamination location is unknown.

| Location Reference             | Rationale for Location                                          | Depth (mbgl) | Sampling, Testing & Monitoring                                     |
|--------------------------------|-----------------------------------------------------------------|--------------|--------------------------------------------------------------------|
| BH1, BH4, CBR 1, CBR 3 and HA1 | Located to cover the site                                       | 0.2-2.0      | Metals, hydrocarbons, PAHs & asbestos.<br>BH1 & BH3 Gas monitoring |
| BH2                            | Located to cover the site                                       | 1.38         | Gas monitoring                                                     |
| CBR 4                          | Located close to substation to identify potential contamination | 0.3-0.4      | PCBs                                                               |
| CBR 5                          | Located close to substation, also to cover the site             | 0.4-0.5      | Metals, hydrocarbons, PAHs, asbestos and PCBs                      |

## 4 SITE DESCRIPTION

The site is irregular in plan and occupies 0.24ha.

The site is currently occupied, and in use by a number of businesses including an engineering works, a fabricator of conference equipment, a recording studio and a vehicle repair workshop.

The units form a 'U' shape around a small yard on the north of the site and occupy the greater part of the site. An access road runs along the north edge of the site from Arundel Rd to the yard. The access road and yard are concrete surfaced. There is an electrical sub-station in the yard. There are parking spaces along Arundel road frontage, which is asphalt surfaced, there is also a shipping container located on the frontage.

The main buildings are generally brick built, single storey with pitched roofs with skylights, while the RnR building and the entrance to the Trinity unit have flat roofs. The floors appear to be concrete slabs.



**Photograph 1: View of the site from Arundel Road**

The northwest boundary is formed by wooden fencing, dividing the access road and yard area from the adjacent access road to the Chiltern Business Village. The rear of the site is bounded by chain link fencing but is hidden within an area of overgrown vegetation and trees.

The boundary along Arundel Road is undefined and the southern elevation of the building forms the southern boundary.

The estate manager advised that within the vehicle repair workshop there was a tank for waste oil, contained within a bund which was emptied by a contractor and appropriate records maintained.

To the north of the site is the adjacent Chiltern Business Village, and industrial units occupy the area to the east and south. To the west of the site lies an area of overgrown vegetation extending to the nearby river.

The nearby surrounding area is generally industrial with some commercial activity.

No significant visual or olfactory evidence of contamination, such as staining or odours were noted during the visit.

## **5 SITE WORKS**

### **5.1 Programme**

The site works were undertaken on 29 and 30 July 2020.

### **5.2 Contamination Sampling**

A total of seven samples were taken from across the site. Six samples were tested for a range of contaminants such as metals, hydrocarbons, PAHs, asbestos and PCBs. A further sample was tested for PCBs only.

### **5.3 Boreholes**

A total of four boreholes were drilled by mechanical means to depths of between 4.0 and 9.3m below ground level. Gas monitoring pipes were installed in BH 1, 2 and 3 to allow for future monitoring.

One borehole was hand augered to a depth of 0.45m below ground level to obtain a sample for contamination testing.

## **6 GROUND CONDITIONS**

### **6.1 Geological Survey**

Reference to the geological survey of Great Britain indicates that beneath made ground, the area generally is underlain by superficial deposits comprising Alluvium which is described as Clay, Silt, Sand and Gravel.

The superficial deposits are underlain by bedrock comprising London Clay Formation described as Clay, Silt and Sand

### **6.2 Hydrogeology**

The Environment Agency maps show the site to be located over a Secondary A Aquifer in the superficial or drift deposits, in the bedrock they show the site to be over Unproductive Strata.

Unproductive Strata are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Secondary A Aquifers comprise permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

The soils overlying the aquifers are assumed to have a high leaching potential (U) and a worst case vulnerability classification (H) is assumed due to a lack of data available for restored workings and urban areas.

The Environment Agency maps show the site is not located within a source protection zone of a borehole abstraction point.

### **6.3 Hydrology**

The nearest surface water feature is the River Colne, approximately 50 metres to the south west. The direction of flow is southwards. It is considered there is the possibility for this to be impacted by the site.

The River Quality recorded for the River Colne, from a point approximately 80m southwest of the site sampled in 2000 is given a GQA Grade of River Quality A.

The Grand Union Canal lies approximately 250m to the east of the site. This is unlikely to be in hydraulic continuity with ground water and also considered too distant to be impacted by the site.

The Environment Agency maps show the site is not located within a flood zone.

The British Geological Society data shows the site lies in an area with potential for groundwater flooding to occur at surface.

## **7 PROPOSED DEVELOPMENT**

Plan details for the proposed redevelopment of the site are shown on the RGP Architects drawing 10773-P-102 rev G, contained in appendix C.

The drawing shows a development comprising a large industrial building divided into two units including parking facilities, cycle and bin storage. External areas are to be hard surfaced with a 300mm planting strip along the west and northwest boundary. Access to the rear will be gained via a revised dedicated access from Arundel Road.

The proposed plan indicates the existing substation is to be relocated.

## 8 GEOTECHNICAL INVESTIGATION

### 8.1 Borehole Findings

#### i. Overview

Four boreholes were carried out on site, to establish the geology across the site as a whole. The boreholes were drilled to a maximum depth of 9.30m and all boreholes encountered very similar profiles which matched the expected underlying geology of superficial Alluvium deposits. The London Clay bedrock was however not encountered, it is therefore predicted to be located at a depth greater than 9.30m below ground level. All boreholes were drilled utilising a mechanical flight auger drilling rig to provide details on the geology beneath the site and also allowed monitoring wells to be installed

The strata encountered within each of the boreholes drilled, along with their depth is recorded below:

| Stratum                                             | BH1           | BH2           | BH3           | BH4           |
|-----------------------------------------------------|---------------|---------------|---------------|---------------|
| TARMAC/(Reinforced) CONCRETE                        | G.L. – 0.03m  | G.L. - 0.04m  | G.L. – 0.06m  | G.L. – 0.22m  |
| Sand & Gravel/Cement FILL                           | 0.03m – 0.25m | 0.04m – 0.30m | -             | -             |
| Dark Grey/Dark Brown-Black Silty Clayey MADE GROUND | 0.25m – 1.00m | 0.30m – 1.30m | 0.06m – 0.80m | 0.22m – 1.30m |
| Silty Clayey GRAVEL                                 | -             | 1.30m – 2.30m | 0.80m – 2.20m | 1.30m – 3.40m |
| Sandy (Clayey) GRAVEL                               | 1.00m – 4.00m | 2.30m – 4.00m | 2.20m – 4.00m | 3.40m – 9.30m |

#### ii. Made Ground/Topsoil

Made Ground was encountered to a depth of 1.30m and consisted of Silty CLAY with varying amounts of Brick and Gravel. The area from which the boreholes were drilled was covered with TARMAC/(Reinforced) CONCRETE onto Sand & Gravel/Cement FILL noted to be 0.03m-0.30m thick.

### iii. Silty Clayey Gravel

Below the MADE GROUND in boreholes 2, 3 & 4, Dark Grey/Black Silty Clayey GRAVEL was recorded; this stratum was proved to a depth of 3.40m and is recognised as the top of the superficial Alluvium.

Insitu Mackintosh Probe tests within this stratum found it to be Medium Dense to Dense (Mackintosh Probe result = 23-41 blows for 75mm travel).

### v. Insitu Testing

Insitu strength tests, in the form of hand-held shear vane tests were conducted within the cohesive subsoil, and Mackintosh Probe tests within the more granular material. The insitu strength testing was carried out at appropriate intervals throughout the borehole. The results of all insitu strength tests are recorded on the borehole logs within Appendix D.

The hand-held shear vane gives a guide to the undrained shear strength (kPa) of the cohesive soil. The shear vane is considered less accurate than laboratory testing, often giving higher readings, because the vane tests only a very small area of soil, and shears the soil in a horizontal direction.

The Mackintosh probe measures the number of blows taken to drive the probe 300mm into the soil using the drop of a 5kg hammer. The Mackintosh probe gives an indication of soil density. Unfortunately, no published literature exists to convert Mackintosh probe readings with SPT N values.

### vi. Root Activity

No roots below grass level were observed within any of the boreholes.

### vii. Groundwater

All of the boreholes encountered water strikes during drilling, these were at 2.20m below groundlevel in BH1, 2.30m in BH2, 2.20m in BH3 and 5.20m below ground level in BH4. In the short term this suggests that the groundwater lies at a depth of 2.20m below ground level. Monitoring wells were installed in boreholes 1, 2 & 3 to allow groundwater levels to be monitored.

It should be noted that comments on groundwater conditions are based on observations made at the time of the investigation (July 2020) and that changes in groundwater levels are likely to arise due to seasonal affects and changes in drainage conditions.

## **8.2 Testing**

All samples were tested in accordance with BS 1377 1990: method of test of soils for Civil Engineering purposes, the results of which are discussed within Chapter 6 and recorded as test sheets and summaries within Appendix H.

The laboratory testing conducted on the samples taken during this investigation comprised of, natural moisture contents (14No.), Particle Size Distribution testing (9No.) and sulphate content and pH (4No.).

## **8.3 Test Results**

### **i. Sulphate and pH Tests**

Four soil samples were tested for sulphate and pH from the area in which the new industrial building is proposed to be built. The soil samples tested gave water soluble sulphate 2:1 results ranging from a minimum of <0.02g/l to a maximum of 0.06g/l. The samples ranged from a pH of 8.2 to a pH of 8.3. Using the BRE digest SD1 (2005) - concrete in Aggressive Ground, the design sulphate class for this site is DS-1, with an ACEC class of AC-1 (Natural Soil - Mobile Water).

### **ii. Particle Size Distribution Tests**

Particle size distribution tests were carried out on samples from BH1 at 2.00m, 3.00m & 4.00m, BH2 at 1.00m & 2.00m, BH3 at 1.00m & 2.00m and BH4 at 2.00m & 5.00m. The results of the tests confirm that the stratum above the London Clay is fine-rich GRAVEL. The results are shown on the graphs in appendix H.

## 8.4 Recommendations

### i. Subsoil Profile

The subsoil profile encountered across the site was generally consistent with the geological survey map of the area, which suggested the site to be underlain by superficial Alluvium Deposits. Made Ground was encountered across the site to a maximum depth of approximately 1.30m with Silty/Sandy Clayey GRAVEL underlying the Made Ground.

### ii. Foundation Options

It is understood that the proposed development is for the demolition of the existing industrial unit on site and the construction of a new industrial building in its place. We would note that we have no information regarding the construction of these buildings or possible loadings and therefore, our comments are general comments based on assumed 'normally' loaded residential building, with no significant point loadings.

The main factors which will control the type of foundation used on this site will be the thickness of Made Ground present across this site and the bearing capacity of the underlying Alluvium deposits. Made Ground is an inherently variable material and foundations should not be based in this material as the composition of the soil may vary wildly across the site. The Made Ground was encountered to a maximum depth of 1.30m, and foundations should be taken at least 300mm past this to ensure natural ground is encountered, which means a minimum depth of 1.60m.

Therefore, in summary, we would suggest that conventional strip foundations could be utilised but may be economically unviable. The most suitable alternative foundation for this site would be a piled foundation taken down further into the superficial Alluvium or into the underlying London Clay bedrock. If a piled foundation is required, then a number of deeper boreholes (minimum 15m) may be required to provide sufficient information for design purposes.

### iii. Bearing Capacity Assessment

For preliminary design purposes, BS8004 gives presumed bearing values which are the pressures which would normally result in an adequate factor of safety against shear failure for particular soil types, but without consideration of settlement.

These values are as follows:

| Category           | Types of rocks and soils                             | Presumed bearing value                                       |
|--------------------|------------------------------------------------------|--------------------------------------------------------------|
| Non-cohesive soils | Dense gravel or dense sand and gravel                | >600 kN/m <sup>2</sup>                                       |
|                    | Medium dense gravel, or medium dense sand and gravel | <200 to 600 kN/m <sup>2</sup>                                |
|                    | Loose gravel, or loose sand and gravel               | <200 kN/m <sup>2</sup>                                       |
|                    | Compact sand                                         | >300 kN/m <sup>2</sup>                                       |
|                    | Medium dense sand                                    | 100 to 300 kN/m <sup>2</sup>                                 |
|                    | Loose sand                                           | <100 kN/m <sup>2</sup> <i>depends on degree of looseness</i> |

|                |                                      |                              |
|----------------|--------------------------------------|------------------------------|
| Cohesive soils | Very stiff bolder clays & hard clays | 300 to 600 kN/m <sup>2</sup> |
|                | Stiff clays                          | 150 to 300 kN/m <sup>2</sup> |
|                | Firm clay                            | 75 to 150 kN/m <sup>2</sup>  |
|                | Soft clays and silts                 | < 75 kN/m <sup>2</sup>       |
|                | Very soft clay                       | Not applicable               |
| Peat           |                                      | Not applicable               |
| Made ground    |                                      | Not applicable               |

Within the boreholes at 1.60m-3.00m depth, the ground was found to be Silty/Sandy Clayey GRAVEL with a Mackintosh probe reading of 14-45 blows for 75mm travel and Shear Vane reading of 120-122kPa, indicating the material at 1.60m to 3.00m to be Medium Dense to Dense/Stiff with a bearing capacity of 150->600kN/m<sup>2</sup>.

For calculation of the bearing capacities available at 1.60m to 3.00m, we have used the lowest Mackintosh probe/Shear Vane reading at each depth. Based on Hansen (1968) and Tomlinson (2001), which assumes groundwater will not impact upon the foundations (i.e. groundwater will not be present within the width of the foundation below the foundation) the bearing capacities for each depth are shown below. The calculated bearing capacities allow for settlements up to 25mm.

| Depth            | 1.60m                          | 2.00m                          | 3.00m                          |
|------------------|--------------------------------|--------------------------------|--------------------------------|
| Mackintosh probe | 14 blows for<br>75mm<br>travel | 27 blows for<br>75mm<br>travel | 29 blows<br>for 75mm<br>travel |
| Bearing capacity | 135kN/m <sup>2</sup>           | 175kN/m <sup>2</sup>           | 346kN/m <sup>2</sup>           |

However, water was noted to be present from a depth of 2.20m which could reduce bearing capacities by up to 50%. Therefore, we would recommend using a bearing capacity of 67-173kN/m<sup>2</sup> across this site at 1.60m-3.00m depth.

#### iv. Ground Conditions & Construction

The four boreholes drilled on this site were all found to contain standing water on completion of drilling, but water monitoring standpipes were installed to assess long term groundwater levels and allow for gas monitoring. However, in the short term this would indicate that excavations on this site are likely to be affected by water inflows, with the groundwater levels likely to be at a depth of 2.20m.

The material encountered on this site was found to be of a generally granular nature, which would indicate that sides of excavations are unlikely to be self-supporting, certainly in the long term. However, temporary support should be considered for all excavations where collapse is to be avoided, with heavy duty closed shoring in excavations below 1.20m where construction workers access is required.

## 9 IN-SITU CALIFORNIA BEARING RATIO TESTING

In-situ California Bearing Ratio tests were undertaken at five locations across the site. The results were highly variable ranging from 0.8 to 21.

## **10 CONTAMINATION SAMPLING and TESTING**

### **10.1 Laboratory Testing**

The chemical testing was carried out in accordance with standard industry methods in a UKAS approved laboratory which is also currently accredited in accordance with MCERTS for the majority of its testing. Further information regarding this accreditation is available on request together with a full list of test methods if required.

Six samples were tested for a range of commonly occurring contaminants and indicators of contamination including those given by the Contaminated Land Exposure Assessment (CLEA). These include, heavy metals, aromatic and aliphatic hydrocarbons, in accordance with Environment Agency guidelines, and speciated PolyAromatic Hydrocarbon (PAH).

Two samples were tested for PCBs.

Six samples were analysed for the presence of asbestos.

### **10.2 Test Results**

All the results have been compared to the Atkins 2017 ATRISKsoil SSVs commercial, for 1% or 6% as appropriate, where available. These guideline values have been derived using the updated CLEA v1.071 model, previously published Category 4 Screening Levels (C4SLs) by DEFRA and information in the Environment Agency guidance SR2. Where ATRISKsoil SSVs have not been derived, the Category 4 Screening Levels have been used, and for determinands which do not have either of the above, the LQM/CIEH Suitable 4 Use Levels (S4ULs) assessment criteria have been used.

To assess the genotoxic poly-aromatic hydrocarbons (PAHs), the benzo-a-pyrene (BaP) surrogate marker approach has been adopted. The results for genotoxic PAHs have been compared to the soil PAH coal tar mixtures used in the Culp et al 1998 study, to determine if they are sufficiently similar and establish if benzo-a-pyrene is a suitable surrogate marker for PAHs.

The LQM PAH profiling tool has been used to confirm the validity of the surrogate marker approach. The results show that it is appropriate to use benzo-a-pyrene as a surrogate marker for this data set. The results of this profiling are available in appendix G.

| <b>TEST RESULTS ABOVE SCREENING VALUES</b> |                  |              |                          |                                        |
|--------------------------------------------|------------------|--------------|--------------------------|----------------------------------------|
| <b>Determinand</b>                         | <b>Reference</b> | <b>Depth</b> | <b>Value<br/>(mg/kg)</b> | <b>Screening<br/>value<br/>(mg/kg)</b> |
| Benzo(a)pyrene                             | BH4              | 0.5-0.7      | 162                      | 76.3                                   |

Six samples were screened in the laboratory for the presence of asbestos fibres. No asbestos was identified in any of the samples.

Two samples were tested for PCBs. No samples recorded PCBs above LOD.

### 10.3 Gas Monitoring

The hazardous ground gas(es) identified to pose a threat to the development are methane and carbon dioxide. The table below summarises the maximum values recorded at each borehole during each visit.

| <b>Date</b> | <b>Borehole<br/>Ref.</b> | <b>Maximum<br/>Carbon<br/>Dioxide<br/>%v/v</b> | <b>Maximum<br/>Methane<br/>%v/v</b> |
|-------------|--------------------------|------------------------------------------------|-------------------------------------|
| 11/08/20    | BH1                      | 4.9                                            | 0.0                                 |
|             | BH2                      | 0.5                                            | 0.0                                 |
|             | BH3                      | 1.8                                            | 0.0                                 |
| 26/08/20    | BH1                      | 9.3                                            | 0.0                                 |
|             | BH2                      | 4.8                                            | 0.0                                 |
|             | BH3                      | 2.0                                            | 0.0                                 |
| 02/09/20    | BH1                      | 1.4                                            | 0.0                                 |
|             | BH2                      | 0.7                                            | 0.0                                 |
|             | BH3                      | 0.8                                            | 0.0                                 |

As no detectable gas flow rate has been recorded, the instrument level of detection of 0.1l/hr has been used to calculate the GSV:

$$\begin{aligned}\text{GSV (l/h)} &= \text{flow rate (0.1l/h)} * 9.3 \% / 100 \\ (\text{l/h}) &= 0.0093\end{aligned}$$

As this value is below the screening value for carbon dioxide gas protection measures are not required.

## 11 CONTAMINATION DISCUSSION

In this investigation samples were tested for a range of commonly occurring contaminants and indicators of contamination including those given by the Contaminated Land Exposure Assessment (CLEA).

The only contaminant identified to exceed the environmental screening level was benzo(a)pyrene (a PolyAromatic Hydrocarbon).

No olfactory evidence of contamination (such as vapours) was identified during sampling. No visual evidence of contaminants, such as oils, were noted.

Six samples were screened in the laboratory for the presence of asbestos fibres. No asbestos was identified in any of the samples.

Benzo(a)pyrene attaches strongly to sediments and any other solid matter, small amounts can leach to groundwater. Hydrogeological records indicate a Secondary A Aquifer in the superficial geological deposits. Therefore, there is potential for contaminants to be transported either to or from site in the groundwater.

However, the benzo(a)pyrene exceedance identified was found in a sample under concrete slab inside the building, and this is a considerable distance from the very minor proposed soft landscaping on the western edge of site. Additionally, all the other samples, many in proximity to the soft landscaping strip, returned test results an order of magnitude below the screening value for benzo(a)pyrene. Other than the perimeter soft landscaping strip the proposed development will be entirely impermeable hard surfacing. It is therefore considered that there is no significant risk to on-site and off-site receptors from benzo(a)pyrene, and therefore no remediation is required.

| <b>BH4 BENZO(A)PYRENE VALUE COMPARED TO COMPLIANT SAMPLES</b> |                  |                      |                                |
|---------------------------------------------------------------|------------------|----------------------|--------------------------------|
| <b>Reference</b>                                              | <b>Depth (m)</b> | <b>Value (mg/kg)</b> | <b>Screening value (mg/kg)</b> |
| BH4                                                           | 0.5-0.7          | 162                  | 76.3                           |
| BH1                                                           | 0.4 - 0.6        | <0.1                 | 76.3                           |
| CBR1                                                          | 0.3 – 0.5        | 0.5                  | 76.3                           |
| CBR3                                                          | 0.3 – 0.5        | 7.0                  | 76.3                           |
| CBR5                                                          | 0.4 – 0.5        | 1.4                  | 76.3                           |
| HA1                                                           | 0.2 – 0.4        | 2.6                  | 76.3                           |

Ground gas and groundwater monitoring was undertaken in three boreholes on the site on three separate visits. The results of the monitoring showed no methane presence on site. A maximum Carbon Dioxide concentration of 9.3 %v/v was detected in BH1 on the second visit. A third visit the following week showed that the Carbon Dioxide concentration in BH1 had dropped to 1.4 %v/v. Atmospheric pressures ranged from 1008 to 1016mb and no flow rates were detected. The Carbon Dioxide concentration of 9.3% v/v was used to calculate a GSV value of 0.0093 l/h. As this value is below the screening value for carbon dioxide gas protection measures are not required.

On three separate visits, no groundwater was detected in any of the boreholes.

If any potentially contaminated spoil is to be removed from site, the Waste Acceptance Criteria (WAC) testing should be agreed with the facility to which the spoil is being transported. It is critical that the WAC results are representative of the material to be disposed of and therefore care must be taken to ensure that different materials are not mixed. Guidance can be obtained from Environment Agency document Waste Sampling and Testing for Disposal to Landfill.

## **12 REVISED CONCEPTUAL MODEL**

The legislative framework for the regulation of contaminated land is embodied in Part IIA of the Environmental Protection Act 1990, implemented in the Contaminated Land (England) Regulations 2000. This legislation allows for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment. The approach adopted by UK contaminated land policy is that of “suitability for use” which implies that the land should be suitable for its current use and made suitable for any proposed future use.

In this revised contamination assessment the site has been modelled using the Source-Pathway-Receptor approach to produce a site specific conceptual model.

Source - substances or potential contaminants which may cause harm

Pathway - a linkage or route between a source and receptor

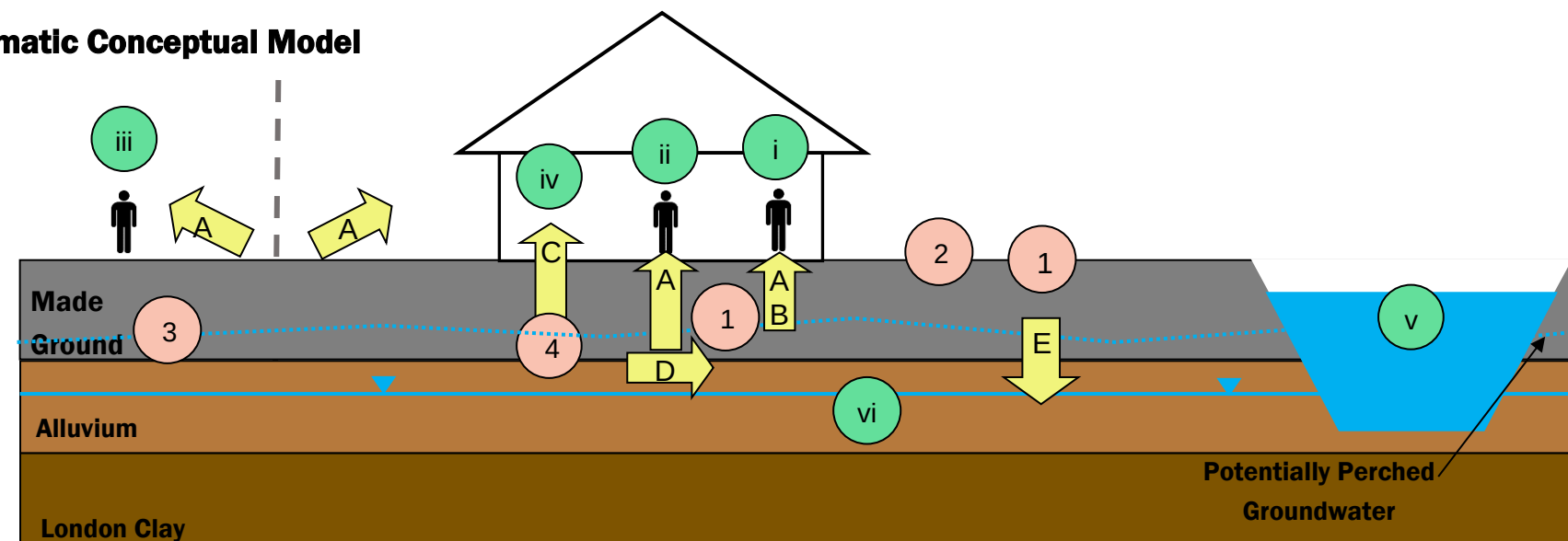
Receptor - humans, plant life, groundwater etc., which could be harmed by a contaminant

Geological records indicate that the site is underlain by an aquifer in the superficial stratum and therefore there is a potential for contaminants to be transported both to and from site in the groundwater.

From the information available at present a revised conceptual model has been considered.

|           |                                         | POTENTIAL PATHWAYS                |                                 |                       |                       |                        |                                    |                                                |                       |                              |                           |                                  |                                                                                                      |                                                          |
|-----------|-----------------------------------------|-----------------------------------|---------------------------------|-----------------------|-----------------------|------------------------|------------------------------------|------------------------------------------------|-----------------------|------------------------------|---------------------------|----------------------------------|------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
|           |                                         | Inhalation of contaminated vapour | Inhalation of contaminated dust | Direct Soil Ingestion | Direct dermal contact | Inhalation of asbestos | Drinking contaminated water supply | Direct contact of soil with building materials | Surface water run-off | Surface water percolation to | Migration via groundwater | Build-up of ground gas - methane |                                                                                                      |                                                          |
|           |                                         | COMMENTS ON DISCOUNTED PATHWAYS   |                                 |                       |                       |                        |                                    |                                                |                       |                              |                           |                                  |                                                                                                      |                                                          |
| RECEPTORS | Site Users/<br>Residents                | Y                                 | N                               | N                     | N                     | N                      | N                                  |                                                |                       |                              |                           | N                                | Almost entire site to have impermeable hard surface therefore these pathways will not be significant | No elevated concentrations of gas or flow rates detected |
|           | Construction/<br>Maintenance Operatives | Y                                 | Y                               | Y                     | Y                     | N                      |                                    |                                                |                       |                              |                           | N                                |                                                                                                      |                                                          |
|           | Neighbours                              | Y                                 | Y                               |                       |                       | N                      |                                    |                                                | N                     |                              | N                         | N                                |                                                                                                      |                                                          |
|           | Proposed Building                       |                                   |                                 |                       |                       |                        |                                    | Y                                              |                       |                              |                           | N                                |                                                                                                      |                                                          |
|           | Watercourse                             |                                   |                                 |                       |                       |                        |                                    |                                                | N                     |                              | Y                         |                                  | Almost entire site to have impermeable hard surface therefore these pathways will not be significant |                                                          |
|           | Aquifer                                 |                                   |                                 |                       |                       |                        |                                    |                                                |                       | Y                            | Y                         |                                  | Site to have impermeable hard surface preventing percolation however SuDS option to be considered.   |                                                          |

## Schematic Conceptual Model



| Sources                                                              | Pathways                                            | Receptors                     |
|----------------------------------------------------------------------|-----------------------------------------------------|-------------------------------|
| 1 Former & current industrial use of buildings and yard. (On Site)   | A Inhalation, ingestion, dermal contact, vapours    | i Site Users                  |
| 2 Electricity Substation (On Site)                                   | B Drinking contaminated water supply                | ii Ground Workers             |
| 3 Current and former industrial use including sludge beds (Off Site) | C Direct contact of soil with building materials    | iii Neighbours                |
| 4 Naturally occurring contaminants (On Site)                         | D Migration via groundwater                         | iv Proposed Building          |
|                                                                      | E Surface water percolation to groundwater via SuDS | v Surface water (River Colne) |
|                                                                      |                                                     | Groundwater                   |
|                                                                      |                                                     | vi (Secondary A Aquifer)      |

## **13 REVISED RISK ASSESSMENT**

The level of information provided by the Landmark report and historic Ordnance Survey maps, together with the other information within the report is considered suitable to provide the data for a satisfactory risk assessment for the site. While there will always be uncertainties due to known or unknown gaps in information it is considered that sufficient information is available to reduce those uncertainties to within acceptable limits for the nature of the site under review.

An asbestos survey of existing structures and infrastructure (as defined under Section 5(a) of the Control of Asbestos Regulations 2012) was beyond the brief of this report. The risk assessment has been undertaken on the basis that should asbestos be identified within buildings or infrastructure, these materials will be removed appropriately by licensed contractors and asbestos materials disposed of in accordance with legal requirements prior to demolition or other works in order to avoid contaminating soils at the site.

Only contaminants identified to exceed the environmental screening level have been included in the Risk Assessment.

Benzo(a)pyrene was identified to exceed the screening level in one sample, however, this exceedance was found in a sample under concrete slab inside the building, and this is a considerable distance from the very minor proposed soft landscaping on the western edge of site. Additionally, all the other samples returned test results an order of magnitude below the screening value for benzo(a)pyrene. Based on the above and that the proposed development will be almost entirely impermeable hard surfacing, it is considered that there is no significant risk to on-site and off-site receptors from benzo(a)pyrene.

| Sources                                                                                                                | Potential pollutant | Receptor    | Pathway                                                     | Hazard severity | Likelihood of occurrence | Risk / Significance | Comment & control measures                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------|---------------------|-------------|-------------------------------------------------------------|-----------------|--------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Former and current industrial use of buildings and yard, including waste oil tank & electricity sub-station. (On Site) | Benzo(a) pyrene     | Site Users  | Inhalation of vapours, indoors and outdoors                 | Mild            | Unlikely                 | Low risk            | No action required                                                                                                                                               |
|                                                                                                                        |                     |             | Drinking of water from supply impacted by contaminated soil | Mild            | Likely                   | Moderate/low risk   | It is not considered that a barrier water supply pipe is required however it is recommended that this report is provided to the water supplier for confirmation. |
|                                                                                                                        |                     | River Colne | Lateral percolation to surface water                        | Mild            | Unlikely                 | Low risk            | No action required                                                                                                                                               |
|                                                                                                                        |                     | Aquifer     | Percolation to groundwater via SuDS                         | Mild            | Unlikely                 | Low risk            |                                                                                                                                                                  |

| Sources                                                                                                                | Potential pollutant | Receptor                    | Pathway                                                    | Hazard severity | Likelihood of occurrence | Risk / Significance | Comment & control measures                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------|------------------------------------------------------------|-----------------|--------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Former and current industrial use of buildings and yard, including waste oil tank & electricity sub-station. (On Site) | benzo(a) pyrene     | Ground Workers              | Dermal contact                                             | Mild            | Unlikely                 | Low risk            | Information to be contained in site Health & Safety Plan and File. Use of appropriate PPE and normal good hygiene measures. Appropriate dust control measures during construction. |
|                                                                                                                        |                     |                             | Inhalation of vapours                                      | Mild            | Unlikely                 | Low risk            |                                                                                                                                                                                    |
|                                                                                                                        |                     |                             | Soil Ingestion                                             | Mild            | Unlikely                 | Low risk            |                                                                                                                                                                                    |
|                                                                                                                        |                     |                             | Inhalation of contaminated dust                            | Mild            | Unlikely                 | Low risk            |                                                                                                                                                                                    |
|                                                                                                                        |                     | Grounds maintenance workers | Dermal contact                                             | Mild            | Unlikely                 | Low risk            | No action                                                                                                                                                                          |
|                                                                                                                        |                     |                             | Soil Ingestion                                             | Mild            | Unlikely                 | Low risk            |                                                                                                                                                                                    |
|                                                                                                                        |                     |                             | Inhalation of contaminated dust                            | Mild            | Unlikely                 | Low risk            |                                                                                                                                                                                    |
|                                                                                                                        |                     | Neighbours                  | Inhalation of vapours, in and outdoors                     | Mild            | Unlikely                 | Low risk            |                                                                                                                                                                                    |
|                                                                                                                        |                     |                             | Inhalation of contaminated dust (during construction)      | Mild            | Unlikely                 | Low risk            |                                                                                                                                                                                    |
|                                                                                                                        |                     |                             | Lateral migration of groundwater transporting contaminants | Mild            | Unlikely                 | Low risk            |                                                                                                                                                                                    |

| Sources                                                            | Potential pollutant | Receptor          | Pathway                                             | Hazard severity | Likelihood of occurrence | Risk / Significance | Comment & control measures                                                                                                                                                          |
|--------------------------------------------------------------------|---------------------|-------------------|-----------------------------------------------------|-----------------|--------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Naturally occurring contaminants                                   | Sulphates pH        | Proposed Building | Direct contact of soil with building materials      | Medium          | Likely                   | Moderate            | As the protection of concrete is normally resolved in the building design process, the designer of the foundations should determine the requirement to undertake any investigation. |
| Current and former industrial use including sludge beds (Off Site) | benzo(a) pyrene     | Site Users        | Inhalation of vapours, in & outdoors                | Mild            | Unlikely                 | Low risk            | No action required                                                                                                                                                                  |
|                                                                    |                     |                   | Drinking water supply impacted by contaminated soil | Mild            | Likely                   | Moderate/low risk   | It is not considered that a barrier water supply pipe is required however it is recommended that this report is provided to the water supplier for confirmation.                    |
|                                                                    |                     | Ground Workers    | Dermal contact                                      | Mild            | Unlikely                 | Low risk            | Information to be contained in site Health & Safety Plan and File. Use of appropriate PPE and normal good hygiene measures. Dust Control.                                           |

Any visual or olfactory evidence of contamination noted during works should be investigated by a suitably qualified person and their recommendations implemented.

## **14 SITE WORKS and UNEXPECTED CONDITIONS**

The sample locations were positioned to cover the site. However, there are areas where investigations were not carried out, and although unlikely given the size of the site, it should be considered possible that other areas may potentially be contaminated. Construction operatives should remain vigilant for any unexpected contamination encountered during development (eg discoloured soil or odours or buried waste). Any unexpected conditions should be investigated by a suitably qualified person and their recommendations implemented.

It is recommended that construction operatives use appropriate ppe, normal good hygiene measures, and appropriate dust control measures if necessary. The risks to construction operatives identified, should be addressed under a Construction (Design and Management) (CDM) Plan. The CDM Regulations place legal duties on those involved in construction work. All construction projects require a plan to ensure that health and safety issues are properly considered during a project's development so that the risk of harm to workers is reduced.

## **15 CONCLUSIONS**

### **15.1 Contamination**

In this investigation samples were tested for a range of commonly occurring contaminants and indicators of contamination including those given by the Contaminated Land Exposure Assessment (CLEA).

The only contaminant identified to exceed the environmental screening level was benzo(a)pyrene (a PolyAromatic Hydrocarbon).

No olfactory evidence of contamination (such as vapours) was identified during sampling. No visual evidence of contaminants, such as oils, were noted.

Six samples were screened in the laboratory for the presence of asbestos fibres. No asbestos was identified in any of the samples.

However, the benzo(a)pyrene exceedance identified was found in a sample under concrete slab inside the building, and this is a considerable distance from the very minor proposed soft landscaping on the western edge of site. Additionally, all the other samples, many in proximity to the soft landscaping strip, returned test results an order of magnitude below the screening value for benzo(a)pyrene. Other than the perimeter soft landscaping strip the proposed development will be entirely impermeable hard surfacing. It is therefore considered that there is no significant risk to on-site and off-site receptors from benzo(a)pyrene, and therefore no remediation is required.

The sample locations were positioned to investigate the risks identified in the phase 1 desktop study. However, there are areas where investigations were not carried out, it should be considered possible that other areas may potentially be contaminated. Construction operatives should remain vigilant of any unexpected contamination encountered during development (eg discoloured soil or odours or buried waste).

It is also possible the asbestos may be present in other areas of the site and therefore construction operatives should also ensure that appropriate ppe and good hygiene measures are used, and dust control measures during construction where necessary. Any debris from earlier demolition found during site strip is to be inspected for asbestos by a suitably experienced contractor.

Monitoring was undertaken for land gas. A maximum Carbon Dioxide concentration of 9.3 %v/v was detected in BH1 on the second visit. The Carbon Dioxide concentration of 9.3% v/v was used to calculate a GSV value of 0.0093 l/h. As this value is below the screening value for carbon dioxide gas protection measures are not required.

It is recommended that this report is referenced in the site Health and Safety Plan and that normal good hygiene practice is observed during the works and subsequent building and grounds maintenance.

If any potentially contaminated spoil is to be removed from site, the Waste Acceptance Criteria (WAC) testing should be agreed with the facility to which the spoil is being transported.

## **15.2 Geotechnical**

The subsoil profile encountered across the site was generally consistent with the geological survey map of the area, which suggested the site to be underlain by superficial Alluvium Deposits. Made Ground was encountered across the site to a maximum depth of approximately 1.30m with Silty/Sandy Clayey GRAVEL underlying the Made Ground.

The Made Ground was encountered to a maximum depth of 1.30m, and foundations should be taken at least 300mm past this to ensure natural ground is encountered, which means a minimum depth of 1.60m.

Therefore, in summary, we would suggest that conventional strip foundations could be utilised but may be economically unviable. The most suitable alternative foundation for this site would be a piled foundation taken down further into the superficial Alluvium or into the underlying London Clay bedrock.

Water was noted to be present from a depth of 2.20m which could reduce bearing capacities by up to 50%. Therefore, we would recommend using a bearing capacity of 67-173kN/m<sup>2</sup> across this site at 1.60m-3.00m depth.

The four boreholes drilled on this site were all found to contain standing water on completion of drilling, but water monitoring standpipes were installed to assess long term groundwater levels and allow for gas monitoring. However, in the short term this would indicate that excavations on this site are likely to be affected by water inflows, with the groundwater levels likely to be at a depth of 2.20m.

The material encountered on this site was found to be of a generally granular nature, which would indicate that sides of excavations are unlikely to be self-supporting, certainly in the long term. However, temporary support should be considered for all excavations where collapse is to be avoided, with heavy duty closed shoring in excavations below 1.20m where construction workers access is required.

It is recommended that this report is referenced in the site Health and Safety Plan and that normal good hygiene practice is observed during the works and subsequent building and grounds maintenance.

If any potentially contaminated spoil is to be removed from site, the Waste Acceptance Criteria (WAC) testing should be agreed with the facility to which the spoil is being transported.

## 16 REFERENCES

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*This document has been prepared for the titled project and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and the prior written authority of GO Contaminated Land Solutions Ltd being obtained. No responsibility or liability is accepted for the consequences of this document being used for a purpose other than that for which it was commissioned. Any person using or relying on this document for such other purpose will by such use or reliance be taken to confirm his agreement to indemnify GO Contaminated Land Solutions Ltd for all loss or damage resulting therefrom. GO Contaminated Land Solutions Ltd accepts no responsibility or liability for this document to any party other than **Cyril Leonard Ltd** by whom it was commissioned.*

*The recommendations made and the opinions expressed in this report are based on the borehole records, examination of samples and the results of site and laboratory tests.*

*The report is issued on the condition that GO Contaminated Land Solutions Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the boreholes or trial pits which have not been shown by the boreholes, trial pits or other tests carried out during the investigation.*

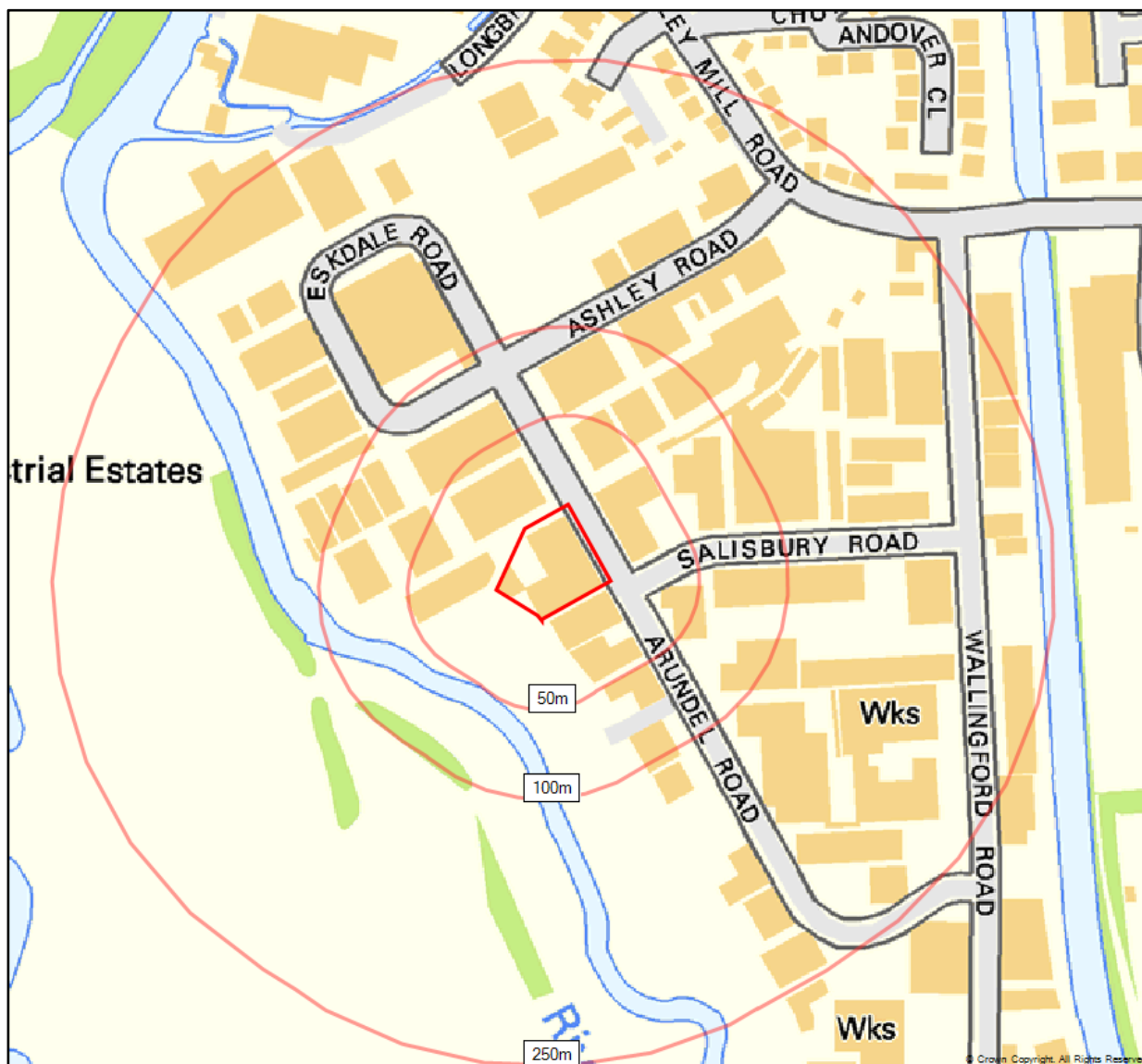
*In addition, GO Contaminated Land Solutions Ltd will not be liable for any loss whatsoever arising directly or indirectly from any opinion given on the possible configuration of strata either between the borehole positions or below the maximum depth of the investigation. Such opinions, where given, are for guidance only.*

*Groundwater levels may also vary with time from those reported during our site investigation due to factors such as tidal conditions, heavy pumping from nearby wells or seasonal changes.*

*All soil samples will be kept for a period of 28 days after the date of the invoice for this project unless otherwise notified to GO Contaminated Land Solutions Ltd in writing. Should samples be required to be stored for longer than 28 days then a storage charge will be levied.*



## **Appendix A – Site Location Plan**



**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge**  
**Cyril Leonard Ltd**



## **Appendix B – Site Works Plan**



Tyndales Farm, Southend Road, Woodham Mortimer,  
Maldon, Essex, CM9 6TQ

Telephone: 0844 3358908  
Fax: 0844 3358907  
Email: [enquiries@fastrackgroup.co.uk](mailto:enquiries@fastrackgroup.co.uk)  
Web: [www.fastrackgroup.co.uk](http://www.fastrackgroup.co.uk)

Appendix No: 1  
FSI Ref: 21000

## SITE PLAN

**Property Address:** Darton Buildings, Uxbridge Industrial Estate, Arundel Road, Uxbridge, London UB8 2SN

**Client Claim Ref:** 1833

**Survey date:** 29-30/07/2020

**Operative:** SE1



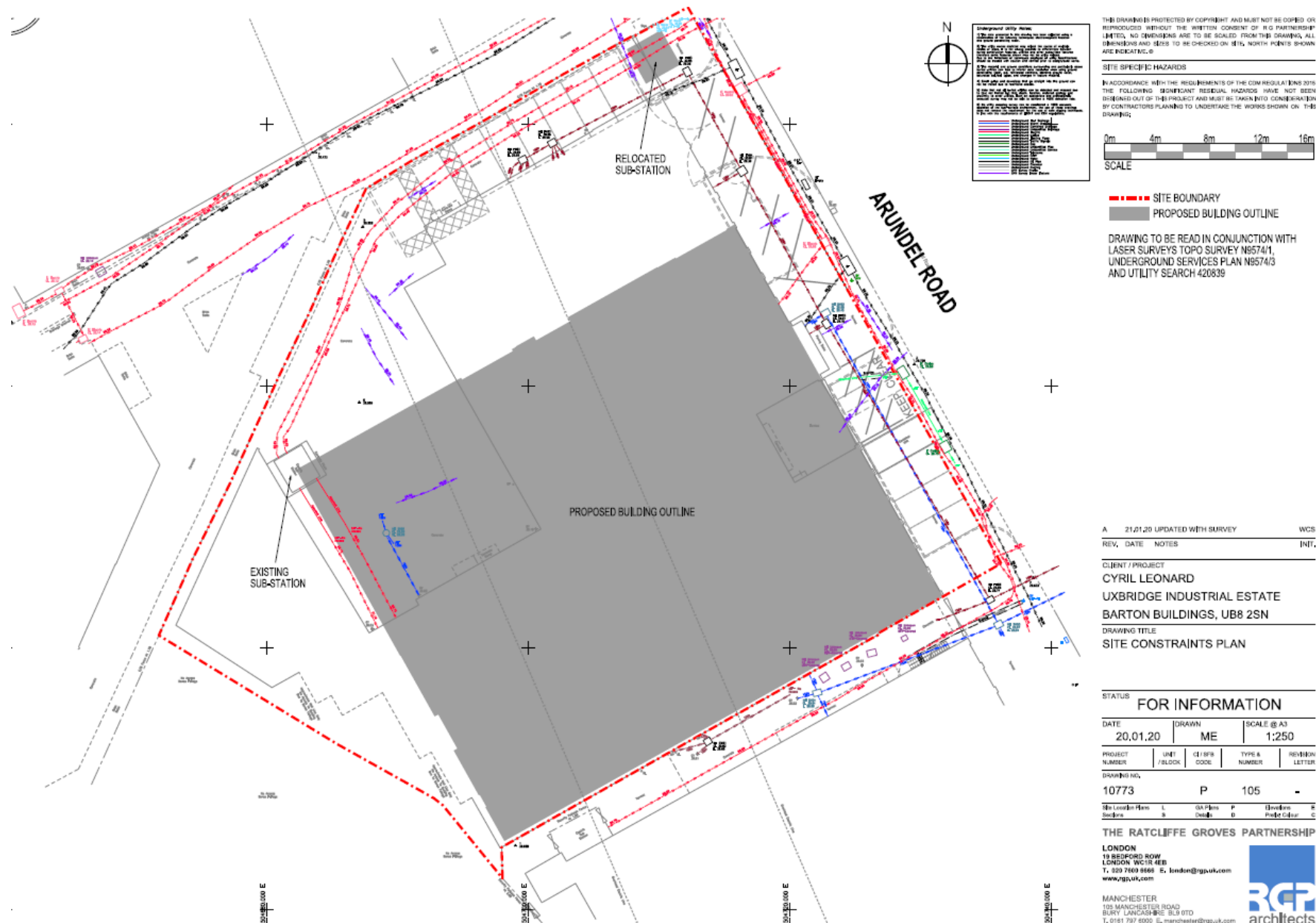
|        |           |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|--------|-----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Scale: | Drawn by: | Key:                                                                                |  |  |  |  |  |  |
| NTS    | GB        |  |  |  |  |                                                                                     |                                                                                       |                                                                                       |

**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge**

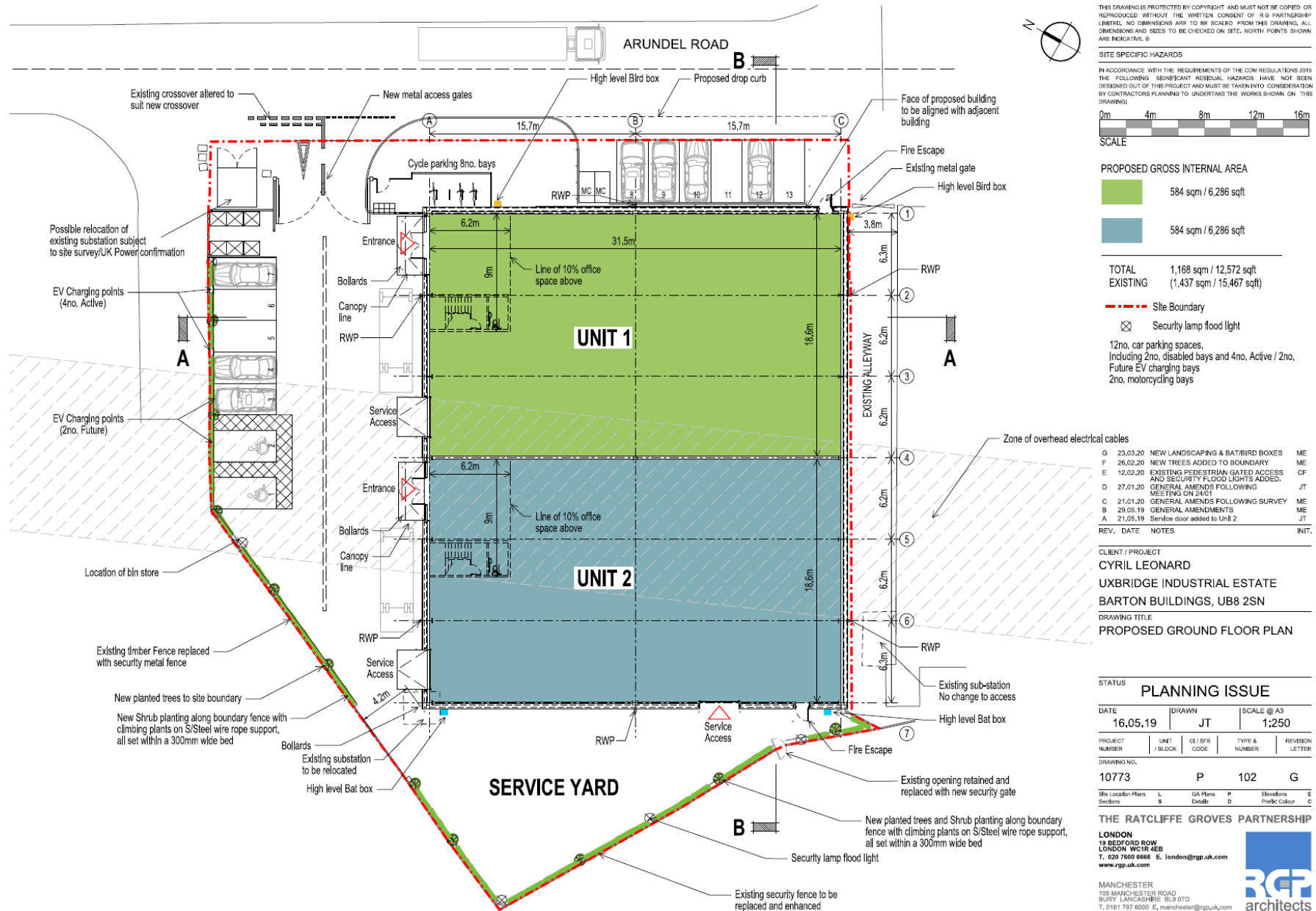
**Cyril Leonard Ltd**



## **Appendix C – Proposed Site Plan**



**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge**  
**Cyril Leonard Ltd**





## **Appendix D –Borehole Logs**

|                                                       |                            | Fastrack Site Investigations Ltd<br>Unit 9, Tyndales Farm<br>Southend Road<br>Maldon CM9 6TQ |                                                              | <h1>Borehole Log</h1> |                                                                                   | Borehole No.                                                         |                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                                                                        |                            |                                                                                              |                                                              |                       |                                                                                   | <b>BH1</b><br>Sheet 1 of 1                                           |                                                                                       |
| Project Name: 1833                                                                                                                     |                            |                                                                                              | Project No. 21000                                            |                       | Site Date: 29/07/2020                                                             |                                                                      | Hole Type<br>BH                                                                       |
| Location:                                                                                                                              |                            | Barton Buildings, Uxbridge Industrial Estate, Arundel Road, Uxbridge, London UB8 2SN         |                                                              |                       |                                                                                   | Scale<br>1:25                                                        |                                                                                       |
| Client:                                                                                                                                |                            | GO Contaminated Land Solutions Ltd                                                           |                                                              |                       |                                                                                   | Logged By<br>SE1                                                     |                                                                                       |
| Water<br>Strikes                                                                                                                       | Sample and In Situ Testing |                                                                                              |                                                              | Depth<br>(m)          | Legend                                                                            | Stratum Description                                                  |                                                                                       |
|                                                                                                                                        | Depth (m)                  | Type                                                                                         | Results                                                      |                       |                                                                                   |                                                                      |                                                                                       |
|                                                                                                                                        |                            |                                                                                              |                                                              | 0.03                  |  | TARMAC                                                               |                                                                                       |
|                                                                                                                                        |                            |                                                                                              |                                                              | 0.25                  |  | Sand & Gravel/Cement FILL                                            |                                                                                       |
|                                                                                                                                        |                            |                                                                                              |                                                              | 0.25                  |  | Dark Grey/Black Silty Clayey MADE GROUND containing Brick and Gravel |                                                                                       |
|                                                                                                                                        | 1.00                       | D                                                                                            | MP = 27/75mm<br>MP = 29/75mm<br>MP = 29/75mm<br>MP = 31/75mm | 1.00                  |  | Dark Brown Sandy Clayey GRAVEL                                       | 1                                                                                     |
|                                                                                                                                        | 2.00                       | D                                                                                            | MP = 33/75mm<br>MP = 33/75mm<br>MP = 35/75mm<br>MP = 35/75mm |                       |                                                                                   | Borehole backfilled to 1.30m below ground level                      | 2                                                                                     |
|                                                                                                                                        | 3.00                       | D                                                                                            | MP = 29/75mm<br>MP = 29/75mm<br>MP = 30/75mm<br>MP = 31/75mm |                       |                                                                                   |                                                                      | 3                                                                                     |
|                                                                                                                                        | 4.00                       | D                                                                                            | MP = 34/75mm<br>MP = 35/75mm<br>MP = 37/75mm<br>MP = 37/75mm | 4.00                  |                                                                                   | End of Borehole at 4.000m                                            | 4                                                                                     |
|                                                                                                                                        |                            |                                                                                              |                                                              |                       |                                                                                   |                                                                      | 5                                                                                     |
| Key: D - Disturbed Sample    V - Insitu Vane Test    MP - Mackintosh Probe Test                                                        |                            |                                                                                              |                                                              |                       |                                                                                   |                                                                      |  |
| Remarks: Borehole closed at 4.00m. Standpipe installed to 1.30m due to backfill.<br>Borehole noted to contain standing water at 2.20m. |                            |                                                                                              |                                                              |                       |                                                                                   |                                                                      |                                                                                       |

**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge**

**Cyril Leonard Ltd**

|                                                                                                                                        |                            |                                                                                              |                                                              |              |                                                                                     |                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|                                                       |                            | Fastrack Site Investigations Ltd<br>Unit 9, Tyndales Farm<br>Southend Road<br>Maldon CM9 6TQ |                                                              | Borehole Log |                                                                                     | Borehole No.<br><b>BH2</b><br>Sheet 1 of 1                                             |
| Project Name: 1833                                                                                                                     |                            |                                                                                              | Project No. 21000                                            |              | Site Date: 30/07/2020                                                               |                                                                                        |
| Location:                                                                                                                              |                            | Barton Buildings, Uxbridge Industrial Estate, Arundel Road, Uxbridge, London UB8 2SN         |                                                              |              |                                                                                     | Hole Type<br>BH                                                                        |
| Client:                                                                                                                                |                            | GO Contaminated Land Solutions Ltd                                                           |                                                              |              |                                                                                     | Scale<br>1:25                                                                          |
|                                                                                                                                        |                            |                                                                                              |                                                              |              |                                                                                     | Logged By<br>SE1                                                                       |
| Water<br>Strikes                                                                                                                       | Sample and In Situ Testing |                                                                                              |                                                              | Depth<br>(m) | Legend                                                                              | Stratum Description                                                                    |
|                                                                                                                                        | Depth (m)                  | Type                                                                                         | Results                                                      |              |                                                                                     |                                                                                        |
|                                                                                                                                        |                            |                                                                                              |                                                              | 0.04         |    | TARMAC<br>Sand & Gravel/Cement FILL                                                    |
|                                                                                                                                        |                            |                                                                                              |                                                              | 0.30         |    | Dark Grey/Black Silty Clayey MADE GROUND containing Brick and Gravel                   |
|                                                                                                                                        | 1.00                       | D                                                                                            | MP - 14/75mm<br>MP - 14/75mm<br>MP - 15/75mm<br>MP - 15/75mm | 1.30         |   | Dark Grey/Black Silty Clayey GRAVEL<br>Borehole backfilled to 1.30m below ground level |
|                                                                                                                                        | 2.00                       | D                                                                                            | MP - 37/75mm<br>MP - 37/75mm<br>MP - 39/75mm<br>MP - 39/75mm | 2.30         |  | Dark Brown Sandy Clayey GRAVEL                                                         |
|                                                                                                                                        | 3.00                       | D                                                                                            | MP - 39/75mm<br>MP - 41/75mm<br>MP - 43/75mm<br>MP - 44/75mm |              |                                                                                     |                                                                                        |
|                                                                                                                                        | 4.00                       | D                                                                                            | MP - 41/75mm<br>MP - 41/75mm<br>MP - 44/75mm<br>MP - 45/75mm | 4.00         |                                                                                     | End of Borehole at 4.000m                                                              |
| Key: D - Disturbed Sample   V - Insitu Vane Test   MP - Mackintosh Probe Test                                                          |                            |                                                                                              |                                                              |              |                                                                                     |                                                                                        |
| Remarks: Borehole closed at 4.00m. Standpipe installed to 1.30m due to backfill.<br>Borehole noted to contain standing water at 2.30m. |                            |                                                                                              |                                                              |              |                                                                                     |                                                                                        |
|                                                   |                            |                                                                                              |                                                              |              |                                                                                     |                                                                                        |

|                                                       |                            | Fastrack Site Investigations Ltd<br>Unit 9, Tyndales Farm<br>Southend Road<br>Maldon CM9 6TQ |                                                              | <b>Borehole Log</b>   |                                                                                     | Borehole No.                                                                           |                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                                                                        |                            |                                                                                              |                                                              |                       |                                                                                     | <b>BH3</b><br>Sheet 1 of 1                                                             |                                                                                       |
| Project Name: 1833                                                                                                                     |                            | Project No. 21000                                                                            |                                                              | Site Date: 30/07/2020 |                                                                                     | Hole Type BH                                                                           |                                                                                       |
| Location:                                                                                                                              |                            | Barton Buildings, Uxbridge Industrial Estate, Arundel Road, Uxbridge, London UB8 2SN         |                                                              |                       |                                                                                     |                                                                                        | Scale 1:25                                                                            |
| Client:                                                                                                                                |                            | GO Contaminated Land Solutions Ltd                                                           |                                                              |                       |                                                                                     |                                                                                        | Logged By SE1                                                                         |
| Water Strikes                                                                                                                          | Sample and In Situ Testing |                                                                                              |                                                              | Depth (m)             | Legend                                                                              | Stratum Description                                                                    |                                                                                       |
|                                                                                                                                        | Depth (m)                  | Type                                                                                         | Results                                                      |                       |                                                                                     |                                                                                        |                                                                                       |
|                                                                                                                                        |                            |                                                                                              |                                                              | 0.06                  |    | CONCRETE                                                                               |                                                                                       |
|                                                                                                                                        | 1.00                       | D                                                                                            | MP - 23/75mm<br>MP - 25/75mm<br>MP - 25/75mm<br>MP - 27/75mm | 0.80                  |    | Dark Grey/Black Silty Clayey GRAVEL<br>Borehole backfilled to 0.80m below ground level | 1                                                                                     |
|                                                                                                                                        | 2.00                       | D                                                                                            | MP - 36/75mm<br>MP - 39/75mm<br>MP - 39/75mm<br>MP - 41/75mm | 2.20                  |  | Dark Brown Sandy Clayey GRAVEL                                                         | 2                                                                                     |
|                                                                                                                                        | 3.00                       | D                                                                                            | MP - 41/75mm<br>MP - 43/75mm<br>MP - 43/75mm<br>MP - 45/75mm |                       |                                                                                     |                                                                                        | 3                                                                                     |
|                                                                                                                                        |                            |                                                                                              | MP - 44/75mm<br>MP - 46/75mm<br>MP - 47/75mm<br>MP - 47/75mm | 4.00                  |                                                                                     | End of Borehole at 4.000m                                                              | 4                                                                                     |
|                                                                                                                                        |                            |                                                                                              |                                                              |                       |                                                                                     |                                                                                        | 5                                                                                     |
| Key: D - Disturbed Sample    V - Insitu Vane Test    MP - Mackintosh Probe Test                                                        |                            |                                                                                              |                                                              |                       |                                                                                     |                                                                                        |  |
| Remarks: Borehole closed at 4.00m. Standpipe installed to 0.80m due to backfill.<br>Borehole noted to contain standing water at 2.20m. |                            |                                                                                              |                                                              |                       |                                                                                     |                                                                                        |                                                                                       |

|                                                                                                                   |                            |                                                                                              |                                                              |              |                                                                                     |                                                                       |                  |
|-------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------|
|                                  |                            | Fastrack Site Investigations Ltd<br>Unit 9, Tyndales Farm<br>Southend Road<br>Maldon CM9 6TQ |                                                              | Borehole Log |                                                                                     | Borehole No.<br><b>BH4</b><br>Sheet 1 of 1                            |                  |
| Project Name: 1833                                                                                                |                            |                                                                                              | Project No.<br>21000                                         |              | Site Date: 29/07/2020                                                               |                                                                       | Hole Type<br>BH  |
| Location:                                                                                                         |                            | Barton Buildings, Uxbridge Industrial Estate, Arundel Road, Uxbridge, London UB8 2SN         |                                                              |              |                                                                                     |                                                                       | Scale<br>1:50    |
| Client:                                                                                                           |                            | GO Contaminated Land Solutions Ltd                                                           |                                                              |              |                                                                                     |                                                                       | Logged By<br>SE1 |
| Water<br>Strikes                                                                                                  | Sample and In Situ Testing |                                                                                              |                                                              | Depth<br>(m) | Legend                                                                              | Stratum Description                                                   |                  |
|                                                                                                                   | Depth (m)                  | Type                                                                                         | Results                                                      |              |                                                                                     |                                                                       |                  |
|                                                                                                                   |                            |                                                                                              |                                                              | 0.22         |    | Reinforced CONCRETE                                                   |                  |
|                                                                                                                   |                            |                                                                                              |                                                              | 0.60         |    | Dark Brown/Black Silty Clayey MADE GROUND containing Brick and Gravel |                  |
|                                                                                                                   |                            |                                                                                              | V (kPa) = 120<br>V (kPa) = 122                               | 1.30         |    | Dark Grey/Black Silty Clayey MADE GROUND containing Brick             | 1                |
|                                                                                                                   | 2.00                       | D                                                                                            | MP = 27/75mm<br>MP = 29/75mm<br>MP = 30/75mm<br>MP = 31/75mm |              |    | Dark Grey/Black Silty Clayey GRAVEL                                   | 2                |
|                                                                                                                   | 3.00                       | D                                                                                            | MP = 33/75mm<br>MP = 35/75mm<br>MP = 35/75mm<br>MP = 37/75mm |              |    | Borehole backfilled to 1.70m below ground level                       | 3                |
|                                                                                                                   | 4.00                       | D                                                                                            | MP = 37/75mm<br>MP = 38/75mm<br>MP = 38/75mm<br>MP = 41/75mm | 3.40         |   | Dark Brown Sandy GRAVEL                                               | 4                |
|                                                                                                                   | 5.00                       | D                                                                                            | MP = 41/75mm<br>MP = 41/75mm<br>MP = 43/75mm<br>MP = 44/75mm | 5.20         |  | Dark Brown Sandy Clayey GRAVEL                                        | 5                |
|                                                                                                                   | 9.00                       | D                                                                                            | MP = 47/75mm<br>MP = 51/75mm<br>MP = 51/75mm<br>MP = 53/75mm | 9.30         |                                                                                     | End of Borehole at 9.300m                                             | 9                |
| Key: D - Disturbed Sample    V - Insitu Vane Test    MP - Mackintosh Probe Test                                   |                            |                                                                                              |                                                              |              |                                                                                     |                                                                       |                  |
| Remarks: Borehole closed at 9.30m due to solid obstruction.<br>Borehole noted to contain standing water at 5.20m. |                            |                                                                                              |                                                              |              |                                                                                     |                                                                       |                  |
|                              |                            |                                                                                              |                                                              |              |                                                                                     |                                                                       |                  |



Contaminated  
Land  
Solutions

GO Contaminated Land Solutions  
4 De Frene Rd  
London, SE26 4AB

Tel.: 020 8291 1354  
Email: askgo@gosolve.co.uk  
Web: www.gosolve.co.uk

## BOREHOLE

|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------|--------------|---------------|---------------------------------------------------------|--|---------------------|--------------|
| <b>Project</b>                                                                                                                                                                      |                | <b>Uxbridge Industrial Estate, Uxbridge</b> |              |               | <b>Project No.</b>                                      |  | <b>1833</b>         |              |
| <b>Client</b>                                                                                                                                                                       |                | <b>Cyril Leonard Ltd</b>                    |              |               | <b>Survey date:</b>                                     |  | <b>29 July 2020</b> |              |
| <b>Log ID</b>                                                                                                                                                                       | HA1            |                                             |              |               | <b>Hole type:</b>                                       |  | BH                  |              |
| <b>Water Strikes</b>                                                                                                                                                                | <b>Samples</b> | <b>Level</b>                                | <b>Depth</b> | <b>Legend</b> | <b>Stratum Description and Observations</b>             |  |                     | <b>Depth</b> |
|                                                                                                                                                                                     | Type           | depth (m)                                   | (m OD)       | (m)           |                                                         |  |                     | (m)          |
|                                                                                                                                                                                     |                |                                             |              |               | MADE GROUND: Stoney, Loamy Soil with fragments of glass |  |                     | -0.10        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -0.20        |
|                                                                                                                                                                                     | C              | 0.2-0.4                                     |              |               |                                                         |  |                     | -0.30        |
|                                                                                                                                                                                     |                |                                             |              | 0.45          |                                                         |  |                     | -0.40        |
|                                                                                                                                                                                     |                |                                             |              |               | Borehole Terminated                                     |  |                     | -0.50        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -0.60        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -0.70        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -0.80        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -0.90        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -1.00        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -1.10        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -1.20        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -1.30        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -1.40        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -1.50        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -1.60        |
|                                                                                                                                                                                     |                |                                             |              |               |                                                         |  |                     | -1.70        |
| <input checked="" type="checkbox"/> Water strike                                                                                                                                    |                |                                             |              |               |                                                         |  |                     |              |
| Remarks: Groundwater not noted during excavations. No visual or olfactory evidence of contamination noted.<br>Key: C - Contamination sample      W - Water sample      P - PID test |                |                                             |              |               |                                                         |  |                     |              |

**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge**

**Cyril Leonard Ltd**



## **Appendix E – Gas & Groundwater Monitoring Results**

| <div></div> <div>Contaminated<br/>Land<br/>Solutions</div>                                                                                                                        |          |       | GROUNDWATER & GAS MONITORING RESULTS |                                      |                        |             |        |               |        |                            |        |                             |        |                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------|--------------------------------------|--------------------------------------|------------------------|-------------|--------|---------------|--------|----------------------------|--------|-----------------------------|--------|------------------------------|
|                                                                                                                                                                                                                                                                    |          |       |                                      |                                      |                        |             |        | Project No.   |        | 1833                       |        |                             |        |                              |
|                                                                                                                                                                                                                                                                    |          |       |                                      |                                      |                        |             |        | Project Name  |        | Uxbridge Industrial Estate |        |                             |        |                              |
| BH ref                                                                                                                                                                                                                                                             | Date     | Time  | Weather                              | Atmos-<br>pheric<br>Pressure<br>(mb) | Flow<br>Rate<br>(l/hr) | Methane (%) |        | Oxygen (%v/v) |        | Carbon dioxide (%)         |        | VOC & SVOC<br>Vapours (ppm) |        | Ground<br>water<br>level (m) |
|                                                                                                                                                                                                                                                                    |          |       |                                      |                                      |                        | Initial     | Steady | Initial       | Steady | Initial                    | Steady | Initial                     | Steady |                              |
|                                                                                                                                                                                                                                                                    | 11/08/20 | 12:16 | Sunny, Dry, Hot                      | 1010                                 | 0.0                    | 0.0         | 0.0    | 19.5          | 9.5    | 1.9                        | 4.9    | n/a                         | n/a    | Dry                          |
| BH1                                                                                                                                                                                                                                                                | 26/08/20 | 10:35 | Sunny, Dry, Windy                    | 1008                                 | 0.0                    | 0.0         | 0.0    | 17.0          | 1.0    | 2.0                        | 9.3    | n/a                         | n/a    | Dry                          |
|                                                                                                                                                                                                                                                                    | 02/09/20 | 10:21 | Overcast, Dry, Warm                  | 1016                                 | 0.0                    | 0.0         | 0.0    | 18.1          | 1.4    | 0.8                        | 1.4    | n/a                         | n/a    | Dry                          |
|                                                                                                                                                                                                                                                                    | 11/08/20 | 12:26 | Sunny, Dry, Hot                      | 1010                                 | 0.0                    | 0.0         | 0.0    | 19.8          | 20.2   | 0.5                        | 0.3    | n/a                         | n/a    | Dry                          |
| BH2                                                                                                                                                                                                                                                                | 26/08/20 | 10:45 | Sunny, Dry, Windy                    | 1008                                 | 0.0                    | 0.0         | 0.0    | 7.5           | 19.2   | 4.8                        | 1.4    | n/a                         | n/a    | Dry                          |
|                                                                                                                                                                                                                                                                    | 02/09/20 | 10:30 | Overcast, Dry, Warm                  | 1016                                 | 0.0                    | 0.0         | 0.0    | 18.3          | 19.2   | 1.3                        | 1.7    | n/a                         | n/a    | Dry                          |
|                                                                                                                                                                                                                                                                    | 11/08/20 | 12:00 | Sunny, Dry, Hot                      | 1010                                 | 0.0                    | 0.0         | 0.0    | 19.8          | 19.1   | 0.8                        | 1.8    | n/a                         | n/a    | Dry                          |
| BH3                                                                                                                                                                                                                                                                | 26/08/20 | 10:25 | Sunny, Dry, Windy                    | 1008                                 | 0.0                    | 0.0         | 0.0    | 20.0          | 17.0   | 0.0                        | 2.0    | n/a                         | n/a    | Dry                          |
|                                                                                                                                                                                                                                                                    | 02/09/20 | 10:11 | Overcast, Dry, Warm                  | 1016                                 | 0.0                    | 0.0         | 0.0    | 20.2          | 20.0   | 0.1                        | 0.8    | n/a                         | n/a    | Dry                          |
| Overall Depth (m)                                                                                                                                                                                                                                                  |          |       |                                      |                                      |                        |             |        |               |        |                            |        |                             |        |                              |
| BH1                                                                                                                                                                                                                                                                | 1.33m    |       |                                      |                                      |                        |             |        |               |        |                            |        |                             |        |                              |
| BH2                                                                                                                                                                                                                                                                | 1.38m    |       |                                      |                                      |                        |             |        |               |        |                            |        |                             |        |                              |
| BH3                                                                                                                                                                                                                                                                | 0.83m    |       |                                      |                                      |                        |             |        |               |        |                            |        |                             |        |                              |
| Monitoring Equipment: Gas Data GFM436 Multichannel Portable gas analyser, an ATEX and MCERTS accredited hand held gas analyser.<br>Monitoring for VOCs and SVOCs will be undertaken with a MiniRAE Lite PID manufactured by RAE System fitted with a 10.6 eV lamp. |          |       |                                      |                                      |                        |             |        |               |        |                            |        |                             |        |                              |

\*Gas monitoring should not be for less than 3 minutes. If high concentrations, monitoring should be for up to 10 minutes.

**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge**

**Cyril Leonard Ltd**



## **Appendix F – Contamination Test Results**

## PH and Sulphates Test Results



Unit A2  
Windmill Road  
Ponswood Industrial Estate  
St Leonards on Sea  
East Sussex  
TN38 9BY  
Telephone: (01424) 718618

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### THE ENVIRONMENTAL LABORATORY LTD

---

**Analytical Report Number:** 20-29168

**Issue:** 1

**Date of Issue:** 07/08/2020

**Contact:** Martin Rush

**Customer Details:** Fastrack Site Investigations Ltd  
Unit 9 Tyndales Farm  
Southend Road  
Woodham Mortimer  
Essex CM9 6TQ

**Quotation No:** Q19-01629

**Order No:** 20600

**Customer Reference:** 21000

**Date Received:** 04/08/2020

**Date Approved:** 07/08/2020

**Details:** Barton Buildings, Arundel Road, Uxbridge, London, UB13 2RR

**Approved by:** 

Mike Varley, Technical Manager

---

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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## Sample Summary

Report No.: 20-29168, issue number 1

| Elab No. | Client's Ref. | Date Sampled | Date Scheduled | Description         | Deviations |
|----------|---------------|--------------|----------------|---------------------|------------|
| 210306   | BH1 D1 1.00   | 31/07/2020   | 04/08/2020     | Silty loam + stones |            |
| 210307   | BH4 D2 5.00   | 31/07/2020   | 04/08/2020     | Stones              |            |
| 210308   | BH2 D2 2.00   | 31/07/2020   | 04/08/2020     | Stones              |            |
| 210309   | BH3 D3 3.00   | 31/07/2020   | 04/08/2020     | Stones              |            |



## Results Summary

2683

Report No.: 20-29168, issue number 1

|                                           |            |            |            |            |
|-------------------------------------------|------------|------------|------------|------------|
| ELAB Reference                            | 210306     | 210307     | 210308     | 210309     |
| Customer Reference                        | D1         | D2         | D2         | D3         |
| Sample ID                                 |            |            |            |            |
| Sample Type                               | SOIL       | SOIL       | SOIL       | SOIL       |
| Sample Location                           | BH1        | BH4        | BH2        | BH3        |
| Sample Depth (m)                          | 1.00       | 5.00       | 2.00       | 3.00       |
| Sampling Date                             | 31/07/2020 | 31/07/2020 | 31/07/2020 | 31/07/2020 |
| Determinand                               | Codes      | Units      | LOD        |            |
| <b>Soil sample preparation parameters</b> |            |            |            |            |
| Material removed                          | N          | %          | 0.1        | 76.3       |
| Description of Inert material removed     | N          |            | 0          | Stones     |
| <b>Anions</b>                             |            |            |            |            |
| Water Soluble Sulphate                    | M          | g/l        | 0.02       | ^ 0.04     |
| <b>Miscellaneous</b>                      |            |            |            |            |
| pH                                        | M          | pH units   | 0.1        | ^ 8.2      |

Tests marked N are not UKAS accredited.  
The Environmental Laboratory Ltd. Reg. No. 3882193

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**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge**  
**Cyril Leonard Ltd**



## Method Summary

Report No.: 20-29168, issue number 1

| Parameter            | Codes | Analysis Undertaken<br>On | Date<br>Tested | Method<br>Number | Technique          |
|----------------------|-------|---------------------------|----------------|------------------|--------------------|
| <b>Soil</b>          |       |                           |                |                  |                    |
| pH                   | M     | Air dried sample          | 07/08/2020     | 113              | Electromeric       |
| Water soluble anions | M     | Air dried sample          | 05/08/2020     | 172              | Ion Chromatography |



## Report Information

Report No.: 20-29168, issue number 1

### Key

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|     |                                                                             |
|-----|-----------------------------------------------------------------------------|
| U   | hold UKAS accreditation                                                     |
| M   | hold MCERTS and UKAS accreditation                                          |
| N   | do not currently hold UKAS accreditation                                    |
| ^   | MCERTS accreditation not applicable for sample matrix                       |
| *   | UKAS accreditation not applicable for sample matrix                         |
| S   | Subcontracted to approved laboratory UKAS Accredited for the test           |
| SM  | Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test    |
| NS  | Subcontracted to approved laboratory. UKAS accreditation is not applicable. |
| I/S | Insufficient Sample                                                         |
| U/S | Unsuitable sample                                                           |
| n/t | Not tested                                                                  |
| <   | means "less than"                                                           |
| >   | means "greater than"                                                        |

Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.

ELAB are unable to provide an interpretation or opinion on the content of this report.

The results relate only to the sample received.

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

### Deviation Codes

- 
- |   |                                                          |
|---|----------------------------------------------------------|
| a | No date of sampling supplied                             |
| b | No time of sampling supplied (Waters Only)               |
| c | Sample not received in appropriate containers            |
| d | Sample not received in cooled condition                  |
| e | The container has been incorrectly filled                |
| f | Sample age exceeds stability time (sampling to receipt)  |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

### Sample Retention and Disposal

---

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage

## Contamination Results

| COMMERCIAL - SOM 6%                                |          |           |            |               |       |                 |
|----------------------------------------------------|----------|-----------|------------|---------------|-------|-----------------|
| Determinand                                        | Unit     | GAC       | Source     | Concentration |       | Number of Tests |
|                                                    |          |           |            | Min           | Max   |                 |
| Metals                                             |          |           |            |               |       |                 |
| Arsenic                                            | mg/kg    | 635.0     | DEFRA C4SL | 11.3          | 28.5  | 6               |
| Cadmium                                            | mg/kg    | 410.0     | DEFRA C4SL | <0.5          | 2.0   | 6               |
| Chromium (III)                                     | mg/kg    | 208000.0  | ATRISK SSV | 38.8          | 92.1  | 6               |
| Copper                                             | mg/kg    | 106000.0  | ATRISK SSV | 37.5          | 177.0 | 6               |
| Lead                                               | mg/kg    | 2310.0    | DEFRA C4SL | 61.1          | 610.0 | 6               |
| Mercury (Inorganic)                                | mg/kg    | 3600.0    | ATRISK SSV | <0.5          | 0.5   | 6               |
| Nickel                                             | mg/kg    | 1770.0    | ATRISK SSV | 25.5          | 56.0  | 6               |
| Selenium                                           | mg/kg    | 13000.0   | ATRISK SSV | <1.0          | 1.7   | 6               |
| Zinc                                               | mg/kg    | 1100000.0 | ATRISK SSV | 105.0         | 451.0 | 6               |
| Inorganics                                         |          |           |            |               |       |                 |
| Free Cyanide                                       | mg/kg    | 373.0     | ATRISK SSV | < 1.0         | <1.0  | 6               |
| Hexavalent Chromium                                | mg/kg    | 49.0      | DEFRA C4SL | < 0.8         | <0.8  | 6               |
| Miscellaneous                                      |          |           |            |               |       |                 |
| Moisture Content                                   | %        | -         | -          | 8.3           | 34.5  | 6               |
| pH                                                 | pH units | -         | -          | 7.9           | 9.6   | 6               |
| Soil Organic Matter                                | %        | -         | -          | 2.8           | 9.7   | 6               |
| Stones Content                                     | %        | -         | -          | 16.0          | 69.3  | 6               |
| Phenols                                            |          |           |            |               |       |                 |
| Total Monohydric Phenols                           | mg/kg    | 3200.0    | LQM/CIEH   | <5            | 16.0  | 6               |
| Polyaromatic hydrocarbons                          |          |           |            |               |       |                 |
| Naphthalene                                        | mg/kg    | 1050.0    | ATRISK SSV | <0.1          | 24.8  | 6               |
| Acenaphthylene                                     | mg/kg    | 100000.0  | LQM/CIEH   | <0.1          | 1.2   | 6               |
| Acenaphthene                                       | mg/kg    | 106000.0  | ATRISK SSV | <0.1          | 51.0  | 6               |
| Fluorene                                           | mg/kg    | 72000.0   | ATRISK SSV | <0.1          | 30.6  | 6               |
| Phenanthrene                                       | mg/kg    | 23000.0   | LQM/CIEH   | <0.1          | 404.0 | 6               |
| Anthracene                                         | mg/kg    | 544000.0  | ATRISK SSV | <0.1          | 71.9  | 6               |
| Fluoranthene                                       | mg/kg    | 72600.0   | ATRISK SSV | <0.1          | 401.0 | 6               |
| Pyrene                                             | mg/kg    | 54400.0   | ATRISK SSV | <0.1          | 321.0 | 6               |
| Benzo(a)pyrene                                     | mg/kg    | 76.3      | DEFRA C4SL | <0.1          | 162.0 | 6               |
| TPH CWG                                            |          |           |            |               |       |                 |
| >C <sub>6</sub> -C <sub>8</sub> Aliphatic          | mg/kg    | 29400.0   | ATRISK SSV | <0.01         | <0.01 | 6               |
| >C <sub>8</sub> -C <sub>8</sub> Aliphatic          | mg/kg    | 98200.0   | ATRISK SSV | <0.01         | <0.01 | 6               |
| >C <sub>8</sub> -C <sub>10</sub> Aliphatic         | mg/kg    | 14800.0   | ATRISK SSV | <1.0          | <1.0  | 6               |
| >C <sub>10</sub> -C <sub>12</sub> Aliphatic        | mg/kg    | 69500.0   | ATRISK SSV | <1.0          | <1.0  | 6               |
| >C <sub>12</sub> -C <sub>18</sub> Aliphatic        | mg/kg    | 139000.0  | ATRISK SSV | <1.0          | 6.7   | 6               |
| >C <sub>18</sub> -C <sub>36</sub> Aliphatic        | mg/kg    | 3620000.0 | ATRISK SSV | <1.0          | 196.1 | 6               |
| >C <sub>36</sub> -C <sub>40</sub> Aliphatic        | mg/kg    | 1800000.0 | LQM/CIEH   | <1.0          | 127.0 | 6               |
| >C <sub>6</sub> -C <sub>7</sub> Aromatic (benzene) | mg/kg    | 98.0      | ATRISK SSV | <0.01         | <0.01 | 6               |
| >C <sub>7</sub> -C <sub>8</sub> Aromatic (toluene) | mg/kg    | 183000.0  | ATRISK SSV | <0.01         | <0.01 | 6               |
| >C <sub>8</sub> -C <sub>10</sub> Aromatic          | mg/kg    | 20800.0   | ATRISK SSV | <1.0          | <1.0  | 6               |
| >C <sub>10</sub> -C <sub>12</sub> Aromatic         | mg/kg    | 53800.0   | ATRISK SSV | <1.0          | 5.5   | 6               |
| >C <sub>12</sub> -C <sub>18</sub> Aromatic         | mg/kg    | 65400.0   | ATRISK SSV | <1.0          | 52.1  | 6               |
| >C <sub>18</sub> -C <sub>21</sub> Aromatic         | mg/kg    | 28400.0   | ATRISK SSV | 1.0           | 161.0 | 6               |
| >C <sub>21</sub> -C <sub>36</sub> Aromatic         | mg/kg    | 28400.0   | ATRISK SSV | 1.4           | 585.0 | 6               |
| >C <sub>36</sub> -C <sub>44</sub> Aromatic         | mg/kg    | 28000.0   | LQM/CIEH   | <1.0          | 168   | 6               |



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THE ENVIRONMENTAL LABORATORY LTD

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Analytical Report Number: 20-29127

Issue: 1

Date of Issue: 05/08/2020

Contact: Peter George

Customer Details: GO Contaminated Land Solutions Ltd  
4 De Frene Road  
Sydenham  
London  
SE26 4AB

Quotation No: Q14-00029

Order No: 1833

Customer Reference: 1833

Date Received: 31/07/2020

Date Approved: 05/08/2020

Details: Uxbridge Industrial Estate

Approved by:

Mike Varley, Technical Manager

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## Sample Summary

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| Elab No. | Client's Ref.    | Date Sampled | Date Scheduled | Description      | Deviations |
|----------|------------------|--------------|----------------|------------------|------------|
| 210098   | BH1 0.40 - 0.60  | 29/07/2020   | 31/07/2020     | Silty loam       |            |
| 210099   | BH1 1.80 - 2.00  | 29/07/2020   | 31/07/2020     |                  |            |
| 210100   | BH4 0.50 - 0.70  | 29/07/2020   | 31/07/2020     | Silty loam       |            |
| 210101   | BH4 0.70 - 1.00  | 29/07/2020   | 31/07/2020     |                  |            |
| 210102   | CBR1 0.30 - 0.50 | 29/07/2020   | 31/07/2020     | Sandy silty loam |            |
| 210103   | CBR3 0.30 - 0.50 | 29/07/2020   | 31/07/2020     | Silty loam       |            |
| 210104   | CBR4 0.30 - 0.40 | 29/07/2020   | 31/07/2020     | Silty loam       |            |
| 210105   | CBR5 0.40 - 0.50 | 29/07/2020   | 31/07/2020     | Silty loam       |            |
| 210106   | HA1 0.20 - 0.40  | 29/07/2020   | 31/07/2020     | Silty loam       |            |



## Results Summary

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|                                           |             |             |             |             |             |
|-------------------------------------------|-------------|-------------|-------------|-------------|-------------|
| ELAB Reference                            | 210098      | 210100      | 210102      | 210103      | 210104      |
| Customer Reference                        |             |             |             |             |             |
| Sample ID                                 |             |             |             |             |             |
| Sample Type                               | SOIL        | SOIL        | SOIL        | SOIL        | SOIL        |
| Sample Location                           | BH1         | BH4         | CBR1        | CBR3        | CBR4        |
| Sample Depth (m)                          | 0.40 - 0.60 | 0.50 - 0.70 | 0.30 - 0.50 | 0.30 - 0.50 | 0.30 - 0.40 |
| Sampling Date                             | 29/07/2020  | 29/07/2020  | 29/07/2020  | 29/07/2020  | 29/07/2020  |
| Determinand                               | Codes       | Units       | LOD         |             |             |
| <b>Soil sample preparation parameters</b> |             |             |             |             |             |
| Moisture Content                          | N           | %           | 0.1         | 34.5        | 24.2        |
| Stones Content                            | N           | %           | 0.1         | 16.0        | 31.1        |
| Material removed                          | N           | %           | 0.1         | 16.0        | 31.1        |
| Description of Inert material removed     | N           |             | 0           | Stones      | Stones      |
| <b>Metals</b>                             |             |             |             |             |             |
| Arsenic                                   | M           | mg/kg       | 1           | 28.5        | 16.5        |
| Cadmium                                   | M           | mg/kg       | 0.5         | 0.6         | < 0.5       |
| Chromium                                  | M           | mg/kg       | 5           | 55.5        | 46.5        |
| Copper                                    | M           | mg/kg       | 5           | 41.8        | 59.4        |
| Lead                                      | M           | mg/kg       | 5           | 61.1        | 222         |
| Mercury                                   | M           | mg/kg       | 0.5         | < 0.5       | < 0.5       |
| Nickel                                    | M           | mg/kg       | 5           | 56.0        | 26.9        |
| Selenium                                  | M           | mg/kg       | 1           | 1.4         | < 1.0       |
| Zinc                                      | M           | mg/kg       | 5           | 105         | 110         |
| <b>Inorganics</b>                         |             |             |             |             |             |
| Free Cyanide                              | N           | mg/kg       | 1           | < 1.0       | < 1.0       |
| Hexavalent Chromium                       | N           | mg/kg       | 0.8         | < 0.8       | < 0.8       |
| <b>Miscellaneous</b>                      |             |             |             |             |             |
| pH                                        | M           | pH units    | 0.1         | 7.9         | 8.1         |
| Soil Organic Matter                       | U           | %           | 0.1         | 4.9         | 9.7         |
| <b>Phenols</b>                            |             |             |             |             |             |
| Total Monohydric Phenols                  | N           | mg/kg       | 5           | < 5         | 16          |
| <b>Polyaromatic hydrocarbons</b>          |             |             |             |             |             |
| Naphthalene                               | M           | mg/kg       | 0.1         | < 0.1       | 24.8        |
| Acenaphthylene                            | M           | mg/kg       | 0.1         | < 0.1       | 1.2         |
| Acenaphthene                              | M           | mg/kg       | 0.1         | < 0.1       | 51.0        |
| Fluorene                                  | M           | mg/kg       | 0.1         | < 0.1       | 30.6        |
| Phenanthrene                              | M           | mg/kg       | 0.1         | < 0.1       | 404         |
| Anthracene                                | M           | mg/kg       | 0.1         | < 0.1       | 71.9        |
| Fluoranthene                              | M           | mg/kg       | 0.1         | 0.1         | 401         |
| Pyrene                                    | M           | mg/kg       | 0.1         | 0.1         | 321         |
| Benzo(a)anthracene                        | M           | mg/kg       | 0.1         | < 0.1       | 171         |
| Chrysene                                  | M           | mg/kg       | 0.1         | < 0.1       | 174         |
| Benzo(b)fluoranthene                      | M           | mg/kg       | 0.1         | < 0.1       | 158         |
| Benzo(k)fluoranthene                      | M           | mg/kg       | 0.1         | < 0.1       | 144         |
| Benzo(a)pyrene                            | M           | mg/kg       | 0.1         | < 0.1       | 162         |
| Indeno(1,2,3-cd)pyrene                    | M           | mg/kg       | 0.1         | < 0.1       | 113         |
| Dibenzo(a,h)anthracene                    | M           | mg/kg       | 0.1         | < 0.1       | 19.1        |
| Benzo(g,h,i)perylene                      | M           | mg/kg       | 0.1         | < 0.1       | 106         |
| Total PAH(16)                             | M           | mg/kg       | 0.4         | 0.6         | 2350        |

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## Results Summary

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| ELAB Reference                |       |       |      | 210098      | 210100      | 210102      | 210103      | 210104      |
|-------------------------------|-------|-------|------|-------------|-------------|-------------|-------------|-------------|
| Customer Reference            |       |       |      |             |             |             |             |             |
| Sample ID                     |       |       |      |             |             |             |             |             |
| Sample Type                   |       |       |      | SOIL        | SOIL        | SOIL        | SOIL        | SOIL        |
| Sample Location               |       |       |      | BH1         | BH4         | CBR1        | CBR3        | CBR4        |
| Sample Depth (m)              |       |       |      | 0.40 - 0.60 | 0.50 - 0.70 | 0.30 - 0.50 | 0.30 - 0.50 | 0.30 - 0.40 |
| Sampling Date                 |       |       |      | 29/07/2020  | 29/07/2020  | 29/07/2020  | 29/07/2020  | 29/07/2020  |
| Determinand                   | Codes | Units | LOD  |             |             |             |             |             |
| <b>TPH CWG</b>                |       |       |      |             |             |             |             |             |
| >C5-C8 Aliphatic              | N     | mg/kg | 0.01 | < 0.01      | < 0.01      | < 0.01      | < 0.01      | n/t         |
| >C8-C10 Aliphatic             | N     | mg/kg | 0.01 | < 0.01      | < 0.01      | < 0.01      | < 0.01      | n/t         |
| >C8-C10 Aliphatic             | N     | mg/kg | 1    | < 1.0       | < 1.0       | < 1.0       | < 1.0       | n/t         |
| >C10-C12 Aliphatic            | N     | mg/kg | 1    | < 1.0       | < 1.0       | < 1.0       | < 1.0       | n/t         |
| >C12-C16 Aliphatic            | N     | mg/kg | 1    | < 1.0       | 6.7         | 2.0         | < 1.0       | n/t         |
| >C16-C21 Aliphatic            | N     | mg/kg | 1    | < 1.0       | 13.3        | 6.1         | 2.8         | n/t         |
| >C21-C35 Aliphatic            | N     | mg/kg | 1    | < 1.0       | 104         | 190         | 86.4        | n/t         |
| >C35-C40 Aliphatic            | N     | mg/kg | 1    | < 1.0       | 67.3        | 127         | 89.8        | n/t         |
| >C5-C7 Aromatic               | N     | mg/kg | 0.01 | < 0.01      | < 0.01      | < 0.01      | < 0.01      | n/t         |
| >C7-C8 Aromatic               | N     | mg/kg | 0.01 | < 0.01      | < 0.01      | < 0.01      | < 0.01      | n/t         |
| >C8-C10 Aromatic              | N     | mg/kg | 1    | < 1.0       | < 1.0       | < 1.0       | < 1.0       | n/t         |
| >C10-C12 Aromatic             | N     | mg/kg | 1    | < 1.0       | 5.5         | < 1.0       | < 1.0       | n/t         |
| >C12-C16 Aromatic             | N     | mg/kg | 1    | < 1.0       | 52.1        | < 1.0       | < 1.0       | n/t         |
| >C16-C21 Aromatic             | N     | mg/kg | 1    | 1.0         | 161         | 4.8         | 3.5         | n/t         |
| >C21-C35 Aromatic             | N     | mg/kg | 1    | 1.4         | 585         | 220         | 152         | n/t         |
| >C35-C40 Aromatic             | N     | mg/kg | 1    | < 1.0       | 129         | 168         | 146         | n/t         |
| Total (>C5-C40) Ali/Aro       | N     | mg/kg | 1    | 2.4         | 1120        | 717         | 480         | n/t         |
| <b>PCB (ICES 7 congeners)</b> |       |       |      |             |             |             |             |             |
| PCB 28                        | M     | mg/kg | 0.01 | n/t         | n/t         | n/t         | n/t         | < 0.01      |
| PCB 52                        | M     | mg/kg | 0.01 | n/t         | n/t         | n/t         | n/t         | < 0.01      |
| PCB 101                       | M     | mg/kg | 0.01 | n/t         | n/t         | n/t         | n/t         | < 0.01      |
| PCB 118                       | M     | mg/kg | 0.01 | n/t         | n/t         | n/t         | n/t         | < 0.01      |
| PCB 153                       | M     | mg/kg | 0.01 | n/t         | n/t         | n/t         | n/t         | < 0.01      |
| PCB 138                       | M     | mg/kg | 0.01 | n/t         | n/t         | n/t         | n/t         | < 0.01      |
| PCB 180                       | M     | mg/kg | 0.01 | n/t         | n/t         | n/t         | n/t         | < 0.01      |
| PCB (Total of 7 Congeners)    | M     | mg/kg | 0.03 | n/t         | n/t         | n/t         | n/t         | < 0.03      |



## Results Summary

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| ELAB Reference                            |       |          |     | 210105      | 210106      |
|-------------------------------------------|-------|----------|-----|-------------|-------------|
| Customer Reference                        |       |          |     |             |             |
| Sample ID                                 |       |          |     |             |             |
| Sample Type                               |       |          |     | SOIL        | SOIL        |
| Sample Location                           |       |          |     | CBR5        | HA1         |
| Sample Depth (m)                          |       |          |     | 0.40 - 0.50 | 0.20 - 0.40 |
| Sampling Date                             |       |          |     | 29/07/2020  | 29/07/2020  |
| Determinand                               | Codes | Units    | LOD |             |             |
| <b>Soil sample preparation parameters</b> |       |          |     |             |             |
| Moisture Content                          | N     | %        | 0.1 | 30.5        | 15.8        |
| Stones Content                            | N     | %        | 0.1 | 47.2        | 56.6        |
| Material removed                          | N     | %        | 0.1 | 47.2        | 56.6        |
| Description of Inert material removed     | N     |          | 0   | Stones      | Stones      |
| <b>Metals</b>                             |       |          |     |             |             |
| Arsenic                                   | M     | mg/kg    | 1   | 16.7        | 18.3        |
| Cadmium                                   | M     | mg/kg    | 0.5 | 0.7         | 2.0         |
| Chromium                                  | M     | mg/kg    | 5   | 38.8        | 92.1        |
| Copper                                    | M     | mg/kg    | 5   | 37.5        | 109         |
| Lead                                      | M     | mg/kg    | 5   | 108         | 610         |
| Mercury                                   | M     | mg/kg    | 0.5 | < 0.5       | 0.5         |
| Nickel                                    | M     | mg/kg    | 5   | 28.9        | 40.2        |
| Selenium                                  | M     | mg/kg    | 1   | 1.5         | 1.1         |
| Zinc                                      | M     | mg/kg    | 5   | 129         | 451         |
| <b>Inorganics</b>                         |       |          |     |             |             |
| Free Cyanide                              | N     | mg/kg    | 1   | < 1.0       | < 1.0       |
| Hexavalent Chromium                       | N     | mg/kg    | 0.8 | < 0.8       | < 0.8       |
| <b>Miscellaneous</b>                      |       |          |     |             |             |
| pH                                        | M     | pH units | 0.1 | 8.0         | 8.5         |
| Soil Organic Matter                       | U     | %        | 0.1 | 6.1         | 2.8         |
| <b>Phenols</b>                            |       |          |     |             |             |
| Total Monohydric Phenols                  | N     | mg/kg    | 5   | < 5         | < 5         |
| <b>Polyaromatic hydrocarbons</b>          |       |          |     |             |             |
| Naphthalene                               | M     | mg/kg    | 0.1 | < 0.1       | < 0.1       |
| Acenaphthylene                            | M     | mg/kg    | 0.1 | < 0.1       | 0.2         |
| Acenaphthene                              | M     | mg/kg    | 0.1 | 0.1         | < 0.1       |
| Fluorene                                  | M     | mg/kg    | 0.1 | < 0.1       | 0.1         |
| Phenanthrene                              | M     | mg/kg    | 0.1 | 0.4         | 1.2         |
| Anthracene                                | M     | mg/kg    | 0.1 | 0.3         | 0.4         |
| Fluoranthene                              | M     | mg/kg    | 0.1 | 2.7         | 2.9         |
| Pyrene                                    | M     | mg/kg    | 0.1 | 2.3         | 2.6         |
| Benzo(a)anthracene                        | M     | mg/kg    | 0.1 | 1.3         | 1.9         |
| Chrysene                                  | M     | mg/kg    | 0.1 | 1.3         | 2.0         |
| Benzo(b)fluoranthene                      | M     | mg/kg    | 0.1 | 1.5         | 2.6         |
| Benzo(k)fluoranthene                      | M     | mg/kg    | 0.1 | 1.3         | 2.2         |
| Benzo(a)pyrene                            | M     | mg/kg    | 0.1 | 1.4         | 2.6         |
| Indeno(1,2,3-cd)pyrene                    | M     | mg/kg    | 0.1 | 1.1         | 2.5         |
| Dibenzo(a,h)anthracene                    | M     | mg/kg    | 0.1 | 0.3         | 0.6         |
| Benzo(g,h,i)perylene                      | M     | mg/kg    | 0.1 | 1.0         | 2.5         |
| Total PAH(16)                             | M     | mg/kg    | 0.4 | 15.3        | 24.4        |

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## Results Summary

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| ELAB Reference                |       |       |      | 210105      | 210106      |
|-------------------------------|-------|-------|------|-------------|-------------|
| Customer Reference            |       |       |      |             |             |
| Sample ID                     |       |       |      |             |             |
| Sample Type                   |       |       |      | SOIL        | SOIL        |
| Sample Location               |       |       |      | CBR5        | HA1         |
| Sample Depth (m)              |       |       |      | 0.40 - 0.50 | 0.20 - 0.40 |
| Sampling Date                 |       |       |      | 29/07/2020  | 29/07/2020  |
| Determinand                   | Codes | Units | LOD  |             |             |
| <b>TPH CWG</b>                |       |       |      |             |             |
| >C5-C8 Aliphatic              | N     | mg/kg | 0.01 | < 0.01      | < 0.01      |
| >C6-C8 Aliphatic              | N     | mg/kg | 0.01 | < 0.01      | < 0.01      |
| >C8-C10 Aliphatic             | N     | mg/kg | 1    | < 1.0       | < 1.0       |
| >C10-C12 Aliphatic            | N     | mg/kg | 1    | < 1.0       | < 1.0       |
| >C12-C16 Aliphatic            | N     | mg/kg | 1    | < 1.0       | < 1.0       |
| >C16-C21 Aliphatic            | N     | mg/kg | 1    | < 1.0       | < 1.0       |
| >C21-C35 Aliphatic            | N     | mg/kg | 1    | 32.7        | 20.2        |
| >C35-C40 Aliphatic            | N     | mg/kg | 1    | 44.6        | 25.6        |
| >C5-C7 Aromatic               | N     | mg/kg | 0.01 | < 0.01      | < 0.01      |
| >C7-C8 Aromatic               | N     | mg/kg | 0.01 | < 0.01      | < 0.01      |
| >C8-C10 Aromatic              | N     | mg/kg | 1    | < 1.0       | < 1.0       |
| >C10-C12 Aromatic             | N     | mg/kg | 1    | < 1.0       | < 1.0       |
| >C12-C16 Aromatic             | N     | mg/kg | 1    | < 1.0       | < 1.0       |
| >C16-C21 Aromatic             | N     | mg/kg | 1    | 2.3         | 2.4         |
| >C21-C35 Aromatic             | N     | mg/kg | 1    | 67.2        | 47.2        |
| >C35-C40 Aromatic             | N     | mg/kg | 1    | 61.1        | 34.6        |
| Total (>C5-C40) Ali/Aro       | N     | mg/kg | 1    | 208         | 130         |
| <b>PCB (ICES 7 congeners)</b> |       |       |      |             |             |
| PCB 28                        | M     | mg/kg | 0.01 | < 0.01      | n/t         |
| PCB 52                        | M     | mg/kg | 0.01 | < 0.01      | n/t         |
| PCB 101                       | M     | mg/kg | 0.01 | < 0.01      | n/t         |
| PCB 118                       | M     | mg/kg | 0.01 | < 0.01      | n/t         |
| PCB 153                       | M     | mg/kg | 0.01 | < 0.01      | n/t         |
| PCB 138                       | M     | mg/kg | 0.01 | < 0.01      | n/t         |
| PCB 180                       | M     | mg/kg | 0.01 | < 0.01      | n/t         |
| PCB (Total of 7 Congeners)    | M     | mg/kg | 0.03 | < 0.03      | n/t         |

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**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge**  
**Cyril Leonard Ltd**



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## Results Summary

Report No.: 20-29127, issue number 1

### Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #)  
In this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

| Elab No | Depth (m)   | Clients Reference | Description of Sample Matrix #  | Asbestos Identification | Gravimetric Analysis Total (%) | Gravimetric Analysis by ACM Type (%) | Free Fibre Analysis (%) | Total Asbestos (%) |
|---------|-------------|-------------------|---------------------------------|-------------------------|--------------------------------|--------------------------------------|-------------------------|--------------------|
| 210098  | 0.40 - 0.60 | BH1               | Brown Soil, Stones              | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |
| 210100  | 0.50 - 0.70 | BH4               | Brown sandy Soil, Stones, Brick | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |
| 210102  | 0.30 - 0.50 | CBR1              | Brown sandy Soil, Stones        | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |
| 210103  | 0.30 - 0.50 | CBR3              | Brown Sandy Soil, Stones        | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |
| 210105  | 0.40 - 0.50 | CBR5              | Brown sandy Soil, Stones        | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |
| 210106  | 0.20 - 0.40 | HA1               | Brown Sandy Soil, Stoners       | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |



## Method Summary

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| Parameter                               | Codes | Analysis Undertaken On | Date Tested | Method Number | Technique    |
|-----------------------------------------|-------|------------------------|-------------|---------------|--------------|
| <b>Soil</b>                             |       |                        |             |               |              |
| Free cyanide                            | N     | As submitted sample    | 03/08/2020  | 107           | Colorimetry  |
| Hexavalent chromium                     | N     | As submitted sample    | 03/08/2020  | 110           | Colorimetry  |
| pH                                      | M     | Air dried sample       | 05/08/2020  | 113           | Electromeric |
| PCB (ICES 7 congeners)                  | M     | Air dried sample       | 04/08/2020  | 120           | GC-MS        |
| Phenols in solids                       | N     | As submitted sample    | 03/08/2020  | 121           | HPLC         |
| PAH (GC-FID)                            | M     | As submitted sample    | 03/08/2020  | 133           | GC-FID       |
| Low range Aliphatic hydrocarbons soil   | N     | As submitted sample    | 03/08/2020  | 181           | GC-MS        |
| Low range Aromatic hydrocarbons soil    | N     | As submitted sample    | 03/08/2020  | 181           | GC-MS        |
| Aliphatic hydrocarbons in soil          | N     | As submitted sample    | 03/08/2020  | 214           | GC-FID       |
| Aliphatic/Aromatic hydrocarbons in soil | N     | As submitted sample    | 04/08/2020  | 214           | GC-FID       |
| Aromatic hydrocarbons in soil           | N     | As submitted sample    | 03/08/2020  | 214           | GC-FID       |
| Aqua regia extractable metals           | M     | Air dried sample       | 03/08/2020  | 300           | ICPMS        |
| Soil organic matter                     | U     | Air dried sample       | 05/08/2020  | BS1377:P3     | Titrimetry   |
| Asbestos identification                 | U     | Air dried sample       | 05/08/2020  | PMAN          | Microscopy   |

Tests marked N are not UKAS accredited



## Report Information

Report No.: 20-29127, issue number 1

### Key

---

|     |                                                                             |
|-----|-----------------------------------------------------------------------------|
| U   | hold UKAS accreditation                                                     |
| M   | hold MCERTS and UKAS accreditation                                          |
| N   | do not currently hold UKAS accreditation                                    |
| ^   | MCERTS accreditation not applicable for sample matrix                       |
| *   | UKAS accreditation not applicable for sample matrix                         |
| S   | Subcontracted to approved laboratory UKAS Accredited for the test           |
| SM  | Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test    |
| NS  | Subcontracted to approved laboratory. UKAS accreditation is not applicable. |
| I/S | Insufficient Sample                                                         |
| U/S | Unsuitable sample                                                           |
| n/t | Not tested                                                                  |
| <   | means "less than"                                                           |
| >   | means "greater than"                                                        |

Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.

ELAB are unable to provide an interpretation or opinion on the content of this report.

The results relate only to the sample received.

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

### Deviation Codes

---

|   |                                                          |
|---|----------------------------------------------------------|
| a | No date of sampling supplied                             |
| b | No time of sampling supplied (Waters Only)               |
| c | Sample not received in appropriate containers            |
| d | Sample not received in cooled condition                  |
| e | The container has been incorrectly filled                |
| f | Sample age exceeds stability time (sampling to receipt)  |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

### Sample Retention and Disposal

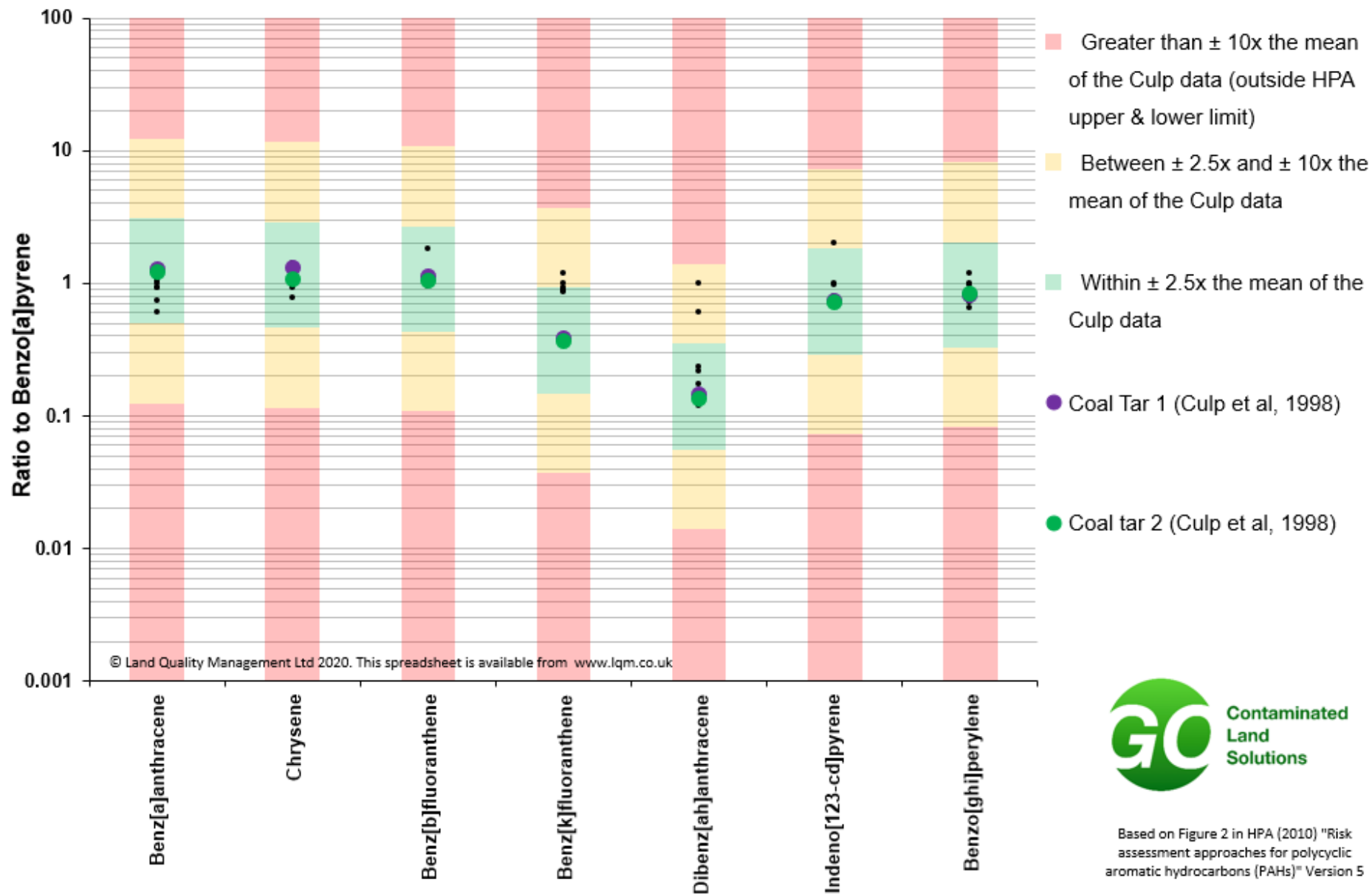
All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage



## **Appendix G – LQM PAH Profiling Tool Results**







## **Appendix H – Geotechnical Test Results**



Tyndales Farm, Southend Road, Woodham Mortimer,  
Maldon, Essex, CM9 6TQ

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Appendix No: 3  
FSI Ref: 21000

## LABORATORY RESULTS

**Property Address:** Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR

| SAMPLE DETAILS      |                       | ANALYSIS REQUESTED   |                                     |
|---------------------|-----------------------|----------------------|-------------------------------------|
| Investigation date: | 29/07/2020            | Moisture Content     | <input checked="" type="checkbox"/> |
| Sample details:     | Bags as received      | Liquid Limit         | <input checked="" type="checkbox"/> |
| Samples received:   | 31/07/2020            | Plastic Limit        | <input checked="" type="checkbox"/> |
| Schedule received:  | 31/07/2020            | Plasticity Index     | <input checked="" type="checkbox"/> |
| Samples tested:     | 31/07/2020-10/08/2020 | Root ID              | <input type="checkbox"/>            |
| Results reported:   | 10/08/2020            | Other (please state) | <input type="checkbox"/>            |
|                     |                       | PSD                  | <input checked="" type="checkbox"/> |
|                     |                       | Soil Suction         | <input type="checkbox"/>            |
|                     |                       | Shear Strength       | <input type="checkbox"/>            |
|                     |                       | Contamination        | <input type="checkbox"/>            |
|                     |                       | Root/Tree DNA        | <input type="checkbox"/>            |

## TEST DETAILS

### General

Sample descriptions were written in accordance with BS 5930:1999.

Samples were prepared in accordance with BS 1377: Part 1: 1990, section 7

Samples from this contract will be retained for 1 calendar month following the issue of this report unless otherwise notified

Written approval is required from Fastrack Site Investigations Limited to reproduce report in full. The results shown within this report only relate to the samples tested

### Moisture Content

Samples were tested in accordance with BS 1377: Part 2: 1990, section 3.2 (Oven drying method)

In accordance with Note 1 to paragraph 3.2.4 of BS 1377 Part 2 1990; these moisture contents have been corrected to give the equivalent moisture content of the fraction passing the 425µm sieve, to enable comparison with the liquid & plastic limits. (If condition of test is 'natural' the retained percentage is an estimated value, if condition is 'washed' the percentage is a measured value).

Samples are dried at 105-110°C unless otherwise stated.

### Atterberg Limits

Samples were tested in accordance with BS 1377: Part 2: 1990, section 4.3 (4 drop LL), 4.4 (1 drop LL), 5.3 (PL) and 5.4 (PI)

Test results on samples with a sand content, may show less accurate results. If condition of test is 'washed' results relate to the fraction passing the 425µm sieve only.

\* Driscoll's rules deem the soil to be desiccated where the moisture content is less than the value calculated using Driscoll's rule 1 and/or 2

### Particle Size Distribution

Samples were tested in accordance with BS 1377: Part 2: 1990 section 9.2 (Wet sieving method)

### Undrained Shear Strength

Samples were prepared in accordance with BS 1377: Part 7: 1990 section 8.3 and testing in accordance with BS 1377: Part 7: 1990: section 8.4 (undrained shear strength in triaxial compression without measurement of pore pressure (UU))

### Soil Suction

Samples were prepared and tested based on the BRE digest No:IP4/93 (Corrected). 'A method of determining the state of desiccation in clay soils.' (Filter paper method).

Test results on samples with a sand or silt content, may show less accurate results. Deviation to standard procedure - Polythene bags are not used from weighing filter papers.

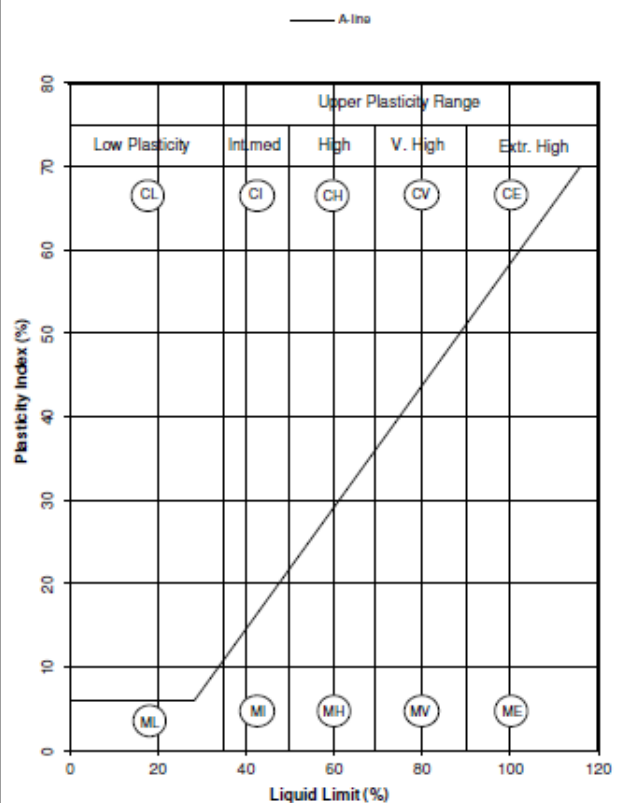
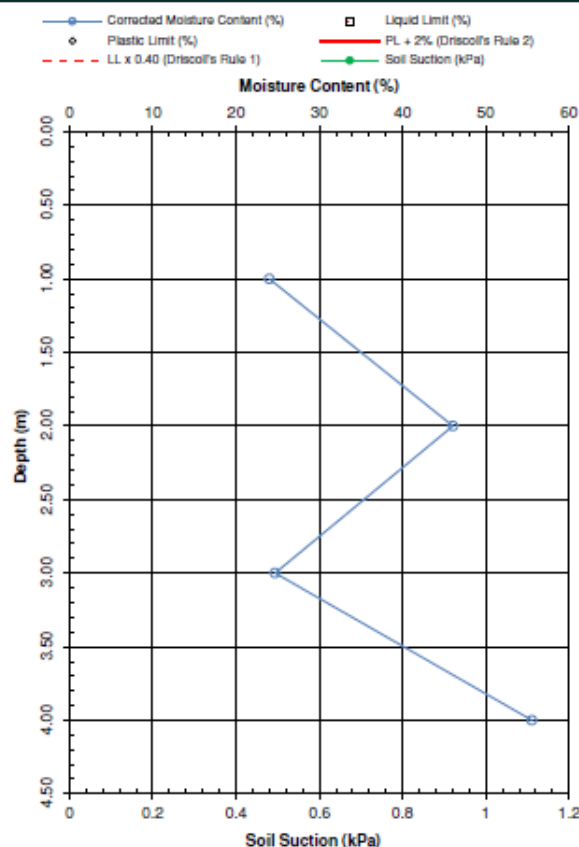
## LABORATORY RESULTS

|                   |                                                           |
|-------------------|-----------------------------------------------------------|
| Property Address: | Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR |
|-------------------|-----------------------------------------------------------|

**Client Claim Ref:**

0 |

## BOREHOLE 1

[illegible]

Comments:

Issued by: ☐ Jade McLellan (Laboratory Manager)  
☒ Isabella Acerbis (Laboratory Technician)

☐ Other  
☐ Benjamin Brocklebank (Laboratory Technician)



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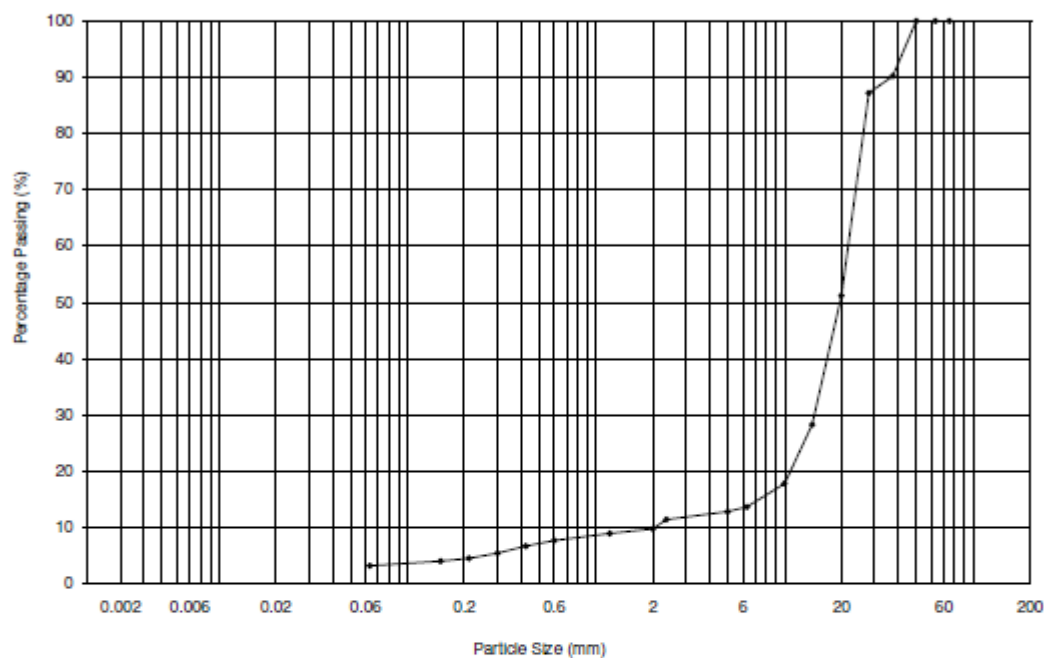
Appendix No: 3

FGS Ref: 21000

## LABORATORY RESULTS

Property Address: Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR

### PARTICLE SIZE DISTRIBUTION: BOREHOLE 1 at 2.00m



|      |      |        |        |      |        |        |        |        |        |         |
|------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|
| CLAY | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | COBBLES |
|      | SILT |        |        | SAND |        |        | GRAVEL |        |        |         |

Issued by:



Jade Barnet (Laboratory Technician)



Other

Signed:

1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge

Cyril Leonard Ltd

**FASTRACK**

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Email: enquiries@fastrack-geotechnical.co.uk

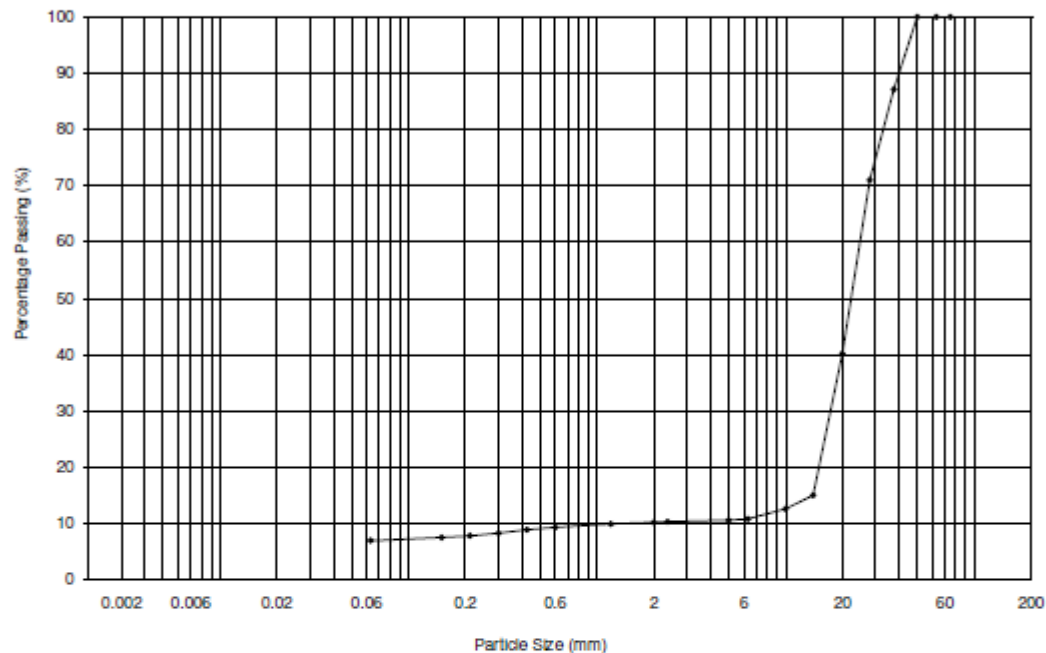
Web: www.fastrack-geotechnical.co.uk

Appendix No:

3

FGS Ref:

21000

Tyndales Farm, Southend Road, Woodham Mortimer,  
Maldon, Essex, CM9 6TQ**LABORATORY RESULTS****Property Address: Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR****PARTICLE SIZE DISTRIBUTION: BOREHOLE 1 at 3.00m**

| CLAY | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | COBBLES |
|------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|
|      | SILT |        |        | SAND |        |        | GRAVEL |        |        |         |

Issued by:



Jade Barnet (Laboratory Technician)



Other

Signed:

**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge****Cyril Leonard Ltd**

**FASTRACK**

Tyndales Farm, Southend Road, Woodham Mortimer,  
Maldon, Essex, CM9 6TQ

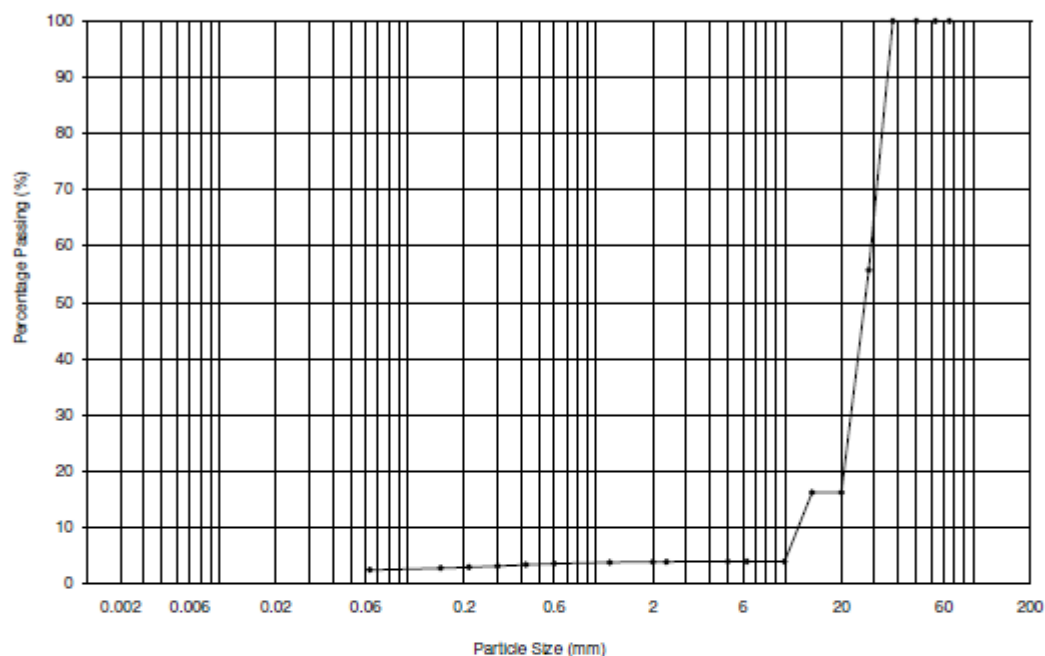
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Appendix No: 3

FGS Ref: 21000

**LABORATORY RESULTS****Property Address: Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR****PARTICLE SIZE DISTRIBUTION: BOREHOLE 1 at 4.00m**

| CLAY | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | COBBLES |
|------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|
|      | SILT |        |        | SAND |        |        | GRAVEL |        |        |         |

Issued by:



Jade Barnet (Laboratory Technician)

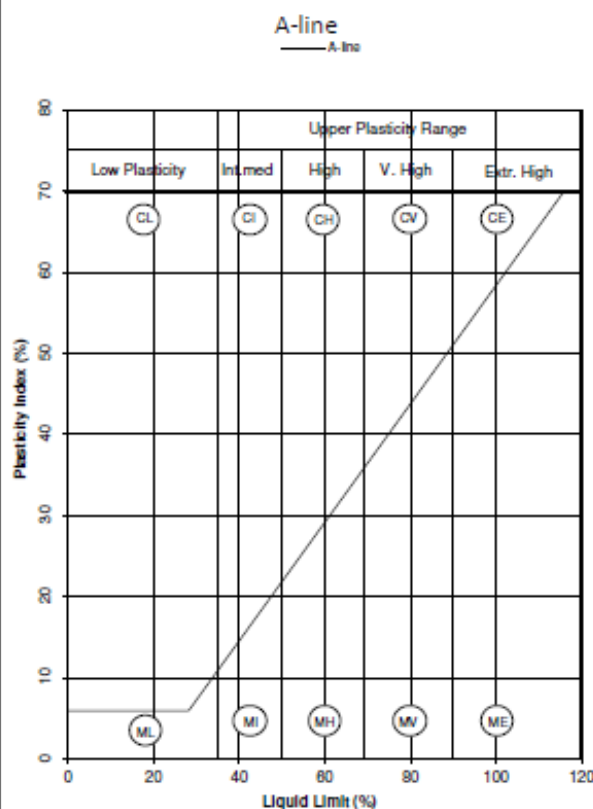


Other

Signed:

**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge****Cyril Leonard Ltd**

0

[illegible]

☐ Other  
☐ Benjamin Brocklebank (Laboratory Technician)

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Maldon, Essex, CM9 6TQ

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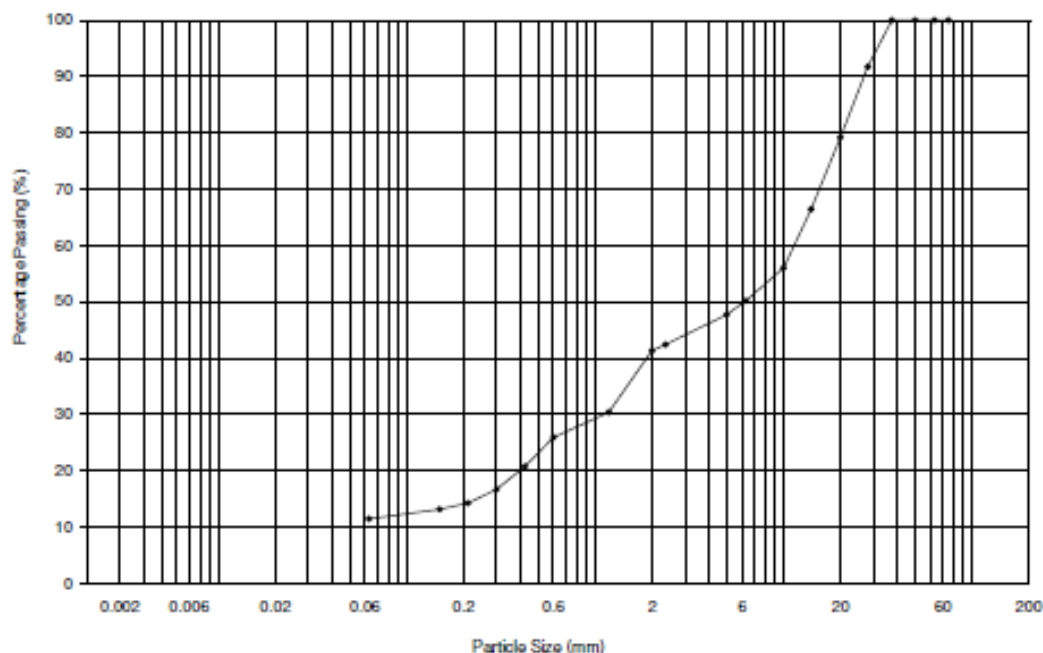
Fax: 0844 3358907

Email: enquiries@fastrack-geotechnical.co.uk

Web: www.fastrack-geotechnical.co.uk

Appendix No: 3

FGS Ref: 21000

**LABORATORY RESULTS****Property Address: Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR****PARTICLE SIZE DISTRIBUTION: BOREHOLE 2 at 1.00m**

| CLAY | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | COBBLES |
|------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|
|      | SILT |        |        | SAND |        |        | GRAVEL |        |        |         |

Issued by:



Jade Barnett (Laboratory Technician)



Other

Signed:

**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge****Cyril Leonard Ltd**



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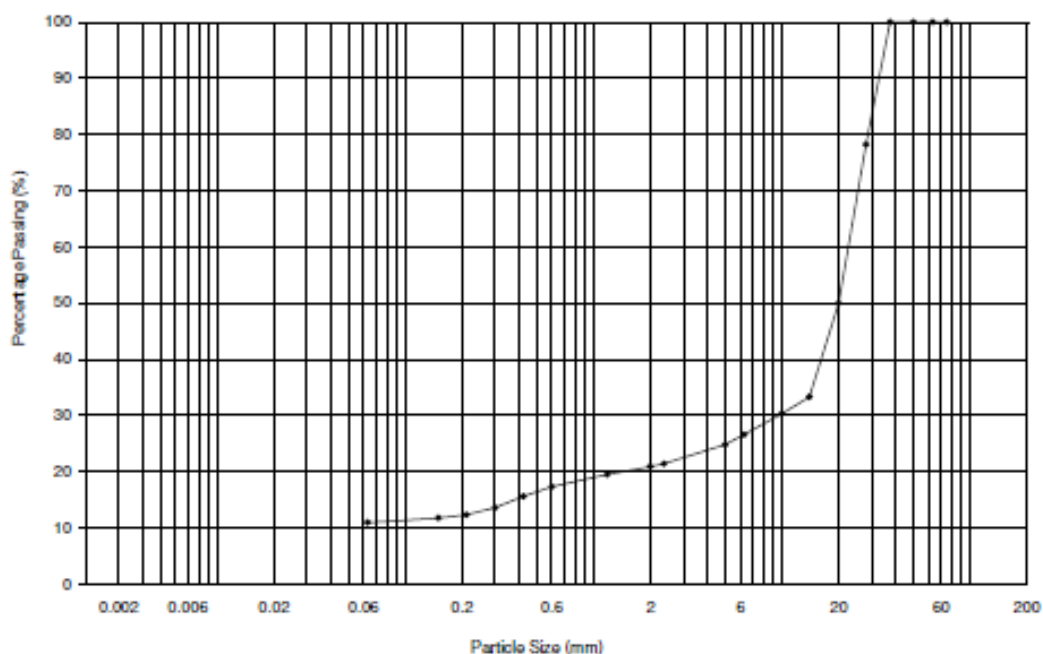
Appendix No: 3

FGS Ref: 21000

## LABORATORY RESULTS

Property Address: Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR

### PARTICLE SIZE DISTRIBUTION: BOREHOLE 2 at 2.00m



| CLAY | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | COBBLES |
|------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|
|      | SILT |        |        | SAND |        |        | GRAVEL |        |        |         |

Issued by:



Jade Barnett (Laboratory Technician)



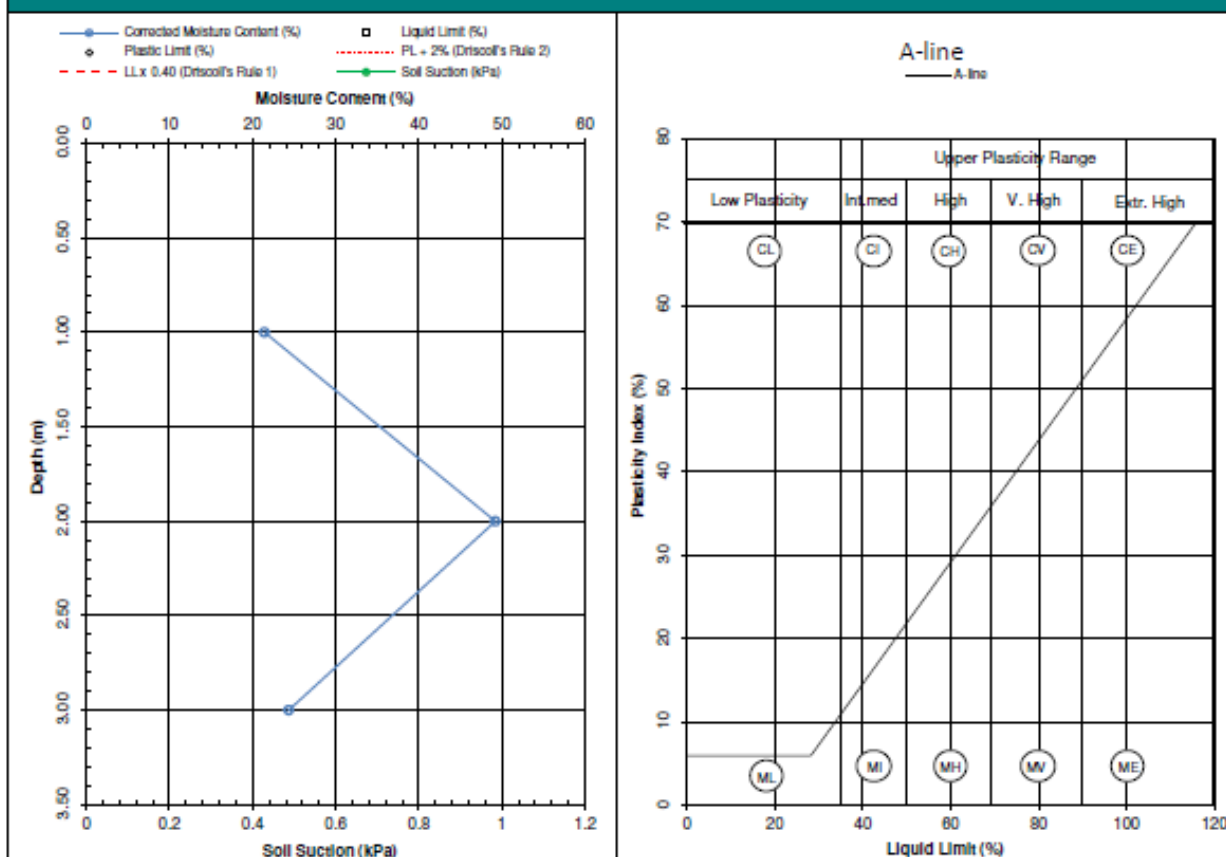
Other

Signed:

1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge

Cyril Leonard Ltd

|                          |                                                           |
|--------------------------|-----------------------------------------------------------|
| <b>Property Address:</b> | Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR |
| <b>Client Claim Ref:</b> |                                                           |

[illegible]

|           |                                                              |
|-----------|--------------------------------------------------------------|
| Comments: | Unable to perform PSD on BH3 @ 3.00 due to not enough sample |
|-----------|--------------------------------------------------------------|

Issued by: ☐ Jade McLellan (Laboratory Manager)  
☒ Isabella Acerbis (Laboratory Technician)

☐ Benjamin Brocklebank (Laboratory Technician)

**FASTRACK**Tyndales Farm, Southend Road, Woodham Mortimer,  
Maldon, Essex, CM9 6TQ

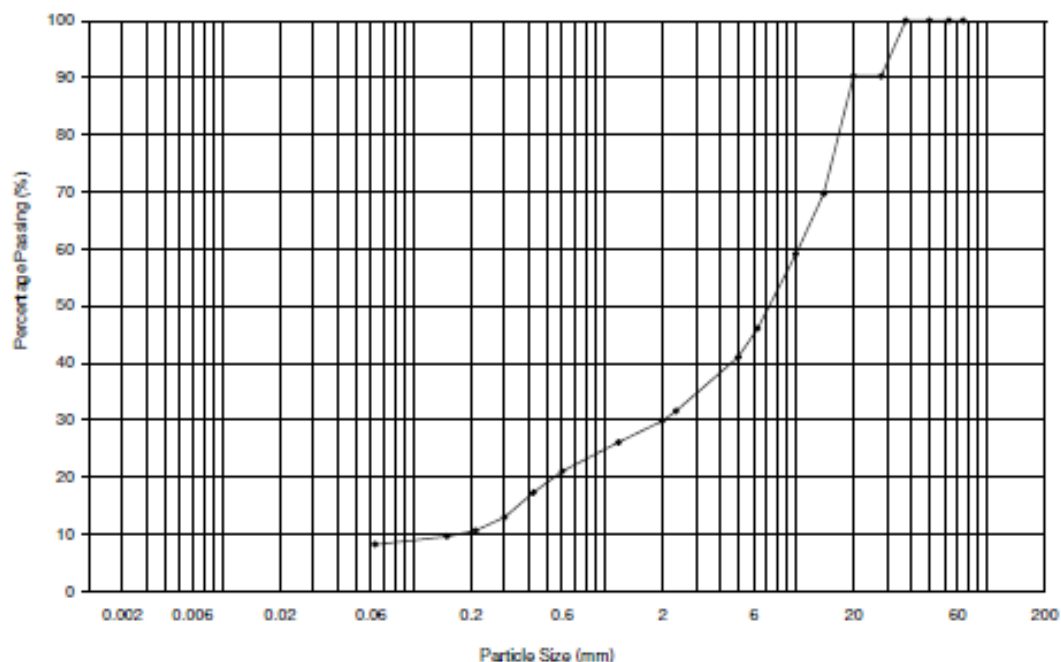
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Appendix No: 3

FGS Ref: 21000

**LABORATORY RESULTS****Property Address: Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR****PARTICLE SIZE DISTRIBUTION: BOREHOLE 3 at 1.00m**

| CLAY | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | COBBLES |
|------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|
|      | SILT |        |        | SAND |        |        | GRAVEL |        |        |         |

Issued by:



Jade Barnett (Laboratory Technician)



Other

Signed:

**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge****Cyril Leonard Ltd**

**FASTRACK**Tyndales Farm, Southend Road, Woodham Mortimer,  
Maldon, Essex, CM9 6TO

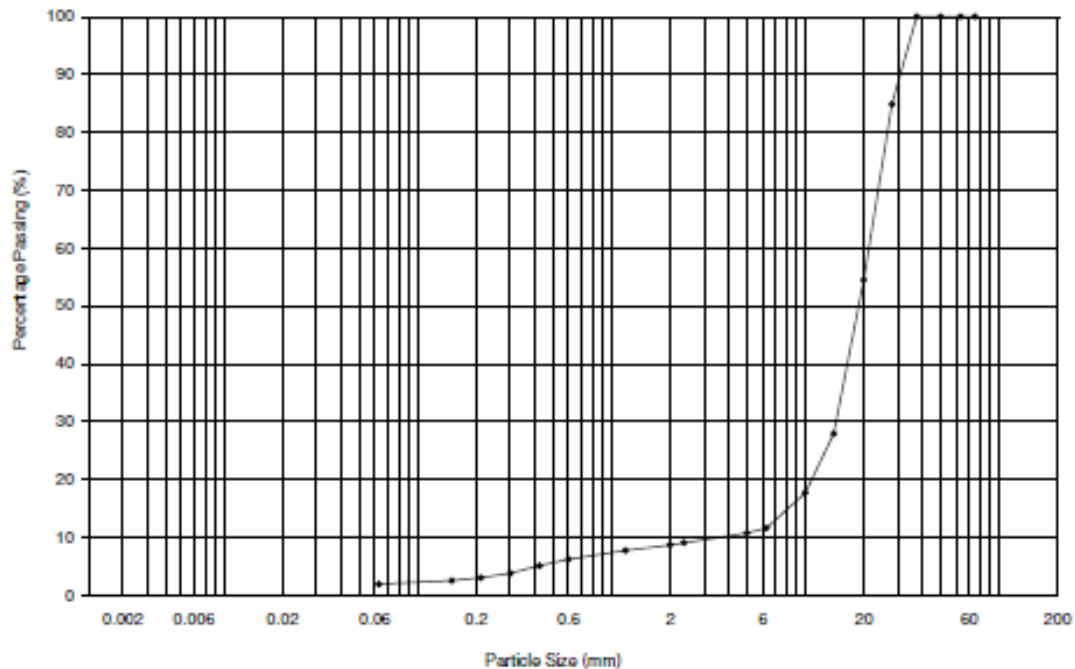
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Appendix No: 3

FGS Ref: 21000

**LABORATORY RESULTS****Property Address: Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR****PARTICLE SIZE DISTRIBUTION: BOREHOLE 3 at 2.00m**

| CLAY | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | COBBLES |
|------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|
|      | SILT |        |        | SAND |        |        | GRAVEL |        |        |         |

Issued by:



Jade Barnett (Laboratory Technician)



Other

Signed:

**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge****Cyril Leonard Ltd**

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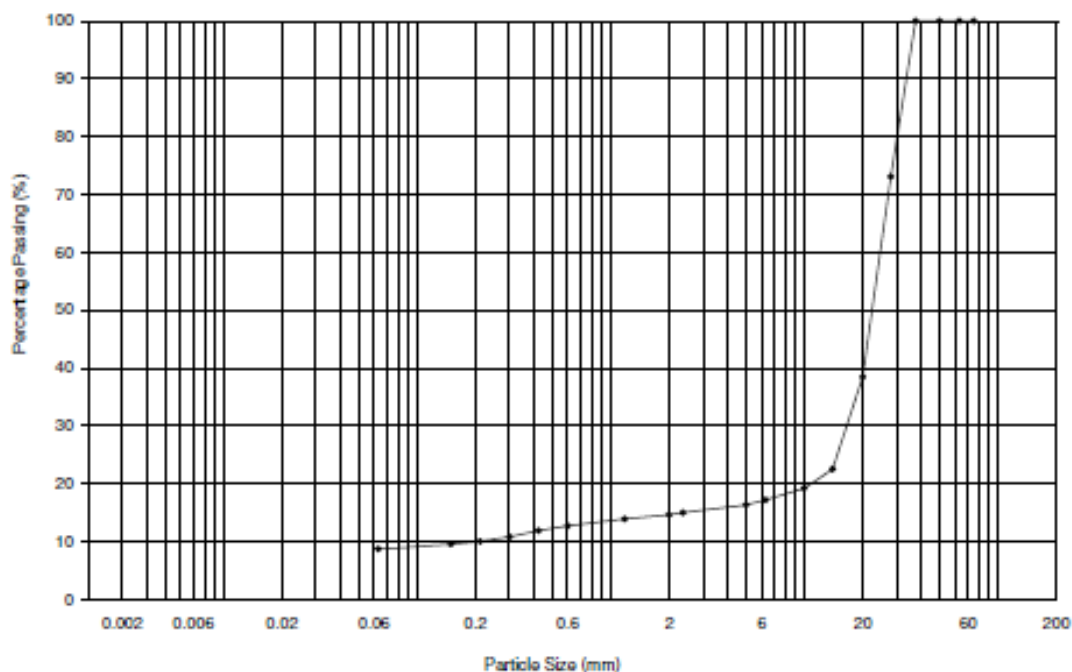
Appendix No: 3

FGS Ref: 21000

## LABORATORY RESULTS

Property Address: Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR

### PARTICLE SIZE DISTRIBUTION: BOREHOLE 4 at 2.00m



| CLAY | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | COBBLES |
|------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|
|      | SILT |        |        | SAND |        |        | GRAVEL |        |        |         |

Issued by:



Jade Barnett (Laboratory Technician)



Other

Signed:

**FASTRACK**Tyndales Farm, Southend Road, Woodham Mortimer,  
Maldon, Essex, CM9 6TQ

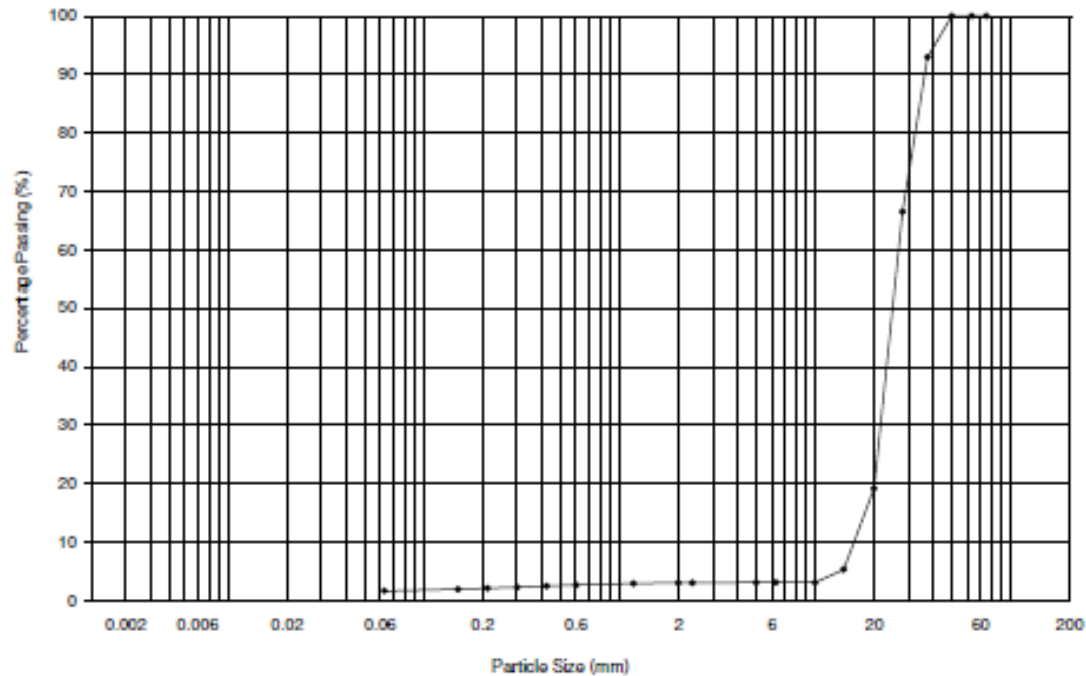
Tel: 0844 3358908

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Appendix No: 3

FGS Ref: 21000

**LABORATORY RESULTS****Property Address: Barton Buildings, Arundel Road, Uxbridge, London, UB8 2RR****PARTICLE SIZE DISTRIBUTION: BOREHOLE 4 at 5.00m**

| CLAY | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | COBBLES |
|------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|
|      | SILT |        |        | SAND |        |        | GRAVEL |        |        |         |

Issued by:



Jade Barnett (Laboratory Technician)



Other

Signed:

**1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge****Cyril Leonard Ltd**



## **Appendix I – CBR Test Results**



## In Situ California Bearing Ratio ( CBR )

|                  |                                                                          |        |                            |
|------------------|--------------------------------------------------------------------------|--------|----------------------------|
| Job Ref          | 28565                                                                    |        |                            |
|                  | CBR No.                                                                  |        |                            |
| Site Name        | Barton Building, Uxbridge Industrial Estate                              |        |                            |
| Project No.      | 1833                                                                     | Client | Contaminated Land Solution |
| Soil Description | Dark grey clayey sandy GRAVEL (gravel is fmc and sub-angular to rounded) |        |                            |
| Test Method      | BS1377 : Part 9 : 1990, clause 4.3                                       |        | CBR Test Number            |
|                  |                                                                          | 1      |                            |

Note: Test only applicable when maximum particle size beneath the plunger does not exceed 20mm

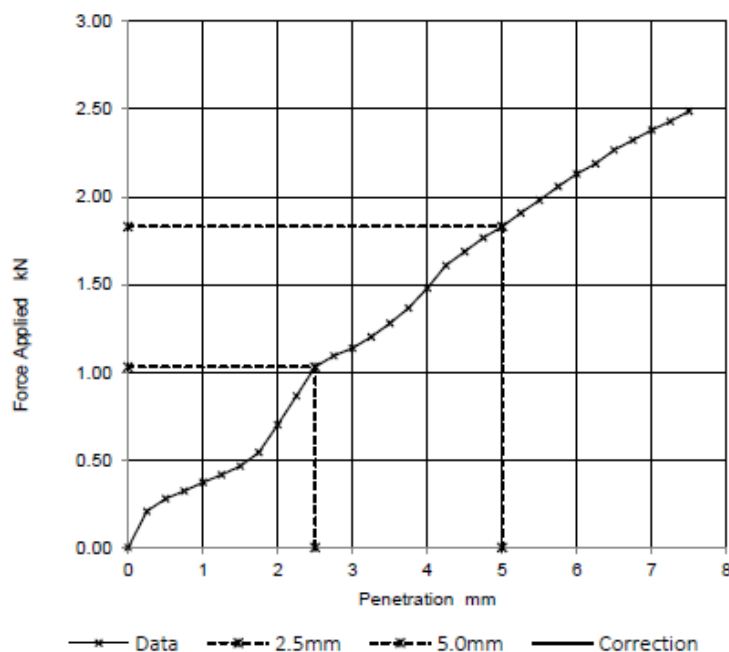
Rate of Strain 1.00 mm/min  
 Mass of Surcharge 4.6 kg  
 Proving Ring Factor 7.15 N/div

Temperature 22 °C  
 Environmental Conditions Sunny

### Readings

| Penetration of Plunger<br>mm | Force on Plunger |            |
|------------------------------|------------------|------------|
|                              | Dial Reading     | Load<br>kN |
| 0.00                         | 0                | 0.00       |
| 0.25                         | 29               | 0.21       |
| 0.50                         | 39               | 0.28       |
| 0.75                         | 45               | 0.32       |
| 1.00                         | 52               | 0.37       |
| 1.25                         | 58               | 0.41       |
| 1.50                         | 65               | 0.46       |
| 1.75                         | 76               | 0.54       |
| 2.00                         | 98               | 0.70       |
| 2.25                         | 121              | 0.87       |
| 2.50                         | 144              | 1.03       |
| 2.75                         | 153              | 1.09       |
| 3.00                         | 159              | 1.14       |
| 3.25                         | 168              | 1.20       |
| 3.50                         | 179              | 1.28       |
| 3.75                         | 191              | 1.37       |
| 4.00                         | 207              | 1.48       |
| 4.25                         | 225              | 1.61       |
| 4.50                         | 236              | 1.69       |
| 4.75                         | 247              | 1.77       |
| 5.00                         | 256              | 1.83       |
| 5.25                         | 267              | 1.91       |
| 5.50                         | 277              | 1.98       |
| 5.75                         | 288              | 2.06       |
| 6.00                         | 298              | 2.13       |
| 6.25                         | 306              | 2.19       |
| 6.50                         | 317              | 2.27       |
| 6.75                         | 325              | 2.32       |
| 7.00                         | 333              | 2.38       |
| 7.25                         | 340              | 2.43       |
| 7.50                         | 348              | 2.49       |

### Force versus Penetration Plot



Remarks

### Results

| Curve correction applied | CBR Values, %     |                 |           | Moisture Content % |
|--------------------------|-------------------|-----------------|-----------|--------------------|
|                          | Penetration 2.5mm | Penetration 5mm | CBR Value |                    |
| No                       | 7.8               | 9.2             | 9.2       | 9.9                |



Test Report by K4 SOILS LABORATORY  
 Unit 8 Olds Close Olds Approach  
 Watford Herts WD18 9RU

Tel: 01923 711 288

Email: [James@k4soils.com](mailto:James@k4soils.com)

Checked and Approved

Initials: J.P

Date: 06/08/2020

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R16

1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge  
 Cyril Leonard Ltd



## In Situ California Bearing Ratio ( CBR )

|              |            |
|--------------|------------|
| Job Ref      | 28565      |
| CBR No.      | CBR 2      |
| Depth m      | 0.35       |
| Date of Test | 29/07/2020 |

and sub-angular to rounded)

|                 |   |
|-----------------|---|
| CBR Test Number | 2 |
|-----------------|---|

Note: Test only applicable when maximum particle size beneath the plunger does not exceed 20mm

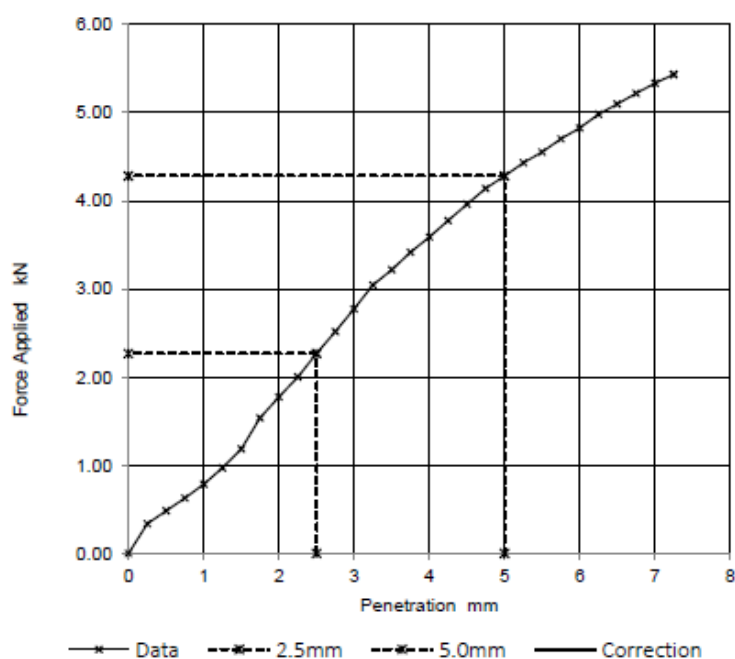
Rate of Strain 1.00 mm/min  
Mass of Surcharge 4.6 kg  
Proving Ring Factor 7.15 N/div

Temperature 22 °C  
Environmental Conditions Sunny

### Readings

| Penetration of Plunger<br>mm | Force on Plunger |            |
|------------------------------|------------------|------------|
|                              | Dial Reading     | Load<br>kN |
| 0.00                         | 0                | 0.00       |
| 0.25                         | 47               | 0.34       |
| 0.50                         | 68               | 0.49       |
| 0.75                         | 88               | 0.63       |
| 1.00                         | 110              | 0.79       |
| 1.25                         | 136              | 0.97       |
| 1.50                         | 166              | 1.19       |
| 1.75                         | 215              | 1.54       |
| 2.00                         | 248              | 1.77       |
| 2.25                         | 280              | 2.00       |
| 2.50                         | 317              | 2.27       |
| 2.75                         | 352              | 2.52       |
| 3.00                         | 388              | 2.77       |
| 3.25                         | 426              | 3.05       |
| 3.50                         | 450              | 3.22       |
| 3.75                         | 478              | 3.42       |
| 4.00                         | 502              | 3.59       |
| 4.25                         | 528              | 3.78       |
| 4.50                         | 554              | 3.96       |
| 4.75                         | 579              | 4.14       |
| 5.00                         | 599              | 4.28       |
| 5.25                         | 620              | 4.43       |
| 5.50                         | 637              | 4.55       |
| 5.75                         | 658              | 4.70       |
| 6.00                         | 675              | 4.83       |
| 6.25                         | 697              | 4.98       |
| 6.50                         | 713              | 5.10       |
| 6.75                         | 730              | 5.22       |
| 7.00                         | 746              | 5.33       |
| 7.25                         | 760              | 5.43       |
| 7.50                         |                  |            |

### Force versus Penetration Plot



Remarks

### Results

| Curve<br>correction<br>applied | CBR Values, % |     |           | Moisture<br>Content<br>% |
|--------------------------------|---------------|-----|-----------|--------------------------|
|                                | Penetration   |     | CBR Value |                          |
|                                | 2.5mm         | 5mm |           |                          |
| No                             | 17            | 21  | 21        | 8.3                      |



Test Report by K4 SOILS LABORATORY  
Unit 8 Olds Close Olds Approach  
Watford Herts WD18 9RU

Tel: 01923 711 288

Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 06/08/2020

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R18

1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge  
Cyril Leonard Ltd



# In Situ California Bearing Ratio ( CBR )

Job Ref 28565

CBR No. CBR 3

Site Name Barton Building, Uxbridge Industrial Estate

Depth m 0.45

Project No. 1833

Client

Contaminated Land Solution

Date of Test 29/07/2020

Soil Description Brown slightly gravelly slightly sandy silty CLAY (gravel is fmc and sub-angular to rounded)

Test Method BS1377 : Part 9 : 1990, clause 4.3

CBR Test Number 3

Note: Test only applicable when maximum particle size beneath the plunger does not exceed 20mm

Rate of Strain 1.00 mm/min

Mass of Surcharge 4.6 kg

Proving Ring Factor 0.42 N/div

Temperature  
Environmental  
Conditions

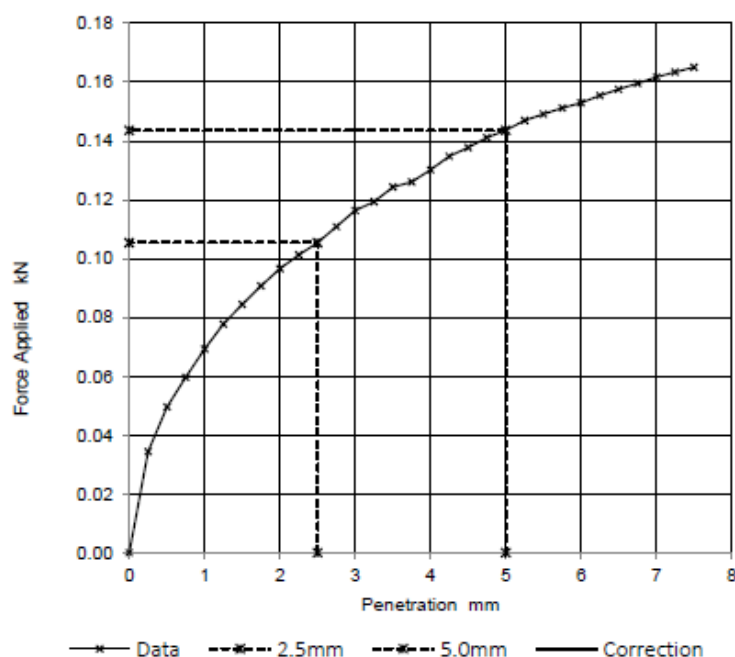
22 0C

Sunny

## Readings

| Penetration of Plunger<br>mm | Force on Plunger |            |
|------------------------------|------------------|------------|
|                              | Dial Reading     | Load<br>kN |
| 0.00                         | 0                | 0.00       |
| 0.25                         | 82               | 0.03       |
| 0.50                         | 118              | 0.05       |
| 0.75                         | 142              | 0.06       |
| 1.00                         | 165              | 0.07       |
| 1.25                         | 185              | 0.08       |
| 1.50                         | 201              | 0.08       |
| 1.75                         | 216              | 0.09       |
| 2.00                         | 230              | 0.10       |
| 2.25                         | 241              | 0.10       |
| 2.50                         | 251              | 0.11       |
| 2.75                         | 264              | 0.11       |
| 3.00                         | 277              | 0.12       |
| 3.25                         | 284              | 0.12       |
| 3.50                         | 296              | 0.12       |
| 3.75                         | 300              | 0.13       |
| 4.00                         | 310              | 0.13       |
| 4.25                         | 321              | 0.13       |
| 4.50                         | 328              | 0.14       |
| 4.75                         | 336              | 0.14       |
| 5.00                         | 342              | 0.14       |
| 5.25                         | 350              | 0.15       |
| 5.50                         | 355              | 0.15       |
| 5.75                         | 360              | 0.15       |
| 6.00                         | 364              | 0.15       |
| 6.25                         | 370              | 0.16       |
| 6.50                         | 375              | 0.16       |
| 6.75                         | 380              | 0.16       |
| 7.00                         | 385              | 0.16       |
| 7.25                         | 389              | 0.16       |
| 7.50                         | 393              | 0.17       |

## Force versus Penetration Plot



Remarks

## Results

| Curve correction applied | CBR Values, %     |                 | Moisture Content % |
|--------------------------|-------------------|-----------------|--------------------|
|                          | Penetration 2.5mm | Penetration 5mm |                    |
| No                       | 0.80              | 0.72            | 0.80               |
|                          |                   |                 | 35                 |



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MSF-5-R16

1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge

Cyril Leonard Ltd

|                                                                                   |                                                                             |        |                            |              |            |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------|----------------------------|--------------|------------|
|  | In Situ California Bearing Ratio ( CBR )                                    |        | Job Ref                    | 28565        |            |
|                                                                                   |                                                                             |        | CBR No.                    | CBR 4        |            |
| Site Name                                                                         | Barton Building, Uxbridge Industrial Estate                                 |        | Depth m                    | 0.30         |            |
| Project No.                                                                       | 1833                                                                        | Client | Contaminated Land Solution | Date of Test | 29/07/2020 |
| Soil Description                                                                  | Brown gravelly sandy silty CLAY (gravel is fine and sub-angular to rounded) |        |                            |              |            |
| Test Method                                                                       | BS1377 : Part 9 : 1990, clause 4.3                                          |        | CBR Test Number            | 4            |            |

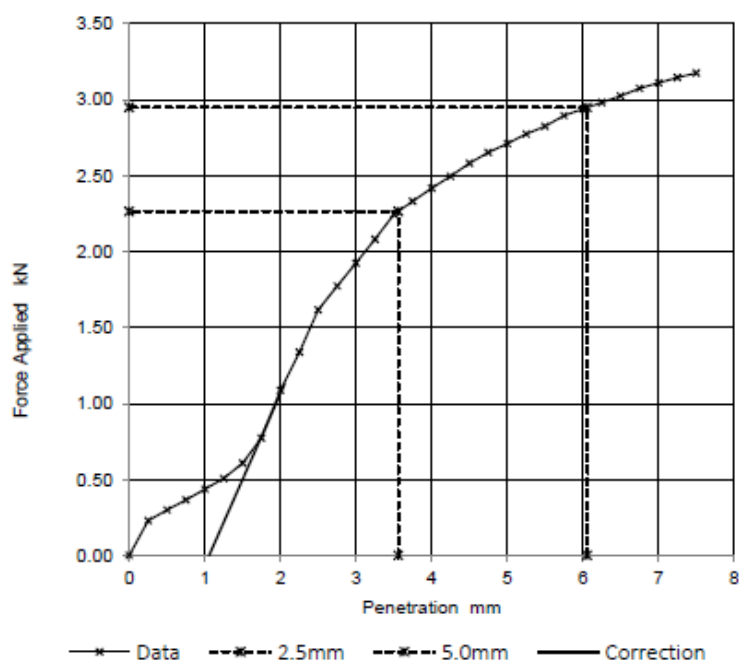
Note: Test only applicable when maximum particle size beneath the plunger does not exceed 20mm

|                     |      |        |                          |       |    |
|---------------------|------|--------|--------------------------|-------|----|
| Rate of Strain      | 1.00 | mm/min | Temperature              | 22    | °C |
| Mass of Surcharge   | 4.6  | kg     | Environmental Conditions | Sunny |    |
| Proving Ring Factor | 7.15 | N/div  |                          |       |    |

### Readings

| Penetration of Plunger<br>mm | Force on Plunger |            |
|------------------------------|------------------|------------|
|                              | Dial Reading     | Load<br>kN |
| 0.00                         | 0                | 0.00       |
| 0.25                         | 32               | 0.23       |
| 0.50                         | 42               | 0.30       |
| 0.75                         | 51               | 0.36       |
| 1.00                         | 61               | 0.44       |
| 1.25                         | 71               | 0.51       |
| 1.50                         | 85               | 0.61       |
| 1.75                         | 108              | 0.77       |
| 2.00                         | 152              | 1.09       |
| 2.25                         | 187              | 1.34       |
| 2.50                         | 228              | 1.62       |
| 2.75                         | 248              | 1.77       |
| 3.00                         | 269              | 1.92       |
| 3.25                         | 291              | 2.08       |
| 3.50                         | 314              | 2.25       |
| 3.75                         | 328              | 2.33       |
| 4.00                         | 338              | 2.42       |
| 4.25                         | 349              | 2.50       |
| 4.50                         | 361              | 2.58       |
| 4.75                         | 371              | 2.65       |
| 5.00                         | 379              | 2.71       |
| 5.25                         | 388              | 2.77       |
| 5.50                         | 395              | 2.82       |
| 5.75                         | 405              | 2.90       |
| 6.00                         | 411              | 2.94       |
| 6.25                         | 417              | 2.98       |
| 6.50                         | 423              | 3.02       |
| 6.75                         | 430              | 3.07       |
| 7.00                         | 435              | 3.11       |
| 7.25                         | 440              | 3.15       |
| 7.50                         | 444              | 3.17       |

### Force versus Penetration Plot



Remarks

|  |
|--|
|  |
|--|

### Results

| Curve correction applied | CBR Values, % |     |           | Moisture Content |
|--------------------------|---------------|-----|-----------|------------------|
|                          | Penetration   |     | CBR Value | %                |
|                          | 2.5mm         | 5mm |           |                  |
| Yes                      | 17            | 15  | 17        | 16               |



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MSF-S-R16

1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge  
Cyril Leonard Ltd



## In Situ California Bearing Ratio ( CBR )

Job Ref 28565

CBR No. CBR 5

Site Name Barton Building, Uxbridge Industrial Estate

Depth m 0.45

Project No. 1833

Client

Contaminated Land Solution

Date of Test 29/07/2020

Soil Description Brown slightly gravelly slightly sandy silty CLAY (gravel is fmc and sub-angular to rounded)

Test Method BS1377 : Part 9 : 1990, clause 4.3

CBR Test Number 5

*Note: Test only applicable when maximum particle size beneath the plunger does not exceed 20mm*

Rate of Strain 1.00 mm/min

Mass of Surcharge 4.6 kg

Proving Ring Factor 0.42 N/div

Temperature 22 °C

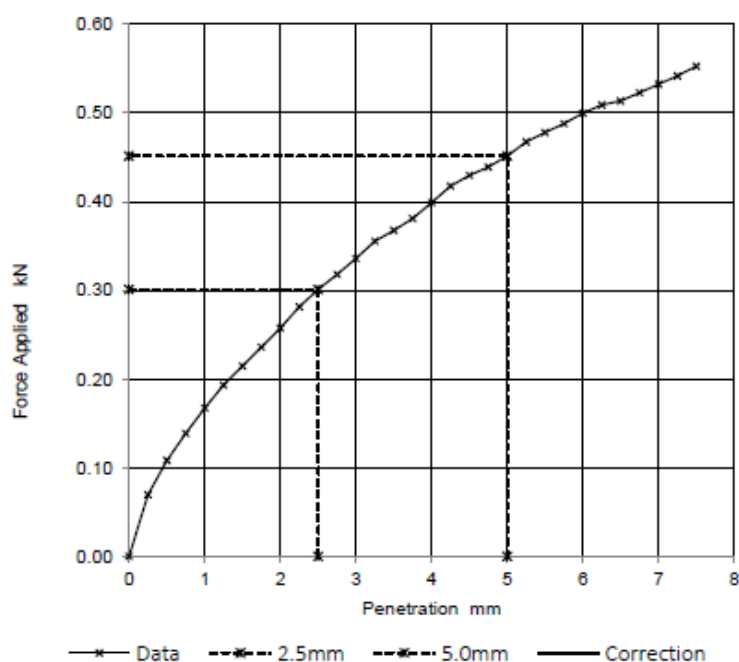
Environmental Sunny

Conditions

### Readings

| Penetration of Plunger<br>mm | Force on Plunger |            |
|------------------------------|------------------|------------|
|                              | Dial Reading     | Load<br>kN |
| 0.00                         | 0                | 0.00       |
| 0.25                         | 166              | 0.07       |
| 0.50                         | 258              | 0.11       |
| 0.75                         | 330              | 0.14       |
| 1.00                         | 398              | 0.17       |
| 1.25                         | 480              | 0.19       |
| 1.50                         | 511              | 0.21       |
| 1.75                         | 562              | 0.24       |
| 2.00                         | 613              | 0.26       |
| 2.25                         | 670              | 0.28       |
| 2.50                         | 717              | 0.30       |
| 2.75                         | 757              | 0.32       |
| 3.00                         | 800              | 0.34       |
| 3.25                         | 846              | 0.36       |
| 3.50                         | 875              | 0.37       |
| 3.75                         | 907              | 0.38       |
| 4.00                         | 950              | 0.40       |
| 4.25                         | 994              | 0.42       |
| 4.50                         | 1023             | 0.43       |
| 4.75                         | 1045             | 0.44       |
| 5.00                         | 1075             | 0.45       |
| 5.25                         | 1113             | 0.47       |
| 5.50                         | 1138             | 0.48       |
| 5.75                         | 1162             | 0.49       |
| 6.00                         | 1190             | 0.50       |
| 6.25                         | 1212             | 0.51       |
| 6.50                         | 1223             | 0.51       |
| 6.75                         | 1245             | 0.52       |
| 7.00                         | 1268             | 0.53       |
| 7.25                         | 1290             | 0.54       |
| 7.50                         | 1316             | 0.55       |

### Force versus Penetration Plot



Remarks

### Results

| Curve correction applied | CBR Values, %     |                 |           | Moisture Content % |
|--------------------------|-------------------|-----------------|-----------|--------------------|
|                          | Penetration 2.5mm | Penetration 5mm | CBR Value |                    |
| No                       | 2.3               | 2.3             | 2.3       | 27                 |



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MSF-S-R16

1833-P2GE-1: Uxbridge Industrial Estate, Arundel Road, Uxbridge

Cyril Leonard Ltd



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