# HERTS & ESSEX SITE INVESTIGATIONS

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*GEOTECHNICAL ASSESSMENTS – ENVIRONMENTAL ASSESSMENT - DESKTOP STUDY – CONTAMINATED LAND*


***Report For :***

## *Higgins Homes PLC*

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# *Phase II ENVIRONMENTAL REPORT*

***Site location :***

## *Former Cherry Garden School, Macks Road, Bermondsey, London SE16 3XU*

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***December 2019***
***Report No. 15629***

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# *DOCUMENT INFORMATION AND CONTROL SHEET*

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Higgins Homes PLC
One Langston Road
Loughton
Essex
IG10 3SD

***Client Contact :***

Unknown

**Environmental Consultants :**

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***Qualifications***

***C.S.Gray***

- ONC - Civil Engineering
- HNC – Civil Engineering
- P.G. Certificate – Geotechnical Engineering, (Inc. Environmental Engineering)
- P.G. Diploma – Geotechnical Engineering, (Inc. Environmental Engineering),
- Master of Science, (Geotechnical Engineering), (Inc. Environmental Engineering)
- SNIFFER modelling course
- CONSIM Groundwater Assessment Course.
- (30 Years in Geotechnical and Environmental Engineering)
- Asbestos Awareness Course;
- Non-Licensed Work with Asbestos Including NNLW.
- Site Supervisors Safety Training Scheme, (SSSTS).
- First Aid Course in Construction – 3 Day Course – 3 years
- CSCS Labourer Card

Document Status and Approval Schedule

| Issue No | Status | Date | ***Prepared by :*** Rebecca Chamberlain<br><br>Signature / Date | ***Technical review by :*** Martyn Smith<br>Chris Gray<br><br>Signature / Date | ***Checked By :*** Chris Gray<br>Martyn Smith<br><br>Signature / Date |
|---|---|---|---|---|---|
| 1 | Final | December 2019 |  |  |  |

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| 1 | HESI, (File Copy) | Electronic Copy | 1 | December 2019 |
| 2 | Higgins Homes PLC | Electronic Copy | 1 | December 2019 |
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***EXECUTIVE SUMMARY***
***Phase II - Environmental Report***

| | |
|---|---|
| ***Client*** | Higgins Homes PLC |
| ***Site Location*** | Former Cherry Garden School, Macks Road, Bermondsey, London SE16 3XU |
| ***Existing Development*** | Vacant primary School |
| ***Proposed Development*** | It is proposed to develop residential dwellings within the site area, in the form of flats, duplexes and houses, forming between two and six storeys. Private gardens as well as communal landscaping is also proposed. |
| ***Site Settings and Previous Uses*** | From the earliest map reference that site area is recorded as terraced residential dwellings with rear gardens, in about 1940 the area was redeveloped (likely due to bomb damage during the war) the site and land to the east, south and west remain residential land. From 1973 the site area was redeveloped to form the school which remains in place to date.<br><br>Surrounding the site residential land remains in place to the east, south and west. Some commercial shops are in place to the south east of the site area. To the north of the site area a grassed recreational area is in place. |
| ***Nearest Surface Water Feature*** | The nearest surface water feature is recorded as 704 meters to the east of the site which is recorded as a pond within Southwark Park. |

| | | | |
|---|---|---|---|
| ***Geological and Hydrological Profile*** | ***Geology*** | | |
| | ***Made Ground*** | Shallow Made Ground to a maximum depth of 1.70 | Not Classified |
| | ***Kempton Park Gravel Member*** | Chalky till, together with outwash sands and gravels, silts and clays in place to about 5.40m | Secondary A Aquifer |
| | ***Lambeth Group*** | Encountered to the close of the borehole at 25 meters | Secondary A Aquifer |

| | |
|---|---|
| ***Groundwater Abstractions*** | The nearest abstraction well is located 775 meters to the east of the site which is recorded as a Public Administration: Drinking, Cooking, Sanitary, Washing, (Small Garden) and Municipal Grounds: Make-Up or Top Up Water. |
| ***Source Protection Zone*** | The site does not lie within a Source Protection Zone. |
| ***Potential Sources of Contamination*** | ***On Site***<br>• Parking area<br>• School<br>• Terrace dwellings and gardens- Redeveloped<br>• (possible bomb damage)<br>• Made Ground<br><br>***Off Site***<br>• Made Ground (bomb Damage) |
| ***Previous Investigations*** | No reports relating to contaminated land are known to us at the time of writing this report relating to the site |

| | |
|---|---|
| ***HUMAN HEALTH RISK*** | The site has identified three specific layers of Made Ground and potentially contaminated ground. These form the following layers and associated contamination :-<br><br>○ ***FILL*** :- ***Isolated*** contamination from ***Lead*** to the areas of ***WS7 ONLY*** – ***additional testing and Remediation works will be required to this area;***<br><br>Based on the above, ***remedial measures will likely be required areas where pathways to receptors are in place***. |
| ***WORKFORCE*** | The above human health risk is in place within the site area, will promote a low risk on a short term bases to any workforce within the areas. ***Appropriate PPE / RPE should be worn and the soil contamination risk should be noted within any site inductions.*** |
| ***GROUNDWATER RISKS*** | • Due to the low level of contamination in place within the site area, ***risks to groundwater are generally considered low***. |
| ***VAPOUR RISKS*** | • Chemical testing of the soils show that low risks are in place. ***Vapour risk is not in place.*** |
| ***GAS RISKS*** | • No sources of land gas risk are recorded in place following the investigation not recording significant depths of made ground nor highly organic soils. |
| ***CONSTRUCTION MATERIALS*** | Construction materials have been considered and no risk has been identified directly to any water main pipework developed at the site;<br><br>• ***Water main pipework can be laid in a conventional pipework system;***<br>• ***Any water main pipework should be laid in clean corridors in order to prevent future risk to workforce used in the maintenance and repair of any water main system.*** |
| ***FURTHER WORKS*** | • ***It is recommended that additional works will be required for the site in order to complete assessments which are detailed as follows :-***<br><br>▪ ***Additional sampling to be completed across the site and targeting WS7 to complete the data set and potentially isolate the targeted risk in the location of WS7.***<br><br>• ***Submit reports to Local Authority and Environment Agency for review and confirm the risks identified in this report along with the further works proposed are suitable and acceptable.***<br><br>• ***The exact details of remediation required for the site should be assessed and reported in a Remediation Strategy Report in order to comply with current best practice, (BS 10175 & CLR 11).*** |

## *INVESTIGATION WORKS AND RISK ASSESSMENT REPORTING*

### *1 Introduction*

We have been asked by Higgins Homes PLC to undertake an investigation of the above site in order to assess the potential environmental impact of the historical use of the site on the proposed development. The development of this report has been completed utilising information and assessments completed by HESI developed from a desk top study completed in Oct 2019.

### *2 Report Objectives*

The objectives of this report are to assess and define the extent of contamination within the site as a result of the investigation works undertaken to date.

### *2.1 Limitations*

The opinions expressed within this document and the comments and recommendations given, are based on the information gained, to date within a desktop study previously undertaken on the site. The interpretation of the data has been made by Herts & Essex Site Investigations.

Within any site investigation, materials sampled represent only a small proportion of the materials present on site. It is therefore possible that other conditions prevailing at the site which have not been revealed within the scope of this report, have not been taken into account. Where suspect materials are encountered during any further or future works within the site, additional specialist advice should be sought to assess whether any new information will materially affect the recommendations given within any physical ground investigation.

### *2.2 Planning Condition*

At the time of writing this report no planning application has been submitted with Southwark Council.

### *3 Site Location and National Grid Reference*

The site is located within a residential area of London, the details of which are summarised in Table 1 with the location plan of the site shown in Appendix 2, Sheet 1.

***Table 1 Site Detail***

| | |
|---|---|
| ***Site Address :*** | Former Cherry Garden School, Macks Road, Bermondsey, London SE16 3XU |
| ***Site assessed under*** | Site Owners Request - Aid as part of future planning |
| ***Current use of land :*** | Primary School |
| ***Previous use of site, (if known)*** | As above |
| ***Grid Reference*** | NGR 534340, 178850 |
| ***Site Area*** | 0.23 Hectares |
| ***Local Authority*** | Southwark Council |
| ***Gradient of the site*** | The site and the surrounding area form a level area of land. |
| ***Proximity of Controlled Waters, (if known)*** | The nearest surface water feature is recorded as 704 meters to the east of the site area, where a pond is in place with Southwark Park. |

## 4 Review of Previous Reports or Documents Relating to the Site

### 4.1 Site Details

- The site area forms a vacant school, with a parking area and recreational areas;
- It is proposed to develop residential dwellings within the site area, in the form of flats, duplexes and houses, forming between two and six storeys. Private gardens as well as communal landscaping is also proposed
- From the earliest map reference that site area is recorded as terraced residential dwellings with rear gardens, in about 1940 the area was redeveloped (likely due to bomb damage during the war) the site and land to the east, south and west remain residential land. From 1973 the site area was redeveloped to form the school which remains in place to date.
- Surrounding the site residential land remains in place to the east, south and west. Some commercial shops are in place to the south east of the site area. To the north of the site area a grassed recreational area is in place.
- The nearest surface water feature is recorded as 704 meters to the east of the site which is recorded as a pond within Southwark Park.
- The nearest abstraction well is located 775 meters to the east of the site which is recorded as a Public Administration: Drinking, Cooking, Sanitary, Washing, (Small Garden) and Municipal Grounds: Make-Up or Top Up Water.
- The site does not lie within a Source Protection Zone
- The ground conditions based on geological maps and BGS information shows the site to be located within an area of Kempton Park Gravel Member within the superficial deposit which over lays Lambeth Group. To the south of the site area, 40m, there is Thanet Formation report in place below the Kempton Park Gravel Member.

### 4.2 Risks derived from DTS

As a result of the works undertaken, the following have been confirmed as the following :

***Source Risk***

***On Site***

- Parking area
- School
- Terrace dwellings and gardens- Redeveloped
- (possible bomb damage)
- Made Ground

***Off Site***

- Made Ground (bomb Damage)

***Table 2 Pollutant Risk***

| ***Risk Assessment*** | ***Land Use*** | ***Pollutant*** | |
|---|---|---|---|
| ***Risk Assessment A*** | ***Features On Site***<br><br>Parking area–W<br><br>School<br><br>Terrace dwellings and gardens- Redeveloped (possible bomb damage)<br><br>Made ground | ***Soil, Groundwater & Vapour Risk***<br><br>Moisture Content, pH, Electrical Conductivity, Cyanide, (Free), Cyanide, (Total), Organic Matter, Boron, Sulfate, (2:1 water soluble), Chromium, (Hexavalent), Sulfate, (Total), Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead, Zinc, Speciated PAH's, (EPA Priority 16), Phenols, Asbestos, Total Petroleum Hydrocarbons (aliphatic/ aromatic 8-Band), Naphthalene, $CO_2$, $CH_4$.<br><br>***Soil Sampling Groundwater & Vapour Assessment*** | |
| ***Spatial Sampling, (General Assessment)*** | | Moisture Content, pH, Electrical Conductivity, Cyanide, (Free), Cyanide, (Total), Organic Matter, Boron, Sulfate, (2:1 water soluble), Chromium, (Hexavalent), Sulfate, (Total), Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead, Zinc, Speciated PAH's, (EPA Priority 16), Phenols. | 25 meter Centres<br>In accordance with BS10175: 2011+A2:2017. |
| | | Asbestos | 5-10 meter Centres<br>In accordance with BS10175: 2011+A2:2017. |

***Pathways***

Potential pathways in place within the site area recorded as : -

- Dermal Contact;
- Inhalation of dust and fibres;
- Ingestion of dust and fibres
- Ingestion of contaminated water through water main pipework;
- Inhalation of vapours from soils;
- Inhalation Asbestos dust and fibres (from Asbestos within the building);
- Inhalation Asbestos dust and fibres (from asbestos within the soil).
- Inhalation of vapours from Groundwater.

***Receptors***

Potential receptors in place within the site area recorded as : -

- Human Health, (Site Development Personnel);
- Human Health, (Residents or staff);
- Adjoining Land Owners, (unlikely);
- Flora, (Plant Growth);
- Buildings, Construction Materials, Services;
- Groundwater;

## *5 Details of Preparatory Work*

Preparatory works had originally been agreed with the client to gain access and undertake excavations within the site. This incorporates free access across the site area, although access for the drilling to some of the proposed locations was not possible due to the size of the rig.

## *6 Details of Investigation Objectives.*

Within the scope of this report, the objectives will form the following :-

- To anticipate regulatory action and provide sufficient data to overcome and answer any outstanding queries they may raise;

- Provide the relevant authorities sufficient information to satisfy any regulatory requirements set for the site;
- To ensure that the development, on completion, will be fit for the proposed use with all risk assessed and removed.
- It is proposed within this investigation to assess the suitability of the site for a new development which will incorporate residential structure and associated landscaping;
- In order to assess this suitability for development, it is proposed to use a source-pathway-receptor analogy, which, if broken, presents a reduced risk to the development.
- It is proposed to assess, where possible, sources of contamination within the site as a result of historical or ongoing use and whether these uses have pathways to receptors within the proposed development.

## *7 Summary of Work Undertaken*

The scope of the works involved excavation of boreholes to gain a better and more visual understanding of the site conditions. This was undertaken at locations around the site and broadly confirmed the findings of the visual inspection of the site.

Samples were taken in containers dependant upon the proposed sampling regime required and placed in cool boxes where they were transported directly to the analytical chemist for assessment. These works included the following :-

### *7.1 Investigation Works Completed*

The investigation works completed are as detailed below :-

1. The focus of the investigation was to confirm risks from the site which are detailed as follows :-
   a. Assessment of soils across the site area;
2. Spatial sampling around the remainder of the site to provide a general assessment.

***Initial Investigation – November 2019***

- 7 No Competitor Rig Windowless Sampler borehole sunk to depths of approximately 3.00 meters - Date of Works – Nov 2018 ( Access to the location of WS3 & WS5 was not possible)
- 2 No Shell and Auger Drilling Rig Boreholes were completed to a depth of 25 meters; - Date of Work – Nov 2019
- Installation of 2 No standpipes to a depth of 6.00 meters for the purpose of ground water assessments;
- Chemical Sampling and Testing recovered from samples and sent to analytical chemist, (26 November 2019).

### *7.2 Historic Investigation*

- Prior to our involvement in the development of the site, no historic investigations are known to us.

## *8 Location Plans for Exploratory Excavations*

The plans which detail the location of the site, existing site use, proposed site use and identification of features on the site that may promote a risk are shown in Appendix Two. The plans also confirm the location of the excavations made on the site.

The areas of risk will be dictated by the risk classification given in this report and confirm where risk is in place relevant to the proposed end land use classification.

## *9 Description of Site Works and on/off Site Observations*

In order to provide an easy understanding of the proposed development, we can confirm that the site will assess as a single section of land with the same proposed residential land use with potential for homegrown produce.

***The Site.***

The site has been reviewed and we can confirm that the geology within the site is as follows :-

***Table 3 Geological Profile***

| *Stratum* | *Description* | *Depth, Range* | *Thickness, Range* |
|---|---|---|---|
| ***Made Ground*** | Tarmac | 0.05 – 0.20 meters | 0.05-0.20 meters |
| | clayey brick, Concrete and gravel FILL<br>brown sand FILL<br>brown silty clay FILL | 0.50 - 1.70 meters | 0.40 – 1.59 meters |
| ***Kempton Park Gravel Member*** | Medium dense brown slightly claybound SAND | 1.30 – 1.80 meters | 0.60 – 1.30 meters |
| | Firm brown mottled grey sandy CLAY increasing in silt and sand content with depth | 1.20 - 1.60 meters | 1.00 meter |
| | Dense brown SAND & GRAVEL | 5.00 - 5.40 meters | 3.35 – 3.60 meters |
| ***Lambeth Group*** | Very stiff grey sandy slightly silty CLAY with shell fragments | 7.00 meters | 1.40m+ meters |
| | Very stiff grey sandy slightly silty CLAY with pockets of increase silt | 8.60 – 7.00 meters | 1.60 meters |
| | CLAY with rounded black gravel over SAND with black gravel | 9.00 – 9.70 meters | 1.00 - 1.10 meters |
| | Dense grey SAND | 25.00m + meters | 14.50+ meters |
| ***Ground Water*** : Groundwater has been identified within the scope of the site works within the Deeper Shell and auger boreholes at 6.00 and 6.20 meters. No long term monitoring has been completed to date. | | | |

## *10 Contamination Assessment*

### *10.1 Contamination*

In order to assess the site, the site will be considered based on the historic land use of the site which will depict the extent of testing undertaken to consider risk within the area and additionally, the site will consider the proposed land use for assessment of whether target values have been exceeded for that particular land use.

### *10.2 Human Health Risk*

As part of a generic assessment of the subsoil conditions, a comparison has initially been made using Generic Quantitative Assessment Criteria, (GQRA), values for contaminants derived the Environment Agency in Soil Guideline Values released in August 2015, LQM / CIEH - S4UL's for Human Health Risk Assessment and also Category 4 Screening Values, (DEFRA), to evaluate whether the levels of contamination measured at the site exceed the human health risk levels which have been derived for the site. For the proposed land use of this site, we can confirm that Generic Quantitative Assessment Criteria have been identified for the site. This is the order in which the Health Criteria Values will be used.

We are aware that the CIEH have published a 'Position Statement' which confirms that they do not wish to be associated with Category 4 screening values under the planning regime and as such would revert back to their own values, although, we are also aware that Local Authorities recommend the use of these value, although this is dependent upon the council EHO. As detailed above, the order of progression will be EA - SGV's, LQM / CIEH Data and then C4SL data.

It is possible that where exceedance of these values are recorded, a more Detailed, Qualitative Risk Assessment, (DQRA), could be completed using site specific scenarios and toxicological properties of the subsoil and site conditions to derive Site Specific Assessment Criteria, (SSAC), for the site. The assessment of testing has been completed as follows and reports the initial risks considered in place compared to GQRA

For ease of assessment, we can confirm that the site will be considered based on single zone of development as detailed below :-

- ***Zone 1 The Site Residential Land Use Standards***

The density of sampling has been appropriate to consider Asbestos risks across the entire proposed development area, which required a 10 metre sampling grid pattern. Also, for general risk pollutants, the identified risks have been appropriately classified in accordance with BS10175:2011+A2:2017.

We consider that general risk pollutants have appropriate density sampling and as such, can be taken forward to be considered through statistical analysis.

By comparison of the data recovered from the sample analysis against the human health risk assessments with the potential for plant uptake, it can be seen that exceedance of the relevant generic guidance values have been identified which are detailed as follows.

***Table 4*** ***Table of Source risk contamination based on GQRA***

| ***Existing use*** | ***Proposed use*** | ***Site Work Date*** | ***Strata Description*** | ***Depth of strata*** *m.b.g.l.* | ***Sample ID*** | ***Depth*** *(m)* | | | ***Testing completed*** HESI Suite 1 | PAH's (speciated) | TPH CWG | Asbestos | VOCs | PCBs | WAC | ***Data sets where elevated level are in place*** ACM Type | % Asbestos Identification | Lead mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vacant School | Residential | 15 11 19 | clayey brick and gravel FILL | 0.70 | WS1 | 0.6 | - | 0.65 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - | No Asbestos Detected | 50 |
| | | 15 11 19 | brown sand FILL | 0.60 | WS2 | 0.5 | - | 0.55 | ✓ | ✓ | ✓ | ✓ | | | | - | No Asbestos Detected | ***201*** |
| | | 15 11 19 | [A] Firm brown silty CLAY with occasional flint gravel | 1.20 | WS4 | 0.50 | - | 0.55 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | - | No Asbestos Detected | 12 |
| | | 15 11 19 | Brick and concrete hardcore | 0.50 | WS6 | 0.40 | - | 0.45 | ✓ | ✓ | ✓ | ✓ | | | | - | No Asbestos Detected | 107 |
| | | 15 11 19 | Brown silty clay FILL | 1.10 | WS6 | 1.00 | - | 1.05 | ✓ | ✓ | ✓ | ✓ | | | | - | No Asbestos Detected | 108 |
| | | 15 11 19 | [B] Dense orange brown SAND & GRAVEL | 3.00+ | WS6 | 3.00 | - | 3.05 | ✓ | ✓ | ✓ | ✓ | | | ✓ | - | No Asbestos Detected | 13 |
| | | 15 11 19 | clayey brick and gravel FILL | 1.70 | WS7 | 0.40 | - | 0.45 | ✓ | ✓ | ✓ | ✓ | | | | - | No Asbestos Detected | ***432*** |
| | | 15 11 19 | | | WS7 | 1.50 | - | 1.55 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | - | No Asbestos Detected | 61 |
| | | 26 11 19 | Loose to compact brown sandy gravelly sandy FILL | 0.50 | BH1 | 0.40 | - | 0.45 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | - | No Asbestos Detected | ***204*** |
| | | 26 11 19 | [A] | 1.65 | BH1 | 0.70 | - | 0.75 | ✓ | ✓ | ✓ | ✓ | | | | - | No Asbestos Detected | 63 |
| | | 26 11 19 | Loose to compact brown sandy gravelly sandy FILL | 0.50 | BH2 | 0.40 | - | 0.45 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | - | No Asbestos Detected | 174 |
| | | 26 11 19 | Firm brown clayey SAND | 1.80 | BH2 | 0.80 | - | 0.85 | ✓ | ✓ | ✓ | ✓ | | | | - | No Asbestos Detected | 44 |
| * Indicates the value which forms the lowest trigger level.<br>Some PAH's are additionally tested within the VOC List. The highest values have been taken.<br>For the purposes of assessment, Soil Organic Matter values of 2.5% has been used.<br>All measurements are given in $mg/kg^{-1}$ | | | | | | ***Residential Exposure Level*** | | | | | | | | | | Absent / Present | | 200 |

### *10.3 Statistical Analysis*

Statistical analysis has been completed on the samples recovered from the site in order to further risk assess the site. Based on the information present, we can confirm the following results were achieved from the assessment : -

***Table 5 Statistical Assessment***

| | | *Lead* | *Notes and Conclusions* |
|---|---|---|---|
| ***Strata*** | | | |
| ***Made Ground*** | ***No of Samples*** | 12 | Based on the information gained, confidence is good although in accordance with best practice, additional sampling should be undertaken to achieve a 95% confidence.<br><br>Outliers are recorded in place likely to form WS7.<br><br>***CONCLUSIONS:.*** Isolated risk is likely in place to WS7, Additional testing is recommended to confirm the risk OR Assume widespread risk is in place. |
| | ***Confidence*** | 84% | |
| | ***Outliers Present*** | ✓ | |
| | ***Upper 95$^{th}$ Percentile*** | 118.57 | |
| | ***Residential Exposure Level*** | 200 | |
| | ***Upper 95$^{th}$ Percentile PASS/ FAIL*** | Pass | |

### *10.4 Human Health Source Conclusions*

Risk based on assessments of the site confirm that risk is in place as follows :-

***Table 6 Soil Contamination Risks***

| *Risk Factor* | *Risks in place* | *Remediation* |
|---|---|---|
| ***Targeted Risks*** | ***Lead*** Risk within the Fill<br>***WS7*** | Remediation action required.<br>Additional sampling to comply with the statistical data set. |
| ***Spatial Risks*** | None | None |

### *10.5 Ground and Surface Water Source*

The nearest surface water feature is recorded as 704 meters to the east of the site which is recorded as a pond within Southwark Park.

The nearest abstraction well is located 775 meters to the east of the site which is recorded as a Public Administration: Drinking, Cooking, Sanitary, Washing, (Small Garden) and Municipal Grounds: Make-Up or Top Up Water.

The site does not lie within a Source Protection Zone

The ground conditions based on geological maps and BGS information shows the site to be located within an area of Kempton Park Gravel Member within the superficial deposit which over lays Lambeth Group.

Isolated low levels of risk from ***Lead will promote low risk to groundwater.***

Considering the above, we can confirm that the likely current and historical impact of pollution on a groundwater system underlying the site will be minimal due to the low risks in place.

### *10.6 Land Gas Assessments*

In accordance with CLR11, BS 10175:2011, BS 8485:2007, CIRIA C665 and CIRIA R149, risks from land gas were potentially recorded in place within site area due to the potential form increased depths of made ground.

Within the investigations completed the depth of fill within the site was recorded up to 1.70 meters in one location, the majority of the fill is recorded as a sandy Hardcore FILL. No elevated levels of organic matter are recorded within the site area.

Therefore, we would considered that sources of land gases are not in place within the site area.

### *10.7 Vapour Risks*

Considering the potential for vapour risk to be in place from various source as noted below, the following risks are in place.

**Table 7 Vapour Risk Assessment - Response Zone**

| *Feature* | *Targeted Response Zone* | *Location to Target* | *Vapour risk* |
|---|---|---|---|
| Parking area | Made Ground | On Site - W | TPH's, Naphthalene |
| School | | Site wide | |
| Terrace dwellings and gardens- Redeveloped (possible bomb damage) | | Site wide | |
| Made ground | | Site wide | |

Chemical testing has been completed and no elevated level of these vaporous contamination have been recorded in place also when logging and sub-sampling a visual and olfactoral assessment of the soils have been completed, and no contamination that promotes a vapour risk has been encountered within the assessment completed to date.

### *10.8 Water Main Pipework*

Construction materials have been considered and no risk has been identified directly to any water main pipework developed at the site;

- New water main pipework can be laid in a conventional pipework system;
- Any water main pipework should be laid in clean corridors in order to prevent future risk to workforce used in the maintenance and repair of any water main system.

### *10.9 Building Risks*

Based on the information shown, we can confirm that the risk from explosive land gases is low based on the information identified. The justification for low ground gas risk has been identified and reviewed in Section 10.6.

Considering the risk from Sulphates to concrete we can confirm that the chemical testing completed confirms the sulphate levels in the ground which can identify risk to concrete and whether special sulphate resisting cement may be required.

Based on the information gained, we can confirm that a classification of DS2-AC1s should be adopted for the site. Further assessment of the lower natural soils is recommended.

### *10.10 General Source Risk Conclusions*

***The Site***

- ***A targeted risk from lead has been identified in the location of WS7.*** Additional testing to this location is required to complete the data set and assess the extent of the targeted risk.
- Groundwater risk is identified as Low and is recorded as of low environmental sensitivity.
- No vapour risks are recorded within the site area.
- No sources of Land Gases are recorded within the site area.
- No risk to the water main pipework are recorded in place.

Additional testing is recommended to further assess the risks found within the site, to aid in the density of sampling and to isolate the extent of the targeted risks identified within the site, and increase the confidence in the statistical analysis.

## 11 Risk Assessment Based on Source Risk

Considering the presence of contamination which has been identified above, we confirm the following outlines the assessment of the site completed and way forward for the site.

***Table 8 Risk Assessment A***

| Source | Receptors | Pathway | Mitigation / Discussion |
|---|---|---|---|
| **Lead** | Site Users, (current and future); Construction Workers; Adjacent Site Users, Fauna. | Direct contact | Risk is likely to be isolated to WS7 |
| | | Ingestion dust and soil | |
| | | Ingestion of soils attached to vegetation | |
| | | Inhalation of asbestos fibers | Not Applicable |
| | | Inhalation of vapours, (gas and organic) | No vapour risk from Lead contamination identified |
| | | Explosive risk from Land Gas | Not Applicable |
| | | Ingestion of contaminated water through water main pipework | No risk in place from Lead contamination identified |
| | | Inhalation of vapours through contaminated ground waters | No vapour risk from Lead. |
| | | Direct contact with contaminated ground waters | Groundwater risk has been identified as low based on the information gained. |
| | Surface Water. | Lateral migration of shallow groundwater to a target receptor. | |
| | Ground Water; Abstraction Well. | Migration through fissures / cracks which may migrate to a groundwater receptor. | |
| | Plants; Vegetation. | Plant uptake; Direct contact. | Plant Risks are considered Low based on assessments with ICRCL old exposure levels. No specific plant risk assessment criteria is in place to date. |
| | Buildings; Construction Materials. | Direct contact with contaminated soils; | PAH's pose a low risk to the built environment. |
| | | Direct contact with contaminated groundwater | Groundwater risk has been identified as low based on the information gained. |

## *12 Implications of the End Use of the Site*

Within the assessment of the site completed within this report, we can confirm that existing source – pathway – receptor risk assessments are now in place based on actual site data. Based on the change in use of the site through this proposed development, it is possible that pathways to receptors will be either be removed or enhanced such that risk may be in place / removed.

The end use risks based on pathways are discussed below and relate to the site as a whole:-

- ***Hard Landscaping -*** will effectively cap off any contamination and remove risk, although, the placement of hard surfaces across the site should be confirmed as part of the planning application and not form a system of remediation that homeowners could remove as part of the ongoing habitation.
- ***Soft Landscaping -*** will form an area where risk is in place and as such, remedial measures are likely to be required.
- ***Under Buildings -*** will effectively cap off any contamination and remove risk.
- ***Services -*** By examination of the UKWIR, (Guidance for the selection of water supply pipes to be used in brownfield sites) we can confirm the risks associated with human health from water main feeds are not in place, as such, as such conventual pipework can be used. We would suggest that consultation with the relevant statutory authority will be required.

## *13 Outline Remediation Measures*

Considering the above, we would suggest that the following outline remediation measures could be employed in order to develop the site based on the existing data. This will be based on the assumption that there is isolated risk within the site area. although further testing is needed to confirm this.

### *13.1 Cover Systems - NHBC*

The remedial measures are likely to include one of the following cover systems for the site :-

Engineered cover systems – designed to provide the complete separation of the receptor from the hazard and to perform a number of functions including limiting upward migration of contaminants due to capillary rise and controlling the downward infiltration of water.

Simple cover systems – to provide a reduction of the hazard to human health and to provide a suitable medium for plant growth.

Consultation within NHBC guidance documents, (Cover Systems for Land Regeneration), confirm that maximum depths of cover will be required for residential sites and overcome the inherent issues with earthworm activity, burrowing animals, effects of trees and plants, digging during garden activities and intermixing of leaf fall. Justification of this is included within the NHBC guidance document.

It is also recorded that as part of the review, a questionnaire was sent out to various Developers, Consultants and Regulators who all confirmed variable degrees of cover system based on the level of contamination which ranged from 0.30 meters to 3.00 meters, although, the report by NHBC removes these as conservative and the suggestion of a 0.60 meter cover system adopted by the report as a maximum depth of cover required to be sufficient.

It should be noted that these cover systems do not overcome the risks from soil gases, hydrocarbons, highly elevated Mercury or Arsenic, the groundwater or any controlled waters, significant contamination, deep excavations, services, slopes or areas where rabbit or badger populations are significant.

***Table 9 Outline Remediation Measures for end use of the site***

| ***Land Use*** | ***Mitigation Measure*** | ***Depth to remove risk*** | ***Confirmation required.*** |
|---|---|---|---|
| Private Gardens & Communal Areas Shrub Planting Areas | ***Lead*** risk likely to area of ***WS7***<br><br>Excavate and remove soils which are assessed to form a risk and placement of clean inert soils to a minimum depth of 0.60 meters. (See Cover Systems above for justification) | 0.60m excavation and replacement of clean inert soils tested to confirm the infilled soils fall below the human health residential land use standards – Confirm level of contamination. | Validation Works will be required. Validation of sides and base of excavation and validation of any soils brought onto the site. |
| Hard Landscaping | Hard landscaping will remove any risks through pathway removal. Must be a permanent feature, (not patio's).<br><br>Patio's should assume a soft landscape finish.<br><br>Additionally, confirmation will be required from the Local or relevant Authority that hard landscaping areas will require specific permission to remove any and / or all hard surfaces which may expose contamination to human receptors. | None | Confirmation from relevant authority |
| Under Buildings | None | | |
| Water Main | Any new water main installations can be installed using convential pipework. | None | To Be Confirmed with the relevant statutory authority |
| Controlled Waters – Surface Water & Ground Water | Groundwater risks removed | | |

## *14 Waste Disposal*

The Landfill Directive sets rigorous standards to reduce both our reliance on landfill and the environmental impact of wastes disposed of by landfill. Tighter operational and infrastructure standards limit the types and nature of waste that we can send to landfill and place greater restrictions on the location of landfill sites

The key points are:

• Certain kinds of waste cannot be landfilled.

• Landfills are classified according to whether they can accept hazardous, non-hazardous or inert wastes.

• Wastes can only be accepted at a landfill if they meet the waste acceptance criteria (WAC) for that class of landfill.

• Most wastes must be treated before you can send them to landfill.

• There are formal processes for identifying and checking wastes you must follow before wastes can be accepted at a landfill site.

The Council Decision lays down waste acceptance procedures (WAP). From this foundation landfill operators should build their own site-specific WAP. The Council Decision WAP must be used to determine whether a waste is suitable to go to landfill, and if so, to which class of landfill. The WAP consist of three steps to identify and periodically check the main characteristics of the waste (see Section 9):

- ***Level 1***: basic characterisation. Before you can send a load of waste to landfill, you need to know its composition and properties so you can determine whether it is suitable for acceptance and at which class of site (see the Council Decision Annex, paragraph 1.1),
- ***Level 2***: compliance testing. If you produce waste that is 'regularly arising', e.g. from an industrial process, you must periodically check the waste to ensure that those properties have not changed (see the Council Decision Annex, paragraph 1.2),
- ***Level 3***: on-site verification. The operator must check each delivery at the landfill to verify that it is the expected waste and that it has not been contaminated in storage or transport (see the Council Decision Annex, paragraph 1.3).

Before a waste producer can take waste to a landfill site for disposal, they need to check the landfill site has the appropriate permit and must have completed the following:

- Duty of care transfer note/Hazardous Waste consignment note
- Pre-treatment declaration form
- Basic characterisation of the waste, to include:
    - Description of the waste
    - Waste code (using List of Wastes)
    - Composition of the waste (by testing, if necessary)
    - WAC testing (if required)

### *14.1 WAC Testing*

Two WAC tests have been completed on samples from the site area as follows:-

***Table 10 WAC testing Results***

| *Location* | *Depth (m)* | *Soil description* | *Classification* | *Reason* |
|---|---|---|---|---|
| WS1 | 0.60 | Clayey brick and gravel FILL | ***Stable Non-reactive HAZARDOUS waste*** | Elevated Antimony |
| WS6 | 3.00 | Dense orange brown SAND & GRAVEL | ***INERT*** | |

## *15 Source Risk Conclusions*

***HUMAN HEALTH RISK***

- The site has identified three specific layers of Made Ground and potentially contaminated ground. These form the following layers and associated contamination :-
  - ***FILL*** :- ***Isolated*** contamination from ***Lead*** to the areas of ***WS7 ONLY*** – ***additional testing and Remediation works will be required to this area;***

- Based on the above, ***remedial measures will likely be required areas where pathways to receptors are in place***.

***WORKFORCE***

The above human health risk is in place within the site area, will promote a low risk on a short term bases to any workforce within the areas. ***Appropriate PPE / RPE should be worn and the soil contamination risk should be noted within any site inductions.***

***GROUNDWATER RISKS***

- Due to the low level of contamination in place within the site area, ***risks to groundwater are generally considered low***.

***VAPOUR RISKS***

- Chemical testing of the soils show that low risks are in place. ***Vapour risk is not in place.***

***GAS RISKS***

- No sources of land gas risk are recorded in place following the investigation not recording significant depths of made ground nor highly organic soils.

***CONSTRUCTION MATERIALS***

- Construction materials have been considered and no risk has been identified directly to any water main pipework developed at the site;

  - ***Water main pipework can be laid in a conventional pipework system;***
  - ***Any water main pipework should be laid in clean corridors in order to prevent future risk to workforce used in the maintenance and repair of any water main system.***

***FURTHER WORKS***

- ***It is recommended that additional works will be required for the site in order to complete assessments which are detailed as follows :-***

  - ***Additional sampling to be completed across the site and targeting WS7 to complete the data set and potentially isolate the targeted risk in the location of WS7.***

- ***Submit reports to Local Authority and Environment Agency for review and confirm the risks identified in this report along with the further works proposed are suitable and acceptable.***

- ***The exact details of remediation required for the site should be assessed and reported in a Remediation Strategy Report in order to comply with current best practice, (BS 10175 & CLR 11).***

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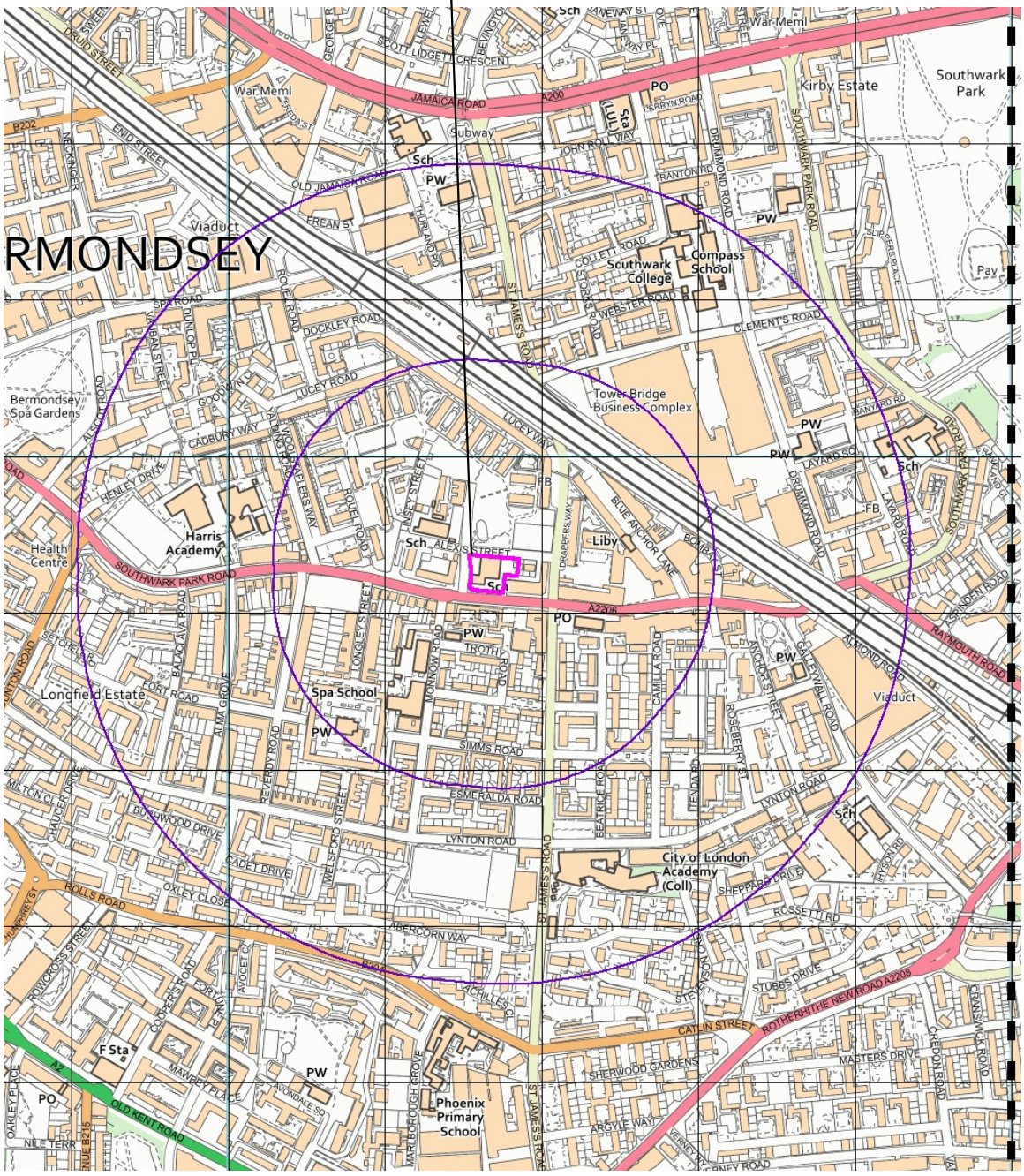
Location Plan

N

The Site

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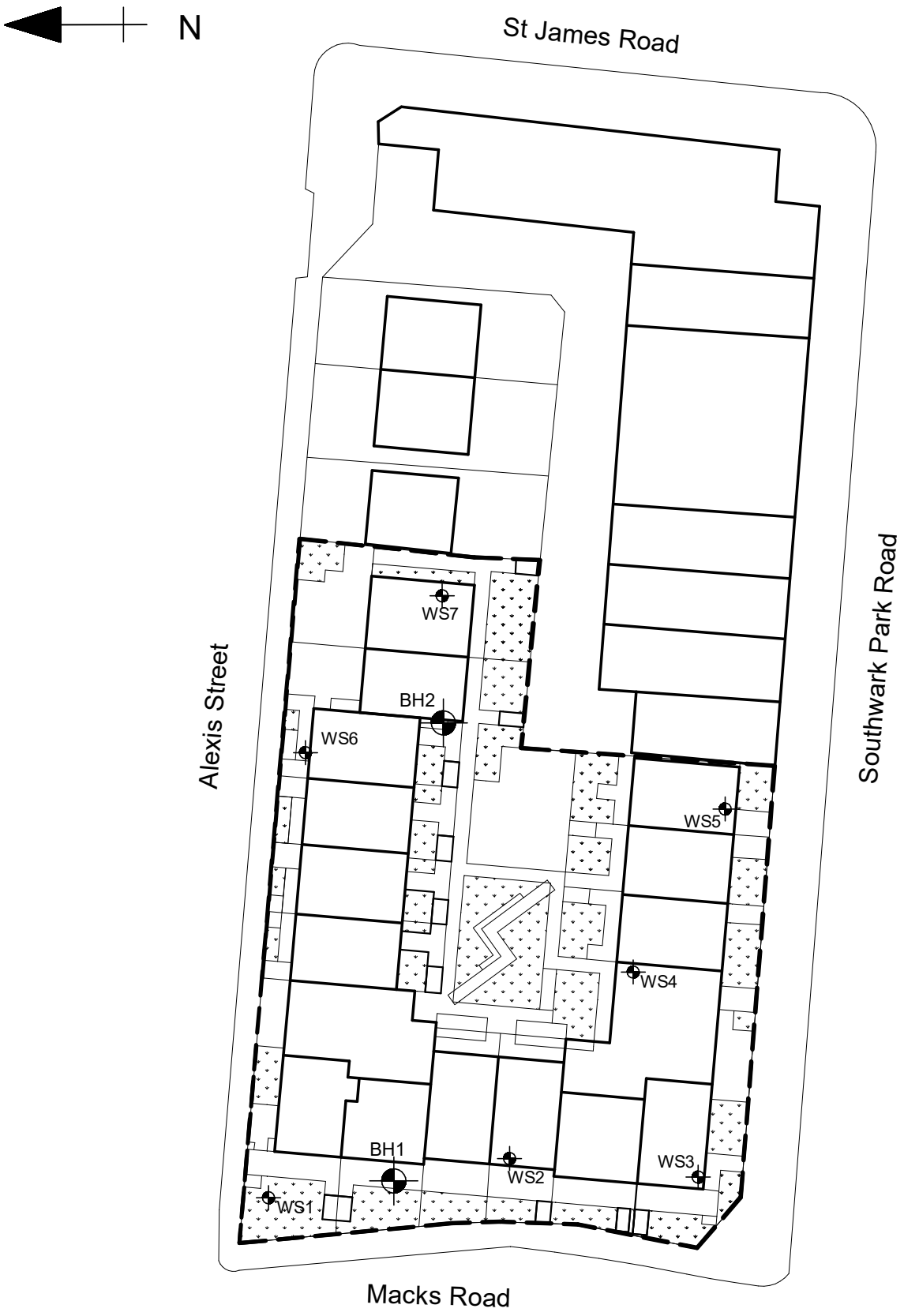
Proposed Site Plan with Sample Locations

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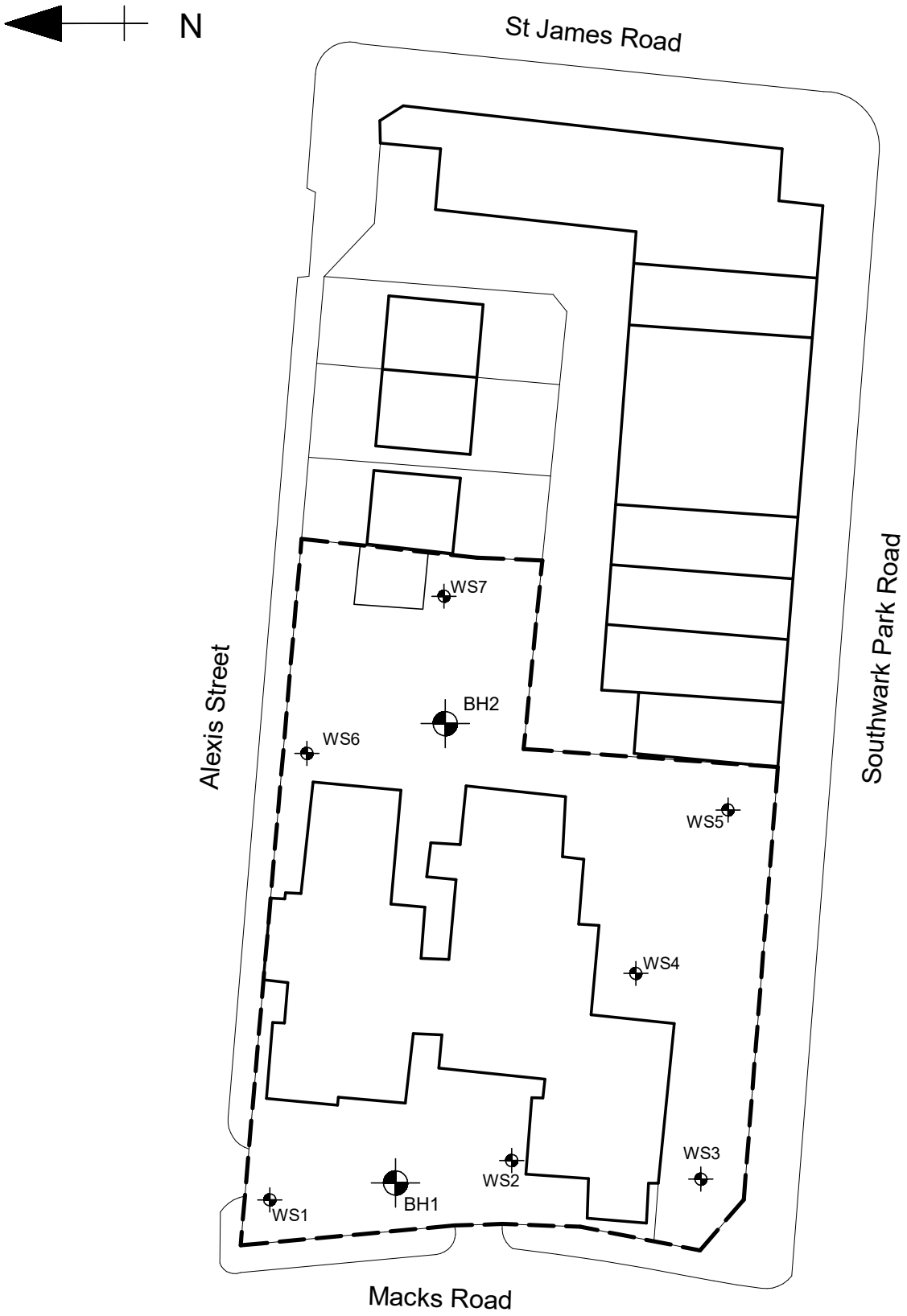
Existing Site Plan with Sample Locations

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Window Sample One

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tarmac | | 0.10 | 0.10 | | 1 | U | GL - 1.00 | | | | |
| MADE GROUND : clayey brick and gravel FILL | | 0.70 | 0.60 | | | | | | | | |
| Medium dense brown slightly claybound SAND | | 1.30 | 0.60 | | 2 | U | 1.00-2.00 | N=11 | | | 1.00 |
| Dense brown SAND & GRAVEL | | 3.00 | 1.70 | | 3 | U | 2.00 - 3.00 | N=31 | | | |
| | | | | | | | 3.00 | N=47 | | | |
| Borehole Complete at 3.00 metres | | | | | | | | | | | |

Remarks

Scale 1 : 25

Key : U - Undisturbed Sample (100mm **diameter**) B - Bulk Sample ▼ - Water Struck D - Disturbed Sample ▽ - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

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Window Sample Two

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tarmac | | 0.10 | 0.10 | | 1 | U | GL - 1.00 | | | | |
| MADE GROUND : brown sand FILL | | 0.60 | 0.50 | | | | | | | | |
| Firm brown mottled grey sandy CLAY increasing in silt and sand content with depth | | 1.60 | 1.00 | | 2 | U | 1.00-2.00 | | | | 1.00 |
| Dense orange brown SAND & GRAVEL | | 3.00 | 1.40 | | 3 | U | 2.00 - 3.00 | N=29 | | | |
| | | | | | | | 3.00 | N=33 | | | |
| Borehole Complete at 3.00 metres | | | | | | | | | | | |

Remarks

Scale 1 : 25

Key : U - Undisturbed Sample (100mm **diameter**) B - Bulk Sample ▼ - Water Struck D - Disturbed Sample ▽ - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

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Window Sample Three

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No Access at the time of the site works | | | | | | | | | | | |

1.0
2.0
3.0
4.0
5.0

Remarks

Scale 1 : 25

Key : U - Undisturbed Sample (100mm **diameter)** B - Bulk Sample ▼ - Water Struck D - Disturbed Sample ▽ - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

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Window Sample Four

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tarmac over concrete | | 0.20 | 0.20 | | 1 | U | GL - 1.00 | | | | |
| Firm brown silty CLAY with occasional flint gravel | | 1.20 | 1.00 | | 2 | U | 1.00- 2.00 | N=17 | | | 1.00 |
| Firm brown slightly claybound SAND & GRAVEL | | 1.80 | 0.60 | | | | | | | | |
| Dense orange brown SAND & GRAVEL | | 3.00 | 1.20 | | 3 | U | 2.00 - 3.00 | N=26 | | | |
| | | | | | | | 3.00 | N=39 | | | |
| Borehole Complete at 3.00 metres | | | | | | | | | | | |

Remarks

Scale 1 : 25

Key : U - Undisturbed Sample (100mm **diameter**) B - Bulk Sample ▼ - Water Struck D - Disturbed Sample ▽ - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

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Window Sample Five

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No Access at the time of the site works | | | | | | | | | | | |

1.0
2.0
3.0
4.0
5.0

Remarks

Scale 1 : 25

Key : U - Undisturbed Sample (100mm **diameter)** B - Bulk Sample ▼ - Water Struck D - Disturbed Sample ▽ - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

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Window Sample Six

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tarmac | | 0.10 | 0.10 | | 1 | U | GL - 1.00 | | | | |
| MADE GROUND : Brick and concrete hardcore | | 0.50 | 0.40 | | | | | | | | |
| MADE GROUND : Brown silty clay FILL | | 1.10 | 0.60 | | 2 | U | 1.00-2.00 | N=16 | | | 1.00 |
| Firm brown silty claybound fine SAND with occasional flint gravel | | 1.50 | 0.40 | | | | | | | | |
| Dense orange brown SAND & GRAVEL | | 3.00 | 1.50 | | 3 | U | 2.00 - 3.00 | N=41 | | | |
| | | | | | | | 3.00 | N=48 | | | |
| Borehole Complete at 3.00 metres | | | | | | | | | | | |

Remarks

Scale 1 : 25

Key : U - Undisturbed Sample (100mm **diameter**) B - Bulk Sample ▼ - Water Struck D - Disturbed Sample ▽ - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

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Window Sample Seven

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tarmac | | 0.11 | 0.11 | | 1 | U | GL - 1.00 | | | | |
| MADE GROUND : clayey brick and gravel FILL | | | | | | | | | | | 1.00 |
| 1.0 | | | 1.59 | | 2 | U | 1.00-2.00 | N=16 | | | |
| | | 1.70 | | | | | | | | | |
| Dense brown SAND & GRAVEL | | | | | | | | | | | |
| 2.0 | | | | | 3 | U | 2.00 - 3.00 | N=38 | | | |
| | | | 1.30 | | | | | | | | |
| 3.0 | | 3.00 | | | | | 3.00 | N=42 | | | |
| Borehole Complete at 3.00 metres | | | | | | | | | | | |
| 4.0 | | | | | | | | | | | |
| 5.0 | | | | | | | | | | | |

Remarks

Scale 1 : 25

Key : U - Undisturbed Sample (100mm **diameter**) B - Bulk Sample ▼ - Water Struck D - Disturbed Sample ▽ - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

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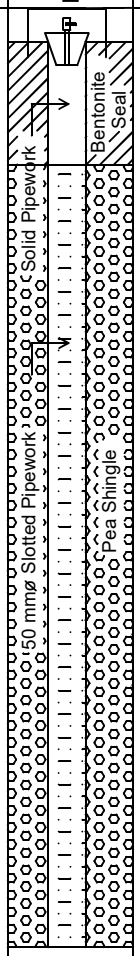
Borehole One

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tarmac (0.10m) over Loose to compact brown sandy gravelly sandy FILL | | 0.50 | 0.50 | | | | | | | | |
| Firm brown sandy slightly silty CLAY | | 1.65 | 1.15 | | 1 | U | 1.20 | | | | |
| Dense brown SAND & GRAVEL | | 5.00 | 3.35 | | 1 | B | 2.00 | N=46 | | | |
| | | | | | 2 | B | 3.00 | N=45 | | | |
| | | | | | 3 | B | 4.00 | N=45 | | | |
| Very stiff grey sandy slightly silty CLAY with shell fragments | | 7.00 | 2.00 | Water level at finish of boring 6.20 | 2 | U | 5.20 | | | | |
| | | | | | 3 | U | 6.40 | | | | |
| Very stiff grey sandy slightly silty CLAY with pockets of increase silt | | 8.60 | 1.60 | | | | 7.10 | N=48 | | | |
| Stiff grey mottled brown CLAY with rounded black gravel | | 9.00 | 0.40 | | 4 | B | 8.60 | N=50+ | | | |
| Dense yellow SAND with black rounded gravel | | 9.70 | 0.70 | | 5 | B | 9.00 | | | | |
| Very stiff grey brown mottled grey and brown slightly silty sand CLAY | | | 0.80 | | 6 | B | 9.70 | | | | |




Remarks

Scale 1 : 50

Key : U - Undisturbed Sample (100mm **diameter**) B - Bulk Sample - Water Struck D - Disturbed Sample - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

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Date Nov 2019

Former Cherry Garden School, Mack's Road, Bermondsey, London SE16 3XU

Borehole One .... continued

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| As above | | 10.5 | 0.50 | | | | | | | | |
| Dense dark greenish blue brown clayey SAND | | | | | 7 | B | 10.60 | N=48 | | | |
| | | 12.0 | 1.50 | | | | | | | | |
| Dense dark grey SAND | | | | | | | 12.00 | N=50+ | | | |
| | | | | | | | | | | | 3.00 - |
| | | | | | | | 13.50 | N=50+ | | | |
| | | | | | | | 15.00 | N=50+ | | | |
| | | | 13.00 | | | | | | | | |
| | | | | | | | 16.50 | N=50+ | | | |
| | | | | | | | 18.00 | N=50+ | | | |
| | | | | | | | 19.50 | N=50+ | | | |

Remarks

Scale 1 : 50

Key : U - Undisturbed Sample (100mm **diameter**) B - Bulk Sample - Water Struck D - Disturbed Sample - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

# HERTS & ESSEX SITE INVESTIGATIONS

*The Old Post Office, Wellpond Green*
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*Telephone: 01920822233*
*FAX 01920822200*


Appendix No 2
Sheet No 10
Job No 15629
Date Nov 2019

Former Cherry Garden School, Mack's Road, Bermondsey, London SE16 3XU

Borehole One .... continued

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| As above | | | | | | | 21.00 | N=50+ | | | |
| | | | 13.00 | | | | 22.50 | N=50+ | | | 23.00 |
| | | | | | | | 24.50 | N=50+ | | | |
| | | 25.0 | | | | | | | | | |
| Borehole closed at 25.00 meters | | | | | | | | | | | |

Remarks

Scale 1 : 50

Key : U - Undisturbed Sample (100mm **diameter**) B - Bulk Sample - Water Struck D - Disturbed Sample - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

# HERTS & ESSEX SITE INVESTIGATIONS

*The Old Post Office, Wellpond Green*
*Standon, Ware, Herts. SG11 1NJ*

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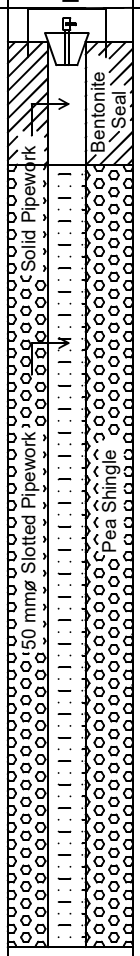
Appendix No 2
Sheet No 11
Job No 15629
Date Nov 2019

Former Cherry Garden School, Mack's Road, Bermondsey, London SE16 3XU

Borehole Two

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tarmac (0.05m) over Loose to compact brown sandy gravelly sandy FILL with fine roots | | 0.50 | 0.50 | | | | | | | | |
| Firm brown clayey SAND | | 1.80 | 1.30 | | 1 | B | 1.00 | N=10 | | | |
| | | | | | 2 | B | 1.80 | N=43 | | | |
| Dense brown SAND & GRAVEL | | 5.40 | 3.60 | | 3 | B | 3.00 | N=46 | | | |
| | | | | | 4 | B | 4.00 | N=49 | | | |
| | | | | | 5 | B | 5.00 | N=43 | | | |
| Very stiff grey sandy slightly silty CLAY | | 7.00 | 1.60 | Water level at finish of boring 6.00 | 6 | B | 5.50 | N=25 | | | |
| | | | | | 7 | B | 6.50 | N=50+ | | | |
| Dense brown clayey SAND with rounded black GRAVEL | | 8.00 | 1.00 | | 8 | B | 7.10 | N=50+ | | | |
| Stiff grey mottled brown CLAY with rounded black gravel | | 9.00 | 1.00 | | | | | | | | |
| Stiff greenish blue brown slightly silty sandy CLAY | | | 1.80 | | 9 | B | 9.00 | N=50+ | | | |




Remarks

Scale 1 : 50

Key : U - Undisturbed Sample (100mm **diameter**) B - Bulk Sample - Water Struck D - Disturbed Sample - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

# HERTS & ESSEX SITE INVESTIGATIONS

*The Old Post Office, Wellpond Green*
*Standon, Ware, Herts. SG11 1NJ*

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Appendix No 2
Sheet No 12
Job No 15629
Date Nov 2019

Former Cherry Garden School, Mack's Road, Bermondsey, London SE16 3XU

Borehole Two .... continued

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| As above | | | | | | | 10.60 | N=48 | | | |
| | | | 1.80 | | | | | | | | |
| | | 11.8 | | | | | | | | | |
| Dense dark greenish blue brown clayey SAND | | | | | | | 12.00 | N=50+ | | | |
| | | | | | | | | | | | 3.00 - |
| | | | 3.20 | | | | 13.50 | N=50+ | | | |
| | | 15.0 | | | | | | | | | |
| Dense dark grey SAND | | | | | | | 15.00 | N=50+ | | | |
| | | | | | | | 16.50 | N=50+ | | | |
| | | | 10.0 | | | | | | | | |
| | | | | | | | 18.00 | N=50+ | | | |
| | | | | | | | 19.50 | N=50+ | | | |

Remarks

Scale 1 : 50

Key : U - Undisturbed Sample (100mm **diameter**) B - Bulk Sample - Water Struck D - Disturbed Sample - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

# HERTS & ESSEX SITE INVESTIGATIONS

*The Old Post Office, Wellpond Green*
*Standon, Ware, Herts. SG11 1NJ*

*Telephone: 01920822233*
*FAX 01920822200*


Appendix No 2
Sheet No 13
Job No 15629
Date Nov 2019

Former Cherry Garden School, Mack's Road, Bermondsey, London SE16 3XU

Borehole One .... continued

| Description Of Stratum | Legend | Depth | Thickness (m) | Water Level | Samples No | Samples Type | Samples Depth (m) | S.P.T N-Value or Vane Strength | VOC's (ppm) | Installations | Casing Depth, (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| As above | | | | | | | 21.00 | N=50+ | | | |
| | | | 10.0 | | | | 22.50 | N=50+ | | | 23.00 |
| | | | | | | | 24.50 | N=50+ | | | |
| | | 25.0 | | | | | | | | | |
| Borehole closed at 25.00 meters | | | | | | | | | | | |

Remarks

Scale 1 : 50

Key : U - Undisturbed Sample (100mm **diameter**) B - Bulk Sample - Water Struck D - Disturbed Sample - Water Standing W - Water Sample T - Chemical Tub N - SPT N-Value V - Vane Test, (kN.m²)

DETS

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane, Lenham Heath
Maidstone
Kent ME17 2JN

Tel: 01622 850410

russell.jarvis@suez.com

Client: Herts and Essex Site Investigation
Address: The Old Post Office
Wellpond Green
Standon SG11 1NJ
Tel: 01920822233

Date Samples Dispatched:
Sampler: Chris Gray
Quotation No:
*(if no contract rates apply)*

Sheet .... 1
of .... 1

Project / Site Name: **Former Cherry Garden School Bermondsey London SE16 3XU**
Project / Job No: **15629**
Contact Name: Chris Gray / Rebecca Chamberlain
E-mail: csgray@hesi.co.uk / rchamberlain@hesi.co.uk

| | Lab Use | Date Sampled | Client Sample ID | Depth (m) | Additional references | No. of Containers | Sample Type | Suite Name / Analysis Required: HESI Suite 1 | TPH CWG | VOCs | PCBs | WAC | | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 15 11 19 | WS1 | 0.6 | | PT/AJ250 | S | x | x | x | x | x | | | | | | | | | | |
| 2 | | 15 11 19 | WS2 | 0.5 | | PT/AJ250 | S | x | x | | | | | | | | | | | | | |
| 3 | | 15 11 19 | WS4 | 0.50 | | PT/AJ250 | S | x | x | x | x | | | | | | | | | | | |
| 4 | | 15 11 19 | WS6 | 0.40 | | PT/AJ250 | S | x | x | | | | | | | | | | | | | |
| 5 | | 15 11 19 | WS6 | 1.00 | | PT/AJ250 | S | x | x | | | | | | | | | | | | | |
| 6 | | 15 11 19 | WS6 | 3.00 | | PT/AJ250 | S | x | x | | | x | | | | | | | | | | |
| 7 | | 15 11 19 | WS7 | 0.40 | | PT/AJ250 | S | x | x | | | | | | | | | | | | | |
| 8 | | 15 11 19 | WS7 | 1.50 | | PT/AJ250 | S | x | x | x | x | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | |

**Turnaround (please indicate)**

| | |
|---|---|
| 5 day (standard) | X |
| 4 day | |
| 3 day | |
| Other | |
| Specific Date | |

**Additional instructions should be entered here**

**Purchase Order No: Same as Job No**

KO Version 4.0 03/02/2017

DETS

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane, Lenham Heath
Maidstone
Kent ME17 2JN

Tel: 01622 850410

russell.jarvis@suez.com

Client: Herts and Essex Site Investigation
Address: The Old Post Office
Wellpond Green
Standon SG11 1NJ
Tel: 01920822233

Date Samples Dispatched:
Sampler: Chris Gray
Quotation No:
*(if no contract rates apply)*

Sheet .... 1
of .... 1

Project / Site Name: **Former Cherry Garden School Bermondsey London SE16 3XU**
Project / Job No: **15629**
Contact Name: Chris Gray / Rebecca Chamberlain
E-mail: csgray@hesi.co.uk / rchamberlain@hesi.co.uk

| | Lab Use | Date Sampled | Client Sample ID | Depth (m) | Additional references | No. of Containers | Sample Type | Suite Name / Analysis Required: HESI Suite 1 | TPH CWG | VOCs | PCBs | | | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 26 11 19 | BH1 | 0.40 | | PT/AJ250 | S | x | x | x | x | | | | | | | | | | | |
| 2 | | 26 1 1 19 | BH1 | 0.70 | | PT/AJ250 | S | x | x | | | | | | | | | | | | | |
| 3 | | 26 1 1 19 | BH2 | 0.40 | | PT/AJ250 | S | x | x | x | x | | | | | | | | | | | |
| 4 | | 26 1 1 19 | BH2 | 0.80 | | PT/AJ250 | S | x | x | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | | | | | | | | |
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| 29 | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | |

**Turnaround (please indicate)**

| | |
|---|---|
| 5 day (standard) | X |
| 4 day | |
| 3 day | |
| Other | |
| Specific Date | |

**Additional instructions should be entered here**

**Purchase Order No: Same as Job No**

KO Version 4.0 03/02/2017

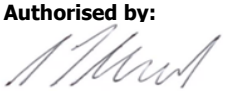
Chris Gray
Herts and Essex Site Investigations
The Old Post Office
Wellpond Green
Standon
Ware
Herts
SH11 1DJ

**DETS Ltd**
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
**t:** 01622 850410

# DETS Report No: 19-16286

| | |
|---|---|
| **Site Reference:** | Former Cherry Garden School Bermondsey London SE16 3XU |
| **Project / Job Ref:** | 15629 |
| **Order No:** | 15629 |
| **Sample Receipt Date:** | 20/11/2019 |
| **Sample Scheduled Date:** | 20/11/2019 |
| **Report Issue Number:** | 1 |
| **Reporting Date:** | 26/11/2019 |

**Authorised by:**



Dave Ashworth
Technical Manager

**DETS Ltd**
**Unit 1, Rose Lane Industrial Estate**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

4480

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | **Date Sampled** | 15/11/19 | 15/11/19 | 15/11/19 | 15/11/19 | 15/11/19 |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | **TP / BH No** | WS1 | WS2 | WS4 | WS6 | WS6 |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 15629** | **Depth (m)** | 0.60 | 0.50 | 0.50 | 0.40 | 1.00 |
| **Reporting Date: 26/11/2019** | **DETS Sample No** | 448264 | 448265 | 448266 | 448267 | 448268 |

| Determinand | Unit | RL | Accreditation | | | (n) | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | Not Detected | Not Detected | Not Detected | Not Detected | Not Detected |
| pH | pH Units | N/a | MCERTS | 8.2 | 7.8 | 12.0 | 11.1 | 7.7 |
| Electrical Conductivity | uS/cm | < 5 | NONE | 306 | 79 | 2600 | 483 | 176 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | NONE | 654 | 336 | 5700 | 5899 | 492 |
| Total Sulphate as $SO_4$ | % | < 0.02 | NONE | 0.07 | 0.03 | 0.57 | 0.59 | 0.05 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 118 | 11 | < 10 | 46 | 52 |
| W/S Sulphate as $SO_4$ (2:1) | g/l | < 0.01 | MCERTS | 0.12 | 0.01 | < 0.01 | 0.05 | 0.05 |
| Organic Matter | % | < 0.1 | MCERTS | 1 | 1.3 | 1.6 | 1.5 | 1.1 |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 12 | 12 | 10 | 9 | 11 |
| W/S Boron | mg/kg | < 1 | NONE | < 1 | < 1 | < 1 | < 1 | < 1 |
| Cadmium (Cd) | mg/kg | < 0.2 | MCERTS | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | 19 | 17 | 14 | 16 | 15 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 21 | 32 | 13 | 22 | 24 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 50 | 201 | 12 | 107 | 108 |
| Mercury (Hg) | mg/kg | < 1 | NONE | < 1 | < 1 | < 1 | < 1 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 13 | 10 | 9 | 10 | 10 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 35 | 49 | 36 | 62 | 33 |
| Total Phenols (monohydric) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{O}$C
Subcontracted analysis (S)
(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | **Date Sampled** | 15/11/19 | 15/11/19 | 15/11/19 | | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | | |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | **TP / BH No** | WS6 | WS7 | WS7 | | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | | |
| **Order No: 15629** | **Depth (m)** | 3.00 | 0.40 | 1.50 | | |
| **Reporting Date: 26/11/2019** | **DETS Sample No** | 448269 | 448270 | 448271 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | Not Detected | Not Detected | Not Detected | | |
| pH | pH Units | N/a | MCERTS | 8.2 | 8.3 | 8.2 | | |
| Electrical Conductivity | uS/cm | < 5 | NONE | 52 | 113 | 155 | | |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | NONE | 260 | 1150 | 1436 | | |
| Total Sulphate as $SO_4$ | % | < 0.02 | NONE | 0.03 | 0.11 | 0.14 | | |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 32 | 18 | 28 | | |
| W/S Sulphate as $SO_4$ (2:1) | g/l | < 0.01 | MCERTS | 0.03 | 0.02 | 0.03 | | |
| Organic Matter | % | < 0.1 | MCERTS | 0.2 | 3.4 | 0.5 | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 20 | 22 | 13 | | |
| W/S Boron | mg/kg | < 1 | NONE | < 1 | < 1 | < 1 | | |
| Cadmium (Cd) | mg/kg | < 0.2 | MCERTS | < 0.2 | 0.5 | < 0.2 | | |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | 32 | 25 | 16 | | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 10 | 110 | 17 | | |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 13 | 432 | 61 | | |
| Mercury (Hg) | mg/kg | < 1 | NONE | < 1 | 1.5 | < 1 | | |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 25 | 18 | 10 | | |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 34 | 358 | 59 | | |
| Total Phenols (monohydric) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{O}$C
Subcontracted analysis (S)

**DETS Ltd**
**Unit 1, Rose Lane Industrial Estate**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

4480

| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | **Date Sampled** | 15/11/19 | 15/11/19 | 15/11/19 | 15/11/19 | 15/11/19 |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | **TP / BH No** | WS1 | WS2 | WS4 | WS6 | WS6 |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 15629** | **Depth (m)** | 0.60 | 0.50 | 0.50 | 0.40 | 1.00 |
| **Reporting Date: 26/11/2019** | **DETS Sample No** | 448264 | 448265 | 448266 | 448267 | 448268 |

| Determinand | Unit | RL | Accreditation | | | (n) | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Acenaphthylene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Acenaphthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Fluorene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.12 | < 0.1 |
| Phenanthrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 1.37 | < 0.1 |
| Anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.43 | < 0.1 |
| Fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 3.37 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 2.62 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 1.55 | < 0.1 |
| Chrysene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 1.54 | < 0.1 |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 2.02 | < 0.1 |
| Benzo(k)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.64 | < 0.1 |
| Benzo(a)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 1.33 | < 0.1 |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 1.10 | < 0.1 |
| Dibenz(a,h)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.21 | < 0.1 |
| Benzo(ghi)perylene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.98 | < 0.1 |
| Total EPA-16 PAHs | mg/kg | < 1.6 | MCERTS | < 1.6 | < 1.6 | < 1.6 | 17.3 | < 1.6 |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{O}$C
(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | **Date Sampled** | 15/11/19 | 15/11/19 | 15/11/19 | | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | | |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | **TP / BH No** | WS6 | WS7 | WS7 | | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | | |
| **Order No: 15629** | **Depth (m)** | 3.00 | 0.40 | 1.50 | | |
| **Reporting Date: 26/11/2019** | **DETS Sample No** | 448269 | 448270 | 448271 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| Acenaphthylene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| Acenaphthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| Fluorene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| Phenanthrene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.14 | < 0.1 | | |
| Anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| Fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.34 | < 0.1 | | |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.27 | < 0.1 | | |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.29 | < 0.1 | | |
| Chrysene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.16 | < 0.1 | | |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.37 | < 0.1 | | |
| Benzo(k)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.11 | < 0.1 | | |
| Benzo(a)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.19 | < 0.1 | | |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.14 | < 0.1 | | |
| Dibenz(a,h)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| Benzo(ghi)perylene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| Total EPA-16 PAHs | mg/kg | < 1.6 | MCERTS | < 1.6 | 2 | < 1.6 | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{O}$C

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| Soil Analysis Certificate - TPH CWG Banded | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | **Date Sampled** | 15/11/19 | 15/11/19 | 15/11/19 | 15/11/19 | 15/11/19 |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | **TP / BH No** | WS1 | WS2 | WS4 | WS6 | WS6 |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 15629** | **Depth (m)** | 0.60 | 0.50 | 0.50 | 0.40 | 1.00 |
| **Reporting Date: 26/11/2019** | **DETS Sample No** | 448264 | 448265 | 448266 | 448267 | 448268 |

| Determinand | Unit | RL | Accreditation | | | (n) | | |
|---|---|---|---|---|---|---|---|---|
| Aliphatic >C5 - C6 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aliphatic >C6 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Aliphatic >C8 - C10 | mg/kg | < 2 | **MCERTS** | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aliphatic >C10 - C12 | mg/kg | < 2 | **MCERTS** | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aliphatic >C12 - C16 | mg/kg | < 3 | **MCERTS** | < 3 | < 3 | < 3 | < 3 | < 3 |
| Aliphatic >C16 - C21 | mg/kg | < 3 | **MCERTS** | < 3 | < 3 | < 3 | < 3 | < 3 |
| Aliphatic >C21 - C34 | mg/kg | < 10 | **MCERTS** | < 10 | < 10 | 41 | < 10 | < 10 |
| Aliphatic (C5 - C34) | mg/kg | < 21 | NONE | < 21 | < 21 | 41 | < 21 | < 21 |
| Aromatic >C5 - C7 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aromatic >C7 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Aromatic >C8 - C10 | mg/kg | < 2 | **MCERTS** | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aromatic >C10 - C12 | mg/kg | < 2 | **MCERTS** | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aromatic >C12 - C16 | mg/kg | < 2 | **MCERTS** | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aromatic >C16 - C21 | mg/kg | < 3 | **MCERTS** | < 3 | < 3 | < 3 | 9 | < 3 |
| Aromatic >C21 - C35 | mg/kg | < 10 | **MCERTS** | < 10 | < 10 | 89 | 16 | < 10 |
| Aromatic (C5 - C35) | mg/kg | < 21 | NONE | < 21 | < 21 | 89 | 25 | < 21 |
| Total >C5 - C35 | mg/kg | < 42 | NONE | < 42 | < 42 | 130 | < 42 | < 42 |

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(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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| Soil Analysis Certificate - TPH CWG Banded | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | **Date Sampled** | 15/11/19 | 15/11/19 | 15/11/19 | | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | | |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | **TP / BH No** | WS6 | WS7 | WS7 | | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | | |
| **Order No: 15629** | **Depth (m)** | 3.00 | 0.40 | 1.50 | | |
| **Reporting Date: 26/11/2019** | **DETS Sample No** | 448269 | 448270 | 448271 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aliphatic >C5 - C6 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Aliphatic >C6 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | | |
| Aliphatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| Aliphatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| Aliphatic >C12 - C16 | mg/kg | < 3 | MCERTS | < 3 | < 3 | < 3 | | |
| Aliphatic >C16 - C21 | mg/kg | < 3 | MCERTS | < 3 | < 3 | < 3 | | |
| Aliphatic >C21 - C34 | mg/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | | |
| Aliphatic (C5 - C34) | mg/kg | < 21 | NONE | < 21 | < 21 | < 21 | | |
| Aromatic >C5 - C7 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Aromatic >C7 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | | |
| Aromatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| Aromatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| Aromatic >C12 - C16 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| Aromatic >C16 - C21 | mg/kg | < 3 | MCERTS | < 3 | < 3 | < 3 | | |
| Aromatic >C21 - C35 | mg/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | | |
| Aromatic (C5 - C35) | mg/kg | < 21 | NONE | < 21 | < 21 | < 21 | | |
| Total >C5 - C35 | mg/kg | < 42 | NONE | < 42 | < 42 | < 42 | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{O}$C

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**Maidstone**
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| Soil Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | **Date Sampled** | 15/11/19 | 15/11/19 | 15/11/19 | 15/11/19 | 15/11/19 |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | **TP / BH No** | WS1 | WS2 | WS4 | WS6 | WS6 |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 15629** | **Depth (m)** | 0.60 | 0.50 | 0.50 | 0.40 | 1.00 |
| **Reporting Date: 26/11/2019** | **DETS Sample No** | 448264 | 448265 | 448266 | 448267 | 448268 |

| Determinand | Unit | RL | Accreditation | | | (n) | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| Toluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | < 5 | < 5 |
| Ethylbenzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| p & m-xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| o-xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| MTBE | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | < 5 | < 5 |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{o}$C
(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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4480

| Soil Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | **Date Sampled** | 15/11/19 | 15/11/19 | 15/11/19 | | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | | |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | **TP / BH No** | WS6 | WS7 | WS7 | | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | | |
| **Order No: 15629** | **Depth (m)** | 3.00 | 0.40 | 1.50 | | |
| **Reporting Date: 26/11/2019** | **DETS Sample No** | 448269 | 448270 | 448271 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| Toluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Ethylbenzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| p & m-xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| o-xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| MTBE | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{o}$C

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| Soil Analysis Certificate - Volatile Organic Compounds (VOC) | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | **Date Sampled** | 15/11/19 | 15/11/19 | 15/11/19 | | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | | |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | **TP / BH No** | WS1 | WS4 | WS7 | | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | | |
| **Order No: 15629** | **Depth (m)** | 0.60 | 0.50 | 1.50 | | |
| **Reporting Date: 26/11/2019** | **DETS Sample No** | 448264 | 448266 | 448271 | | |

| Determinand | Unit | RL | Accreditation | | (n) | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Vinyl Chloride | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Chloromethane | ug/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | | |
| Chloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Bromomethane | ug/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | | |
| Trichlorofluoromethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,1-Dichloroethene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| MTBE | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| trans-1,2-Dichloroethene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,1-Dichloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| cis-1,2-Dichloroethene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 2,2-Dichloropropane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Chloroform | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Bromochloromethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,1,1-Trichloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,1-Dichloropropene | ug/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | | |
| Carbon Tetrachloride | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,2-Dichloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Benzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| 1,2-Dichloropropane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Trichloroethene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Bromodichloromethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Dibromomethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| TAME | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| cis-1,3-Dichloropropene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Toluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| trans-1,3-Dichloropropene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,1,2-Trichloroethane | ug/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | | |
| 1,3-Dichloropropane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Tetrachloroethene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Dibromochloromethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,2-Dibromoethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Chlorobenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,1,1,2-Tetrachloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Ethyl Benzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| m,p-Xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| o-Xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | | |
| Styrene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Bromoform | ug/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | | |
| Isopropylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,1,2,2-Tetrachloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,2,3-Trichloropropane | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| n-Propylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| Bromobenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 2-Chlorotoluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,3,5-Trimethylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 4-Chlorotoluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| tert-Butylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,2,4-Trimethylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| sec-Butylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| p-Isopropyltoluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,3-Dichlorobenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,4-Dichlorobenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| n-Butylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| 1,2-Dichlorobenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |
| ,2-Dibromo-3-chloropropane | ug/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | | |
| Hexachlorobutadiene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{o}$C
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| Soil Analysis Certificate - PCB (7 Congeners) | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | **Date Sampled** | 15/11/19 | 15/11/19 | 15/11/19 | | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | | |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | **TP / BH No** | WS1 | WS4 | WS7 | | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | | |
| **Order No: 15629** | **Depth (m)** | 0.60 | 0.50 | 1.50 | | |
| **Reporting Date: 26/11/2019** | **DETS Sample No** | 448264 | 448266 | 448271 | | |

| Determinand | Unit | RL | Accreditation | (n) | | | | |
|---|---|---|---|---|---|---|---|---|
| PCB Congener 28 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | < 0.008 | | |
| PCB Congener 52 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | < 0.008 | | |
| PCB Congener 101 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | < 0.008 | | |
| PCB Congener 118 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | < 0.008 | | |
| PCB Congener 138 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | < 0.008 | | |
| PCB Congener 153 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | < 0.008 | | |
| PCB Congener 180 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | < 0.008 | | |
| Total PCB (7 Congeners) | mg/kg | < 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{o}$C
(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 4480

## Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

| | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | **Date Sampled** | 15/11/19 | | **Landfill Waste Acceptance Criteria Limits** | | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | | **Inert Waste Landfill** | **Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill** | **Hazardous Waste Landfill** |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | **TP / BH No** | WS1 | | | | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | | | | |
| **Order No: 15629** | **Depth (m)** | 0.60 | | | | |
| **Reporting Date: 26/11/2019** | **DETS Sample No** | 448264 | | | | |

| **Determinand** | **Unit** | **MDL** | | | | | | |
|---|---|---|---|---|---|---|---|---|
| TOC[MU] | % | < 0.1 | 0.6 | | | | 3% | 5% | 6% |
| Loss on Ignition | % | < 0.01 | 2.10 | | | | -- | -- | 10% |
| BTEX[MU] | mg/kg | < 0.05 | < 0.05 | | | | 6 | -- | -- |
| Sum of PCBs | mg/kg | < 0.1 | < 0.1 | | | | 1 | -- | -- |
| Mineral Oil[MU] | mg/kg | < 10 | < 10 | | | | 500 | -- | -- |
| Total PAH[MU] | mg/kg | < 1.7 | < 1.7 | | | | 100 | -- | -- |
| pH[MU] | pH Units | N/a | 8.2 | | | | -- | >6 | -- |
| Acid Neutralisation Capacity | mol/kg (+/-) | < 1 | < 1 | | | | -- | To be evaluated | To be evaluated |

| **Eluate Analysis** | **2:1 mg/l** | **8:1 mg/l** | | **Cumulative 10:1 mg/kg** | **Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)** | | |
|---|---|---|---|---|---|---|---|
| Arsenic[U] | < 0.01 | < 0.01 | | < 0.2 | 0.5 | 2 | 25 |
| Barium[U] | < 0.02 | < 0.02 | | < 0.1 | 20 | 100 | 300 |
| Cadmium[U] | < 0.0005 | < 0.0005 | | < 0.02 | 0.04 | 1 | 5 |
| Chromium[U] | < 0.005 | < 0.005 | | < 0.20 | 0.5 | 10 | 70 |
| Copper[U] | 0.02 | 0.02 | | < 0.5 | 2 | 50 | 100 |
| Mercury[U] | < 0.0005 | < 0.0005 | | < 0.005 | 0.01 | 0.2 | 2 |
| Molybdenum[U] | 0.022 | 0.006 | | < 0.1 | 0.5 | 10 | 30 |
| Nickel[U] | < 0.007 | < 0.007 | | < 0.2 | 0.4 | 10 | 40 |
| Lead[U] | < 0.005 | < 0.005 | | < 0.2 | 0.5 | 10 | 50 |
| Antimony[U] | 0.038 | 0.019 | | 0.21 | **0.06** | 0.7 | 5 |
| Selenium[U] | < 0.005 | < 0.005 | | < 0.05 | 0.1 | 0.5 | 7 |
| Zinc[U] | 0.008 | < 0.005 | | < 0.2 | 4 | 50 | 200 |
| Chloride[U] | 7 | 2 | | 25 | 800 | 15000 | 25000 |
| Fluoride[U] | < 0.5 | < 0.5 | | < 1 | 10 | 150 | 500 |
| Sulphate[U] | 107 | 8 | | 175 | 1000 | 20000 | 50000 |
| TDS | 197 | 71 | | 832 | 4000 | 60000 | 100000 |
| Phenol Index | < 0.01 | < 0.01 | | < 0.5 | 1 | - | - |
| DOC | 20 | 19.5 | | 195 | 500 | 800 | 1000 |
| **Leach Test Information** | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Sample Mass (kg) | 0.19 | | | | | | |
| Dry Matter (%) | 90.3 | | | | | | |
| Moisture (%) | 10.8 | | | | | | |
| **Stage 1** | | | | | | | |
| Volume Eluate L2 (litres) | 0.33 | | | | | | |
| Filtered Eluate VE1 (litres) | 0.17 | | | | | | |
| | | | | | | | |
| | | | | | | | |

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

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mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 4480

## Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

| | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16286** | | **Date Sampled** | 15/11/19 | | **Landfill Waste Acceptance Criteria Limits** | |
| **Herts and Essex Site Investigations** | | **Time Sampled** | None Supplied | | **Inert Waste Landfill** | **Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill** | **Hazardous Waste Landfill** |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | | **TP / BH No** | WS6 | | | | |
| **Project / Job Ref: 15629** | | **Additional Refs** | None Supplied | | | | |
| **Order No: 15629** | | **Depth (m)** | 3.00 | | | | |
| **Reporting Date: 26/11/2019** | | **DETS Sample No** | 448269 | | | | |
| **Determinand** | **Unit** | **MDL** | | | | | |
| TOC[MU] | % | < 0.1 | 0.1 | | 3% | 5% | 6% |
| Loss on Ignition | % | < 0.01 | 0.80 | | -- | -- | 10% |
| BTEX[MU] | mg/kg | < 0.05 | < 0.05 | | 6 | -- | -- |
| Sum of PCBs | mg/kg | < 0.1 | < 0.1 | | 1 | -- | -- |
| Mineral Oil[MU] | mg/kg | < 10 | < 10 | | 500 | -- | -- |
| Total PAH[MU] | mg/kg | < 1.7 | < 1.7 | | 100 | -- | -- |
| pH[MU] | pH Units | N/a | 8.2 | | -- | >6 | -- |
| Acid Neutralisation Capacity | mol/kg (+/-) | < 1 | < 1 | | -- | To be evaluated | To be evaluated |

| **Eluate Analysis** | **2:1 mg/l** | **8:1 mg/l** | | **Cumulative 10:1 mg/kg** | **Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)** | | |
|---|---|---|---|---|---|---|---|
| Arsenic[U] | < 0.01 | < 0.01 | | < 0.2 | 0.5 | 2 | 25 |
| Barium[U] | < 0.02 | < 0.02 | | < 0.1 | 20 | 100 | 300 |
| Cadmium[U] | < 0.0005 | < 0.0005 | | < 0.02 | 0.04 | 1 | 5 |
| Chromium[U] | < 0.005 | < 0.005 | | < 0.20 | 0.5 | 10 | 70 |
| Copper[U] | < 0.01 | < 0.01 | | < 0.5 | 2 | 50 | 100 |
| Mercury[U] | < 0.0005 | < 0.0005 | | < 0.005 | 0.01 | 0.2 | 2 |
| Molybdenum[U] | < 0.001 | < 0.001 | | < 0.1 | 0.5 | 10 | 30 |
| Nickel[U] | < 0.007 | < 0.007 | | < 0.2 | 0.4 | 10 | 40 |
| Lead[U] | < 0.005 | < 0.005 | | < 0.2 | 0.5 | 10 | 50 |
| Antimony[U] | < 0.005 | < 0.005 | | < 0.05 | 0.06 | 0.7 | 5 |
| Selenium[U] | < 0.005 | < 0.005 | | < 0.05 | 0.1 | 0.5 | 7 |
| Zinc[U] | < 0.005 | 0.006 | | < 0.2 | 4 | 50 | 200 |
| Chloride[U] | 3 | 3 | | 25 | 800 | 15000 | 25000 |
| Fluoride[U] | 1.2 | < 0.5 | | < 1 | 10 | 150 | 500 |
| Sulphate[U] | 6 | 1 | | < 20 | 1000 | 20000 | 50000 |
| TDS | 53 | 44 | | 445 | 4000 | 60000 | 100000 |
| Phenol Index | < 0.01 | < 0.01 | | < 0.5 | 1 | - | - |
| DOC | 3.5 | 10.9 | | 104 | 500 | 800 | 1000 |
| **Leach Test Information** | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Sample Mass (kg) | 0.19 | | | | | | |
| Dry Matter (%) | 93.2 | | | | | | |
| Moisture (%) | 7.4 | | | | | | |
| **Stage 1** | | | | | | | |
| Volume Eluate L2 (litres) | 0.34 | | | | | | |
| Filtered Eluate VE1 (litres) | 0.11 | | | | | | |
| | | | | | | | |
| | | | | | | | |

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

**DETS Ltd**
**Unit 1, Rose Lane Industrial Estate**
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4480

| Soil Analysis Certificate - Sample Descriptions | |
|---|---|
| **DETS Report No: 19-16286** | |
| **Herts and Essex Site Investigations** | |
| **Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU** | |
| **Project / Job Ref: 15629** | |
| **Order No: 15629** | |
| **Reporting Date: 26/11/2019** | |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| 448264 | WS1 | None Supplied | 0.60 | 9.7 | Brown loamy sand |
| 448265 | WS2 | None Supplied | 0.50 | 11.9 | Brown loamy sand |
| 448266 | WS4 | None Supplied | 0.50 | 2.6 | Brown concrete |
| 448267 | WS6 | None Supplied | 0.40 | 8.5 | Brown loamy sand with brick and concrete |
| 448268 | WS6 | None Supplied | 1.00 | 9.1 | Brown loamy sand |
| 448269 | WS6 | None Supplied | 3.00 | 6.8 | Brown sandy gravel with stones |
| 448270 | WS7 | None Supplied | 0.40 | 11.8 | Black loamy sand with stones and brick |
| 448271 | WS7 | None Supplied | 1.50 | 6.5 | Brown sandy gravel with stones and concrete |

*Moisture content is part of procedure E003 & is not an accredited test*

Insufficient Sample I/S

Unsuitable Sample U/S

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mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 4480

| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 19-16286 |
| Herts and Essex Site Investigations |
| Site Reference: Former Cherry Garden School Bermondsey London SE16 3XU |
| Project / Job Ref: 15629 |
| Order No: 15629 |
| Reporting Date: 26/11/2019 |

| Matrix | Analysed On | Determinand | Brief Method Description | Method No |
|---|---|---|---|---|
| Soil | D | Boron - Water Soluble | Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES | E012 |
| Soil | AR | BTEX | Determination of BTEX by headspace GC-MS | E001 |
| Soil | D | Cations | Determination of cations in soil by aqua-regia digestion followed by ICP-OES | E002 |
| Soil | D | Chloride - Water Soluble (2:1) | Determination of chloride by extraction with water & analysed by ion chromatography | E009 |
| Soil | AR | Chromium - Hexavalent | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry | E016 |
| Soil | AR | Cyanide - Complex | Determination of complex cyanide by distillation followed by colorimetry | E015 |
| Soil | AR | Cyanide - Free | Determination of free cyanide by distillation followed by colorimetry | E015 |
| Soil | AR | Cyanide - Total | Determination of total cyanide by distillation followed by colorimetry | E015 |
| Soil | D | Cyclohexane Extractable Matter (CEM) | Gravimetrically determined through extraction with cyclohexane | E011 |
| Soil | AR | Diesel Range Organics (C10 - C24) | Determination of hexane/acetone extractable hydrocarbons by GC-FID | E004 |
| Soil | AR | Electrical Conductivity | Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement | E022 |
| Soil | AR | Electrical Conductivity | Determination of electrical conductivity by addition of water followed by electrometric measurement | E023 |
| Soil | D | Elemental Sulphur | Determination of elemental sulphur by solvent extraction followed by GC-MS | E020 |
| Soil | AR | EPH (C10 – C40) | Determination of acetone/hexane extractable hydrocarbons by GC-FID | E004 |
| Soil | AR | EPH Product ID | Determination of acetone/hexane extractable hydrocarbons by GC-FID | E004 |
| Soil | AR | EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40) | Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS | E004 |
| Soil | D | Fluoride - Water Soluble | Determination of Fluoride by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | FOC (Fraction Organic Carbon) | Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate | E010 |
| Soil | D | Loss on Ignition @ 450oC | Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace | E019 |
| Soil | D | Magnesium - Water Soluble | Determination of water soluble magnesium by extraction with water followed by ICP-OES | E025 |
| Soil | D | Metals | Determination of metals by aqua-regia digestion followed by ICP-OES | E002 |
| Soil | AR | Mineral Oil (C10 - C40) | Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge | E004 |
| Soil | AR | Moisture Content | Moisture content; determined gravimetrically | E003 |
| Soil | D | Nitrate - Water Soluble (2:1) | Determination of nitrate by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | Organic Matter | Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate | E010 |
| Soil | AR | PAH - Speciated (EPA 16) | Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards | E005 |
| Soil | AR | PCB - 7 Congeners | Determination of PCB by extraction with acetone and hexane followed by GC-MS | E008 |
| Soil | D | Petroleum Ether Extract (PEE) | Gravimetrically determined through extraction with petroleum ether | E011 |
| Soil | AR | pH | Determination of pH by addition of water followed by electrometric measurement | E007 |
| Soil | AR | Phenols - Total (monohydric) | Determination of phenols by distillation followed by colorimetry | E021 |
| Soil | D | Phosphate - Water Soluble (2:1) | Determination of phosphate by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | Sulphate (as SO4) - Total | Determination of total sulphate by extraction with 10% HCl followed by ICP-OES | E013 |
| Soil | D | Sulphate (as SO4) - Water Soluble (2:1) | Determination of sulphate by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | Sulphate (as SO4) - Water Soluble (2:1) | Determination of water soluble sulphate by extraction with water followed by ICP-OES | E014 |
| Soil | AR | Sulphide | Determination of sulphide by distillation followed by colorimetry | E018 |
| Soil | D | Sulphur - Total | Determination of total sulphur by extraction with aqua-regia followed by ICP-OES | E024 |
| Soil | AR | SVOC | Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS | E006 |
| Soil | AR | Thiocyanate (as SCN) | Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry | E017 |
| Soil | D | Toluene Extractable Matter (TEM) | Gravimetrically determined through extraction with toluene | E011 |
| Soil | D | Total Organic Carbon (TOC) | Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate | E010 |
| Soil | AR | TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) | Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS | E004 |
| Soil | AR | TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44) | Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS | E004 |
| Soil | AR | VOCs | Determination of volatile organic compounds by headspace GC-MS | E001 |
| Soil | AR | VPH (C6-C8 & C8-C10) | Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID | E001 |

**D Dried**
**AR As Received**

Chris Gray
Herts and Essex Site Investigations
The Old Post Office
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**DETS Ltd**
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Rose Lane Industrial Estate
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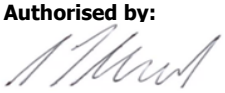
Lenham Heath
Kent
ME17 2JN
**t:** 01622 850410

# DETS Report No: 19-16718

| | |
|---|---|
| **Site Reference:** | Former Cherry Garden School, Bermondsey, London, SE16 3XU |
| **Project / Job Ref:** | 15629 |
| **Order No:** | 15629 |
| **Sample Receipt Date:** | 28/11/2019 |
| **Sample Scheduled Date:** | 28/11/2019 |
| **Report Issue Number:** | 1 |
| **Reporting Date:** | 04/12/2019 |

**Authorised by:**



Dave Ashworth
Technical Manager

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**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

4480

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16718** | **Date Sampled** | 26/11/19 | 26/11/19 | 26/11/19 | 26/11/19 | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | |
| **Site Reference: Former Cherry Garden School, Bermondsey, London, SE16 3XU** | **TP / BH No** | BH1 | BH1 | BH2 | BH2 | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | |
| **Order No: 15629** | **Depth (m)** | 0.40 | 0.70 | 0.40 | 0.80 | |
| **Reporting Date: 04/12/2019** | **DETS Sample No** | 449830 | 449831 | 449832 | 449833 | |

| Determinand | Unit | RL | Accreditation | | | | |
|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | Not Detected | Not Detected | Not Detected | Not Detected |
| pH | pH Units | N/a | MCERTS | 8.2 | 8.0 | 6.8 | 7.7 |
| Electrical Conductivity | uS/cm | < 5 | NONE | 220 | 225 | 1470 | 343 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | NONE | 996 | 478 | 3912 | 1172 |
| Total Sulphate as $SO_4$ | % | < 0.02 | NONE | 0.10 | 0.05 | 0.39 | 0.12 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 136 | 55 | 1170 | 296 |
| W/S Sulphate as $SO_4$ (2:1) | g/l | < 0.01 | MCERTS | 0.14 | 0.05 | 1.17 | 0.30 |
| Organic Matter | % | < 0.1 | MCERTS | 5.9 | 2.6 | 0.4 | 5.7 |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 13 | 12 | 15 | 12 |
| W/S Boron | mg/kg | < 1 | NONE | 1.3 | < 1 | 1.7 | < 1 |
| Cadmium (Cd) | mg/kg | < 0.2 | MCERTS | 0.2 | < 0.2 | 2 | 0.4 |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | 15 | 20 | 172 | 42 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 54 | 12 | 107 | 24 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 204 | 63 | 174 | 44 |
| Mercury (Hg) | mg/kg | < 1 | NONE | < 1 | < 1 | 1.8 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 12 | 14 | 43 | 17 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 122 | 34 | 332 | 78 |
| Total Phenols (monohydric) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{O}$C
Subcontracted analysis (S)

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4480

| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16718** | **Date Sampled** | 26/11/19 | 26/11/19 | 26/11/19 | 26/11/19 | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | |
| **Site Reference: Former Cherry Garden School, Bermondsey, London, SE16 3XU** | **TP / BH No** | BH1 | BH1 | BH2 | BH2 | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | |
| **Order No: 15629** | **Depth (m)** | 0.40 | 0.70 | 0.40 | 0.80 | |
| **Reporting Date: 04/12/2019** | **DETS Sample No** | 449830 | 449831 | 449832 | 449833 | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | |
| Acenaphthylene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | |
| Acenaphthene | mg/kg | < 0.1 | MCERTS | 0.19 | < 0.1 | < 0.1 | < 0.1 | |
| Fluorene | mg/kg | < 0.1 | MCERTS | 0.22 | < 0.1 | < 0.1 | < 0.1 | |
| Phenanthrene | mg/kg | < 0.1 | MCERTS | 1.87 | 0.24 | 0.30 | < 0.1 | |
| Anthracene | mg/kg | < 0.1 | MCERTS | 0.49 | < 0.1 | < 0.1 | < 0.1 | |
| Fluoranthene | mg/kg | < 0.1 | MCERTS | 3.34 | 0.56 | 0.72 | 0.25 | |
| Pyrene | mg/kg | < 0.1 | MCERTS | 2.45 | 0.49 | 0.60 | 0.22 | |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | 1.23 | 0.26 | 0.33 | 0.23 | |
| Chrysene | mg/kg | < 0.1 | MCERTS | 1.45 | 0.34 | 0.42 | 0.27 | |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | 1.75 | 0.48 | 0.68 | 0.40 | |
| Benzo(k)fluoranthene | mg/kg | < 0.1 | MCERTS | 0.54 | 0.18 | 0.21 | 0.11 | |
| Benzo(a)pyrene | mg/kg | < 0.1 | MCERTS | 1.26 | 0.34 | 0.40 | 0.23 | |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.1 | MCERTS | 0.96 | 0.26 | 0.35 | 0.13 | |
| Dibenz(a,h)anthracene | mg/kg | < 0.1 | MCERTS | 0.15 | < 0.1 | < 0.1 | < 0.1 | |
| Benzo(ghi)perylene | mg/kg | < 0.1 | MCERTS | 0.79 | 0.23 | 0.33 | 0.12 | |
| Total EPA-16 PAHs | mg/kg | < 1.6 | MCERTS | 16.7 | 3.4 | 4.3 | 2 | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{o}$C

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4480

| Soil Analysis Certificate - TPH CWG Banded | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16718** | **Date Sampled** | 26/11/19 | 26/11/19 | 26/11/19 | 26/11/19 | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | |
| **Site Reference: Former Cherry Garden School, Bermondsey, London, SE16 3XU** | **TP / BH No** | BH1 | BH1 | BH2 | BH2 | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | |
| **Order No: 15629** | **Depth (m)** | 0.40 | 0.70 | 0.40 | 0.80 | |
| **Reporting Date: 04/12/2019** | **DETS Sample No** | 449830 | 449831 | 449832 | 449833 | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aliphatic >C5 - C6 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | < 0.01 | |
| Aliphatic >C6 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | |
| Aliphatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | |
| Aliphatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | |
| Aliphatic >C12 - C16 | mg/kg | < 3 | MCERTS | < 3 | < 3 | < 3 | < 3 | |
| Aliphatic >C16 - C21 | mg/kg | < 3 | MCERTS | < 3 | < 3 | < 3 | < 3 | |
| Aliphatic >C21 - C34 | mg/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | < 10 | |
| Aliphatic (C5 - C34) | mg/kg | < 21 | NONE | < 21 | < 21 | < 21 | < 21 | |
| Aromatic >C5 - C7 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | < 0.01 | |
| Aromatic >C7 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | |
| Aromatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | |
| Aromatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | |
| Aromatic >C12 - C16 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | |
| Aromatic >C16 - C21 | mg/kg | < 3 | MCERTS | 12 | < 3 | < 3 | < 3 | |
| Aromatic >C21 - C35 | mg/kg | < 10 | MCERTS | 20 | < 10 | < 10 | < 10 | |
| Aromatic (C5 - C35) | mg/kg | < 21 | NONE | 33 | < 21 | < 21 | < 21 | |
| Total >C5 - C35 | mg/kg | < 42 | NONE | < 42 | < 42 | < 42 | < 42 | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{O}$C

**DETS Ltd**
**Unit 1, Rose Lane Industrial Estate**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

4480

| Soil Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16718** | **Date Sampled** | 26/11/19 | 26/11/19 | 26/11/19 | 26/11/19 | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | |
| **Site Reference: Former Cherry Garden School, Bermondsey, London, SE16 3XU** | **TP / BH No** | BH1 | BH1 | BH2 | BH2 | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | |
| **Order No: 15629** | **Depth (m)** | 0.40 | 0.70 | 0.40 | 0.80 | |
| **Reporting Date: 04/12/2019** | **DETS Sample No** | 449830 | 449831 | 449832 | 449833 | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | |
| Toluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | < 5 | |
| Ethylbenzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | |
| p & m-xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | |
| o-xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | |
| MTBE | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 | < 5 | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{o}$C

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| Soil Analysis Certificate - Volatile Organic Compounds (VOC) | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16718** | **Date Sampled** | 26/11/19 | 26/11/19 | | | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | | | |
| **Site Reference: Former Cherry Garden School, Bermondsey, London, SE16 3XU** | **TP / BH No** | BH1 | BH2 | | | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | | | |
| **Order No: 15629** | **Depth (m)** | 0.40 | 0.40 | | | |
| **Reporting Date: 04/12/2019** | **DETS Sample No** | 449830 | 449832 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Vinyl Chloride | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Chloromethane | ug/kg | < 10 | MCERTS | < 10 | < 10 | | | |
| Chloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Bromomethane | ug/kg | < 10 | MCERTS | < 10 | < 10 | | | |
| Trichlorofluoromethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,1-Dichloroethene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| MTBE | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| trans-1,2-Dichloroethene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,1-Dichloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| cis-1,2-Dichloroethene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 2,2-Dichloropropane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Chloroform | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Bromochloromethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,1,1-Trichloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,1-Dichloropropene | ug/kg | < 10 | MCERTS | < 10 | < 10 | | | |
| Carbon Tetrachloride | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,2-Dichloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Benzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | | | |
| 1,2-Dichloropropane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Trichloroethene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Bromodichloromethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Dibromomethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| TAME | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| cis-1,3-Dichloropropene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Toluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| trans-1,3-Dichloropropene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,1,2-Trichloroethane | ug/kg | < 10 | MCERTS | < 10 | < 10 | | | |
| 1,3-Dichloropropane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Tetrachloroethene | ug/kg | < 5 | MCERTS | < 5 | 9 | | | |
| Dibromochloromethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,2-Dibromoethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Chlorobenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,1,1,2-Tetrachloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Ethyl Benzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | | | |
| m,p-Xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | | | |
| o-Xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | | | |
| Styrene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Bromoform | ug/kg | < 10 | MCERTS | < 10 | < 10 | | | |
| Isopropylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,1,2,2-Tetrachloroethane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,2,3-Trichloropropane | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| n-Propylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| Bromobenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 2-Chlorotoluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,3,5-Trimethylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 4-Chlorotoluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| tert-Butylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,2,4-Trimethylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| sec-Butylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| p-Isopropyltoluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,3-Dichlorobenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,4-Dichlorobenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| n-Butylbenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| 1,2-Dichlorobenzene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |
| ,2-Dibromo-3-chloropropane | ug/kg | < 10 | MCERTS | < 10 | < 10 | | | |
| Hexachlorobutadiene | ug/kg | < 5 | MCERTS | < 5 | < 5 | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{o}$C

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| **Soil Analysis Certificate - PCB (7 Congeners)** | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 19-16718** | **Date Sampled** | 26/11/19 | 26/11/19 | | | |
| **Herts and Essex Site Investigations** | **Time Sampled** | None Supplied | None Supplied | | | |
| **Site Reference: Former Cherry Garden School, Bermondsey, London, SE16 3XU** | **TP / BH No** | BH1 | BH2 | | | |
| **Project / Job Ref: 15629** | **Additional Refs** | None Supplied | None Supplied | | | |
| **Order No: 15629** | **Depth (m)** | 0.40 | 0.40 | | | |
| **Reporting Date: 04/12/2019** | **DETS Sample No** | 449830 | 449832 | | | |

| **Determinand** | **Unit** | **RL** | **Accreditation** | | | | | |
|---|---|---|---|---|---|---|---|---|
| PCB Congener 28 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | | | |
| PCB Congener 52 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | | | |
| PCB Congener 101 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | | | |
| PCB Congener 118 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | | | |
| PCB Congener 138 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | | | |
| PCB Congener 153 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | | | |
| PCB Congener 180 | mg/kg | < 0.008 | NONE | < 0.008 | < 0.008 | | | |
| Total PCB (7 Congeners) | mg/kg | < 0.1 | NONE | < 0.1 | < 0.1 | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30$^{o}$C

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| Soil Analysis Certificate - Sample Descriptions | |
|---|---|
| **DETS Report No: 19-16718** | |
| **Herts and Essex Site Investigations** | |
| **Site Reference: Former Cherry Garden School, Bermondsey, London, SE16 3XU** | |
| **Project / Job Ref: 15629** | |
| **Order No: 15629** | |
| **Reporting Date: 04/12/2019** | |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| 449830 | BH1 | None Supplied | 0.40 | 10.4 | Brown sandy clay with stones |
| 449831 | BH1 | None Supplied | 0.70 | 15.8 | Brown sandy clay |
| 449832 | BH2 | None Supplied | 0.40 | 22.2 | Brown clayey sand with stones |
| 449833 | BH2 | None Supplied | 0.80 | 10.3 | Brown sandy clay |

*Moisture content is part of procedure E003 & is not an accredited test*
Insufficient Sample I/S
Unsuitable Sample U/S

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**Rose Lane**
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**Maidstone**
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**Tel : 01622 850410**

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| **Soil Analysis Certificate - Methodology & Miscellaneous Information** |
|---|
| **DETS Report No: 19-16718** |
| **Herts and Essex Site Investigations** |
| **Site Reference: Former Cherry Garden School, Bermondsey, London, SE16 3XU** |
| **Project / Job Ref: 15629** |
| **Order No: 15629** |
| **Reporting Date: 04/12/2019** |

| Matrix | Analysed On | Determinand | Brief Method Description | Method No |
|---|---|---|---|---|
| Soil | D | Boron - Water Soluble | Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES | E012 |
| Soil | AR | BTEX | Determination of BTEX by headspace GC-MS | E001 |
| Soil | D | Cations | Determination of cations in soil by aqua-regia digestion followed by ICP-OES | E002 |
| Soil | D | Chloride - Water Soluble (2:1) | Determination of chloride by extraction with water & analysed by ion chromatography | E009 |
| Soil | AR | Chromium - Hexavalent | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry | E016 |
| Soil | AR | Cyanide - Complex | Determination of complex cyanide by distillation followed by colorimetry | E015 |
| Soil | AR | Cyanide - Free | Determination of free cyanide by distillation followed by colorimetry | E015 |
| Soil | AR | Cyanide - Total | Determination of total cyanide by distillation followed by colorimetry | E015 |
| Soil | D | Cyclohexane Extractable Matter (CEM) | Gravimetrically determined through extraction with cyclohexane | E011 |
| Soil | AR | Diesel Range Organics (C10 - C24) | Determination of hexane/acetone extractable hydrocarbons by GC-FID | E004 |
| Soil | AR | Electrical Conductivity | Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement | E022 |
| Soil | AR | Electrical Conductivity | Determination of electrical conductivity by addition of water followed by electrometric measurement | E023 |
| Soil | D | Elemental Sulphur | Determination of elemental sulphur by solvent extraction followed by GC-MS | E020 |
| Soil | AR | EPH (C10 – C40) | Determination of acetone/hexane extractable hydrocarbons by GC-FID | E004 |
| Soil | AR | EPH Product ID | Determination of acetone/hexane extractable hydrocarbons by GC-FID | E004 |
| Soil | AR | EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40) | Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS | E004 |
| Soil | D | Fluoride - Water Soluble | Determination of Fluoride by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | FOC (Fraction Organic Carbon) | Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate | E010 |
| Soil | D | Loss on Ignition @ 450oC | Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace | E019 |
| Soil | D | Magnesium - Water Soluble | Determination of water soluble magnesium by extraction with water followed by ICP-OES | E025 |
| Soil | D | Metals | Determination of metals by aqua-regia digestion followed by ICP-OES | E002 |
| Soil | AR | Mineral Oil (C10 - C40) | Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge | E004 |
| Soil | AR | Moisture Content | Moisture content; determined gravimetrically | E003 |
| Soil | D | Nitrate - Water Soluble (2:1) | Determination of nitrate by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | Organic Matter | Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate | E010 |
| Soil | AR | PAH - Speciated (EPA 16) | Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards | E005 |
| Soil | AR | PCB - 7 Congeners | Determination of PCB by extraction with acetone and hexane followed by GC-MS | E008 |
| Soil | D | Petroleum Ether Extract (PEE) | Gravimetrically determined through extraction with petroleum ether | E011 |
| Soil | AR | pH | Determination of pH by addition of water followed by electrometric measurement | E007 |
| Soil | AR | Phenols - Total (monohydric) | Determination of phenols by distillation followed by colorimetry | E021 |
| Soil | D | Phosphate - Water Soluble (2:1) | Determination of phosphate by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | Sulphate (as SO4) - Total | Determination of total sulphate by extraction with 10% HCl followed by ICP-OES | E013 |
| Soil | D | Sulphate (as SO4) - Water Soluble (2:1) | Determination of sulphate by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | Sulphate (as SO4) - Water Soluble (2:1) | Determination of water soluble sulphate by extraction with water followed by ICP-OES | E014 |
| Soil | AR | Sulphide | Determination of sulphide by distillation followed by colorimetry | E018 |
| Soil | D | Sulphur - Total | Determination of total sulphur by extraction with aqua-regia followed by ICP-OES | E024 |
| Soil | AR | SVOC | Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS | E006 |
| Soil | AR | Thiocyanate (as SCN) | Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry | E017 |
| Soil | D | Toluene Extractable Matter (TEM) | Gravimetrically determined through extraction with toluene | E011 |
| Soil | D | Total Organic Carbon (TOC) | Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate | E010 |
| Soil | AR | TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) | Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS | E004 |
| Soil | AR | TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44) | Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS | E004 |
| Soil | AR | VOCs | Determination of volatile organic compounds by headspace GC-MS | E001 |
| Soil | AR | VPH (C6-C8 & C8-C10) | Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID | E001 |

**D Dried**
**AR As Received**

| | |
|---|---|
| Client/client ref | Higgins Homes |
| Project ref | 15629 |
| Site ref | Former Cherry Garden School, Cherry House Road, Bermondsey, London SE16 3XU |
| Data description | Made Ground |
| Contaminant(s) | Lead |
| Test scenario | Planning: is true mean lower than critical concentration (μ < Cc)? |
| Date | 16 12 19 |
| User details | CS Gray |

Statistics calculator (version 1)

# Input data

This spreadsheet has been produced based on the document 'Guidance on Comparing Soil Contamination Data with a Critical Concentration (CIEH/CL:AIRE, 2008)'. Users of this spreadsheet should always refer to this guidance, the User Manual and to relevant guidance on UK legislation and policy, in order to understand how the procedure should be applied in an appropriate context.

ESI Ltd (ESI) do not promise that the spreadsheet will provide any particular facilities or functions. The user must ensure that the spreadsheet meets their needs and they remain solely responsible for the competent use of the spreadsheet. Users are entirely responsible for the consequences of any use of the spreadsheet, ESI do not provide any warranty about the fitness for purpose or performance of any part of the spreadsheet. We do not promise that the media will always be free from defects, computer viruses, software locks or other similar code or that the operation of the spreadsheet will be uninterrupted or error free. The user should carry out all necessary virus checks prior to installing on their computing system.

Go to summary

# Data sheet

Project details

| Easting | Northing | Sample ID | Lead | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WS1 | 50 | | | | | | | | | | |
| | | WS2 | 201 | | | | | | | | | | |
| | | WS4 | 12 | | | | | | | | | | |
| | | WS6 | 107 | | | | | | | | | | |
| | | WS6 | 108 | | | | | | | | | | |
| | | WS6 | 13 | | | | | | | | | | |
| | | WS7 | 432 | | | | | | | | | | |
| | | WS7 | 61 | | | | | | | | | | |
| | | BH1 | 204 | | | | | | | | | | |
| | | BH1 | 63 | | | | | | | | | | |
| | | BH2 | 174 | | | | | | | | | | |
| | | BH2 | 44 | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

#REF!

| | Lead | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Critical concentration, $C_c$** | **200** | | | | | | | | | |
| **Notes** | | | | | | | | | | |
| **Sample size, n** | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Sample mean, $\bar{x}$** | 122.416667 | No Data | No Data | No Data | No Data | No Data | No Data | No Data | No Data | No Data |
| **Standard deviation, s** | 118.566788 | | | | | | | | | |
| **Number of non-detects** | 0 | | | | | | | | | |
| **Set non-detect values to:** | Half detection limit | Half detection limit | Half detection limit | Half detection limit | Half detection limit | Half detection limit | Half detection limit | Half detection limit | Half detection limit | Half detection limit |
| **Outliers?** | Yes | | | | | | | | | |
| **Distribution** | Non-normal | | | | | | | | | |
| **Statistical approach** | Auto: Chebychev | Auto | Auto | Auto | Auto | Auto | Auto | Auto | Auto | Auto |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Test scenario:** | Planning: is true mean lower than critical concentration (μ < Cc)? | | | | **Evidence level required:** | | 95% | Use Normal distribution to test for outliers | | |
| **t statistic, $t_0$ (or $k_0$)** | -2.266710212 | | | | | | | | | |
| **Upper confidence limit** (on true mean concentration, μ) | 271.609937 | | | | | | | | | |
| **Evidence level** | **84%** | | | | | | | | | |
| **Base decision on:** | evidence level | | | | | | | | | |
| **Result** | **μ ≈≥ Cc** | | | | | | | | | |
| **Select dataset** | ○ Y | ○ Y | ◉ Y | ○ Y | ○ Y | ○ Y | ○ Y | ○ Y | ○ Y | ○ Y |

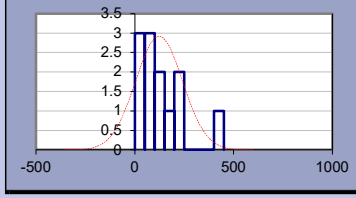
**Back to data** | **Go to outlier test** | **Go to normality test** | **Show individual summary**

# Test Results

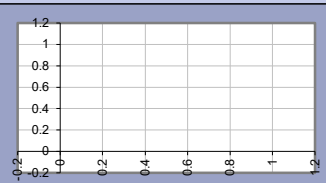
Client/client ref: Former Cherry C #REF!
Project ref: 15629
Data description: Made Ground
Date: 16 12 19
User details: CS Gray

| Dataset: Lead | |
|---|---|
| Sample mean, $\bar{x}$ | 122.42 |
| Sample standard deviation, s | 118.57 |
| Sample size, n | 12 |
| Critical concentration, Cc | 200 |

Use Normal distribution to test for




| Outliers & non-detects | |
|---|---|
| Outliers present? | YES |
| Significance level | 5% |
| Outliers removed? | 0 |
| Non-detects | 0 |

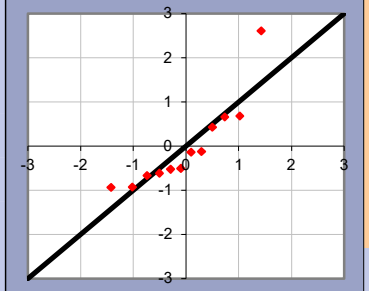



## Normality test

Significance le 5%

Non-normal distribution

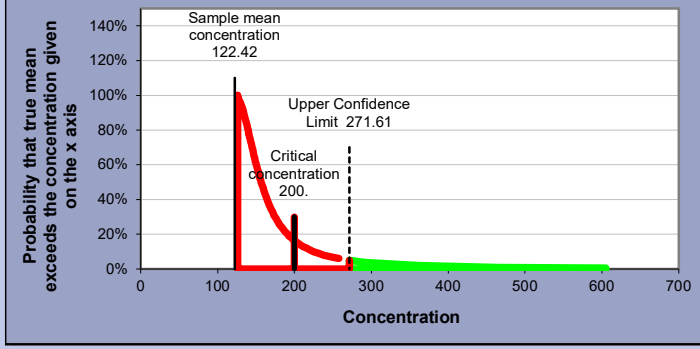
Use: Auto: Chebychev




## Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

| | |
|---|---|
| Null hypothesis: | The true mean concentration is equal to or greater than the critical concentration: μ ≥ Cc |
| Alternative hypothesis: | The true mean concentration is less than the critical concentration: μ < Cc |




| | |
|---|---|
| **Evidence against Null hypothesis:** | **84%** |
| Base decision on: | evidence level |
| Evidence level required: | **95%** |
| Balance of probability? | N/A |
| Reject Null Hypothesis? | No |

**Not enough evidence**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