

REMEDIAL STRATEGY AND METHOD STATEMENT
GLOBAL ACADEMY UTC
HAYES
PURPLEXED LLP
RSMS-MER00566-15-93
MARCH 2015



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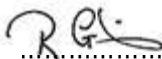
Linford Shacklady

Issued by


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Linford Shacklady

Approved by


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Rob Glavin

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SECTION 1 INTRODUCTION

1.1 SCOPE OF THIS DOCUMENT

- 1.1.1 Idom Merebrook Limited (Merebrook) has been commissioned by Purplexed LLP to undertake contamination and geotechnical assessment of The Old Vinyl Factory (TOVF), Blyth Road, Hayes, prior to redevelopment of the site. As part of this work, Merebrook has compiled a remediation strategy for a parcel of land to be developed by Global Academy University Technical College (UTC), which includes a method statement for breaking out the underground tunnels and the removal of asbestos containing materials (ACMs) as required.
- 1.1.2 The scope of the remedial works proposed here is intended to be sufficient in our judgement to mitigate significant risks to human health and groundwater and permit safe development, and to discharge condition 8 attached to TOVF outline Planning Permission.
- 1.1.3 This document has been prepared for Purplexed LLP for the purposes outlined above. No duty of skill or care is owed by Merebrook to any third party and such third parties using this document do so at their own risk.

SECTION 1 SITE BACKGROUND

1.1 INTRODUCTION

- 1.1.1 Merebrook has previously produced a Phase 1 Environmental Assessment (DS-MER00566-13-58) for the wider TOVF site and a Phase 2 Geo-Environmental Assessment for the Boiler House (GEA-MER00566-13-175 Rev D), which should be consulted along with this report. An additional investigation on the Global Academy UTC Plot was conducted by ESG in January 2015. The EGS Report (D4097-14_Draft GI Factual Report_rev0) is provided in Appendix 1. A summary of the key findings of the investigations are set out in the sections below.
- 1.1.2 The Global Academy UTC plot includes part of the original lean-tos of the Powerhouse building which will be demolished.
- 1.1.3 The majority of external areas surrounding the Global Academy UTC plot will be covered by hardstanding whilst soft landscaping will be used to frontage with Blyth Road.

1.2 SITE LOCATION AND SETTING

- 1.2.1 The site is located to the west of the Hayes and Harlington train station in the London Borough of Hillingdon. The wider site is triangular in shape and is approximately 5.6 hectares in size with the centre of the site located at National Grid Reference TQ091795 (509181, 179575). This report covers the redevelopment of the Global Academy UTC plot, which is adjacent to Blyth Road and lies to the northeast of The Cabinet Building (formerly Vulcan House).



- 1.2.2 The geology beneath the site consists of Made Ground over Brickearth, Taplow Gravels, London Clay (top of strata approximately 4.6 metres below ground level (m bgl), Lambeth Group (top of strata approximately 100 m bgl), and the Chalk Formation (top of strata approximately 130 m bgl). The Taplow Gravels are classified as a Principal Aquifer and groundwater flow is in a south easterly direction. The Grand Union Canal is located approximately 200 m to the north of the site. There are no abstraction licences within 500 m of the site. It is understood that, historically, there were six abstraction wells on the site which have since been decommissioned. The site is not located within a Groundwater Source Protection Zone.

1.3 **SITE HISTORY**

- 1.3.1 Historic plans show that by 1895, the site was largely undeveloped with a few terraced buildings located along the western boundary. By 1914, the site had been significantly developed with the construction of a gramophone factory. By 1993, part of the former gramophone factory was demolished giving rise to the current layout.

1.4 **IDENTIFIED GROUND CONDITIONS**

- 1.4.1 Several phases of ground investigation have been undertaken for the site, with the most relevant data reported in Merebrook's Geo-Environmental Assessment (GEA-MER00566-13-175 Rev D) and by ESG in the form of supplied borehole logs. Whilst the Merebrook report was produced for the adjacent proposed Boiler House, it is considered that the exploratory hole locations and information obtained from these are directly applicable to an assessment for the Powerhouse.
- 1.4.2 The sub-surface ground conditions comprised Made Ground overlying brick earth, sand and gravel then London Clay. A summary of the ground conditions encountered is presented in Table 1.

Table 1: Summary of the Sub-surface Ground Conditions

STRATA	DEPTH TO TOP RANGE (mbgl)	THICKNESS RANGE (m)
Made Ground	0	0.35 - 2.4
Concrete	0.05 - 2.0	0.15 - 1.7+
Brickearth/ Reworked natural	0.35 - 0.8	0.2 - 0.65
Taplow Gravel	0.75 - 2.4	6.4
London Clay	7.6	Unproven (>17.9m)

- 1.4.3 A number of sub-surface ducts/tunnels are located beneath the site. These represent the former service/heating ducts that serviced the gramophone factory. A plan showing the locations of these is included in Appendix 2. The tunnels/ducts have been found to contain asbestos lagged pipes and some localised asbestos debris.



A detailed report on survey works undertaken by Soilfix on behalf of Idom Merebrook Ltd is included in Appendix 3.

- 1.4.4 With the exception of localised hydrocarbon contamination within one of the ducts, no evidence of gross contamination has been encountered. The site has been subject to a detailed investigation.

1.5 SOIL AND GROUNDWATER CONTAMINATION

- 1.5.1 During the site investigation conducted by Merebrook in August 2013, the majority of potential contaminants were reported below their respective commercial screening levels. However, concentrations of several metals were recorded above the screening criteria in two samples of made ground.
- 1.5.2 An elevated arsenic concentration (3100 mg/kg) was detected in a sample of ashy made ground (MTP2 0.6-0.75m). Zinc was recorded in two samples above the phytotoxicity screening level (300 mg/kg) from MTP2 (0.6-0.75m) and MTP1 (0.5-1.0m), with a maximum concentration of 14,000 mg/kg from the sample from MTP2 (0.6-0.75m). Copper and nickel concentrations were also recorded above their respective phytotoxic screening levels within MTP2 (0.6-0.75m), concentrations were recorded as 4,200 and 320 mg/kg respectively.
- 1.5.3 Whilst it is noted that the LQM/CIEH document (GAC 2nd Edition) from which the majority of zootoxic screening levels used in the GEA were adopted has recently been updated and replaced by LQM/CIEH Suitable 4 Use Levels, the changes to these screening levels do not significantly alter the conclusions and recommendations within the GEA report.
- 1.5.4 Five made ground samples were screened for asbestos. Asbestos was identified in CBR203c at 0.4-0.6m (to the east) and MTP1 at 0.5-1.0m (northeast corner) in the form of chrysotile and amosite fibres.
- 1.5.5 Asbestos was also detected during the investigation conducted by ESG. Amosite was identified in a sample of made ground from BH1 at 1.0 m bgl; chrysotile and amosite were detected in two samples of made ground from WS1 at 0.5 and 1.0 m bgl (free fibres and lagging respectively).
- 1.5.6 No organoleptic evidence of contamination was noted in natural strata and no samples recovered from the natural ground exhibited contaminant concentrations above their respective screening levels.
- 1.5.7 A groundwater sample was recovered from BH201. Whilst this location is not within the Global Academy UTC red line boundary the results are considered representative of general groundwater quality in this area of the site. None of the potential contaminants analysed recorded concentrations above their respective screening criteria. No elevated concentrations of potential contaminants were recorded in the groundwater samples analysed as part of previous investigations, including down gradient boreholes.



1.6 **ADDITIONAL MONITORING**

- 1.6.1 Merebrook attended site on 12 March 2014 to conduct additional groundwater monitoring and vapour/gas monitoring. ESG attended site on 17 and 24 February and 2 March 2015 to conduct gas monitoring. All the results have been used to inform this report.
- 1.6.2 Levels of methane, carbon dioxide and oxygen were recorded in BH201, together with associated parameters including borehole flow and ambient air pressure.
- 1.6.3 The results of all Merebrook gas monitoring rounds are appended (see Appendix 2). ESG gas monitoring results are provided in Appendix 1.
- 1.6.4 Ground gas concentrations recorded by ESG were as follows:
- i.* Maximum methane: 0.0 % v/v;
 - ii.* Maximum carbon dioxide: 2.3 % v/v;
 - iii.* Minimum oxygen: 15.5 % v/v;
 - iv.* Maximum carbon monoxide: <1ppm; and,
 - v.* Maximum steady flow: 0 l/hr.
- 1.6.5 The gas risk has been reassessed using the ESG data.
- 1.6.6 In order to give an initial assessment for gas risk the findings have been compared to the Wilson and Card (1999) guidelines applicable for buildings other than low rise residential.
- 1.6.7 Gas Screening Values (GSVs) for carbon dioxide and methane concentrations were calculated using the maximum recorded values throughout the monitoring period in association with the highest recorded flow rate.
- 1.6.8 Based on the ground gas monitoring data, the GSV for carbon dioxide was calculated as 0 l/hr and the GSV for methane was calculated as 0 l/hr.
- 1.6.9 These GSVs have been assessed in accordance with NHBC – Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present as well as the CIRIA C665 guidance – Assessing risks posed by hazardous ground gases to buildings. Based on the modified Wilson and Card classification the site would be classified as Characteristic Situation 1. This would suggest that ground gas protection measures are not required.
- 1.6.10 Vapours in the form of VOCs were monitored with a photoionization detector (PID) at BH201, WS16 and BH102 and no detectable concentrations were encountered.
- 1.6.11 Trace VOC contamination has been detected in groundwater.



1.7 OBSTRUCTIONS

- 1.7.1 Obstructions have been encountered during works conducted by Merebrook and others.
- 1.7.2 A number of sub-surface ducts/tunnels are located beneath the site. These represent the former service/heating ducts that serviced the gramophone factory.
- 1.7.3 The groundwater gradient has been found to be predominantly flat across the site therefore groundwater flow is unlikely to be effected by ponding. Furthermore the hydraulic gradient of the gravels will be high therefore groundwater will readily flow around any obstruction. In addition the thickness of the gravel (approximately 7 m) would again mean that groundwater would flow around any obstructions and therefore not form ponds of contamination.
- 1.7.4 Where obstructions are removed, excavations must be backfilled with a granular material of a suitable grade to enable compaction.

1.8 RADIATION

- 1.8.1 A Desk Study undertaken by RPS in 2006 included details of a radiological survey which had been carried out at the site. The document concludes that there is low risk of radiological contamination across the site, but nonetheless mitigation measures will be employed during the remedial works – see Section 6.2 Watching Brief.

SECTION 2 RISK ASSESSMENT

- 2.1 The potential sources of contamination at the site and the implications with respect to development have been interpreted in accordance with the current government guidance on source-pathway-receptor risk assessment. It should be noted that the risk categorisation summary below is based on proposals that cover the majority of the sub-surface soils with buildings and associated hardstanding, with limited areas of soft landscaping where exposure may occur.
- 2.2 Ground contamination has been identified at the site and this is associated with asbestos and metals in the shallow Made Ground. The concentrations may represent a Low-Moderate risk to future site users from ingestion and inhalation of soil and soil-derived dust and from dermal contact. However, the development includes covering the majority of sub-surface soils with buildings and associated hardstanding. Soft landscaped areas will be limited and constructed with clean cover of at least 300 mm (finished depths to be determined by landscape architect as appropriate). The soft landscaping in the proposed development will not be subject to significant disturbance so the risk to future site users would be Low.
- 2.3 Additional soil gas, vapour and groundwater monitoring was undertaken by Merebrook in March 2014. An updated groundwater and vapour risk assessment (L-MER00566-2.4.2-14-S160-GOB) is contained in Appendix 5. The majority of the VOCs analysed in groundwater returned concentrations below the screening the



laboratory detection limit. However, Cis-1,2-dichlorethene was detected in the samples retrieved from MBH201 (5.9 µg/l) and BH102 (3.0 µg/l), while 1.5 µg/l of Trichloroethane was detected in the sample retrieved from MBH201.

- 2.4 Both of the concentrations of Cis-1,2-dichlorethene retrieved from MBH201 and BH102 did not exceed the WHO standards on drinking water of 50 µg/l, while the concentration of Trichloroethane retrieved from MBH201 was not in exceedance of the water quality regulation standard of 10 µg/l. It is therefore considered that the risk from VOCs to controlled waters is low and no on-site source was identified.
- 2.5 Due to the presence of low concentrations of Cis-1,2-dichlorethene and Trichloroethane a possible risk to human health of volatilisation of the VOCs into indoor air space has been identified. However, given the very low concentrations and depth to groundwater the risk is considered to be low.
- 2.6 No VOCs were recorded on the PID, therefore the volatilisation potential to air from groundwater is considered to be low. No flow was recorded on the gas analyser; this indicates that there is no active pathway by which VOCs could reach the surface.
- 2.7 The groundwater gradient has been found to be predominantly flat across the site therefore groundwater flow is unlikely to be effected by ponding. Furthermore the hydraulic gradient of the gravels will be high, therefore groundwater will readily flow around any obstruction. In addition the thickness of the gravel (approximately 7 m) would again mean that groundwater would flow around any obstructions therefore not form ponds of contamination.
- 2.8 The gas risk assessment carried out by Merebrook demonstrates that the site is likely to be a low risk site in relation to ground gases and no ground gas protection measures are likely to be required for the new development. Furthermore additional monitoring conducted by Merebrook did not encounter VOCs in air or groundwater. In addition, significant flow was not encountered.
- 2.9 The low levels of soil contamination do not indicate that the site would be likely to pose a risk to controlled waters from leaching and migration of contamination. Samples recovered from groundwater did not encounter contamination.
- 2.10 Hydrocarbon contamination was identified within one of the ducts/chambers to the north of the former boiler house building (noted on drawing MER00566-304-002 in Appendix 1). However, the duct appeared to be fully contained thus preventing release to deeper groundwater. Furthermore, no evidence of hydrocarbon contamination has been recorded in groundwater.
- 2.11 Potentially, construction workers are at the greatest risk from exposure to hazardous contamination due to excavation works and during the handling of materials including imported soils. Providing that dust levels are kept within statutory limits and appropriate health and safety procedures are adhered to during the construction phase, the levels of chemical contamination recorded to date are not considered to present an acute risk to human health. Appropriate method statements and PPE will



be required when dealing with the made ground in this area. Measures to control the release of fibres when removing any ductwork must also be put into place.

SECTION 3 REMEDIAL STRATEGY

3.1 OVERVIEW

- 3.1.1 The following method, based on source or pathway removal, has been developed to mitigate the risks identified in previously reported environmental and human health risk assessments.
- 3.1.2 Ground investigations conducted to date have identified localised contamination, including arsenic, copper, nickel, zinc and asbestos.
- 3.1.3 The site is to be redeveloped as a new higher education centre. The majority of sub-surface soils are to be capped with hardstanding, while in the soft landscaped areas at least 300 mm of clean cover will be provided.
- 3.1.4 Remediation activities will be limited to the following:
 - i.* Removal of localised gross hydrocarbon contamination in tunnels/ducting;
 - ii.* Containment/removal of asbestos from sub-surface tunnels as required by the development sub-structures; and,
 - iii.* The provision of clean cover in areas of soft landscaping.

3.2 HYDROCARBON CONTAMINATION IN DUCTING

- 3.2.1 Any light non aqueous phase liquid (LNAPL) or dense non aqueous phase liquids (DNAPL) encountered in ducting should be removed by a specialist contractor by pumping to a tanker for offsite disposal. The duct will be validated by Merebrook through visual inspection and the recovery of photographic records. Furthermore, an industry standard dual phase meter will be used to determine when all measureable free product has been removed. It should be noted that groundwater monitoring across the wider site has not identified hydrocarbon contamination.

3.3 ASBESTOS IN MADE GROUND

- 3.3.1 Asbestos free fibres and pipe lagging have been identified in the made ground. Providing that dust levels are kept within statutory limits and appropriate health and safety procedures are adhered to during the construction phase, the presence of fibres are considered unlikely to present a risk to human health. To ensure that no asbestos fibres are becoming airborne, a programme of reassurance air monitoring at the site boundary and on personnel should be conducted during the initial stages of groundworks.



3.4 CONTAINMENT/REMOVAL OF ASBESTOS FROM SUB-SURFACE TUNNELS

- 3.4.1 Asbestos insulation has been identified as pipe lagging within the ducts and in debris. It is preferable where possible to leave this asbestos undisturbed. Where tunnels require removal to facilitate the development, the tunnel should be cut back and the asbestos removed by a licensed contractor. The requirements for asbestos removal are set out in Section 8. Records must be kept of residual contamination in the site's health and safety file and any ducts left in the ground must be sealed to prevent access.

3.5 CLEAN COVER

- 3.5.1 In view of the distribution of the contaminants it is evident that contamination is limited, in both extent and degree. It has been recommended that remediation be limited to the localised removal of soils demonstrating substantial proportions of clinker and ash. It is recommended that soft landscaped areas are formed of at least 300 mm of clean cover. Since planting will be generally ornamental, with some turfed areas, 300 mm will be sufficient to prevent dermal contact, accidental ingestion or the generation of contaminated dust.
- 3.5.2 It is also noted that the construction of porous pavements across much of the site would greatly increase the thickness of clean cover provided.
- 3.5.3 The thickness of clean cover shall be validated at three locations.

3.6 VALIDATION OF IMPORTED MATERIALS

- 3.6.1 Material imported for the formation of soft landscaped areas shall be obtained from a validated source. Validation of the imported soils shall include both assessment of the provenance of the material, which shall be supported by chemical data on the source soils provided by the supplier, and validation of the emplaced soils.
- 3.6.2 Validation of the chemical quality of imported soils for use in clean cover shall be obtained at a nominal rate of approximately one sample per 250 m³ (with a minimum of three samples). Acceptance criteria for imported soils are presented in Table 2 below. These screening levels have been derived from Suitable for Use Levels (S4ULs) published in 2015 by LQM/CIEH.¹ These precautionary screening levels are designed to be representative of minimal risk to human health in a number of land use scenarios. S4ULs have been selected for a public open space (Park) land use and assuming a soil organic matter of 1% (for organic contaminants). For lead the DEFRA Category 4 Screening Level has been used as this is based on updated toxicological data and a low risk to human health.²

¹ Nathanail, C. P., McCaffrey, C., Gillett, A. G., Ogden, R. C. and Nathanail, J. F. 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham. Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3100. All rights reserved.

² SP1010 Development of Category 4 Screening Levels Main Report (Dec 2013) and SP1010 Policy Companion Document (Mar 2014).



- 3.6.3 For copper, nickel and zinc, phytotoxin screening levels have been adopted from 'The Code of Agricultural Practice for the Protection of Soil' Ministry of Agriculture, Fisheries and Food (MAFF), 1993, which are protective of healthy plant growth (these are more conservative than the respective human health criteria).
- 3.6.4 The criteria set out in table 2 shall also be applied to any remedial excavations, with one sample collected from each side and base at a rate of 10 square metres of exposed surface.

Table 2: Chemical acceptance criteria for imported, *in situ* and site-won soils

Determinand	Units	Screening Level imported soils
pH	-	5 - 9
Arsenic	mg.kg ⁻¹	170
Cadmium	mg.kg ⁻¹	532
Chromium (total)	mg.kg ⁻¹	33000
Chromium (hexavalent)	mg.kg ⁻¹	220
Copper	mg.kg ⁻¹	200
Lead	mg.kg ⁻¹	1300
Mercury	mg.kg ⁻¹	240
Nickel	mg.kg ⁻¹	110
Selenium	mg.kg ⁻¹	1800
Zinc	mg.kg ⁻¹	300
Asbestos	-	absent
TPH Aliphatic >EC ₅ - EC ₆	mg.kg ⁻¹	95000
TPH Aliphatic >EC ₆ - EC ₈	mg.kg ⁻¹	150000
TPH Aliphatic >EC ₈ - EC ₁₀	mg.kg ⁻¹	14000
TPH Aliphatic >EC ₁₀ - EC ₁₂	mg.kg ⁻¹	21000
TPH Aliphatic >EC ₁₂ - EC ₁₆	mg.kg ⁻¹	25000
TPH Aliphatic >EC ₁₆ - EC ₃₅	mg.kg ⁻¹	450000
TPH Aliphatic >EC ₃₅ - EC ₄₄	mg.kg ⁻¹	450000
TPH Aromatic >EC ₅ - EC ₇	mg.kg ⁻¹	76000
TPH Aromatic >EC ₇ - EC ₈	mg.kg ⁻¹	87000
TPH Aromatic >EC ₈ - EC ₁₀	mg.kg ⁻¹	7200
TPH Aromatic >EC ₁₀ - EC ₁₂	mg.kg ⁻¹	9200
TPH Aromatic >EC ₁₂ - EC ₁₆	mg.kg ⁻¹	10000
TPH Aromatic >EC ₁₆ - EC ₂₁	mg.kg ⁻¹	7600
TPH Aromatic >EC ₂₁ - EC ₃₅	mg.kg ⁻¹	7800
TPH Aromatic >EC ₂₁ - EC ₃₅	mg.kg ⁻¹	7800
Acenaphthene	mg.kg ⁻¹	29000
Acenaphthylene	mg.kg ⁻¹	29000
Anthracene	mg.kg ⁻¹	150000
Benzo(a)anthracene	mg.kg ⁻¹	49
Benzo(a)pyrene	mg.kg ⁻¹	11
Benzo(b)fluoranthene	mg.kg ⁻¹	13



Determinand	Units	Screening Level imported soils
Benzo(ghi)perylene	mg.kg ⁻¹	1400
Benzo(k)fluoranthene	mg.kg ⁻¹	370
Chrysene	mg.kg ⁻¹	93
Dibenz(ah)anthracene	mg.kg ⁻¹	1.1
Fluoranthene	mg.kg ⁻¹	6300
Fluorene	mg.kg ⁻¹	20000
Indeno(123-cd)pyrene	mg.kg ⁻¹	150
Naphthalene	mg.kg ⁻¹	1200
Phenanthrene	mg.kg ⁻¹	6200
Pyrene	mg.kg ⁻¹	15000

^a Based on the soil organic matter content, SOM (1%); Thickness check once per 250 m².

Notes: No staining or odours permitted, deleterious materials or propagules of weeds.

SECTION 4 INFRASTRUCTURE

- 4.1 Localised elevated contaminants with the potential to permeate polymeric services have been identified. Therefore, it is recommended that the utility provider is consulted with respect to their requirements for water supply pipes.
- 4.2 However, it is recommended that services are laid in over excavated corridors, with a minimum of 150 mm of blinding to the sides and base.

SECTION 5 WATCHING BRIEF

- 5.1 During groundwork, a watching brief shall be maintained by a Merebrook Consultant. This shall consist of regular site visits, as well as attendance should any unforeseen contamination be encountered.
- 5.2 Whilst no risk of radiological contamination has been identified on site, selected arisings will be screened using a hand-held Geiger counter.

SECTION 6 GENERAL SITE PRACTICES

- 6.1 Materials including clean waste soils, *inter alia* those from excavations for services and foundations, which are not to be retained or re-used should be removed and disposed of in accordance with all relevant statutes including the Environmental Protection Act 1990, the Environmental Protection Act (Duty of Care) Regulations 1991, Code of Practice on the Duty of Care Regulations, the Waste Management Licensing Regulations 1994, The Landfill Regulations 2002 (as Amended) and The Waste Management Licensing (England and Wales) (Amendment and Related Provisions) Regulations 2005.
- 6.2 Potential risks to construction workers have been identified and the adoption of appropriate Health and Safety procedures will ensure that risks to operatives from hazardous materials at the site are minimised. Provided that dust levels are kept within statutory limits (e.g. by damping down in dry conditions) the levels of



contamination in the soils in most areas do not indicate potential for the existence of respiratory hazards. However, asbestos fibres were identified in localised areas and works in these areas must be governed by a specific method statement provided by the contractor. Details of the requirement for asbestos removal from the tunnels and ducts are presented below.

- 6.3 Operatives should not be allowed to eat, drink or smoke on site except in designated areas and should be required to wash all exposed skin at the end of each shift. Operatives should be informed of the potential hazards at the site and should be required to report any observations of suspect materials. Tool box talks and inductions shall be given to all site workers setting out potential risks, the required mitigation and hygiene measures.
- 6.4 The developer will confirm with the local utility provider which materials will be acceptable for potable water pipes and pipe trench backfill.
- 6.5 Obstructions may need to be removed during the course of demolition and/or groundworks.
- 6.6 As with any sampling exercise, it is possible that groundworks will discover conditions or soils different from those found to date. Construction managers and supervisors should be aware that further remediation measures may be required if such conditions are found.
- 6.7 Any observations of ground conditions potentially atypical of those described above shall be reported to Merebrook for assessment. Where, upon initial inspection, it is confirmed that potential new contamination has been encountered then the works will cease and Merebrook will prepare and submit a Method Statement for assessing and dealing with the suspected contamination. This may include additional risk assessment and/or removal of contaminated material if this is deemed necessary and will be submitted to the Local Authority for approval.
- 6.8 Where possible, monitoring boreholes shall be maintained on site.

SECTION 7 OVERARCHING METHOD STATEMENT – ASBESTOS REMOVAL

- 7.1 Asbestos insulation has been identified as pipe lagging within the ducts. This material requires removal by a licensed contractor operating under fully controlled conditions (*i.e.* in an enclosure under negative pressure with a three-stage airlock) with clearance testing carried out by an independent analytical laboratory.
- 7.2 The contractor must produce detailed method statements. However, as a minimum the following must be in place:
 - i.* All notifiable removal works will be undertaken by appropriately trained operatives (Asbestos Supervisors/Operatives Course) and in controlled conditions. To facilitate asbestos removal from ducting, an airtight enclosure will be required around the duct with personal and boundary monitoring in



place. Should fibres be detected at the boundary, works should cease until a source is identified and mitigation measures are put in place.

- ii. On completion certified clearance air testing by pump sampling and phase contrast microscopy will be required. This is described in the Health and Safety Executive (HSE) guidance note 'Method for the Determination of Hazardous Substances (MDHS) 39/4' entitled 'Asbestos fibre in the air-sampling and evaluation by Phase Contrast Microscopy under the Control of Asbestos at Work Regulations' and additionally, guidance notes EH10 entitled 'Asbestos: exposure limits and measurements of airborne dust concentrations'.
- iii. Non-notifiable materials (cement board, guttering, down pipes etc.) would be removed under semi-controlled conditions (without an enclosure, however with appropriate PPE/RPE, fine mist suppression if required and reassurance air sampling) by operatives either as part of soft stripping or as an integral part of the demolition process, adopting appropriate safe systems of work endorsed by the HSE.
- iv. Method statements compiled by a licensed asbestos removal contractor will be reviewed and routine site inspections will be undertaken during asbestos removal works to verify safe systems of working. A copy of this document will also be provided, for reference, to the Environmental Health Officer. Airborne monitoring will be undertaken for reassurance purposes at the site perimeter and works locations. All clearance testing and perimeter reassurance air monitoring will be undertaken by a UKAS accredited testing company in accordance with the quality plan.
- v. All works are to be undertaken in accordance with the Control of Asbestos at Work Regulations (CAR) 2012.
- vi. Where ducts are to remain *in situ*, measures should be used to stop access to the tunnel or duct by either grout or crushed concrete. The locations of the remaining ducts and tunnels where asbestos is to remain *in situ* will be recorded in the health and safety file and kept on site.

SECTION 8 VERIFICATION REPORT

- 8.1 Upon completion of the groundworks, a validation report will be provided for approval and discharge of planning conditions.
- 8.2 The final verification report will provide details of remedial works undertaken including *inter alia*:
 - i. Laboratory data relating to the chemical quality of imported soils, as well as details of placed thicknesses, sample locations and material provenance;



- ii. Details of previously unidentified contamination and measures implemented to mitigate potential risks;
- iii. Details of contamination left *in situ*;
- iv. A photographic record of key stages of works;
- v. Regulatory consents and permits;
- vi. Details of waste disposal, including examples of tip tickets;
- vii. Details of service trenches;
- viii. Records of materials re-use;
- ix. Records of on-site testing; and
- x. Air monitoring data collected during asbestos removal works.



APPENDIX 1 ▪ EGS Factual Report on Ground Investigation D4097-14



GLOBAL UTC, THE OLD VINYL FACTORY, HAYES, MIDDLESEX

FACTUAL REPORT ON GROUND INVESTIGATION

Report No D4097-14

March 2015

Carried out for:
Mott Macdonald Limited
Demeter House
Station Road
Cambridge
CB1 2RS

Engineer:
Mott Macdonald Limited
Demeter House
Station Road
Cambridge
CB1 2RS

DRAFT



Glossop House, Hogwood Industrial Estate, Hogwood Lane
Finchampstead, Berkshire, RG40 4QW, UK
Tel: +44 (0) 118 932 8888 email: geo.wokingham@esg.co.uk

Report No D4097-14

March 2015

Issue No Date	Status	Prepared by	Checked by	Approved by
1 March 2015	Draft report	Tim Rust (BSc)	NAME and QUALIFICATIONS	NAME and QUALIFICATIONS
		SIGNATURE	SIGNATURE	SIGNATURE
	Final report	NAME and QUALIFICATIONS	NAME and QUALIFICATIONS	NAME and QUALIFICATIONS
		SIGNATURE	SIGNATURE	SIGNATURE
		NAME and QUALIFICATIONS	NAME and QUALIFICATIONS	NAME and QUALIFICATIONS
		SIGNATURE	SIGNATURE	SIGNATURE

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1 INTRODUCTION

In October 2014 ESG was commissioned by Mott Macdonald Limited (MM), to carry out a site investigation at Global UTC, The Old Vinyl Factory, Hayes, Middlesex. The investigation was required to obtain geotechnical and geoenvironmental information for a proposed new University Technical College (UTC).

The scope of the investigation was specified by MM and comprised cable percussion and windowless sampler boreholes, in situ testing and laboratory testing. The investigation was performed in accordance with the contract specification, and the general requirements of BS 5930+A2 (2010), BS EN 1997-2 (2007), BS EN ISO 22475-1 (2006) and other relevant related standards identified below. The fieldwork took place between 12 and 21 of January 2015.

This report presents the factual records of the fieldwork and laboratory testing. The information is also presented as digital data as defined in AGS (2005).

A previous investigation had been carried out by Merebrook Consulting (Report No GEA-MER00566-13-175 REV D, November 2013). A copy of their report was made available to ESG by MM at the outset of the current investigation.

2 SITE SETTING

2.1 Location and Description

The site is roughly rectangular, the majority of which is within the boundaries of a disused factory unit. The North Eastern corner of the site is located within a newly developed car park. The site is tarmacadam hardstanding with occasional landscaped vegetated areas and is generally flat. The site is bounded by The Great Western Mainline to the South, modern industrial units and offices to the East and West, and Blyth Road to the North.

Global UTC, The Old Vinyl Factory is located in Hayes, Greater London at National Grid reference TQ 092 796, see Site Location Plan in Appendix A.

2.2 Published Geology and Previous Ground Investigations

2.2.1 Published Geological Information

The published geological map for the area, BGS Sheet 269 (1989) shows the site to be underlain by Brickearth overlying Taplow Gravels, London Clay, Reading beds and Upper Chalk respectively.

2.2.2 Previous Investigations

A Geoenvironmental Investigation was undertaken by Merebrook Consulting in November 2013 comprising of cable percussion boreholes and machine dug trial pits. This investigation details geotechnical and geoenvironmental information and references a number of previous historic investigations. ESG has not had access to these reports.

3 FIELDWORK

The fieldwork was carried out in general accordance with BS 5930+A2 (2010), BS EN 1997-2 (2007) and BS EN ISO 22475-1 (2006).

The exploratory hole locations were selected by MM. The locations were set out from local features. The co-ordinates and reduced levels were surveyed by ESG to National Grid and Ordnance Datum. The exploratory hole locations are shown on the Site Plan in Appendix A.

3.1 Exploratory Holes

The exploratory holes are listed in the following table.

TABLE 1 : SUMMARY OF EXPLORATORY HOLES

TYPE	QUANTITY	MAXIMUM DEPTH (m)	REMARKS
Cable Percussion Boring	3	20.45	BH01 to BH03
Window Sampling	2	4.00	WS01 and WS02

The exploratory hole logs are presented in Appendix B. These provide information including the equipment and methods used, samples taken, tests carried out, water observations and descriptions of the strata encountered. Explanation of the terms and abbreviations used on the logs is given in the Key to Exploratory Hole Records in Appendix B, together with other explanatory information. The logging of soil is in accordance with BS EN ISO 14688-1+A1 (2013) for soils, as amplified by BS 5930+A2 (2010).

Standard penetration tests (SPT) in the boreholes were carried out in accordance with BS EN ISO 22476-3+A1 (2011) and the SPT hammer energy ratio certificate is included in Appendix B. The SPT results are presented on the logs as uncorrected N values.

On completion of the fieldwork geotechnical samples were transported to the Wokingham office of ESG for temporary retention, with those required for testing being transferred to the laboratory at Doncaster. Geoenvironmental samples were transported from site directly to the laboratory at Bretby (Burton-on-Trent).

3.2 Groundwater and Gas Monitoring

Instrumentation installed in the exploratory holes for groundwater and gas monitoring are shown on the logs and summarised in Appendix C. Records of monitoring carried out by ESG during and after the fieldwork period are presented in Appendix C.

3.3 In Situ Testing

In situ testing was carried out in accordance with the relevant standards as tabulated below. The testing is summarised in the following table and the results are presented in the boreholes logs in

Appendix B. Calibration certificates where appropriate are included with the results in the Appendix B.

SUMMARY OF IN SITU TESTING

TYPE	QUANTITY	REMARKS
Standard Penetration Test	47	BS EN ISO 22476-3 (2011). Results presented on logs in Enclosure A

4 LABORATORY TESTING

4.1 Geotechnical Testing

Geotechnical laboratory testing was scheduled by MM and was carried out in accordance with BS 1377 (1990) and ISRM (2007) unless otherwise stated. The testing is summarised below and the results are presented in Appendix D.

TABLE 3 : SUMMARY OF GEOTECHNICAL LABORATORY TESTING

TYPE	REMARKS
Moisture Content Determination	13 No.
Atterberg Limit Determination	11 No.
Particle Size Distribution Analysis	6 No.
pH and Water Soluble Sulphate Content of Soils	7 No. Test methods are BS 1377 or others recognised in BRE Special Digest 1 (2005); they are indicated on the results report sheets in Appendix D.
Unconsolidated Undrained Triaxial Compression Testing	4 No.

4.2 Geoenvironmental Testing

Geoenvironmental laboratory testing was scheduled by MM on soil samples collected during the fieldwork and water samples recovered during post fieldwork monitoring. The testing was carried out by the laboratory at Burton on Trent. The results are presented in Appendix E.

REFERENCES

AGS : 2005 : Electronic transfer of geotechnical and geoenvironmental data (Edition 3.1 including addendum May 2005). Association of Geotechnical and Geoenvironmental Specialists.

BGS England and Wales Sheet 269 : 1989 : Windsor. 1:50000 geological map (solid and drift). British Geological Survey.

BRE Special Digest 1 : 2005 : Concrete in aggressive ground. Building Research Establishment.

BS 1377 : 1990 : Methods of test for soils for civil engineering purposes. British Standards Institution.

BS 5930:1999+A2 : 2010 : Code of practice for site investigations (Amendment 2). British Standards Institution.

BS EN 1997-2 : 2007 : Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing. British Standards Institution.

BS EN ISO 14688-1:2002+A1 : 2013 : Geotechnical investigation and testing - Identification and classification of soil - Part 1 Identification and description. British Standards Institution.

BS EN ISO 14688-2:2002+A1 : 2013 : Geotechnical investigation and testing - Identification and classification of soil - Part 2 Principles for a classification. British Standards Institution.

BS EN ISO 22475-1 : 2006 : Geotechnical investigation and testing – Sampling methods and groundwater measurements - Part 1 Technical principles for execution. British Standards Institution.

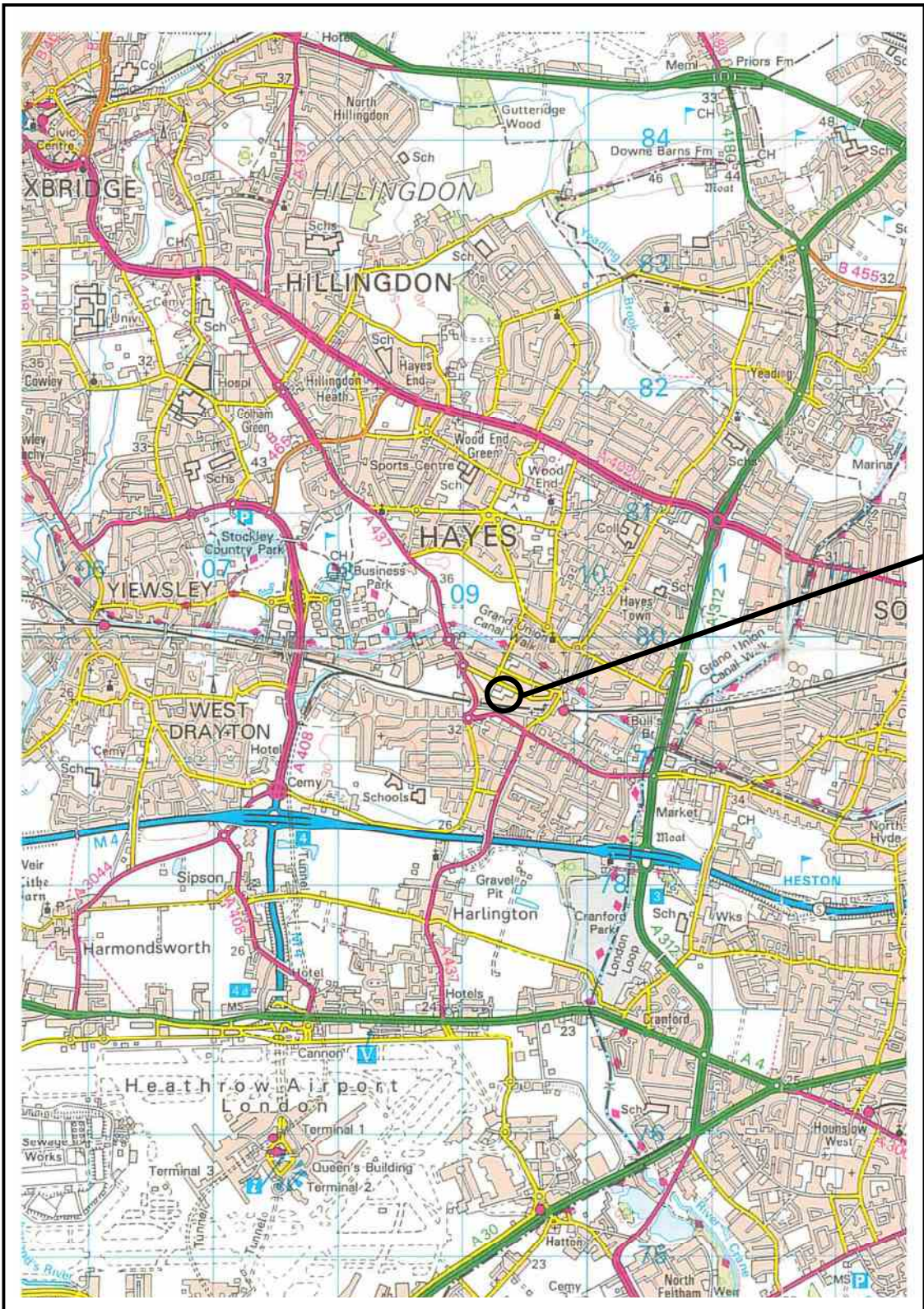
BS EN ISO 22476-3:2005+A1 : 2011 : Geotechnical investigation and testing - Field testing - Part 3 Standard penetration test. British Standards Institution.

APPENDIX A
FIGURES AND DRAWINGS

Site Location Plan
Site Plan

DRAFT

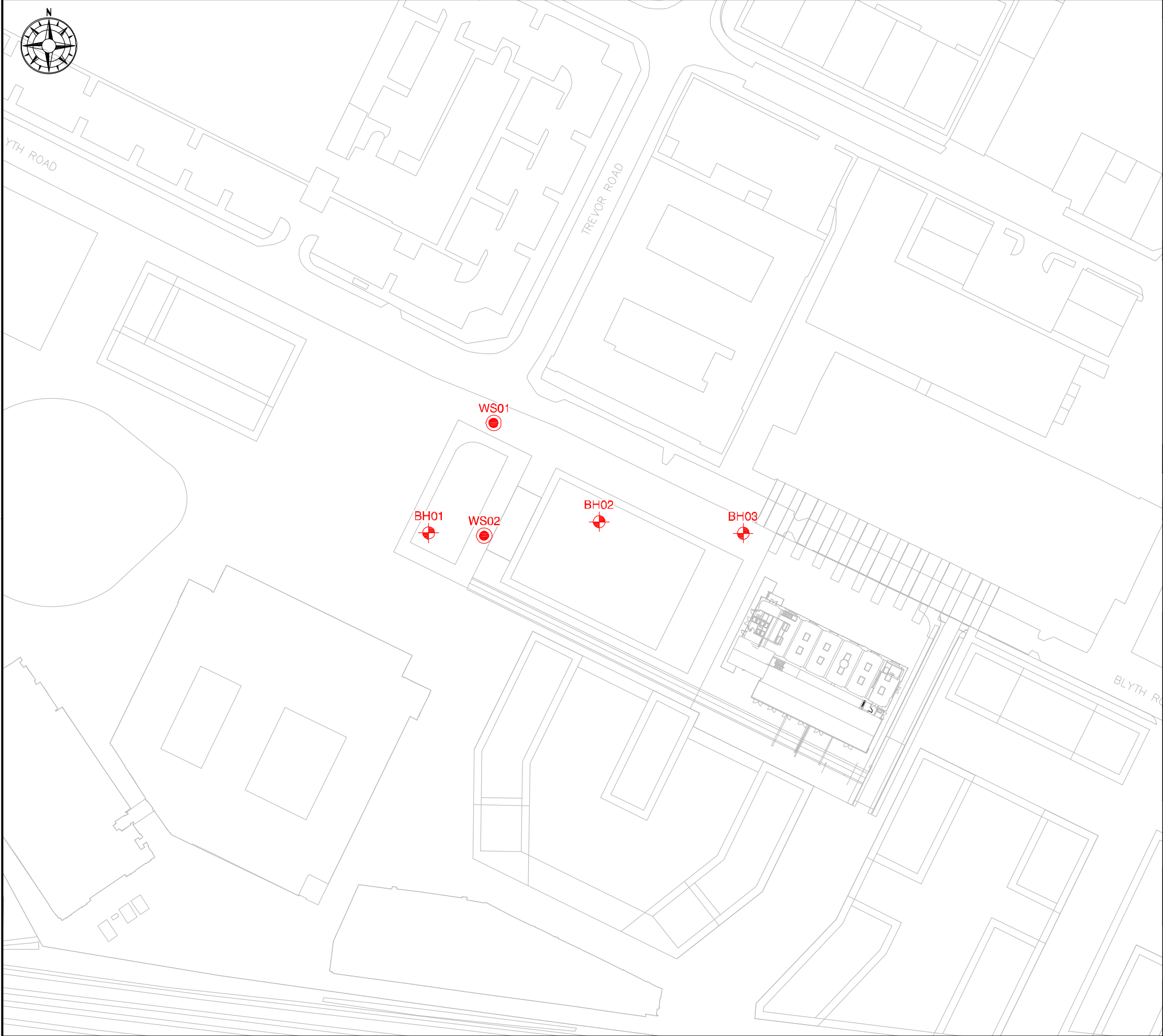
Site Location Plan



THE
SITE

Reproduced from the 2004 Ordnance Survey 1:50 000 scale Landranger map No 176 by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office, © Crown copyright, Environmental Services Group Limited. All rights reserved. Licence Number 100006060

Notes: Scale 1:50 000	Project	GLOBAL UTC, THE OLD VINYL FACTORY, HAYES, MIDDLESEX	Figure A1
	Project No.	D4097-14	
	Carried out for	MOTT MACDONALD LIMITED	



GENERAL NOTES

1.Reproduced from Mott MacDonald Limited's Drawing.

LEGEND TO SYMBOLS

Borehole Location

Window Sample Location

Scale: 1:1000

0

10m

20

30

40

50

x	x	x	x	x	x
Rev	Drawn	Date	Approved	Date	Modification Details

AMENDMENTS

Title

SITE PLAN

Project

GLOBAL UTC
THE OLD VINYL FACTORY SITE

Client

MOTT MACDONALD LIMITED

Date	Drawn By	Approved By
16/03/2015	BS	PM
Sheet Size	Scale	Project No
A3	1:1000	D4097-14
Drawing No		Rev
A2		0

APPENDIX B
EXPLORATORY HOLE RECORDS

Key to Exploratory Hole Records
SPT Hammer Energy Ratio Report
Borehole Logs
Window Sampler Hole Logs

Key
SPT Hammer Reference EQU623
BH01, BH02 & BH03
WS01 & WS02

Key to Exploratory Hole Records



SAMPLES

Undisturbed

U	Driven tube sample	} nominally 100 mm diameter and full recovery unless otherwise stated
UT	Driven thin wall tube sample	
TW	Pushed thin wall tube sample	
P	Pushed piston sample	} full recovery unless otherwise stated
L	Liner sample (from Windowless or similar sampler)	
CBR	CBR mould sample	
BLK	Block sample	
CS	Core sample (from rotary core) taken for laboratory testing	
AMAL	Amalgamated sample	

Disturbed

D	Small sample
B	Bulk sample

Other

W	Water sample
G	Gas sample

ES	Environmental chemistry samples (in more than one container where appropriate)
EW	Soil sample
	Water sample

Comments

Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that attempt was made to take a tube sample, however, there was no recovery.

Monitoring samples taken after completion of hole construction are not shown on the exploratory hole logs.

TESTS

SPT S or SPT C	Standard Penetration Test, open shoe (S) or solid cone (C)
----------------	--

The Standard Penetration Test is defined in BS EN ISO 22476-3 (2005). The incremental blow counts are given in the Field Records column; each increment is 75 mm unless stated otherwise and any penetration under self weight in mm (SW) is noted. Where the full 300 mm test drive is achieved the total number of blows for the test drive is presented as N = ** in the Test column. Where the test drive blows reach 50 the total blow count beyond the seating drive is given (without the N = prefix).

IV	<i>in situ</i> Vane shear strength, peak (p) and remoulded (r)
HV	Hand vane shear strength, peak (p) and remoulded (r)
PP	Pocket penetrometer test, converted to shear strength
KFH, KRH, KPI	Permeability tests (KFH = falling head, KRH = rising head; KPI = packer inflow); results provided in Field Records column (one value per stage for packer tests)

DRILLING RECORDS

The mechanical indices (TCR/SCR/RQD & If) are defined in BS 5930+A2 (2010)

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
If	Fracture spacing, mm. Minimum, typical and maximum spacings are presented. The term non-intact (NI) is used where the core is fragmented.

Flush returns, estimated percentage with colour where relevant, are given in the Records column

CRF	Core recovered (length in m) in the following run
AZCL	Assessed zone of core loss
NR	Not recovered

GROUNDWATER



Groundwater strike



Groundwater level after standing period

Notes:
See report text for full references of standards

Project Global UTC
Project No. D4097-14
Carried out for Mott MacDonald Limited

Key
Sheet 1 of 2

Key to Exploratory Hole Records



INSTALLATION

Standpipe/ piezometer

Details of standpipe/piezometer installations are given on the Record. Legend column shows installed instrument depths including slotted pipe section or tip depth, response zone filter material type and layers of backfill.

SP
SPIE
PPIE
EPIE



The type of instrument installed is indicated by a code in the Legend column at the depth of the response zone:

Standpipe
Standpipe piezometer
Pneumatic piezometer
Electronic piezometer

Inclinometer or Slip Indicator

The installation of vertical profiling instruments is indicated on the Record. The base of tubing is shown in the Legend column.

ICE
ICM
SLIP



The type of instrument installed is indicated by a code in the Legend column at the base of the tubing:

Biaxial inclinometer
Inclinometer tubing for use with probe
Slip indicator

Settlement Points or Pressure Cells

The installation of single point instruments is indicated on the Record. The location of the measuring device is shown in the Legend column.

ESET
ETM
EPCE
PPCE



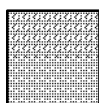
The type of instrument installed is indicated by a code in the Legend column:

Electronic settlement cell/gauge
Magnetic extensometer settlement point
Electronic embedment pressure cell
Electronic push in pressure cell

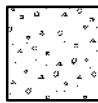
INSTALLATION LEGENDS

A legend describing the installation is shown in the rightmost column. Legends additional to BS5930 are used to describe the backfill materials as indicated below.

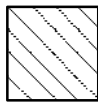
Arising



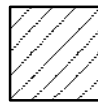
Concrete



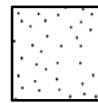
Grout



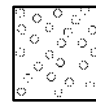
Bentonite



Sand



Gravel



Macadam



NOTES

- 1 Soils and rocks are described in accordance with BS EN ISO 14688-1 (2002) and 14689-1 (2003) respectively as amplified by BS 5930+A2 (2010).
- 2 For fine soils, consistency determined during description is reported for those strata where undisturbed samples are available. Where the logger considers that the sample may not be representative of the condition in situ, for whatever reason, the reported consistency is given in brackets. The reliability of the sample is indicated by Probably or Possibly as appropriate. Hence (Probably firm) indicates the logger is reasonably confident of the assessment, but (Possibly firm) means less certainty. Where the samples available are too disturbed to allow a reasonable assessment of the in situ condition, no consistency is given.
- 3 Evidence of the occurrence of very coarse particles (cobbles and boulders) is presented on the logs, however, because of their size in relation to the exploratory hole these records may not be fully representative of their size and frequency in the ground mass.
- 4 The declination of bedding and joints is given with respect to the normal to the core axis. Thus in a vertical borehole this will be the dip.
- 5 The assessment of SCR, RQD and Fracture Spacing excludes artificial fractures
- 6 Strata legends are in accordance with BS 5930+A2 (2010).
- 7 Water level observations of discernible entries during the advancing of the exploratory hole are given at the foot of the log and in the Legend column. The term "none observed" is used where no discrete entries are identified although this does not necessarily indicate that the hole has not been advanced below groundwater level. Under certain conditions groundwater cannot be observed, for instance, drilling with water flush or overwater, or boring at a rate much faster than water can make its way into the borehole (ref BS5930+A2:2010, Clause 47.2.7). In addition, where appropriate, water levels in the hole at the time of recovering individual samples or carrying out in situ tests and at shift changes are given in the Records column.
- 8 The borehole logs present the results of Standard Penetration Tests recorded in the field without correction or interpretation. However, in certain ground conditions (eg high hydraulic head or where very coarse particles are present) some judgement may be necessary in considering whether the results are representative of in situ mass conditions.

Notes:
See report text for full references of standards

Project Global UTC
Project No. D4097-14
Carried out for Mott Macdonald Limited

Key
Sheet 2 of 2

SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer SPT HAMMER
 Client D J DRILLING
 Test No EQU986
 Test Depth (m) 6.70
 Date of Test 14 February 2014
 Valid until 14 February 2015
 Hammer ID EQU623

Mass of the hammer $m = 63.5\text{ kg}$
 Falling height $h = 0.76\text{ m}$
 $E_{\text{theor}} = m \times g \times h = 473\text{ J}$

Characteristics of the instrumented rod

Diameter $d_r = 0.052\text{ m}$
 Length of the instrumented rod 0.558 m
 Area $A = 11.61\text{ cm}^2$
 Modulus $E_a = 206843\text{ MPa}$

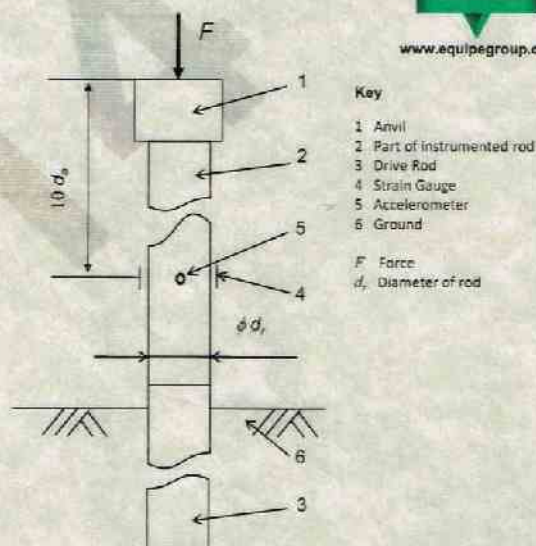
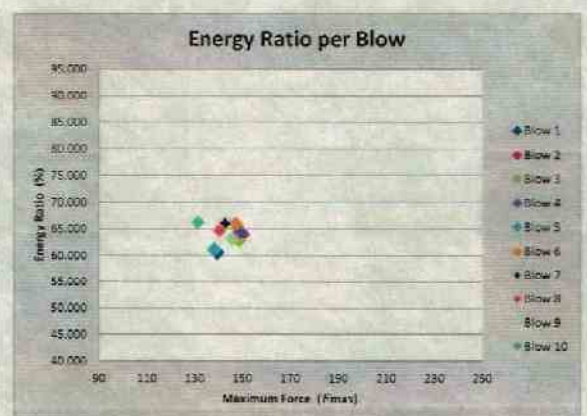
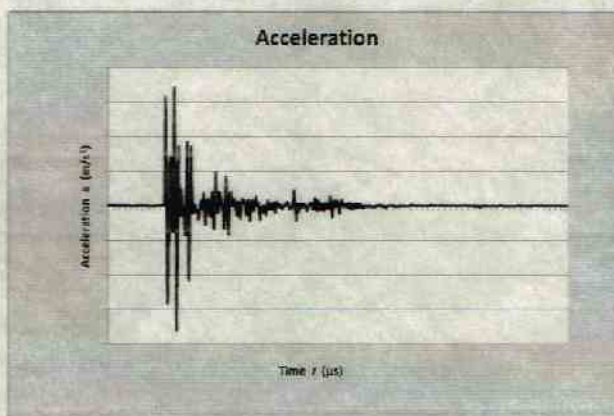
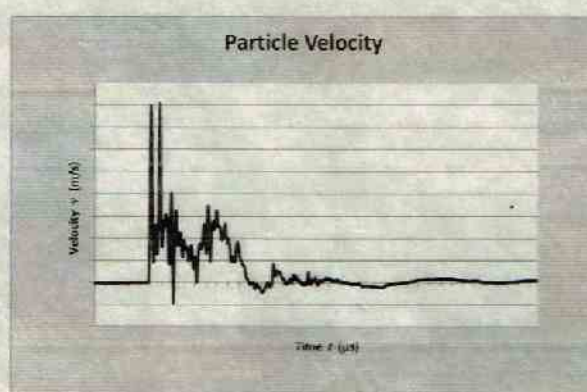
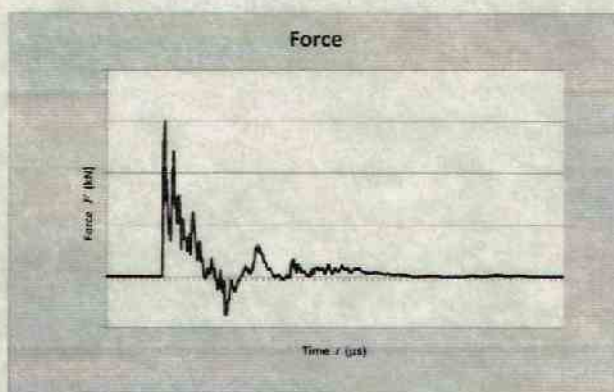


Fig B.1 and B.2 BS EN ISO 22476-3 : 2005 + A1 : 2011



Observations:
 1.

$E_{\text{meas}} = 0.301\text{ kN-m}$

$E_{\text{theor}} = 0.473\text{ kN-m}$

$$\text{Energy Ratio} = \frac{E_{\text{meas}}}{E_{\text{theor}}} = 63.61\%$$

Equipe SPT Analyzer Operators:

AF

Prepared by:

Equipe

Checked by:

h Spivey

Date

17/02/2014

Drilled	DJ	Start	Equipment, Methods and Remarks			Depth from	to	Diameter	Casing Depth	Ground Level	31.78 m OD
Logged	ZB	12/01/2015	Dando 3000 CP Rig Hand excavated inspection pit from GL to 1.20m . Cable percussive boring from 1.20m to 20.45m .			(m)	(m)	(mm)	(m)	Coordinates (m)	E 509213.01
Checked	DB	End								National Grid	N 179610.80
Approved	PM	13/01/2015									
Samples and Tests						Strata Description					
Depth	Type & No	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill		
0.20 - 0.40	B 1				(MADE GROUND) Soft dark brown slightly sandy gravelly CLAY. Gravel is angular to subrounded, fine to coarse of brick, concrete and flint. Sand is fine to coarse.						
0.90 - 1.10	B 2						(1.80)				
1.20 1.20 - 1.65	B 3 SPT C			dry							
1.80 - 2.10	B 4				Dense brown sandy GRAVEL. Gravel is angular to rounded, fine to coarse of flint. Sand is fine to coarse. (RIVER TERRACE DEPOSITS)		1.80 +29.98				
2.20 2.20 - 2.65	B 5 SPT C		2.20	1.50							
2.80	⌢ 6										
3.10 3.10 - 3.55	B 7 SPT C		3.10	2.00			(2.80)				
3.60	⌢ 8										
4.00 4.00 - 4.45	B 9 SPT C	N=4 (1,1,1,1,1)	4.00	2.10							
4.60 4.70 - 4.90	⌢ 10 B 11	1.80-4.50 Water added to assist boring. 49 (8,12/14,15,20,)			Firm orangish brown silty CLAY. (LONDON CLAY FORMATION)		4.60 +27.18		SP		
5.00 5.00 - 5.45	⌢ 12 SPTS	N=41 (6,7,8,9,10,14)	5.00	4.70			(0.55)				
		N=40 (4,7/11,11,9,9)			Firm to stiff grey silty CLAY. (LONDON CLAY FORMATION)		5.15 +26.63				
5.70 5.80 - 6.20	⌢ 13 J 14	N=14 (1,2/2,3,4,5)	5.20				(0.85)				
		30 blows 100% rec									
6.20 6.30 6.30 - 6.75	⌢ 15 ⌢ 16 SPTS	N=17 (1,2/2,4,5,6)	5.20	dry	Stiff fissured dark grey micaceous CLAY. Fissures are closely spaced, randomly orientated, planar and smooth. (LONDON CLAY FORMATION)		6.00 +25.78				
6.90 - 7.35	J 17	50 blows 100% rec	5.20								
7.35 7.40 7.40 - 7.85	⌢ 18 ⌢ 19 SPTS	N=23 (2,3/4,5,7,7)	5.20	dry							
8.00 - 8.30	J 20	60 blows 100% rec	5.20								
8.30 8.30 - 8.75	⌢ 21 SPTS	N=20 (2,3/3,5,5,7)	5.20	dry							
8.80	⌢ 22										
9.00 - 9.35	J 23	70 blows 100% rec	5.20								
9.35 9.40 9.40 - 9.85	⌢ 24 ⌢ 25 SPTS	N=21 (2,3/4,4,6,7)	5.20	dry							
10.00	⌢ 26										
					Hole continues on next sheet						
Groundwater Entries					Depth Related Remarks			Hard Boring			
Vo.	Depth	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used		
					1.80 - 4.50	Water added to assist boring.					
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.					Project Global UTC, The Old Vinyl Factory Site			Borehole			
Scale 1:50					Project No. D4097-14			BH01			
(c)ESG www.esg.co.uk 19/01/2015 15:20:02					Carried out for Mott MacDonald Limited			Sheet 1 of 3			

Borehole Log



Drilled DJ Logged ZB Checked DB Approved PM	Start 12/01/2015 End 13/01/2015	Equipment, Methods and Remarks Dando 3000 CP Rig Hand excavated inspection pit from GL to 1.20m. Cable percussive boring from 1.20m to 20.45m.	Depth from (m) to (m) Diameter (mm) Casing Depth (m)	Ground Level 31.78 m OD Coordinates (m) E 509213.01 National Grid V 179610.80					
Samples and Tests			Strata Description						
Depth	Type & No	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
10.50 - 10.95	J 27	70 blows 100% rec	5.20				(9.00)		
10.95 11.00 11.00 - 11.45	⌋ 28 ⌋ 29 SPTS	N=28 (3,4/6,6,7,9)	5.20	dry					
11.50	⌋ 30								
12.00 - 12.45	J 31	70 blows 100% rec	5.20						
12.45 12.50 12.50 - 12.95	⌋ 32 ⌋ 33 SPTS	N=25 (2,3/5,6,6,8)	5.20	dry					
13.00	⌋ 34								
13.50 - 13.90	J 35	70 blows 100% rec	5.20						
13.90 14.00 14.00 - 14.45	⌋ 36 ⌋ 37 SPTS	N=24 (3,4/5,5,7,7)	5.20	dry					
14.50	⌋ 38								
15.00 - 15.40	J 39	70 blows 100% rec	5.20				15.00	+16.78	
15.40 15.50 15.50 - 15.95	⌋ 40 ⌋ 41 SPTS	N=30 (4,5/6,7,7,10)	5.20	dry	Stiff fissured greyish brown silty CLAY. Fissures are closely spaced, randomly orientated, undulating, planar and smooth. Occasional lenses of silt (2mm x 4mm x 6mm). (LONDON CLAY FORMATION)				
16.00	⌋ 42								
16.50 - 16.90	J 43	70 blows 100% rec	5.20						
16.90 17.00 17.00 - 17.45	⌋ 44 ⌋ 45 SPTS	N=28 (2,4/5,7,7,9)	5.20	dry					
17.50	⌋ 46						(5.45)		
18.00 - 18.40	J 47	70 blows 100% rec	5.20						
18.40 18.50 18.50 - 18.95	⌋ 48 ⌋ 49 SPTS	N=32 (3,4/6,8,8,10)	5.20	dry					
19.00	⌋ 50								
19.50 - 19.90	J 51	70 blows 100% rec	5.20						
19.90 20.00 20.00 - 20.45	⌋ 52 ⌋ 53 SPTS	N=31 (3,4/5,7,8,11)	5.20	dry	Hole continues on next sheet				
Groundwater Entries No. Depth Strike (m) Remarks			Depth Sealed (m)		Depth Related Remarks Depths (m) Remarks		Hard Boring Depths (m) Duration (mins) Tools used		
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.					Project Global UTC, The Old Vinyl Factory Site Project No. D 4097-14 Carried out for Mott MacDonald Limited		Borehole BH01 Sheet 2 of 3		

Scale 1:50

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[illegible]

Borehole Log



Drilled DJ	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	31.83 m OD
Logged ZB	14/01/2015	Dando 3000 CP Rig	0.00	2.00	200	2.00	Coordinates (m)	E 509244.58
Checked DB	End	Hand excavated inspection pit from GL to 1.20m. Cable percussive boring from 1.20m to 20.45m.	2.00	20.45	150	6.20	National Grid	V 179622.47
Approved PM	14/01/2015							

Samples and Tests					Strata Description				
Depth	Type & No	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.30 - 0.50	B 1				(MADE GROUND) MACADAM		0.15 (0.15) +31.68		
0.60 - 0.80	B 2				(MADE GROUND) Dark brown black very gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of clinker, brick, cement flint and frequent timber fragments.		(0.35) +31.33		
0.90 - 1.10	B 3				(MADE GROUND) Medium dense dark brown sandy clayey GRAVEL. Gravel is angular to subangular, fine to coarse of clinker, brick, limestone and flint. Sand is fine to coarse.		(1.30)		
1.20	B 4								
1.20 - 1.65	SPTC			dry					
2.00	▷ 5				Medium dense to very dense orangish brown very gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of flint. (RIVER TERRACE DEPOSITS)		1.80 +30.03		
2.20	B 6		2.20	1.50					
2.20 - 2.65	SPTC								
2.70	▷ 7								
3.00	B 8								
3.00 - 3.43	SPTC		3.00	2.00					
3.50	▷ 9								
4.00	B 10								
4.00 - 4.45	SPTC		4.00	2.70					
4.50	D 11								
5.00	B 12								
5.00 - 5.45	SPTC		5.00	3.20					
5.60	▷ 13								
5.60 - 5.90	B 14				Firm orange slightly sandy gravelly silty CLAY. Sand is fine to coarse, gravel is angular to rounded of fine flint. (RIVER TERRACE DEPOSITS)		5.60 +26.23		
6.00 - 6.45	J 15	V=11 (1,1,1,2,3,5) 1.80-5.00 Water added to assist boring.	6.00				(0.85)		
6.45	▷ 16								
6.50	▷ 17								
6.50 - 6.95	SPTS	N=12 (2,3/2,4,3,3)	6.00	dry	Stiff fissured brownish grey micaceous CLAY. Fissures are closely spaced, randomly orientated, planar and smooth with rare to frequent pyritised nodules and shell fragments. (LONDON CLAY FORMATION)		6.45 +25.38		
7.10 - 7.45	J 18	N=50 (7,10/12,13,13,12 for 55mm)	6.20						
7.45	▷ 19								
7.50	▷ 20	V=46 (4,8/13,12,10,11)							
7.50 - 7.95	SPTS	N=24 (4,6/7,8,5,4)	6.20	dry					
8.10 - 8.50	J 21	45 blows 100% rec	6.20						
8.50	▷ 22	N=19 (2,2/3,5,5,6)							
8.60	▷ 23	50 blows 100% rec							
8.60 - 9.05	SPTS	N=23 (2,3/4,5,7,7) 70 blows 100% rec	6.20	dry					
9.30 - 9.70	J 24	N=26 (2,3/5,5,8,8) 70 blows 100% rec	6.20				(5.55)		
9.70	▷ 25								
9.80	▷ 26								
9.80 - 10.25	SPTS	N=23 (3,3/4,5,6,8)	6.20	dry					

				Hole continues on next sheet					
Groundwater Entries				Depth Related Remarks		Hard Boring			
No.	Depth	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
					1.80 - 5.00	Water added to assist boring.			

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.		Project Global UTC, The Old Vinyl Factory Site		Borehole	
Scale 1:50		Project No. D 4097-14		BH02	
(c) ESG www.esg.co.uk 19/03/2015 15:41:23		Carried out for Mott MacDonald Limited		Sheet 1 of 3	

Notes: 1 type: 01 - Stairpipe, 01 12 - Stairpipe + riser, 01 12 - Hydraulic riser, 01 12 - Hydraulic riser, 01 12 - Hydraulic riser, 01 12 - Hydraulic riser, 01 12 - Hydraulic riser

D4097-14	Global UTC	Mott MacDonald Limited
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Borehole Log



Drilled DJ Logged ZB Checked DB Approved PM	Start 14/01/2015 End 14/01/2015	Equipment, Methods and Remarks Dando 3000 CP Rig Hand excavated inspection pit from GL to 1.20m. Cable percussive boring from 1.20m to 20.45m.	Depth from (m) to (m) Diameter (mm) Casing Depth (m)	Ground Level 31.83 m OD Coordinates (m) E 509244.58 National Grid V 179622.47					
Samples and Tests			Strata Description						
Depth	Type & No	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
10.50 - 10.90	J 27	70 blows 100% rec	6.20						
10.90 11.00 11.00 - 11.45	J 28 J 29 SPTS	N=23 (3,3/3,5,7,8)	6.20	dry					
11.50	J 30								
12.00 - 12.30	J 31	70 blows 100% rec	6.20				12.00 +19.83		
12.30 12.40 12.40 - 12.85	J 32 J 33 SPTS	N=29 (3,3/5,7,8,9)	6.20	dry	Stiff fissured dark brownish grey micaceous CLAY. Fissures are closely spaced, randomly orientated, undulating, planar and smooth with occasional pyritised nodules. (LONDON CLAY FORMATION)				
13.00	J 34								
13.50 - 13.85	J 35	70 blows 100% rec	6.20						
13.85 13.90 13.90 - 14.35	J 36 J 37 SPTS	N=30 (3,5/6,6,9,9)	6.20	dry			(4.90)		
14.50	J 38								
15.00 - 15.45	J 39	75 blows 100% rec	6.20						
15.45 15.50 15.50 - 15.95	J 40 J 41 SPTS	N=36 (4,6/7,8,10,11)	6.20	dry					
16.00	J 42								
16.50 - 16.90	J 43	75 blows 100% rec	6.20						
16.90 17.00 17.00 - 17.45	J 44 J 45 SPTS	N=37 (4,6/7,9,10,11)	6.20	dry	Stiff fissured dark brownish grey silty CLAY. Fissures are closely spaced, randomly orientated, planar and smooth with silt intilled burrows. (LONDON CLAY FORMATION)		16.90 +14.93		
17.50	J 46								
18.00 - 18.40	J 47	75 blows 100% rec	6.20						
18.40 18.50 18.50 - 18.95	J 48 J 49 SPTS	N=39 (4,6/7,9,11,12)	6.20	dry			(3.55)		
19.00	J 50								
19.50 - 19.95	J 51	75 blows 100% rec	6.20						
19.95 20.00 20.00 - 20.45	J 52 J 53 SPTS	N=35 (5,4/6,7,10,12)	6.20	dry	Hole continues on next sheet				
Groundwater Entries No. Depth Strike (m) Remarks			Depth Sealed (m)		Depth Related Remarks Depths (m) Remarks		Hard Boring Depths (m) Duration (mins) Tools used		
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.					Project Global UTC, The Old Vinyl Factory Site Project No. D 4097-14 Carried out for Mott MacDonald Limited			Borehole BH02 Sheet 2 of 3	



Borehole Log



Drilled DJ Logged ZB Checked DB Approved PM	Start 14/01/2015 End 14/01/2015	Equipment, Methods and Remarks Dando 3000 CP Rig Hand excavated inspection pit from GL to 1.20m . Cable percussive boring from 1.20m to 20.45m.	Depth from (m) to (m) Diameter (mm) Casing Depth (m)	Ground Level 31.83 m OD Coordinates (m) E 509244.58 National Grid V 179622.47					
Samples and Tests		Strata Description							
Depth	Type & No	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
					END OF EXPLORATORY HOLE		20.45 +11.38		
Groundwater Entries No. Depth Strike (m) Remarks			Depth Sealed (m)		Depth Related Remarks Depths (m) Remarks			Hard Boring Depths (m) Duration (mins) Tools used	
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.			Project Global UTC, The Old Vinyl Factory Site Project No. D 4097-14 Carried out for Mott MacDonald Limited				Borehole BH02 Sheet 3 of 3		
Scale 1:50 (c) ESG www.esg.co.uk 19/03/2015 15:41:23									

Borehole Log



Drilled DJ Logged ZB Checked DB Approved PM	Start 15/01/2015 End 15/01/2015	Equipment, Methods and Remarks Dando Hand excavated inspection pit from GL to 1.20m . Cable percussive boring from 1.20m to 20.00m.	Depth from (m) 0.00 to (m) 20.00 Diameter (mm) 150 Casing Depth (m) 7.00	Ground Level Coordinates (m) National Grid					
Samples and Tests			Strata Description						
Depth	Type & No	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.30 - 0.50	B 1				(MADE GROUND) MACADAM		0.15 (0.15)		
0.60 - 0.80	B 2				(MADE GROUND) Orangish brown SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of brick, concrete and flint.		0.45 (0.45)		
0.90 - 1.10	B 3				(MADE GROUND) Orangish brown clayey sandy GRAVEL. Gravel is angular to subrounded, fine to coarse of brick, concrete and flint. Sand is fine to coarse.		0.90 (0.30)		
1.20 1.20 - 1.50	B 4 SPTC	50 (25 for 55mm/20,23,7 for 20mm)		damp	Very dense to locally dense orangish brown very sandy angular to sub rounded fine to coarse GRAVEL of Flint. Sand is fine to coarse. (RIVER TERRACE DEPOSITS)				
1.80	▷ 5								
2.10 2.10 - 2.40	B 6 SPTC	50 (25 for 60mm/21,24,5 for 10mm)	2.10	1.50					
2.70	▷ 7								
3.00 3.00 - 3.29	B 8 SPTC	50 (26 for 60mm/23,24,3 for 5mm)	3.00	1.70					
3.60	▷ 9						5.40 (5.40)		
4.00 4.00 - 4.45	B 10 SPTC	N=33 (5,6/8,8,8,9)	4.00	2.20					
4.60	▷ 11								
5.00 5.00 - 5.43	B 12 SPTC	N=50 (6,9/11,14,14,11 for 55mm)	5.00	3.00					
5.60	▷ 13								
6.00 6.00 - 6.45	B 14 SPTC	N=18 (4,5/5,4,4,5)	6.00	4.10					
6.50 - 6.90	B 15				Firm dark orange sandy CLAY. Sand is fine to coarse. (LONDON CLAY FORMATION)		6.30 (0.80)		
7.10 - 7.55	J 16	50 blows 100% rec	7.00		Stiff fissured brownish grey micaceous silty CLAY. Fissures are extremely closely spaced, randomly orientated, undulating, planar and rough with occasional pyrite and occasional infilled silt burrows. (LONDON CLAY FORMATION)		7.10		
7.55 7.60 7.60 - 8.05	▷ 17 ▷ 18 SPTS	N=21 (2,3/3,5,6,7)	7.00	dry					
8.30 - 8.70	J 19	70 blows 100% rec	7.00						
8.80 8.80 - 9.25	▷ 20 SPTS	N=20 (2,2/3,5,5,7)	7.00	dry			4.30 (4.30)		
9.50 - 9.90	J 21	70 blows 100% rec	7.00						
9.90 10.00 10.00 - 10.45	▷ 22 ▷ 23 SPTS	N=26 (2,4/5,6,7,8)	7.00	dry	Hole continues on next sheet				
Groundwater Entries No. Depth Strike (m) Remarks			Depth Sealed (m)		Depth Related Remarks Depths (m) Remarks		Hard Boring Depths (m) Duration (mins) Tools used		
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.			Project Global UTC, The Old Vinyl Factory Site Project No. D 4097-14 Carried out for Mott MacDonald Limited				Borehole BH03 Sheet 1 of 2		
Scale 1:50 (c) ESG www.esg.co.uk 19/03/2015 15:58:43									

Borehole Log



Drilled DJ Logged ZB Checked DB Approved PM	Start 15/01/2015 End 15/01/2015	Equipment, Methods and Remarks Dando Hand excavated inspection pit from GL to 1.20m. Cable percussive boring from 1.20m to 20.00m.	Depth from (m) to (m) Diameter (mm) Casing Depth (m)	Ground Level Coordinates (m) National Grid
Samples and Tests		Strata Description		
Depth	Type & No	Records	Date Casing Time Water	Main Detail Depth, Level (Thickness) Legend Backfill
10.50	⊃ 24			
11.00 - 11.40	J 25	70 blows 100% rec	7.00	
11.40	⊃ 26			
11.50	⊃ 27			
11.50 - 11.95	SPTS	N=24 (3,3/5,6,6,7)	7.00 dry	Stiff fissured greyish brown CLAY. Fissures are extremely closely spaced, randomly orientated, undulating, planar and smooth. (LONDON CLAY FORMATION)
12.00	⊃ 28			
12.50 - 12.95	J 29	70 blows 100% rec	7.00	
12.95	⊃ 30			
13.00	⊃ 31			
13.00 - 13.45	SPTS	N=29 (3,4/5,7,7,10)	7.00 dry	(3.10)
13.50	⊃ 32			
14.00 - 14.40	J 33	70 blows 100% rec	7.00	
14.40	⊃ 34			
14.50	⊃ 35			
14.50 - 14.95	SPTS	N=32 (3,5/6,6,10,10)	7.00 dry	Very stiff fissured brown silty CLAY. Fissures are extremely closely spaced, randomly orientated, undulating, planar and smooth with occasional polished surfaces. Frequent grey silt infilled burrows and occasional pyritised nodules (2mm x 2mm x 8mm). (LONDON CLAY FORMATION)
15.00	⊃ 36			
15.50 - 15.85	J 37	70 blows 100% rec	7.00	
15.85	⊃ 38			
15.90	⊃ 39			
15.90 - 16.35	SPTS	N=35 (4,4/6,8,10,11)	7.00 dry	
16.50	⊃ 40			
17.00 - 17.35	J 41	70 blows 100% rec	7.00	
17.35	⊃ 42			
17.40	⊃ 43			
17.40 - 17.85	SPTS	N=33 (4,5/6,7,9,11)	7.00 dry	(5.50)
18.00	⊃ 44			
18.50 - 18.80	J 45	70 blows 100% rec	7.00	
18.80	⊃ 46			
19.00	⊃ 47			
19.50	⊃ 48			
19.50 - 19.95	SPTS	N=35 (5,5/6,8,10,11)	7.00 dry	
			END OF EXPLORATORY HOLE	
Groundwater Entries No. Depth Strike (m) Remarks			Depth Sealed (m)	Depth Related Remarks Depths (m) Remarks
				Hard Boring Depths (m) Duration (mins) Tools used
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.		Project Global UTC, The Old Vinyl Factory Site Project No. D 4097-14 Carried out for Mott MacDonald Limited		Borehole BH03 Sheet 2 of 2

Scale 1:50

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19/03/2015 15:58:43



Borehole Log



Drilled DR/GB Logged ZB Checked DB Approved PM	Start 14/01/2015 End 14/01/2015	Equipment, Methods and Remarks C130 Dart Rig Hand excavated inspection pit from GL to 1.20m. Windowsampling from 1.20m to 4.00m.	Depth from (m) 1.20 2.00 2.70 3.00	to (m) 2.00 2.70 3.00 4.00	Diameter (mm) 100 67 57 47	Casing Depth (m)	Ground Level 31.82 m OD Coordinates (m) E 509228.31 National Grid V 179629.82		
Samples and Tests			Strata Description						
Depth	Type & No	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.50	ES 1				(MADE GROUND) MACADAM.		0.15 (0.15) +31.67		
1.00	ES 2				(MADE GROUND) Brownish grey gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of flint and limestone with occasional brick and clinker.		(0.25) +31.42		
1.50	▷ 4				(MADE GROUND) Reddish brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of concrete, brick, clinker and flint.		(1.00)		
2.00	ES 3				Orange mottled cream and brown very gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of flint. (RIVER TERRACE DEPOSITS)		1.40 +30.42		SP
2.00	▷ 5								
2.70	▷ 6						(2.60)		
3.00	▷ 7								
4.00	▷ 8	1.20-2.00 0.80m recovery 2.00-2.70 0.70m recovery 2.70-3.00 0.30m recovery 3.00-4.00 1.00m recovery			END OF EXPLORATORY HOLE		4.00 +27.82		
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.									
Groundwater Entries No. Depth Strike (m) Remarks 1 3.10			Depth Sealed (m)			Depth Related Remarks Depths (m) Remarks 1.20 - 2.00 0.80m recovery 2.00 - 2.70 0.70m recovery 2.70 - 3.00 0.30m recovery 3.00 - 4.00 1.00m recovery		Hard Boring Depths (m) Duration (mins) Tools used	
Scale 1:50 (c) ESG www.esg.co.uk 19/03/2015 15:43:36			Project Global UTC, The Old Vinyl Factory Site Project No. D 4097-14 Carried out for Mott MacDonald Limited			Borehole WS01 Sheet 1 of 1			

APPENDIX C
INSTRUMENTATION AND MONITORING

Installation Details
Groundwater Monitoring
Gas Monitoring

Table C1
Table C2
Table C3

Groundwater Installation Details



Instrument reference	Instrument type (see Notes)	Installation date	Pipe diameter (mm)	Instrument base (mbgl)	Top of response zone (m)	Pipe top details	Headworks	Remarks
BH01	SP	13/01/2015	50	4.50	2.00	Gas tap	Stopcock cover	
BH02	SP	15/01/2015	50	1.60	0.80	Gas tap	Stopcock cover	
BH02	SP	15/01/2015	50	5.60	2.60	Gas tap	Stopcock cover	
BH03	SP	15/01/2015	50	5.60	1.00	Gas tap	Stopcock cover	
WS01	SP	14/01/2015	50	1.40	0.40	Gas tap	Stopcock cover	
WS02	SP	14/01/2015	50	1.40	1.00	Gas tap	Stopcock cover	

Notes: Type: SP - Standpipe, SPIE - Standpipe Piezometer, HPIE - Hydraulic Piezometer, PPIE - Pneumatic Piezometer, EPIE - Electronic Piezometer



Project Global UTC, The Old Vinyl Factory Site
Project No. D4097-14
Carried out for Mott MacDonald Limited

Table

C1

Groundwater Monitoring



Location	Instrument reference	Instrument Type	Base of Instrument	Date	Time (hhmm)	Water Level (mBGL)	Comments
BH01	1	SP		17/02/2015	13:30	3.08	
BH01	1	SP		24/02/2015	15:05	3.05	
BH01	1	SP		02/03/2015	14:00	3.01	
BH01	1	SP		09/03/2015	14:45	3.05	
BH02	2	SP		17/02/2015	12:50	3.10	
BH02	2	SP		24/02/2015	15:35	3.06	
BH02	1	SP		02/03/2015	13:00	Dry	
BH02	2	SP		02/03/2015	13:15	3.03	
BH02	1	SP		09/03/2015	14:05	Dry	
BH02	2	SP		19/03/2015	14:15	3.07	
WS01	1	SP		17/02/2015	13:10	Dry	
WS01	1	SP		24/02/2015	15:20	Dry	
WS01	1	SP		02/03/2015	13:30	Dry	
WS01	1	SP		09/03/2015	14:30	Dry	
WS02	1	SP		17/02/2015	13:50	Dry	
WS02	1	SP		24/02/2015	15:50	Dry	
WS02	1	SP		02/03/2015	13:30	Dry	
WS02	1	SP		09/03/2015	15:00	Dry	

Gas and Groundwater Monitoring



Hole	Date	Reading Depth, mBGL	Air Temperature °C	Barometric Pressure, mbar	Installation Depth, m	Gas Differential Pressure, Pa	Gas Flow Rate, l/hr	Detection Limit						
								Unit	%vol	%LEL	%vol	%vol	ppm	ppm
								Gas	Methane	Methane	Oxygen	Carbon Dioxide	Carbon Monoxide	Hydrogen Sulphide
														Nitrogen
BH01	17/02/2015 13:30:00	0.00	9	1032	4.50	0	0		<0.1	<0.1	21.8	<0.1	<1	<1
BH01	17/02/2015 13:30:30	0.00	9	1032	4.50	0	0		<0.1	<0.1	21.8	<0.1	<1	<1
BH01	17/02/2015 13:31:00	0.00	9	1032	4.50	0	0		<0.1	<0.1	21.7	<0.1	<1	<1
BH01	17/02/2015 13:31:30	0.00	9	1032	4.50	0	0		<0.1	<0.1	21.7	<0.1	<1	<1
BH01	17/02/2015 13:32:00	0.00	9	1032	4.50	0	0		<0.1	<0.1	21.7	<0.1	<1	<1
BH01	17/02/2015 13:32:30	0.00	9	1032	4.50	0	0		<0.1	<0.1	21.7	<0.1	<1	<1
BH01	17/02/2015 13:33:00	0.00	9	1032	4.50	0	0		<0.1	<0.1	21.7	<0.1	<1	<1
BH01	17/02/2015 13:34:00	0.00	9	1032	4.50	0	0		<0.1	<0.1	21.7	<0.1	<1	<1
BH01	17/02/2015 13:35:00	0.00	9	1032	4.50	0	0		<0.1	<0.1	21.7	<0.1	<1	<1
BH01	24/02/2015 15:05:00	0.00	11	1012	4.50	0	0		<0.1	<0.1	20.8	<0.1	<1	ND
BH01	24/02/2015 15:05:30	0.00	11	1012	4.50	0	0		<0.1	<0.1	20.6	0.2	<1	ND
BH01	24/02/2015 15:06:00	0.00	11	1012	4.50	0	0		<0.1	<0.1	20.1	0.2	<1	ND
BH01	24/02/2015 15:06:30	0.00	11	1012	4.50	0	0		<0.1	<0.1	20.0	0.2	<1	ND
BH01	24/02/2015 15:07:00	0.00	11	1012	4.50	0	0		<0.1	<0.1	20.0	0.2	<1	ND
BH01	24/02/2015 15:07:30	0.00	11	1012	4.50	0	0		<0.1	<0.1	20.0	0.2	<1	ND
BH01	24/02/2015 15:08:00	0.00	11	1012	4.50	0	0		<0.1	<0.1	20.0	0.2	<1	ND
BH01	24/02/2015 15:09:00	0.00	11	1012	4.50	0	0		<0.1	<0.1	20.0	0.2	<1	ND
BH01	24/02/2015 15:10:00	0.00	11	1012	4.50	0	0		<0.1	<0.1	20.0	0.2	<1	ND
BH01	02/03/2015 14:00:00	0.00	9	1013	4.50	0	0		<0.1	<0.1	20.6	<0.1	<1	ND
BH01	02/03/2015 14:00:30	0.00	9	1013	4.50	0	0		<0.1	<0.1	18.5	1.4	<1	ND
BH01	02/03/2015 14:01:00	0.00	9	1013	4.50	0	0		<0.1	<0.1	15.9	2.2	<1	ND
BH01	02/03/2015 14:01:30	0.00	9	1013	4.50	0	0		<0.1	<0.1	15.5	2.3	<1	ND
BH01	02/03/2015 14:02:00	0.00	9	1013	4.50	0	0		<0.1	<0.1	15.5	2.3	<1	ND
BH01	02/03/2015 14:02:30	0.00	9	1013	4.50	0	0		<0.1	<0.1	15.5	2.3	<1	ND
BH01	02/03/2015 14:03:00	0.00	9	1013	4.50	0	0		<0.1	<0.1	15.5	2.3	<1	ND
BH01	02/03/2015 14:04:00	0.00	9	1013	4.50	0	0		<0.1	<0.1	15.5	2.3	<1	ND
BH01	02/03/2015 14:05:00	0.00	9	1013	4.50	0	0		<0.1	<0.1	15.5	2.3	<1	ND
BH01	09/03/2015 14:45:00	0.00	10	1024	4.50	0	0		<0.1	<0.1	20.7	<0.1	<1	ND
BH01	09/03/2015 14:45:30	0.00	10	1024	4.50	0	0		<0.1	<0.1	17.9	1.7	<1	ND
BH01	09/03/2015 14:46:00	0.00	10	1024	4.50	0	0		<0.1	<0.1	18.7	1.5	<1	ND
BH01	09/03/2015 14:46:30	0.00	10	1024	4.50	0	0		<0.1	<0.1	17.9	2.1	<1	ND
BH01	09/03/2015 14:47:00	0.00	10	1024	4.50	0	0		<0.1	<0.1	17.1	2.3	<1	ND
BH01	09/03/2015 14:47:30	0.00	10	1024	4.50	0	0		<0.1	<0.1	17.7	1.9	<1	ND
BH01	09/03/2015 14:48:00	0.00	10	1024	4.50	0	0		<0.1	<0.1	18.4	1.5	<1	ND
BH01	09/03/2015 14:49:00	0.00	10	1024	4.50	0	0		<0.1	<0.1	18.0	2	<1	ND
BH01	09/03/2015 14:50:00	0.00	10	1024	4.50	0	0		<0.1	<0.1	19.5	0.8	<1	ND
BH02	17/02/2015 12:50:00	0.00	9	1032	5.60	0	0		<0.1	<0.1	21.9	<0.1	<1	<1
BH02	17/02/2015 12:50:30	0.00	9	1032	5.60	0	0		<0.1	<0.1	21.9	<0.1	<1	<1
BH02	17/02/2015 12:51:00	0.00	9	1032	5.60	0	0		<0.1	<0.1	21.9	<0.1	<1	<1
BH02	17/02/2015 12:51:30	0.00	9	1032	5.60	0	0		<0.1	<0.1	21.9	<0.1	<1	<1
BH02	17/02/2015 12:52:00	0.00	9	1032	5.60	0	0		<0.1	<0.1	21.9	<0.1	<1	<1
BH02	17/02/2015 12:52:30	0.00	9	1032	5.60	0	0		<0.1	<0.1	21.9	<0.1	<1	<1
BH02	17/02/2015 12:53:00	0.00	9	1032	5.60	0	0		<0.1	<0.1	21.9	<0.1	<1	<1
BH02	17/02/2015 12:54:00	0.00	9	1032	5.60	0	0		<0.1	<0.1	21.9	<0.1	<1	<1
BH02	17/02/2015 12:55:00	0.00	9	1032	5.60	0	0		<0.1	<0.1	21.9	<0.1	<1	<1
BH02	24/02/2015 15:35:00	0.00	11	1013	5.60	-0.1	0		<0.1	<0.1	20.8	<0.1	<1	ND
BH02	24/02/2015 15:35:30	0.00	11	1013	5.60	-0.1	0		<0.1	<0.1	20.8	<0.1	<1	ND
BH02	24/02/2015 15:36:00	0.00	11	1013	5.60	-0.1	0		<0.1	<0.1	20.8	<0.1	<1	ND
BH02	24/02/2015 15:36:30	0.00	11	1013	5.60	-0.1	0		<0.1	<0.1	20.8	<0.1	<1	ND
BH02	24/02/2015 15:37:00	0.00	11	1013	5.60	-0.1	0		<0.1	<0.1	20.8	<0.1	<1	ND
BH02	24/02/2015 15:37:30	0.00	11	1013	5.60	-0.1	0		<0.1	<0.1	20.8	<0.1	<1	ND
BH02	24/02/2015 15:38:00	0.00	11	1013	5.60	-0.1	0		<0.1	<0.1	20.8	<0.1	<1	ND
BH02	24/02/2015 15:39:00	0.00	11	1013	5.60	-0.1	0		<0.1	<0.1	20.8	<0.1	<1	ND
BH02	24/02/2015 15:40:00	0.00	11	1013	5.60	-0.1	0		<0.1	<0.1	20.8	<0.1	<1	ND
BH02	02/03/2015 13:00:00	0.00	9	1014	1.60	0	0		<0.1	<0.1	20.7	<0.1	<1	ND
BH02	02/03/2015 13:00:30	0.00	9	1014	1.60	0	0		<0.1	<0.1	20.7	<0.1	<1	ND
BH02	02/03/2015 13:01:00	0.00	9	1014	1.60	0	0		<0.1	<0.1	20.7	<0.1	<1	ND

Notes: Notes: ND - not detected

Project Global UTC, The Old Vinyl Factory Site
Project No. D4097-14
Carried out for Mott MacDonald Limited

Table
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								Detection Limit							
Hole	Date	Reading Depth, mBGL	Air temperature °C	Barometric Pressure, mbar	Installation Depth, m	Gas Differential Pressure, Pa	Gas Flow Rate, l/hr	Unit	%vol	%LEL	%vol	%vol	ppm	ppm	%vol
								Gas	Methane	Methane	Oxygen	Carbon Dioxide	Carbon Monoxide	Hydrogen Sulphide	Nitrogen
BH02	02/03/2015 13:01:30	0.00	9	1014	1.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:02:00	0.00	9	1014	1.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:02:30	0.00	9	1014	1.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:03:00	0.00	9	1014	1.6	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:04:00	0.00	9	1014	1.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:05:00	0.00	9	1014	1.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:15:00	0.00	9	1013	5.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:15:30	0.00	9	1013	5.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:16:00	0.00	9	1013	5.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:16:30	0.00	9	1013	5.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:17:00	0.00	9	1013	5.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:17:30	0.00	9	1013	5.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:18:00	0.00	9	1013	5.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:19:00	0.00	9	1013	5.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	02/03/2015 13:20:30	0.00	9	1013	5.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	09/03/2015 14:05:00	0.00	10	1025	1.60	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
BH02	09/03/2015 14:05:30	0.00	10	1025	1.60	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
BH02	09/03/2015 14:06:00	0.00	10	1025	1.60	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
BH02	09/03/2015 14:06:30	0.00	10	1025	1.60	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
BH02	09/03/2015 14:07:00	0.00	10	1025	1.60	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
BH02	09/03/2015 14:07:30	0.00	10	1025	1.60	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
BH02	09/03/2015 14:08:00	0.0	10	1025	1.60	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
BH02	09/03/2015 14:09:00	0.00	10	1025	1.60	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
BH02	09/03/2015 14:10:00	0.00	10	1025	1.60	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
BH02	09/03/2015 14:15:00	0.00	10	1025	5.60	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
BH02	09/03/2015 14:15:30	0.00	10	1025	5.60	0	0		<0.1	<0.1	20.7	0.2	<1	<1	ND
BH02	09/03/2015 14:16:00	0.00	10	1025	5.60	0	0		<0.1	<0.1	20.7	0.2	<1	<1	ND
BH02	09/03/2015 14:16:30	0.00	10	1025	5.60	0	0		<0.1	<0.1	20.7	0.2	<1	<1	ND
BH02	09/03/2015 14:17:00	0.00	10	1025	5.60	0	0		<0.1	<0.1	20.7	0.2	<1	<1	ND
BH02	09/03/2015 14:17:30	0.00	10	1025	5.60	0	0		<0.1	<0.1	20.7	0.2	<1	<1	ND
BH02	09/03/2015 14:18:00	0.00	10	1025	5.60	0	0		<0.1	<0.1	20.7	0.2	<1	<1	ND
BH02	09/03/2015 14:19:00	0.00	10	1025	5.60	0	0		<0.1	<0.1	20.7	0.2	<1	<1	ND
BH02	09/03/2015 14:20:00	0.00	10	1025	5.60	0	0		<0.1	<0.1	20.7	0.2	<1	<1	ND
WS01	17/02/2015 13:10:00	0.00	9	1031	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	77.9
WS01	17/02/2015 13:10:30	0.00	9	1031	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	77.9
WS01	17/02/2015 13:11:00	0.00	9	1031	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	77.9
WS01	17/02/2015 13:11:30	0.00	9	1031	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	78.0
WS01	17/02/2015 13:12:00	0.00	9	1031	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	78.0
WS01	17/02/2015 13:12:30	0.00	9	1031	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	78.0
WS01	17/02/2015 13:13:00	0.00	9	1031	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	78.0
WS01	17/02/2015 13:13:30	0.00	9	1031	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	78.0
WS01	17/02/2015 13:14:00	0.00	9	1031	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	78.0
WS01	17/02/2015 13:15:00	0.00	9	1031	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	78.0
WS01	24/02/2015 15:20:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	24/02/2015 15:20:30	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	24/02/2015 15:21:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	24/02/2015 15:21:30	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	24/02/2015 15:22:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	24/02/2015 15:22:30	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	24/02/2015 15:23:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	24/02/2015 15:23:30	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	24/02/2015 15:24:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	24/02/2015 15:24:30	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	24/02/2015 15:25:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	02/03/2015 13:30:00	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	02/03/2015 13:30:30	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	02/03/2015 13:31:00	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	02/03/2015 13:31:30	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	02/03/2015 13:32:00	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	02/03/2015 13:32:30	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
Notes: Notes: ND - not detected			Project Global UTC, The Old Vinyl Factory Site										Table		
Project No. D4097-14													C3/2		
Carried out for Mott MacDonald Limited															

Gas and Groundwater Monitoring



								Detection Limit							
Hole	Date	Reading Depth, mBGL	Air Temperature °C	Barometric Pressure, mbar	Installation Depth, m	Gas Differential Pressure, Pa	Gas Flow Rate, l/hr	Unit	%vol	%LEL	%vol	%vol	ppm	ppm	%vol
								Gas	Methane	Methane	Oxygen	Carbon Dioxide	Carbon Monoxide	Hydrogen Sulphide	Nitrogen
WS01	02/03/2015 13:33:00	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	02/03/2015 13:34:00	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	02/03/2015 13:35:00	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	09/03/2015 14:30:00	0.00	10	1024	1.40	-0.1	0		<0.1	<0.1	20.7	<0.1	<1	<1	ND
WS01	09/03/2015 14:30:30	0.00	10	1024	1.40	0	0		<0.1	<0.1	19.7	0.2	<1	<1	ND
WS01	09/03/2015 14:31:00	0.00	10	1024	1.40	0	0		<0.1	<0.1	19.4	0.2	<1	<1	ND
WS01	09/03/2015 14:31:30	0.00	10	1024	1.40	0	0		<0.1	<0.1	19.2	0.2	<1	<1	ND
WS01	09/03/2015 14:32:00	0.00	10	1024	1.40	0	0		<0.1	<0.1	19.2	0.2	<1	<1	ND
WS01	09/03/2015 14:32:30	0.00	10	1024	1.40	0	0		<0.1	<0.1	19.2	0.2	<1	<1	ND
WS01	09/03/2015 14:33:00	0.00	10	1024	1.40	0	0		<0.1	<0.1	19.2	0.2	<1	<1	ND
WS01	09/03/2015 14:34:00	0.00	10	1024	1.40	0	0		<0.1	<0.1	19.2	0.2	<1	<1	ND
WS01	09/03/2015 14:35:00	0.00	10	1024	1.40	0	0		<0.1	<0.1	19.2	0.2	<1	<1	ND
WS02	17/02/2015 13:50:00	0.00	9	1032	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	77.9
WS02	17/02/2015 13:50:30	0.00	9	1032	1.40	0	0		<0.1	<0.1	22.0	<0.1	<1	<1	77.9
WS02	17/02/2015 13:51:00	0.00	9	1032	1.40	0	0		<0.1	<0.1	21.9	<0.1	<1	<1	78.0
WS02	17/02/2015 13:51:30	0.00	9	1032	1.40	0	0		<0.1	<0.1	21.9	<0.1	<1	<1	78.0
WS02	17/02/2015 13:52:00	0.00	9	1032	1.40	0	0		<0.1	<0.1	21.9	<0.1	<1	<1	78.0
WS02	17/02/2015 13:52:30	0.00	9	1032	1.40	0	0		<0.1	<0.1	21.9	<0.1	<1	<1	78.0
WS02	17/02/2015 13:53:00	0.00	9	1032	1.40	0	0		<0.1	<0.1	21.9	<0.1	<1	<1	78.0
WS02	17/02/2015 13:54:00	0.00	9	1032	1.40	0	0		<0.1	<0.1	21.9	<0.1	<1	<1	78.0
WS02	17/02/2015 13:55:00	0.00	9	1032	1.40	0	0		<0.1	<0.1	21.9	<0.1	<1	<1	78.0
WS02	24/02/2015 15:50:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	24/02/2015 15:50:30	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	24/02/2015 15:51:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	24/02/2015 15:51:30	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	24/02/2015 15:52:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	24/02/2015 15:52:30	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	24/02/2015 15:53:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	24/02/2015 15:54:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	24/02/2015 15:55:00	0.00	11	1012	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	02/03/2015 13:45:00	0.10	9	1013	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	02/03/2015 13:45:30	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	02/03/2015 13:46:00	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	02/03/2015 13:46:30	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	02/03/2015 13:47:00	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	02/03/2015 13:47:30	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	02/03/2015 13:48:00	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	02/03/2015 13:49:00	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	02/03/2015 13:50:00	0.00	9	1013	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	09/03/2015 15:00:00	0.00	10	1024	1.40	0	0		<0.1	<0.1	20.6	<0.1	<1	<1	ND
WS02	09/03/2015 15:00:30	0.00	10	1024	1.40	0	0		<0.1	<0.1	20.2	0.1	<1	<1	ND
WS02	09/03/2015 15:01:00	0.00	10	1024	1.40	0	0		<0.1	<0.1	20.2	0.1	<1	<1	ND
WS02	09/03/2015 15:01:30	0.00	10	1024	1.40	0	0		<0.1	<0.1	20.2	0.1	<1	<1	ND
WS02	09/03/2015 15:02:00	0.00	10	1024	1.40	0	0		<0.1	<0.1	20.2	0.1	<1	<1	ND
WS02	09/03/2015 15:02:30	0.00	10	1024	1.40	0	0		<0.1	<0.1	20.2	0.1	<1	<1	ND
WS02	09/03/2015 15:03:00	0.00	10	1024	1.40	0	0		<0.1	<0.1	20.2	0.1	<1	<1	ND
WS02	09/03/2015 15:04:00	0.00	10	1024	1.40	0	0		<0.1	<0.1	20.2	0.1	<1	<1	ND
WS02	09/03/2015 15:05:00	0.00	10	1024	1.40	0	0		<0.1	<0.1	20.2	0.1	<1	<1	ND

Notes: Notes: ND - not detected	Project Project No. Carried out for	Global UTC, The Old Vinyl Factory Site D4097-14 Mott MacDonald Limited	Table C3/3
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Notes: Notes: ND - not detected

Project Global UTC, The Old Vinyl Factory Site
Project No. D4097-14
Carried out for Mott MacDonald Limited

Table
C3/3

APPENDIX D
GEOTECHNICAL LABORATORY TEST RESULTS

Index Properties – Summary of Results

INDX 1

Chemical Tests – Summary of Results

CHEM 1

Unconsolidated Undrained Triaxial Compression Tests –
Summary of Results

UUSUM 1

Particle Size Distribution Tests

PSD 1 to 6

ESG
Environmental Scientifics Group

General notes:		All above tests carried out to BS1377 : 1990 unless annotated otherwise. See individual test reports for further details.							
Key :	ρ	bulk density, linear	W_L	Liquid limit	W_p	Plastic limit	<425um preparation	p_s	particle density
	ρ_d	dry density	a	4 point cone test	NP	non - plastic	n from natural soil	-g	= gas jar
	w	moisture content	b	1 point cone test	I_p	Plasticity Index	s sieved specimen	-p	= small pyknometer
QA Ref		Project No D4097-14				Printed:02/03/2015 12:54		Table	
SLR 1 Rev 2.91 Feb 15		Project Name Global UTC, The Old Vinyl Factory Site						INDX	

ESG Environmental Scientifics Group

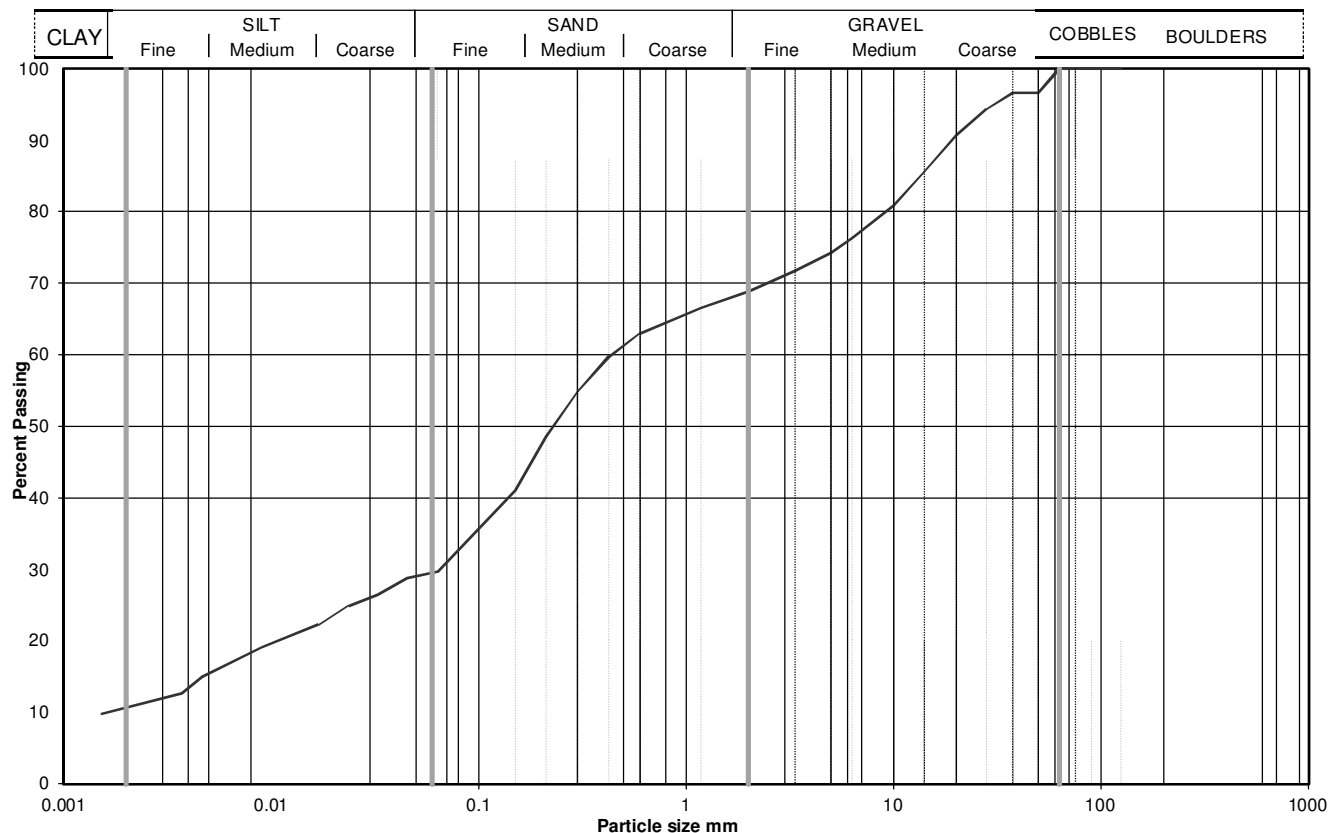
BS 1377 : definitive method unless stated : Org Organic matter content (sulphides, carbonates identified) LOI Mass loss on ignition at 440°C CO ₂ Carbonate content (rapid titration) Cl Chloride content		* Sulphate tests preparation / test methods : 1. BS 1377:Part 3:1990:clause 5.3 2. BS 1377:Part 3:1990:clause 5.4 3. BS 1377:Part 3:1990:clause 5.5 < 2mm material passing 2mm sieve		BRE Special Digest SD1, dependent options : TS Total Sulphur to BR279 / EN ISO15178 Mg Soluble Magnesium to BR279, colorimetric NO ₃ Soluble Nitrate to BR279, colorimetric NH ₄ qualitative	
QA Ref SLR 3 Rev 2.3 Apr 13		Project No D4097-14 Project Name Global UTC, The Old Vinyl Factory Site			Printed:02/03/2015 13:20 CHEM

General notes:	Tests carried out in accordance with BS1377: Part 7: 1990, clause 8 for single stage, clause 9 for multistage tests. Specimens nominally 2:1 height diameter ratio and tested at a rate of strain of 2%/minute, unless annotated otherwise. See individual test reports for further details.				
Legend	UU - single stage test (may be in sets of specimens)	σ_3	cell pressure	Mode of failure	P plastic
	UUM - multistage test on a single specimen	$\sigma_1 - \sigma_3$	deviator stress		B brittle
	suffix R - remoulded or recompacted	C_u	undrained shear strength		C compound

QA Ref SLR 2 Rev 2.5 Apr 13	Project No D4097-14 Project Name Global UTC, The Old Vinyl Factory Site	Printed:02/03/2015 13:21	Table UUSUM
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Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	BH01
	D4097-14201527200123	Sample Depth (m BGL)	0.90
		Sample Type and No	B2
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	30
90	100	0.0452	29
75	100	0.0327	26
63	100	0.0235	25
50	97	0.0170	22
37.5	97	0.0090	19
28	94	0.0047	15
20	91	0.0037	13
14	86	0.0015	10
10	81		
6.3	76		
5.0	74		
3.35	72		
2.00	69		
1.18	67		
0.600	63	Particle density, Mg/m3 2.65 assumed	
0.425	60		
0.300	55	Dry mass of sample, kg 7.3	
0.212	49		
0.150	41		
0.063	30		

Soil description	Brown slightly gravelly sandy CLAY.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions * <60mm values to aid description only	Cobbles / boulders	Whole	* <60mm
	Gravel	1	0
	Sand	30	30
	Silt	39	39
	Clay	19	19

Uniformity Coefficient	D_{60} / D_{10}	269
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 2.10
May 14



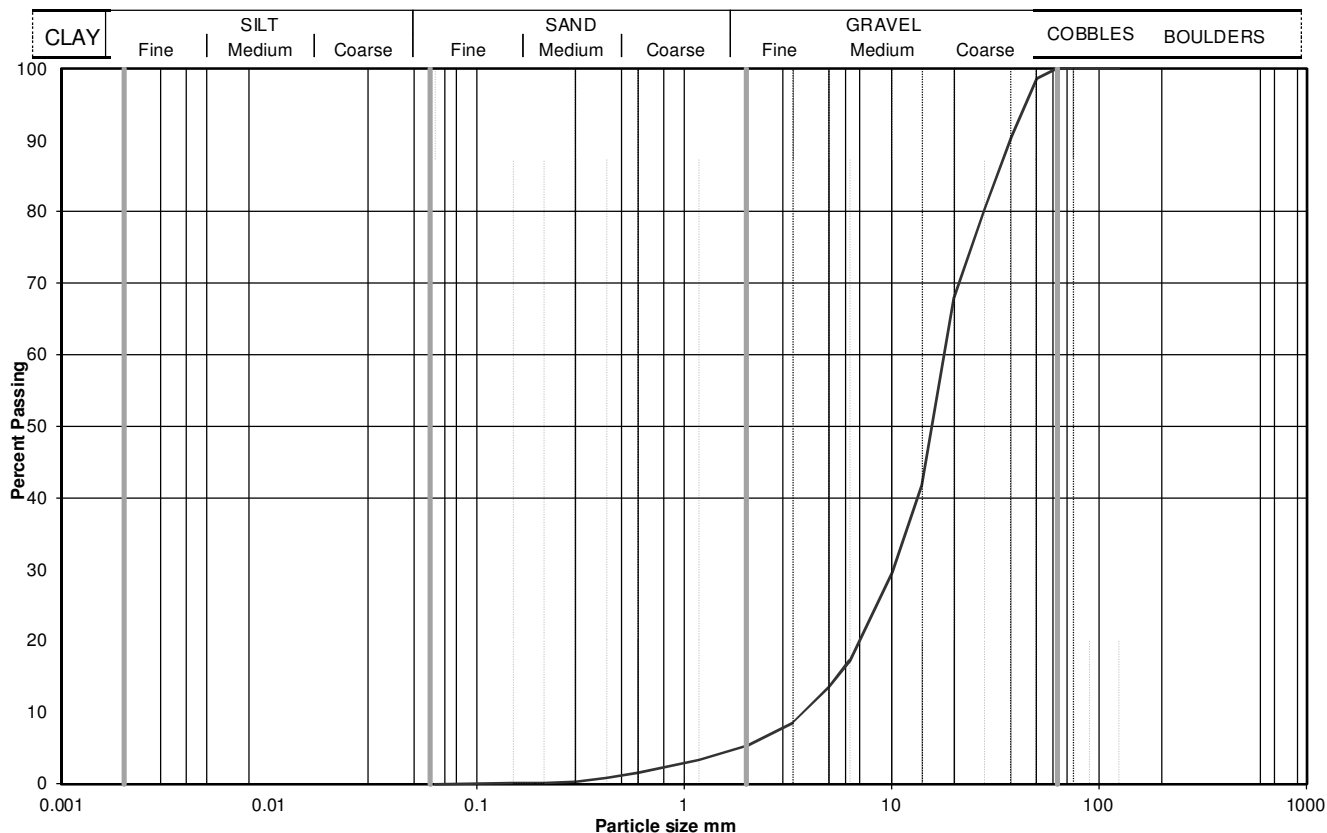
Project No D4097-14
Project Name Global UTC, The Old Vinyl Factory Site

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02/03/2015
12:34

Figure
PSD

Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	BH01
	D4097-14201528200153	Sample Depth (m BGL)	3.10
		Sample Type and No	B7
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	99		
37.5	90		
28	80		
20	68		
14	42		
10	30		
6.3	17		
5.0	14		
3.35	9		
2.00	5		
1.18	3		
0.600	2		
0.425	1		
0.300	0		
0.212	0		
0.150	0		
0.063	0		

Soil description	Brown sandy GRAVEL.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions * <60mm values to aid description only	Cobbles / boulders	Whole	* <60mm
	Gravel	0	0
	Sand	95	95
	Silt	5	5
	Clay	silt+clay =	

Uniformity Coefficient	D_{60} / D_{10}	5
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 2.10
May 14



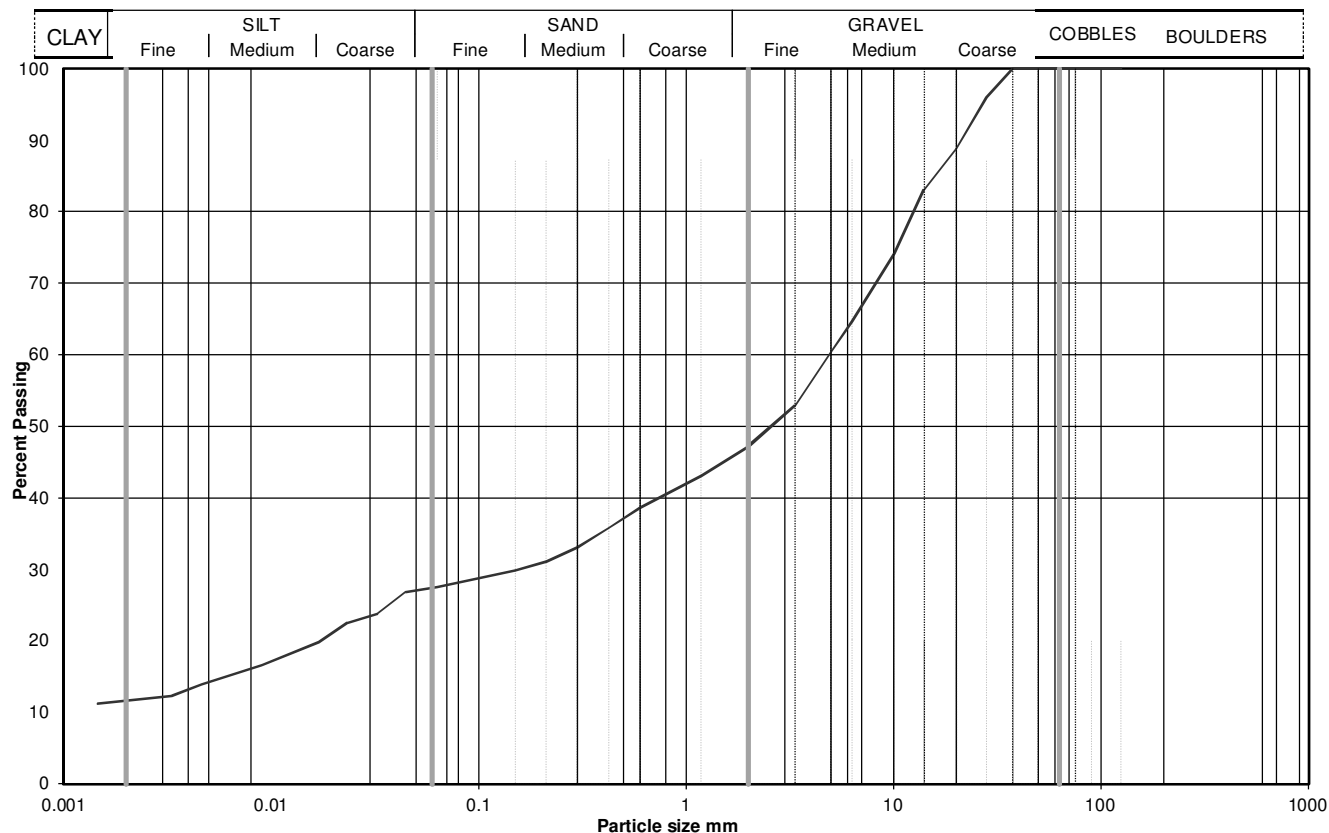
Project No D4097-14
Project Name Global UTC, The Old Vinyl Factory Site

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Figure
PSD

Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	BH02
	D4097-14201527210136	Sample Depth (m BGL)	1.20
		Sample Type and No	B4
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	28
90	100	0.0444	27
75	100	0.0325	24
63	100	0.0233	23
50	100	0.0170	20
37.5	100	0.0090	17
28	96	0.0046	14
20	89	0.0033	12
14	83	0.0015	11
10	74		
6.3	65		
5.0	60		
3.35	53		
2.00	47		
1.18	43		
0.600	39	Particle density, Mg/m3 2.65 assumed Dry mass of sample, kg 7.9	
0.425	36		
0.300	33		
0.212	31		
0.150	30		
0.063	28		

Soil description	Brown slightly sandy gravelly silty CLAY.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions * <60mm values to aid description only	Cobbles / boulders Gravel Sand Silt Clay	Whole	* <60mm
		0	0
		53	53
		20	20
		16	16
		11	11

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 2.10
May 14



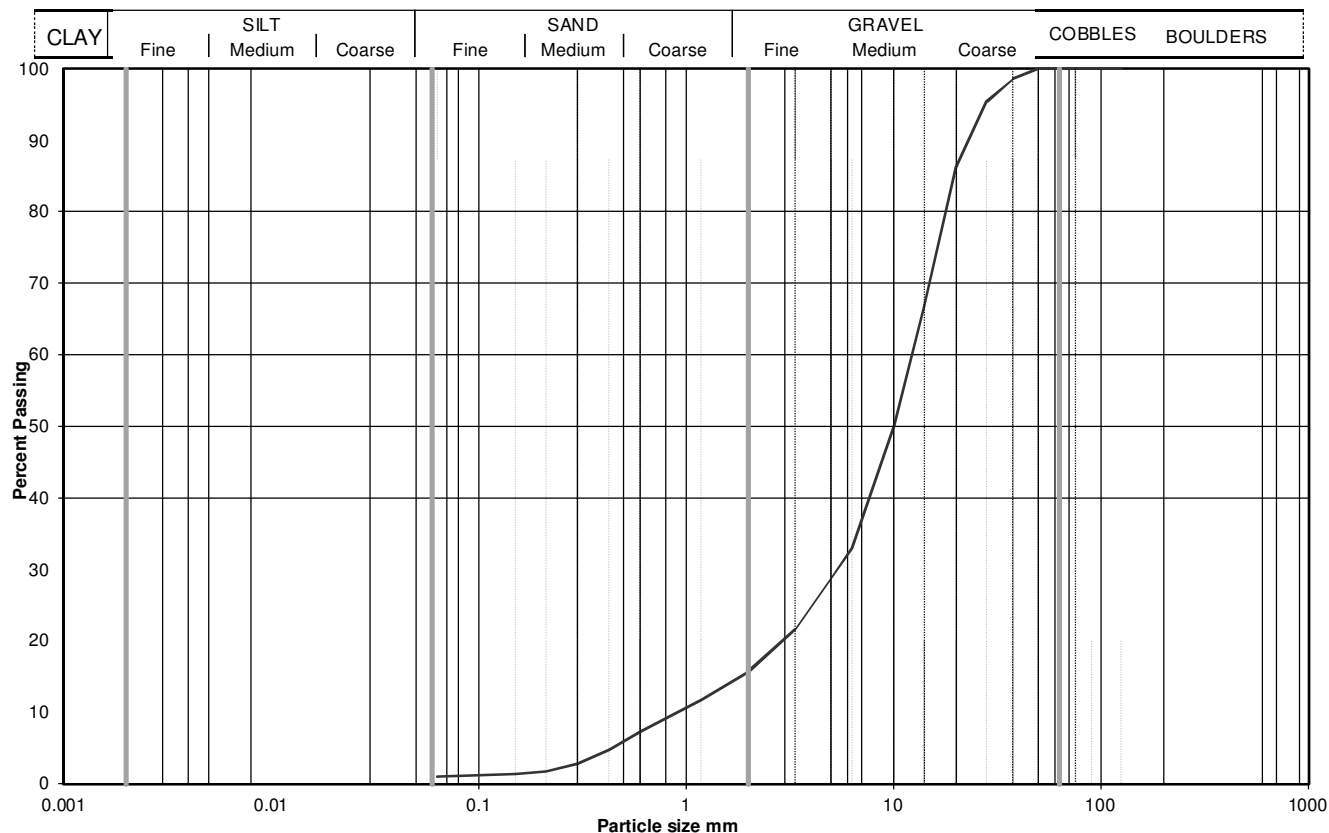
Project No D4097-14
Project Name Global UTC, The Old Vinyl Factory Site

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Figure
PSD

Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	BH03
	D4097-14201555220112	Sample Depth (m BGL)	1.20
		Sample Type and No	B4
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	99		
28	95		
20	86		
14	67		
10	50		
6.3	33		
5.0	29		
3.35	22		
2.00	16		
1.18	12		
0.600	7		
0.425	5		
0.300	3		
0.212	2		
0.150	1		
0.063	1		

Soil description	Brown sandy GRAVEL.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions * <60mm values to aid description only	Cobbles / boulders	Whole	* <60mm
	Gravel	0	0
	Sand	84	84
	Silt	15	15
	Clay	silt+clay =	

Uniformity Coefficient	D_{60} / D_{10}	14
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 2.10
May 14



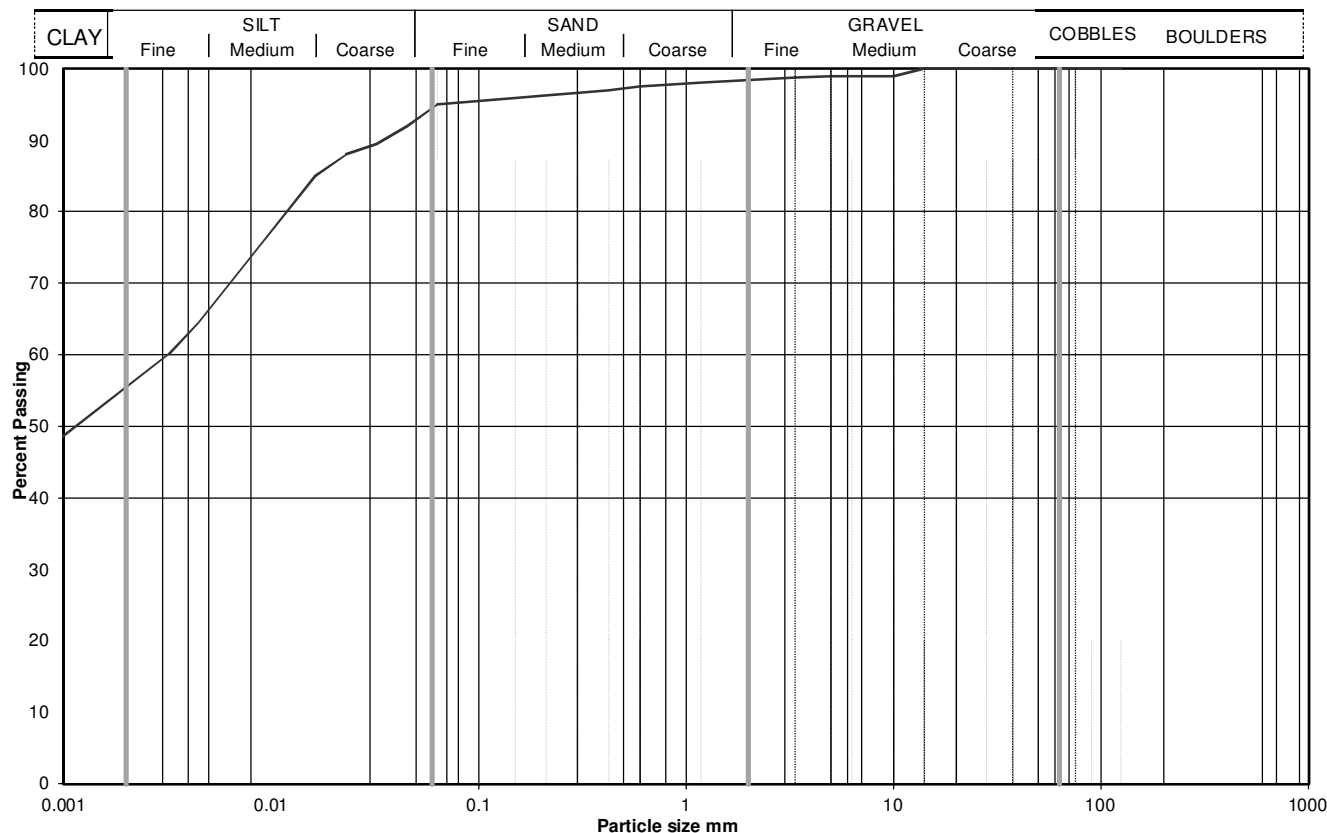
Project No D4097-14
Project Name Global UTC, The Old Vinyl Factory Site

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Figure
PSD

Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	BH03
	D4097-14201556220141	Sample Depth (m BGL)	6.50
		Sample Type and No	B15
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	95
90	100	0.0453	92
75	100	0.0323	89
63	100	0.0229	88
50	100	0.0164	85
37.5	100	0.0087	75
28	100	0.0045	64
20	100	0.0032	60
14	100	0.0008	46
10	99		
6.3	99		
5.0	99		
3.35	99		
2.00	98		
1.18	98		
0.600	97	Particle density, Mg/m3	2.65 assumed
0.425	97		
0.300	97	Dry mass of sample, kg	8.7
0.212	96		
0.150	96		
0.063	95		

Soil description	Brownish grey slightly sandy slightly gravelly CLAY.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions * <60mm values to aid description only	Cobbles / boulders	Whole	* <60mm
	Gravel	0	0
	Sand	2	2
	Silt	4	4
	Clay	39	39
		55	55

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 2.10
May 14



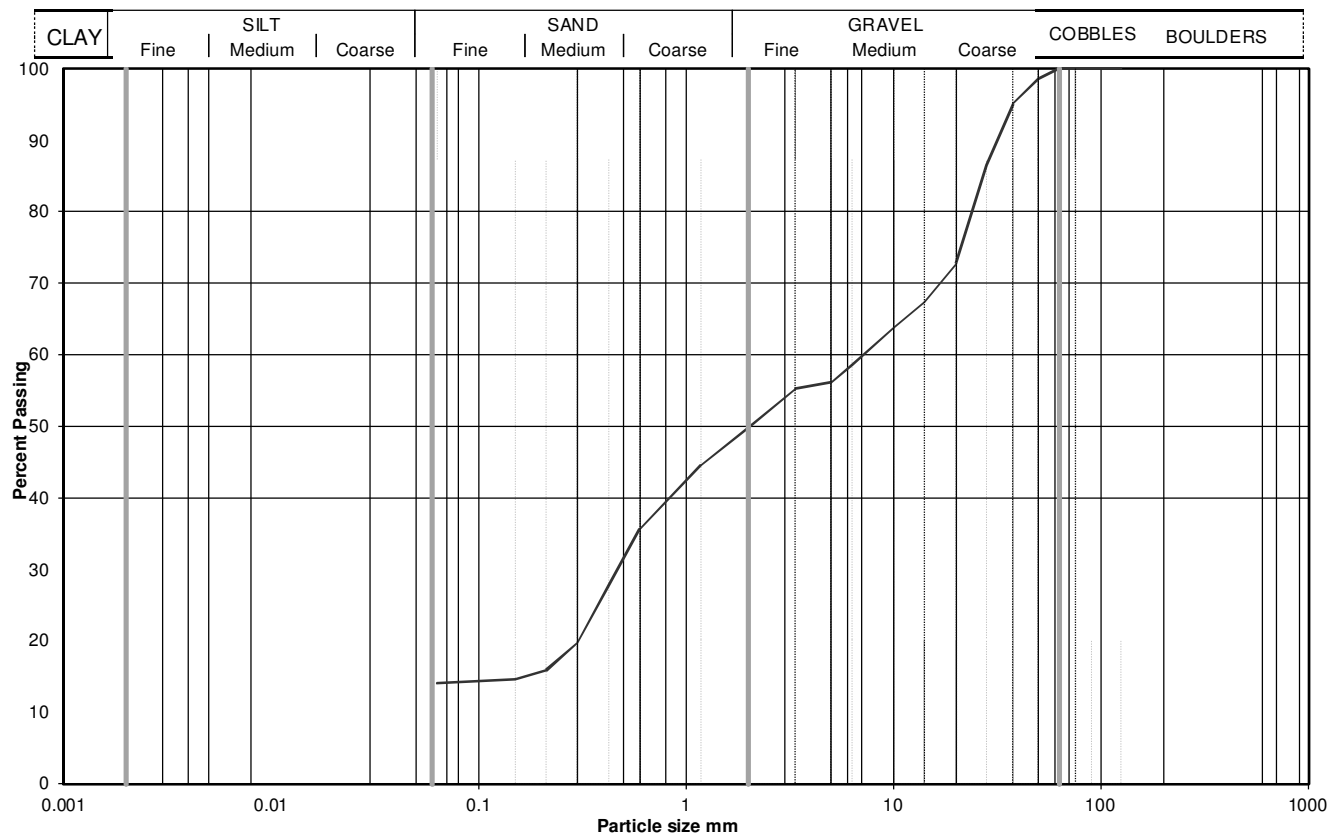
Project No D4097-14
Project Name Global UTC, The Old Vinyl Factory Site

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Figure
PSD

Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	BH03
	D4097-14201556220101	Sample Depth (m BGL)	4.00
		Sample Type and No	B10
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	99		
37.5	95		
28	86		
20	73		
14	67		
10	64		
6.3	59		
5.0	56		
3.35	55		
2.00	50		
1.18	45		
0.600	36		
0.425	28		
0.300	20		
0.212	16		
0.150	15		
0.063	14		

Dry mass of sample, kg	
13.4	

Soil description	Brown very sandy GRAVEL.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions * <60mm values to aid description only	Cobbles / boulders	Whole	* <60mm
	Gravel	0	0
	Sand	50	50
	Silt	36	36
	Clay	silt+clay =	
		14	14

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 2.10
May 14



Project No D4097-14
Project Name Global UTC, The Old Vinyl Factory Site

Printed:
02/03/2015
12:37

Figure
PSD

APPENDIX E
GEOENVIRONMENTAL LABORATORY TEST RESULTS

Soil Sample Analysis Test Report
Water Sample Analysis Test Report

EFS/150723
EXR/193783

TEST REPORT



Report No. EFS/150723 (Ver. 1)

ESG Wokingham
Glossop House
Hogwood Lane
Wokingham
RG40 4QW

Site: The Old Vinyl Factory

The 13 samples described in this report were registered for analysis by ESG on 20-Jan-2015. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 27-Jan-2015

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of PAH (MS-SIM) (80) Results (Pages 4 to 6)
Table of GRO Results (Page 7)
Table of TPH (Si) banding (std) (Page 8)
GC-FID Chromatograms (Pages 9 to 18)
Table of VOC (HSA) Results (Pages 19 to 21)
Table of Asbestos Results (Page 22)
Analytical and Deviating Sample Overview (Pages 23 to 24)
Table of Additional Report Notes (Page 25)
Table of Method Descriptions (Page 26)
Table of Report Notes (Page 27)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
ESG :
Declan Burns

A handwritten signature in black ink, appearing to read 'D. Burns'.

Operations Director
Laboratory and Analytical Business

Date of Issue: 27-Jan-2015

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.

ESG accepts no responsibility for any sampling not carried out by our personnel.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	pH Units		
			Method Codes :	GROHSA	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	ICPSOIL		
			Method Reporting Limits :	0.2	0.5	0.3	0.1	0.5	0.5	0.5	0.1	0.5	0.5	3	1	0.1	36		
			UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
LAB ID Number	CL/	Client Sample Description	Sample Date	GRO (AA) by HSA GC-FID	Boron (H2O Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Barium.	Beryllium.	Iron	SO4-- (H2O sol) mg/l	pH units (AR)
1537280		BH1 ES 0.3	12-Jan-15																
1537281		BH1 ES 0.5	12-Jan-15	Req	1.3	8.4	0.39	22.6	18.3	33.8	0.1	17.3	<0.5	74.4	221	0.638	20500	18	8.2
1537282		BH1 ES 1.0	12-Jan-15		0.8	11.1	1.41	39	40.4	119.6	0.36	25	0.6	142.5	138	0.643	19700	82	8.3
1537283		WS1 ES 0.5	12-Jan-15		1.2	10.8	0.42	28.5	35.1	75.1	0.21	24.9	<0.5	107.4	160	0.734	18300	280	10.9
1537284		WS1 ES 1.0	14-Jan-15																
1537285		WS02 ES 0.50	14-Jan-15																
1537286		WS02 ES 1.00	14-Jan-15	Req	0.9	9.7	0.33	39.6	22.4	61.7	0.14	23.5	<0.5	70.3	84.2	0.443	15700	269	8.9
1537287		WS02 ES 2.00	14-Jan-15																
1537288		BH02 ES 0.50	14-Jan-15		1.3	14.8	0.17	45.7	74.4	170.5	0.11	35.6	<0.5	106	161	0.885	23000	110	8.9
1537289		BH02 ES 2.00	14-Jan-15		<0.5 §	8.1 §	0.17 §	32.3 §	16.6 §	17 §	<0.1 §	22.9 §	<0.5 §	47.1 §	34.6 §	0.417 §	16500 §	24 §	8.6 §
1537290		BH03 ES 0.30	15-Jan-15																
1537291		BH03 ES 0.50	15-Jan-15	Req	0.8	12.3	0.25	28.2	21	92.6	0.12	22.6	<0.5	52.5	98.9	1.04	21400	102	8.9
1537292		BH03 ES 1.00	15-Jan-15																
											</								

Units : Method Codes : Method Reporting Limits : UKAS Accredited :			mg/kg		mg/kg	mg/kg	µg/kg	mg/kg	mg/kg	%	mg/kg							
			SFAP1	Sub002a	TPHFIDUS	TPHUSSI	VOCHSAS	ICPMSS	PAHSCUV	TSBRE1	PAHMSUS							
			0.5		10	20		0.6	10	0.005								
			Yes	Yes	Yes	Yes	Yes	No	No	No	Yes							
LAB ID Number	Client Sample Description	Sample Date	Phenol Index (AR)	Asbestos Screen	TPH by GC/FID (AR)	TPH by GC/FID (AR/SI)	VOC HSA-GCMS	Vanadium (MS)	PAH (screening)	Total Sulphur	PAH (16) by GCMS							
1537280	BH1 ES 0.3	12-Jan-15		NAIIS														
1537281	BH1 ES 0.5	12-Jan-15	<0.5	NAIIS		Req	Req	46.5		0.033	Req							
1537282	BH1 ES 1.0	12-Jan-15	<0.5	AM	189			34.7	108	0.027								
1537283	WS1 ES 0.5	12-Jan-15	<0.5	CH AM	1200			29	507	0.096								
1537284	WS1 ES 1.0	14-Jan-15		CH AM														
1537285	WS02 ES 0.50	14-Jan-15		NAIIS														
1537286	WS02 ES 1.00	14-Jan-15	<0.5	NAIIS		Req	Req	30.7		0.044	Req							
1537287	WS02 ES 2.00	14-Jan-15		NAIIS														
1537288	BH02 ES 0.50	14-Jan-15	<0.5	NAIIS	94			28.4	56	0.029								
1537289	BH02 ES 2.00	14-Jan-15	<0.5 §	NAIIS	11 §			14.3	<10	0.014								
1537290	BH03 ES 0.30	15-Jan-15		NAIIS														
1537291	BH03 ES 0.50	15-Jan-15	<0.5	NAIIS		Req	Req	37.1		0.031	Req							
1537292	BH03 ES 1.00	15-Jan-15		NAIIS														

Polycyclic Aromatic Hydrocarbons GC/MS (SIM)

Customer and Site Details:	ESG Wokingham: The Old Vinyl Factory		
Sample Details:	BH1 ES 0.5	Job Number:	S15_0723
LIMS ID Number:	CL1537281	Date Booked in:	20-Jan-15
QC Batch Number:	150060	Date Extracted:	23-Jan-15
Quantitation File:	Initial Calibration	Date Analysed:	26-Jan-15
Directory:	2615PAH.GC5\	Matrix:	Soil
Dilution:	1.0	Ext Method:	Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.08	-
Acenaphthylene	208-96-8	-	< 0.08	-
Acenaphthene	83-32-9	-	< 0.08	-
Fluorene	86-73-7	-	< 0.08	-
Phenanthrene	85-01-8	5.97	0.11	97
Anthracene	120-12-7	-	< 0.08	-
Fluoranthene	206-44-0	7.38	0.33	98
Pyrene	129-00-0	7.67	0.30	81
Benzo[a]anthracene	56-55-3	9.40	0.23	88
Chrysene	218-01-9	9.45	0.17	97
Benzo[b]fluoranthene	205-99-2	10.95	0.31	76
Benzo[k]fluoranthene	207-08-9	10.99	0.14	76
Benzo[a]pyrene	50-32-8	11.39	0.26	99
Indeno[1,2,3-cd]pyrene	193-39-5	12.80	0.32	69
Dibenzo[a,h]anthracene	53-70-3	-	< 0.08	-
Benzo[g,h,i]perylene	191-24-2	13.15	0.17	68
Total (USEPA16) PAHs	-	-	< 2.82	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	113
Acenaphthene-d10	115
Phenanthrene-d10	118
Chrysene-d12	130
Perylene-d12	139

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	99
Terphenyl-d14	108

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons GC/MS (SIM)

Customer and Site Details:	ESG Wokingham: The Old Vinyl Factory		
Sample Details:	WS02 ES 1.00	Job Number:	S15_0723
LIMS ID Number:	CL1537286	Date Booked in:	20-Jan-15
QC Batch Number:	150060	Date Extracted:	23-Jan-15
Quantitation File:	Initial Calibration	Date Analysed:	26-Jan-15
Directory:	2615PAH.GC5\	Matrix:	Soil
Dilution:	1.0	Ext Method:	Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.08	-
Acenaphthylene	208-96-8	-	< 0.08	-
Acenaphthene	83-32-9	-	< 0.08	-
Fluorene	86-73-7	-	< 0.08	-
Phenanthrene	85-01-8	-	< 0.08	-
Anthracene	120-12-7	-	< 0.08	-
Fluoranthene	206-44-0	-	< 0.08	-
Pyrene	129-00-0	-	< 0.08	-
Benzo[a]anthracene	56-55-3	-	< 0.08	-
Chrysene	218-01-9	-	< 0.08	-
Benzo[b]fluoranthene	205-99-2	-	< 0.08	-
Benzo[k]fluoranthene	207-08-9	-	< 0.08	-
Benzo[a]pyrene	50-32-8	-	< 0.08	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.08	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.08	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.08	-
Total (USEPA16) PAHs	-	-	< 1.28	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	106
Acenaphthene-d10	107
Phenanthrene-d10	109
Chrysene-d12	118
Perylene-d12	125

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	96
Terphenyl-d14	104

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons GC/MS (SIM)

Customer and Site Details:	ESG Wokingham: The Old Vinyl Factory		
Sample Details:	BH03 ES 0.50	Job Number:	S15_0723
LIMS ID Number:	CL1537291	Date Booked in:	20-Jan-15
QC Batch Number:	150060	Date Extracted:	23-Jan-15
Quantitation File:	Initial Calibration	Date Analysed:	26-Jan-15
Directory:	2615PAH.GC5\	Matrix:	Soil
Dilution:	1.0	Ext Method:	Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.08	-
Acenaphthylene	208-96-8	-	< 0.08	-
Acenaphthene	83-32-9	-	< 0.08	-
Fluorene	86-73-7	-	< 0.08	-
Phenanthrene	85-01-8	5.97	0.11	86
Anthracene	120-12-7	-	< 0.08	-
Fluoranthene	206-44-0	7.38	0.09	86
Pyrene	129-00-0	-	< 0.08	-
Benzo[a]anthracene	56-55-3	-	< 0.08	-
Chrysene	218-01-9	-	< 0.08	-
Benzo[b]fluoranthene	205-99-2	-	< 0.08	-
Benzo[k]fluoranthene	207-08-9	-	< 0.08	-
Benzo[a]pyrene	50-32-8	-	< 0.08	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.08	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.08	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.08	-
Total (USEPA16) PAHs	-	-	< 1.32	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	106
Acenaphthene-d10	107
Phenanthrene-d10	108
Chrysene-d12	111
Perylene-d12	113

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	100
Terphenyl-d14	105

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Gasoline Range Organics (BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: ESG Wokingham : The Old Vinyl Factory
Job Number: S15_0723
Directory: E:\TES\DATA\2015\0122HSA_GC9\150122 2015-01-22 15-35-52\065F5901.D
Method: Headspace GCFID

Matrix: Soil
Date Booked in: 20-Jan-15
Date extracted: 22-Jan-15
Date Analysed: 23-Jan-15, 09:44

* Sample data with an asterisk are not UKAS accredited.

[illegible]

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details:	ESG Wokingham : The Old Vinyl Factory
Job Number:	S15_0723
QC Batch Number:	150060
Directory:	D:\TES\DATA\Y2013\02\012615TPH_GC3\019F2201.D
Method:	Ultra Sonic

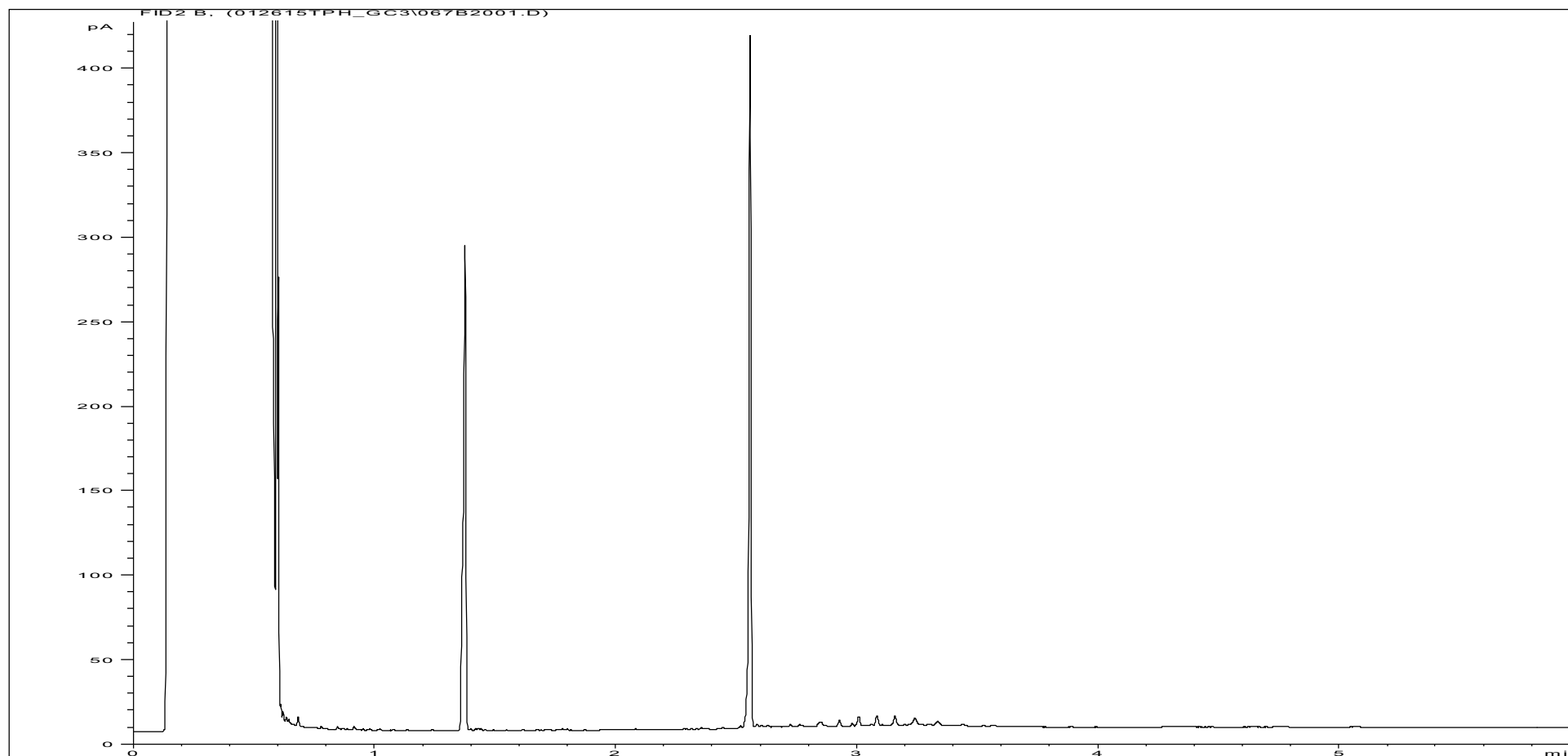
Separation: Silica gel
Eluents: Hexane, DCM

Matrix:	Soil
Date Booked in	20-Jan-15
Date Extracted:	23-Jan-15
Date Analysed:	26-Jan-15

*** This sample data is not UKAS accredited.**

[illegible]

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID: CL1537281ALI

Multiplier: 16.16

Dilution: 1

Acquisition Method: 5UL_RUNF.M

Acquisition Date/Time: 26-Jan-15

Datafile: D:\TES\DATA\Y2013\02\012615TPH_GC3\067B2001.D

Job Number: S15_0723

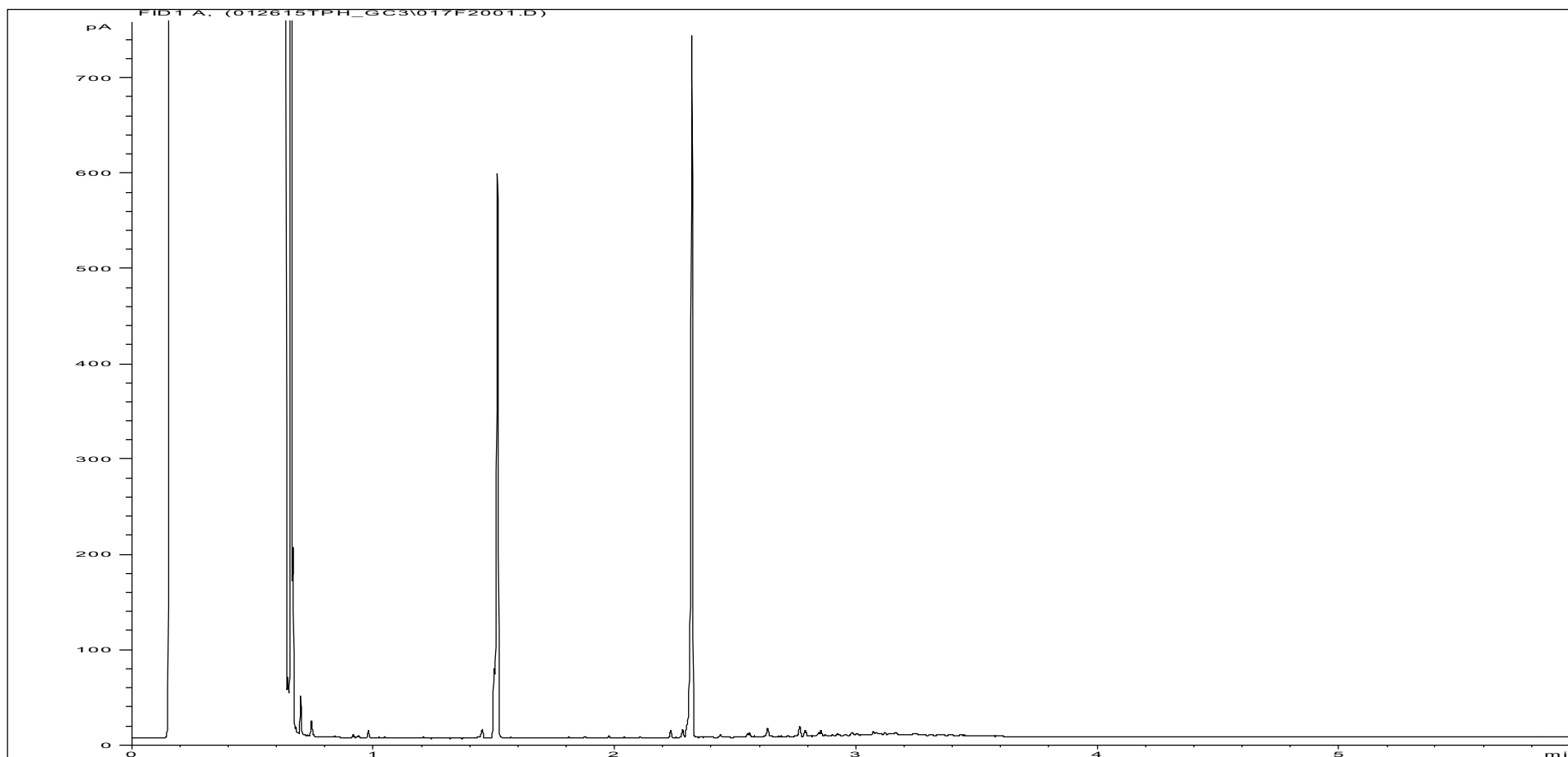
Client: ESG Wokingham

Site: The Old Vinyl Factory

Client Sample Ref: BH1 ES 0.5

Where individual results are flagged see report notes for status.

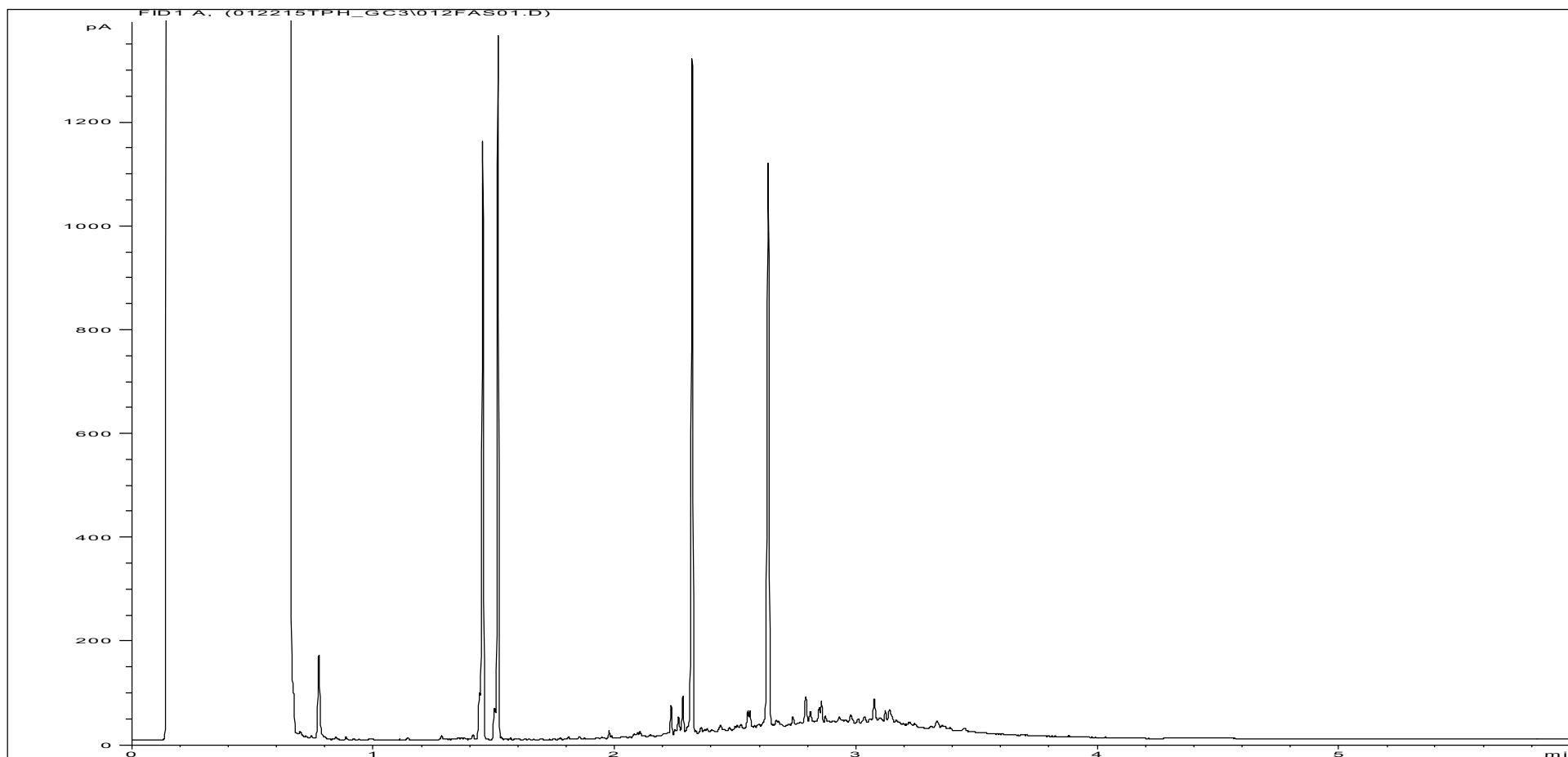
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1537281ARO	Job Number:	S15_0723
Multiplier:	12.32	Client:	ESG Wokingham
Dilution:	1	Site:	The Old Vinyl Factory
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	BH1 ES 0.5
Acquisition Date/Time:	26-Jan-15		
Datafile:	D:\TES\DATA\Y2013\02\012615TPH_GC3\017F2001.D		

Where individual results are flagged see report notes for status.

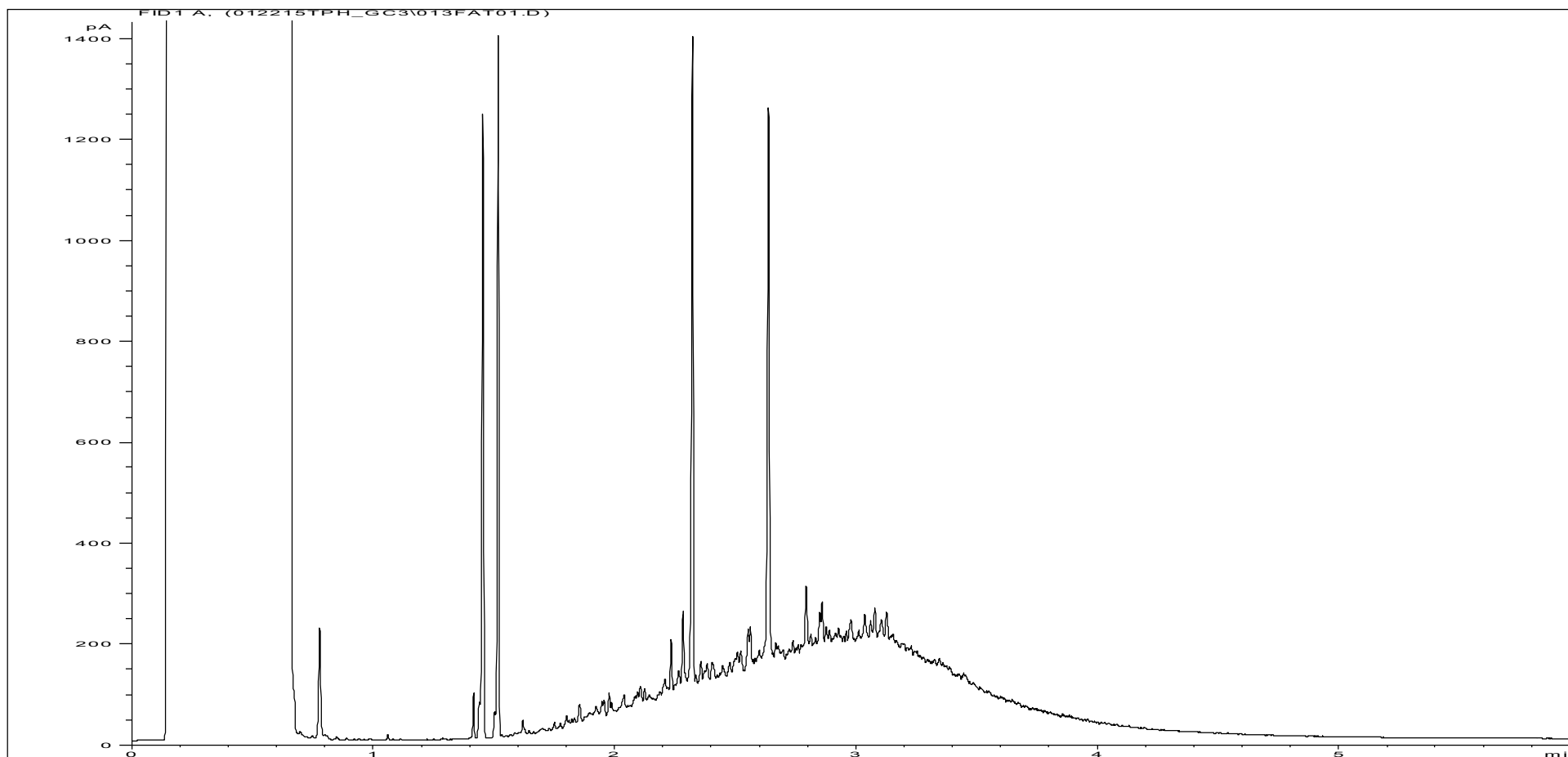
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	CL1537282	Job Number:	S15_0723
Multiplier:	8	Client:	ESG Wokingham
Dilution:	1	Site:	The Old Vinyl Factory
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	BH1 ES 1.0
Acquisition Date/Time:	24-Jan-15		
Datafile:	D:\TES\DATA\Y2013\02\012215TPH_GC3\012FAS01.D		

Where individual results are flagged see report notes for status.

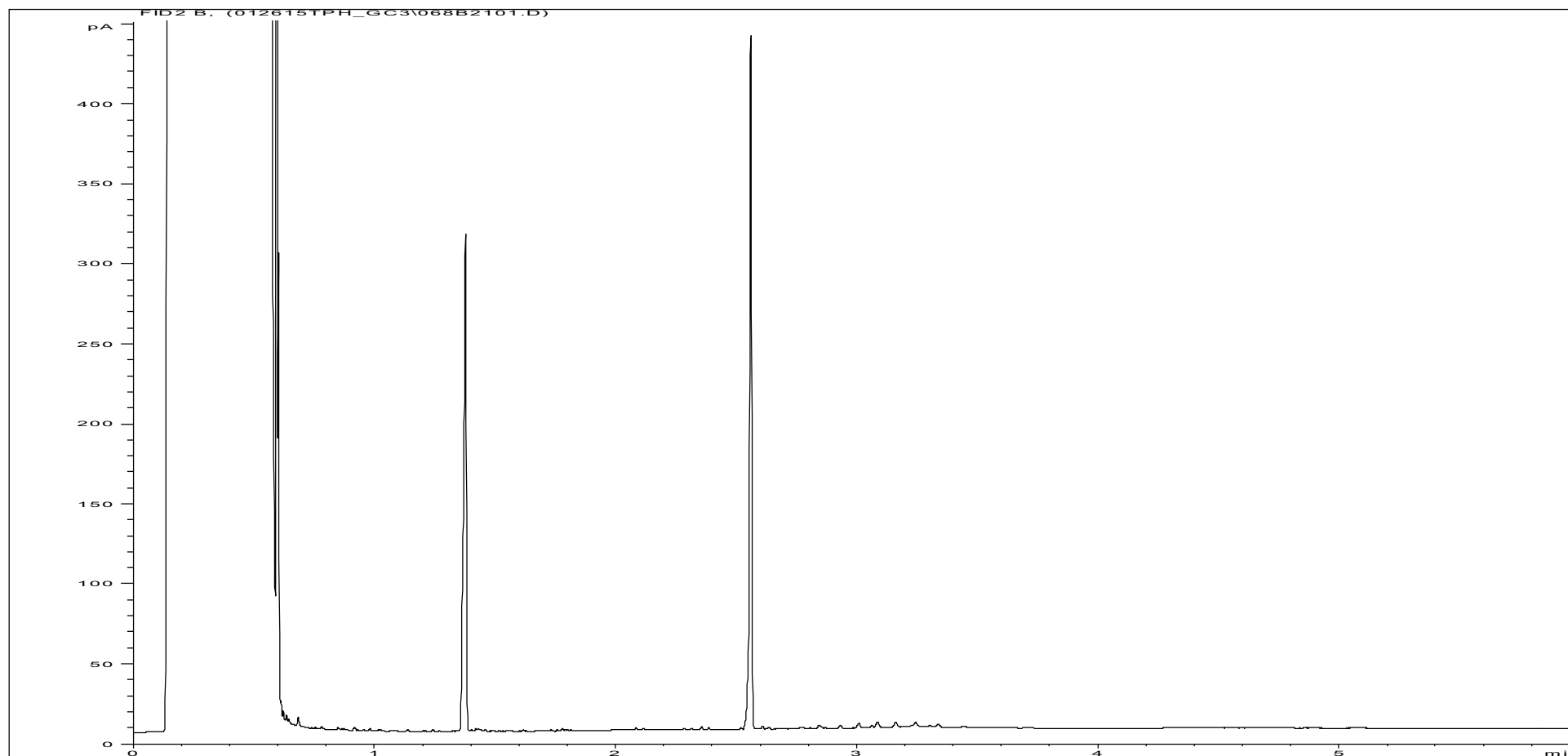
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	CL1537283	Job Number:	S15_0723
Multiplier:	8	Client:	ESG Wokingham
Dilution:	1	Site:	The Old Vinyl Factory
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	WS1 ES 0.5
Acquisition Date/Time:	24-Jan-15		
Datafile:	D:\TES\DATA\Y2013\02\012215TPH_GC3\013FAT01.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID: CL1537286ALI

Multiplier: 16

Dilution: 1

Acquisition Method: 5UL_RUNF.M

Acquisition Date/Time: 26-Jan-15

Datafile: D:\TES\DATA\Y2013\02\012615TPH_GC3\068B2101.D

Job Number: S15_0723

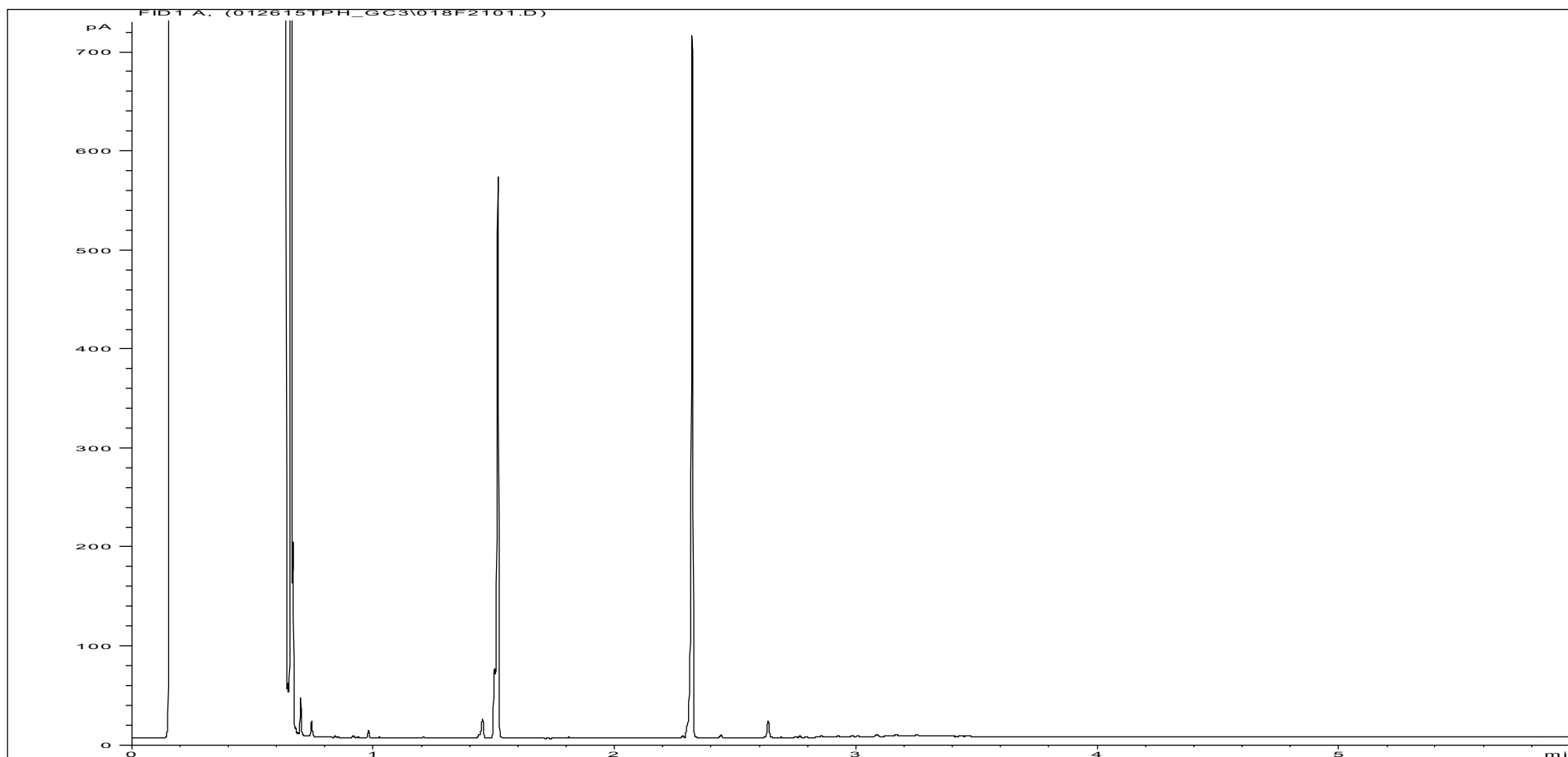
Client: ESG Wokingham

Site: The Old Vinyl Factory

Client Sample Ref: WS02 ES 1.00

Where individual results are flagged see report notes for status.

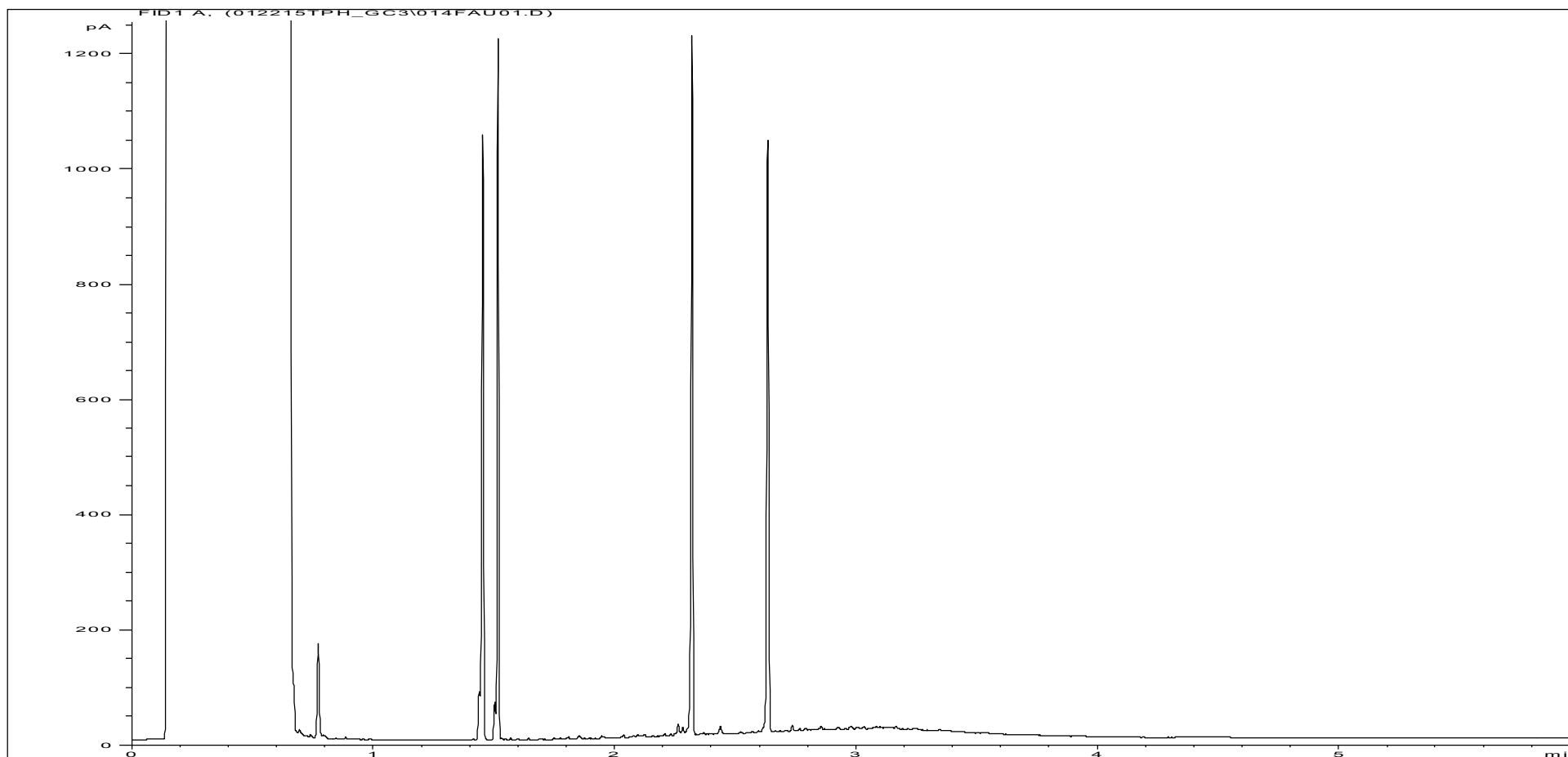
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1537286ARO	Job Number:	S15_0723
Multiplier:	12.16	Client:	ESG Wokingham
Dilution:	1	Site:	The Old Vinyl Factory
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	WS02 ES 1.00
Acquisition Date/Time:	26-Jan-15		
Datafile:	D:\TES\DATA\Y2013\02\012615TPH_GC3\018F2101.D		

Where individual results are flagged see report notes for status.

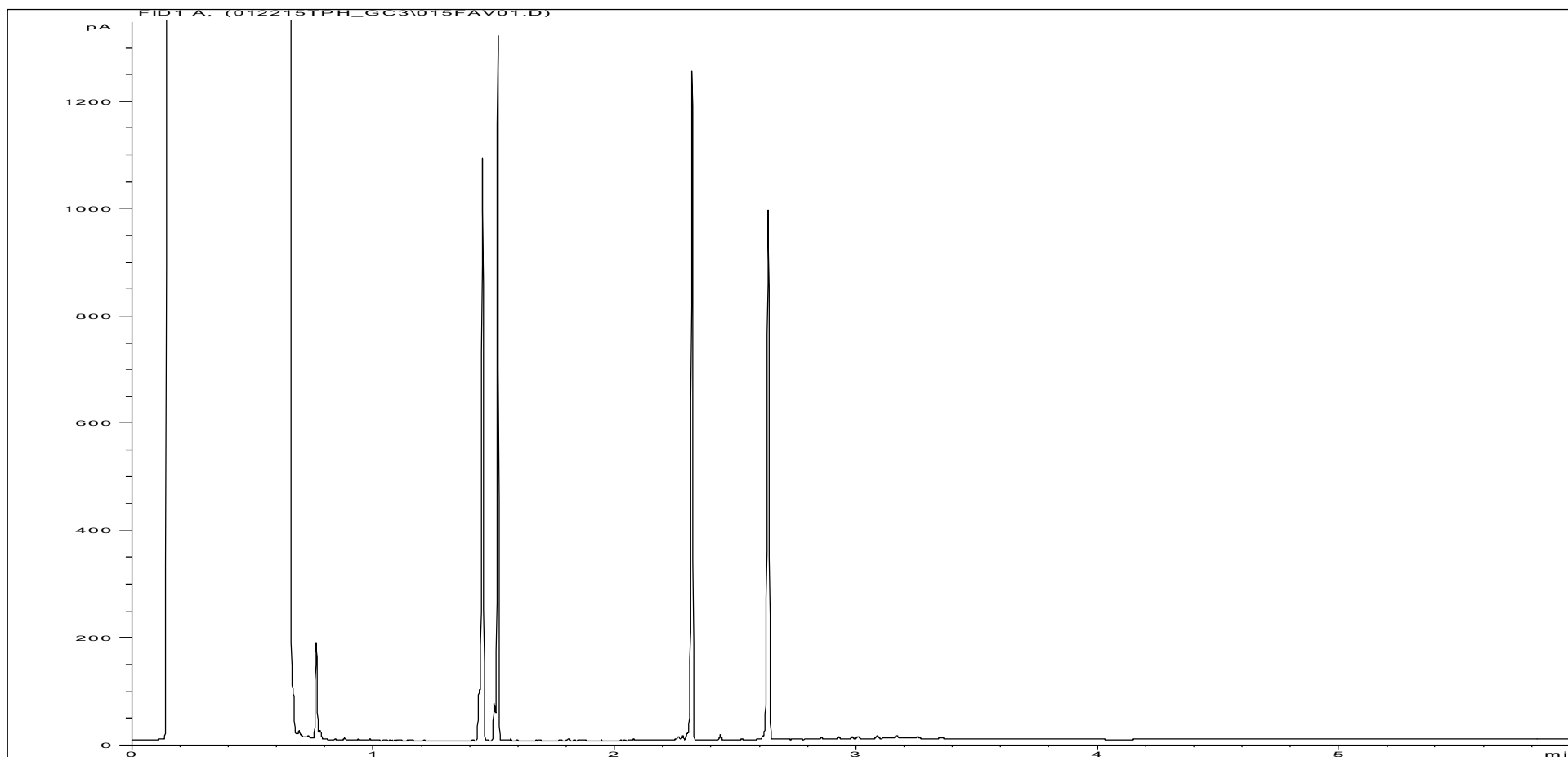
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	CL1537288	Job Number:	S15_0723
Multiplier:	8	Client:	ESG Wokingham
Dilution:	1	Site:	The Old Vinyl Factory
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	BH02 ES 0.50
Acquisition Date/Time:	24-Jan-15		
Datafile:	D:\TES\DATA\Y2013\02\012215TPH_GC3\014FAU01.D		

Where individual results are flagged see report notes for status.

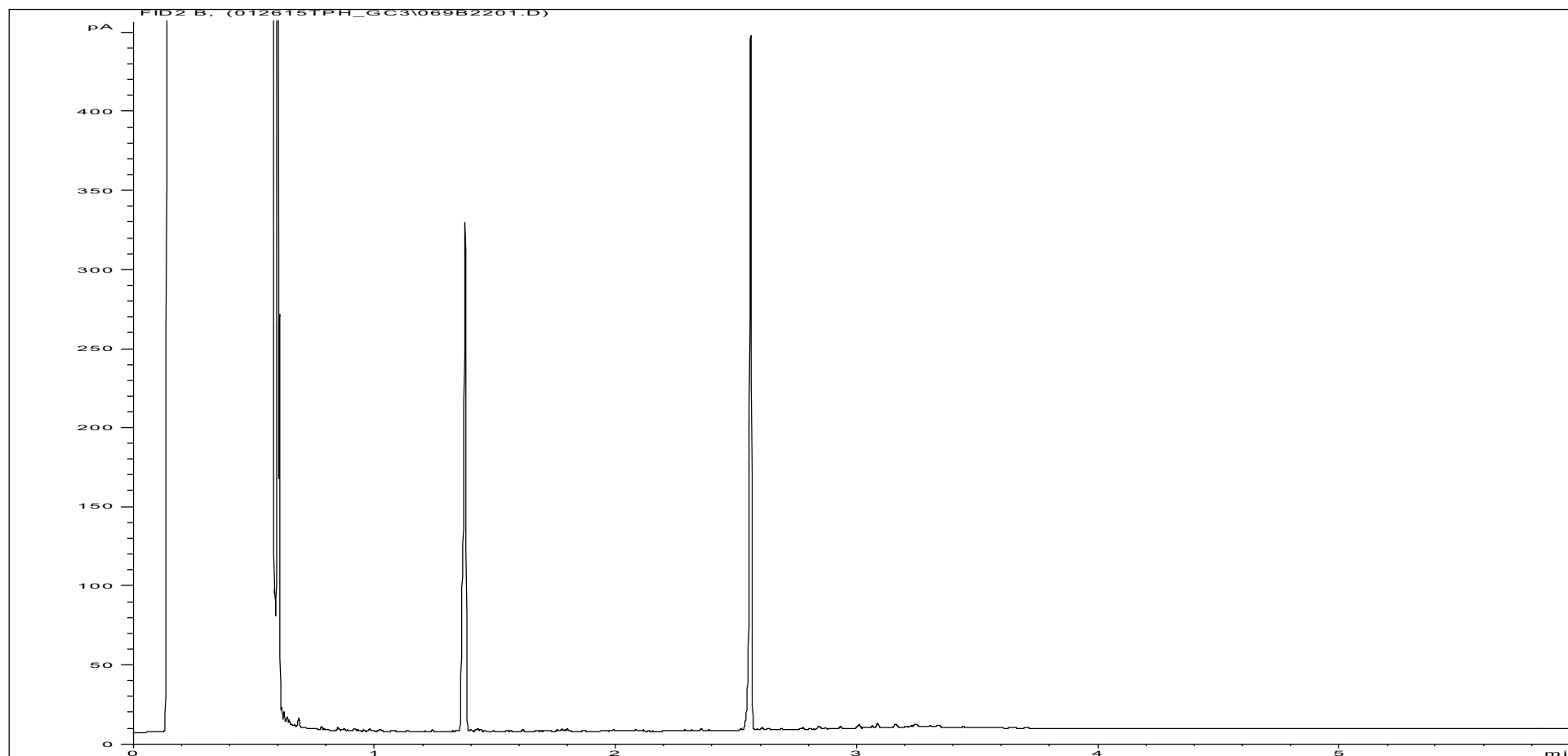
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	CL1537289	Job Number:	S15_0723
Multiplier:	8	Client:	ESG Wokingham
Dilution:	1	Site:	The Old Vinyl Factory
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	BH02 ES 2.00
Acquisition Date/Time:	24-Jan-15		
Datafile:	D:\TES\DATA\Y2013\02\012215TPH_GC3\015FAV01.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID: CL1537291ALI

Multiplier: 16

Dilution: 1

Acquisition Method: 5UL_RUNF.M

Acquisition Date/Time: 26-Jan-15

Datafile: D:\TES\DATA\Y2013\02\012615TPH_GC3\069B2201.D

Job Number: S15_0723

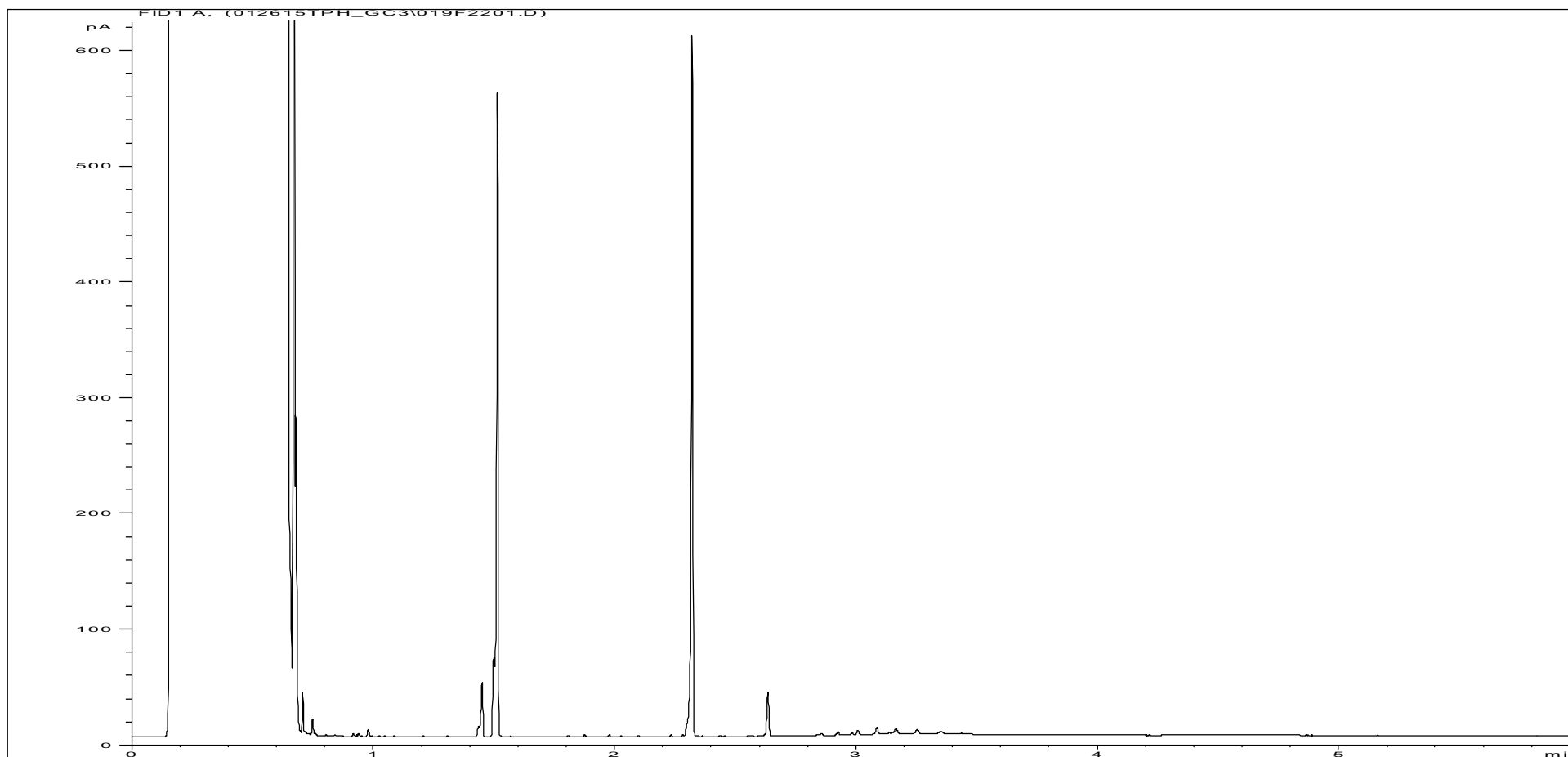
Client: ESG Wokingham

Site: The Old Vinyl Factory

Client Sample Ref: BH03 ES 0.50

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1537291ARO	Job Number:	S15_0723
Multiplier:	11.68	Client:	ESG Wokingham
Dilution:	1	Site:	The Old Vinyl Factory
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	BH03 ES 0.50
Acquisition Date/Time:	26-Jan-15		
Datafile:	D:\TES\DATA\Y2013\02\012615TPH_GC3\019F2201.D		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details: ESG Wokingham: The Old Vinyl Factory
Sample Details: BH1 ES 0.5
LIMS ID Number: CL1537281
Job Number: S15_0723

Directory/Quant file: 120VOC_MS19\ Initial Calibration
Date Booked in: 20-Jan-15
Date Analysed: 21-Jan-15
Operator: TP

Matrix: Soil
Method: Headspace
Multiplier: 1
Position: 29

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit
Dichlorodifluoromethane	75-71-8 **	-	< 1	-
Chloromethane	74-87-3 **	-	< 3	-
Vinyl Chloride	75-01-4 **	-	< 1	-
Bromomethane	74-83-9	-	< 1	-
Chloroethane	75-00-3	-	< 2	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-48 *	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
MTBE	1634-04-4	-	< 1	-
2,2-Dichloropropane	594-20-7	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 5	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 1	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-
Toluene	108-88-3	-	< 5	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 3	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 2	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 4	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit
o-Xylene	95-47-6	-	< 2	-
Styrene	100-42-5	5.77	3	M
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8 *	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 1	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-
1,2,4-Trichlorobenzene	120-82-1 *	-	< 3	-
Hexachlorobutadiene	87-68-3 **	-	< 2	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 3	-

Compounds marked * are not MCERTS accredited
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.11	107	Dibromofluoromethane	111
1,4-Difluorobenzene	4.45	105	Toluene-d8	99
Chlorobenzene-d5	5.56	97		
Bromofluorobenzene	5.96	85		
1,4-Dichlorobenzene-d4	6.36	67		
Naphthalene-d8	7.23	27		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details: ESG Wokingham: The Old Vinyl Factory
Sample Details: WS02 ES 1.00
LIMS ID Number: CL1537286
Job Number: S15_0723

Directory/Quant file: 120VOC_MS19\ Initial Calibration
Date Booked in: 20-Jan-15
Date Analysed: 21-Jan-15
Operator: TP
Matrix: Soil
Method: Headspace
Multiplier: 1
Position: 30

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit
Dichlorodifluoromethane	75-71-8 **	-	< 1	-
Chloromethane	74-87-3 **	-	< 3	-
Vinyl Chloride	75-01-4 **	-	< 1	-
Bromomethane	74-83-9	-	< 1	-
Chloroethane	75-00-3	-	< 2	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-48 *	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
MTBE	1634-04-4	-	< 1	-
2,2-Dichloropropane	594-20-7	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 5	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 1	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-
Toluene	108-88-3	-	< 5	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 3	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 2	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 4	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit
o-Xylene	95-47-6	-	< 2	-
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8 *	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 1	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-
1,2,4-Trichlorobenzene	120-82-1 *	-	< 3	-
Hexachlorobutadiene	87-68-3 **	-	< 2	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 3	-

Compounds marked * are not MCERTS accredited
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.11	104	Dibromofluoromethane	111
1,4-Difluorobenzene	4.45	104	Toluene-d8	98
Chlorobenzene-d5	5.56	95		
Bromofluorobenzene	5.96	84		
1,4-Dichlorobenzene-d4	6.36	71		
Naphthalene-d8	7.22	41		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: Yes

Customer and Site Details: ESG Wokingham: The Old Vinyl Factory
Sample Details: BH03 ES 0.50
LIMS ID Number: CL1537291
Job Number: S15_0723

Directory/Quant file: 120VOC_MS19\ Initial Calibration
Date Booked in: 20-Jan-15
Date Analysed: 21-Jan-15
Operator: TP
Matrix: Soil
Method: Headspace
Multiplier: 1
Position: 31

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit
Dichlorodifluoromethane	75-71-8 **	-	< 1	-
Chloromethane	74-87-3 **	-	< 3	-
Vinyl Chloride	75-01-4 **	-	< 1	-
Bromomethane	74-83-9	-	< 1	-
Chloroethane	75-00-3	-	< 2	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-48 *	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
MTBE	1634-04-4	-	< 1	-
2,2-Dichloropropane	594-20-7	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 5	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 1	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-
Toluene	108-88-3	-	< 5	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 3	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 2	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 4	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit
o-Xylene	95-47-6	-	< 2	-
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 **	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8 *	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 1	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 1	-
1,2,4-Trichlorobenzene	120-82-1 *	-	< 3	-
Hexachlorobutadiene	87-68-3 **	-	< 2	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 3	-

Compounds marked * are not MCERTS accredited
Compounds marked ** are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	4.11	100	Dibromofluoromethane	99
1,4-Difluorobenzene	4.45	103	Toluene-d8	99
Chlorobenzene-d5	5.56	97		
Bromofluorobenzene	5.96	91		
1,4-Dichlorobenzene-d4	6.36	81		
Naphthalene-d8	7.23	57		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.

			ASBESTOS ANALYSIS RESULTS - SOIL ANALYSIS						 1089	Detection limit of Method SCI-ASB-020 is 0.001%	
			ESG Asbestos Limited Certificate of Analysis for Asbestos in Soils							Sampling has been carried out by a third party	
Client:			ESG Environmental Chemistry						Page 1 of 1		
Address:			Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent						Report No: ANO-0488-09511		
For the attention of:			ESG Wokingham						Report Date: 23/01/2015		
Site Address:			The Old Vinyl Factory						Project Number: S150723		
Sample Number	Sample Date	Sample Location	Test Date	Total Sample Dry Weight (g)	Weight of <2mm Fraction (g)	Asbestos(g) in >8mm+>2mm	Asbestos(g) in <2mm	% Asbestos by weight of Total Dried Sample	Asbestos Fibre Types Identified		
CL/1537280	12/01/15	BH1 0.3	23/01/2015					Screen Only	NAIIS		
CL/1537281	12/01/15	BH1 0.5	23/01/2015					Screen Only	NAIIS		
CL/1537282	12/01/15	BH1 1.0	23/01/2015					Screen & ID	Amosite(Free Fibres)		
CL/1537283	12/01/15	WS1 0.5	23/01/2015					Screen & ID	Amosite,Chrysotile(Free Fibres)		
CL/1537284	14/01/15	WS1 1.0	23/01/2015					Screen & ID	Amosite,Chrysotile(Lagging)		
CL/1537285	14/01/15	WS02 0.50	23/01/2015					Screen Only	NAIIS		
CL/1537286	14/01/15	WS02 1.00	23/01/2015					Screen Only	NAIIS		
CL/1537287	14/01/15	WS02 2.00	23/01/2015					Screen Only	NAIIS		
CL/1537288	14/01/15	BH02 0.50	23/01/2015					Screen Only	NAIIS		
CL/1537289	14/01/15	BH02 2.00	23/01/2015					Screen Only	NAIIS		
CL/1537290	15/01/15	BH03 0.30	23/01/2015					Screen Only	NAIIS		
CL/1537291	15/01/15	BH03 0.50	23/01/2015					Screen Only	NAIIS		
CL/1537292	15/01/15	BH03 1.00	23/01/2015					Screen Only	NAIIS		
Keys		NAACR = Not Analysed at Clients Request			NAIIS = No Asbestos Identified in Sample (Screens Only)			Name:	Craig Wilton	Authorised Signatory:	
		NADIS = No Asbestos Detected in Sample (ID & Quant Only)			Position:	Lab Analyst					
The sample analysis for the above results was carried out using the procedures detailed in ESG Asbestos Limited in house method (SCI-ASB-020) based on HSE document MDHS 90 - Asbestos Contaminated Land - Draft 5 - November 1997 (withdrawn). Fibre identification was carried out using ESG Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of fine fraction for asbestos content only includes fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at ESG Asbestos Laboratory, Ashbourne House, Bretby Business Park, Ashby Road, Burton-upon-Trent, Staffordshire. DE15 0XD, UKAS Laboratory Number 1089.											

S150723

Consignment No S45924
Date Logged 20-Jan-2015

Report Due 26-Jan-2015

Report Due To Govt. 2016							
VOC:HSA	VOC HSA-GCMS	✓					
T SBRE1	Total Sulphur.						
TPHUSI	TPH by GC/FID (AR/SI)	✓					
TPHFIDUS	TPH by GC/FID (AR)						
Sub002a	Asbestos Screen	✓					
SFAPI	Phenol Index.(AR)	✓					
PHSOIL	pH units (AR)	✓					
PAHSCLV	PAH (screening)						
PAHMSIS	PAH (16) by GCMS	✓					
ICPWSS	SO4-- (H2O sol) mg/l	✓					
ICPSOIL	Iron	✓					
	Beryllium.	✓					
	Barium.	✓					
	Zinc (MS)	✓					
	Vanadium (MS)						
	Selenium (MS)	✓					
	Nickel (MS)	✓					
	Mercury (MS)	✓					
	Lead (MS)	✓					
ICPMSS	Copper (MS)	✓					
	Chromium (MS)	✓					
	Cadmium (MS)	✓					
	Arsenic (MS)	✓					
ICPCOR	Boron (H2O Soluble)	✓					
GROHSA	GRO (AA) by HSA GC-FID	✓					
ChartServ	REPORT A						
MethodID	Sampled						
Description							
	ID Number						
CL/1537280	BH1 0.3	12/01/15					
CL/1537281	BH1 0.5	12/01/15	E				
CL/1537282	BH1 1.0	12/01/15					
CL/1537283	WS1 0.5	12/01/15					
CL/1537284	WS1 1.0	14/01/15					
CL/1537285	WS02 0.50	14/01/15					
CL/1537286	WS02 1.00	14/01/15					
CL/1537287	WS02 2.00	14/01/15					
CL/1537288	BH02 0.50	14/01/15					
CL/1537289	BH02 2.00	14/01/15					
CL/1537290	BH03 0.30	15/01/15					
CL/1537291	BH03 0.50	15/01/15					
CL/1537292	BH03 1.00	15/01/15					

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

	Analysis Required
	Analysis dependant upon trigger result - Note: due date may be affected if triggered
	No analysis scheduled

Analysis Subcontracted. Note: due date may vary

Where individual results are flagged see report notes for status.

Customer

Site

Report No

ESG Wokingham

The Old Vinyl Factory

S150723

Consignment No S45924

Date Logged 20-Jan-2015

Report Due 26-Jan-2015

ID Number	Description	MethodID	VOC HSA-GCMS
		Sampled	
CL/1537280	BH1 0.3	12/01/15	
CL/1537281	BH1 0.5	12/01/15	
CL/1537282	BH1 1.0	12/01/15	
CL/1537283	WS1 0.5	12/01/15	
CL/1537284	WS1 1.0	14/01/15	
CL/1537285	WS02 0.50	14/01/15	
CL/1537286	WS02 1.00	14/01/15	
CL/1537287	WS02 2.00	14/01/15	
CL/1537288	BH02 0.50	14/01/15	
CL/1537289	BH02 2.00	14/01/15	
CL/1537290	BH03 0.30	15/01/15	
CL/1537291	BH03 0.50	15/01/15	
CL/1537292	BH03 1.00	15/01/15	

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A

The sample was received in an inappropriate container for this analysis

B

The sample was received without the correct preservation for this analysis

C

Headspace present in the sample container

D

The sampling date was not supplied so holding time may be compromised - applicable to all analysis

E

Sample processing did not commence within the appropriate holding time

F

Sample processing did not commence within the appropriate handling time

Requested Analysis Key

Analysis Required

Analysis dependant upon trigger result - Note: due date may be affected if triggered

No analysis scheduled

Analysis Subcontracted - Note: due date may vary

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
TPHFIDUS	CL1537282-83, 288-289	The Primary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from bandings c8-c10 and c16-c21. These circumstances should be taken into consideration when utilising the data.

Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPMS
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PAHSCUV	Oven Dried @ < 35°C	Determination of total hexane extractable Polycyclic Aromatic Hydrocarbons (PAH) by UltraViolet(UV) spectrophotometry
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	TPHFIDUS	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection.
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	TSBRE1	Oven Dried @ < 35°C	Determination of Total Carbon and/or Total Sulphur in solid samples by high temperature combustion/infrared detection
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,

- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
All results on MCERTS reports are reported on a 105°C dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,

- Results are expressed as mg/kg
- SG is expressed as g/cm³@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile

TR Denotes Tremolite

CR Denotes Crocidolite

AC Denotes Actinolite

AM Denotes Amosite

AN Denotes Anthophyllite

NAIIS No Asbestos Identified in Sample

NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.

\$\$ Unable to analyse due to the nature of the sample

¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols.

This may have resulted in deterioration of the sample(s) during transit to the laboratory.

Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling

¥ Results for guidance only due to possible interference

& Blank corrected result

I.S Insufficient sample to complete requested analysis

I.S(g) Insufficient sample to re-analyse, results for guidance only

Intf Unable to analyse due to interferences

N.D Not determined

N.Det Not detected

N.F No Flow

NS Information Not Supplied

Req Analysis requested, see attached sheets for results

▮ Raised detection limit due to nature of the sample

* All accreditation has been removed by the laboratory for this result

‡ MCERTS accreditation has been removed for this result

§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : ESG Wokingham
Site : The Old Vinyl Factory
Report Number : S15_0723

Note: major constituent in upper case

[illegible]

TEST REPORT



Report No. EXR/193783 (Ver. 1)

ESG Wokingham
Glossop House
Hogwood Lane
Wokingham
Berkshire
RG40 4QW

Site: UTC Global

The 2 samples described in this report were registered for analysis by ESG on 11-Feb-2015. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 02-Mar-2015

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of PAH (MS-SIM) (10) Results (Pages 4 to 5)
Table of GRO Results (Page 6)
Table of TPH (Si) banding (UK-CWG) (Page 7)
GC-FID Chromatograms (Pages 8 to 11)
Table of VOC (HSA) Results (Pages 12 to 13)
^Asbestos Results (Page 14)
Analytical and Deviating Sample Overview (Pages 15 to 16)
Table of Method Descriptions (Page 17)
Table of Report Notes (Page 18)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
ESG :
Declan Burns


Managing Director
Multi-Sector Services

Date of Issue: 02-Mar-2015

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.

ESG accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

Units : Method Codes : Method Reporting Limits : UKAS Accredited :			pH units		µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
			WSLM3	Sub002	VOCHSAW	ICPWATVAR	SCALCD	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	PAHMSW	ICPMSW	ICPWATVAR	ICPMSW	ICPWATVAR	ICPMSW	ICPWATVAR	ICPMSW
					1	3	1	0.01	0.001	0.001	0.0001		0.001	0.01	0.002	0.01	0.001	0.01	
			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number	Client Sample Description	Sample Date	pH units w	Asbestos ID	VOC HSA-GCMS o	Total Sulphur as SO4 (Dissolved) a	Total Sulphur as S (Dissolved) a	Barium as Ba (Dissolved) a	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	PAH GC-MS (16) o	Copper as Cu (Dissolved)	Lead as Pb (Dissolved) a	Zinc as Zn (Dissolved)	Iron as Fe (Dissolved) a	Arsenic as As (Dissolved)	Boron as B (Dissolved) a	
1567863	BH01 EW 100215	10-Feb-15	6.6 §	NADIS	Req §	115 §	38.3 §	0.08 §	0.014 §	<0.001 §	0.0004 §	Req §	0.004 §	<0.01 §	0.023 §	0.14 §	<0.001 §	0.16 §	
1567864	BH02 EW 100215	10-Feb-15	7.0 §	NADIS	Req §	140 §	46.7 §	0.09 §	0.016 §	<0.001 §	0.0003 §	Req §	0.004 §	<0.01 §	0.015 §	0.11 §	<0.001 §	0.16 §	
										</									

[illegible]

Polycyclic Aromatic Hydrocarbons

GC/MS (SIM)

Customer and Site Details: ESG Wokingham: UTC Global
Sample Details: BH01 EW 100215 **Job Number:** W19_3783
LIMS ID Number: EX1567863 **Date Booked in:** 11-Feb-15
QC Batch Number: 150111 **Date Extracted:** 20-Feb-15
Quantitation File: Initial Calibration **Date Analysed:** 22-Feb-15
Directory: 015PAH.MS10\ **Matrix:** Water
Dilution: 1.1 **Ext Method:** Bottle

UKAS accredited?: No

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.022	-
Acenaphthylene	208-96-8	-	< 0.011	-
Acenaphthene	83-32-9	-	< 0.011	-
Fluorene	86-73-7	-	< 0.011	-
Phenanthrene	85-01-8	-	< 0.011	-
Anthracene	120-12-7	-	< 0.011	-
Fluoranthene	206-44-0	6.99	0.014	70
Pyrene	129-00-0	7.27	0.020	98
Benzo[a]anthracene	56-55-3	-	< 0.011	-
Chrysene	218-01-9	-	< 0.011	-
Benzo[b]fluoranthene	205-99-2	-	< 0.011	-
Benzo[k]fluoranthene	207-08-9	-	< 0.011	-
Benzo[a]pyrene	50-32-8	-	< 0.011	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.011	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.011	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.011	-
Total (USEPA16) PAHs	-	-	< 0.199	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	91
Acenaphthene-d10	89
Phenanthrene-d10	89
Chrysene-d12	88
Perylene-d12	94

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	96
Terphenyl-d14	110

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons

GC/MS (SIM)

Customer and Site Details: ESG Wokingham: UTC Global
Sample Details: BH02 EW 100215 **Job Number:** W19_3783
LIMS ID Number: EX1567864 **Date Booked in:** 11-Feb-15
QC Batch Number: 150111 **Date Extracted:** 20-Feb-15
Quantitation File: Initial Calibration **Date Analysed:** 22-Feb-15
Directory: 015PAH.MS10\ **Matrix:** Water
Dilution: 1.0 **Ext Method:** Bottle

UKAS accredited?: No

Target Compounds	CAS #	R.T. (min)	Concentration ug/l	% Fit
Naphthalene	91-20-3	-	< 0.020	-
Acenaphthylene	208-96-8	-	< 0.010	-
Acenaphthene	83-32-9	-	< 0.010	-
Fluorene	86-73-7	-	< 0.010	-
Phenanthrene	85-01-8	5.65	0.038	92
Anthracene	120-12-7	5.71	0.018	85
Fluoranthene	206-44-0	6.99	0.127	76
Pyrene	129-00-0	7.27	0.126	95
Benzo[a]anthracene	56-55-3	8.95	0.086	96
Chrysene	218-01-9	9.00	0.078	98
Benzo[b]fluoranthene	205-99-2	10.48	0.110	76
Benzo[k]fluoranthene	207-08-9	10.51	0.036	77
Benzo[a]pyrene	50-32-8	10.91	0.087	97
Indeno[1,2,3-cd]pyrene	193-39-5	12.28	0.061	90
Dibenzo[a,h]anthracene	53-70-3	12.31	0.012	93
Benzo[g,h,i]perylene	191-24-2	12.58	0.054	85
Total (USEPA16) PAHs	-	-	< 0.883	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	86
Acenaphthene-d10	85
Phenanthrene-d10	87
Chrysene-d12	92
Perylene-d12	101

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	96
Terphenyl-d14	102

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Gasoline Range Organics (BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: ESG Wokingham : UTC Global
Job Number: W19_3783
Directory: D:\TES\DATA\Y2015\0223HSA_GC12\150223 2015-02-23 14-13-02\053F4601.D
Method: Headspace GCFID

Matrix: Water
Date Booked in: 11-Feb-15
Date extracted: 23-Feb-15
Date Analysed: 24-Feb-15, 04:54

* Sample data with an asterisk are not UKAS accredited.

[illegible]

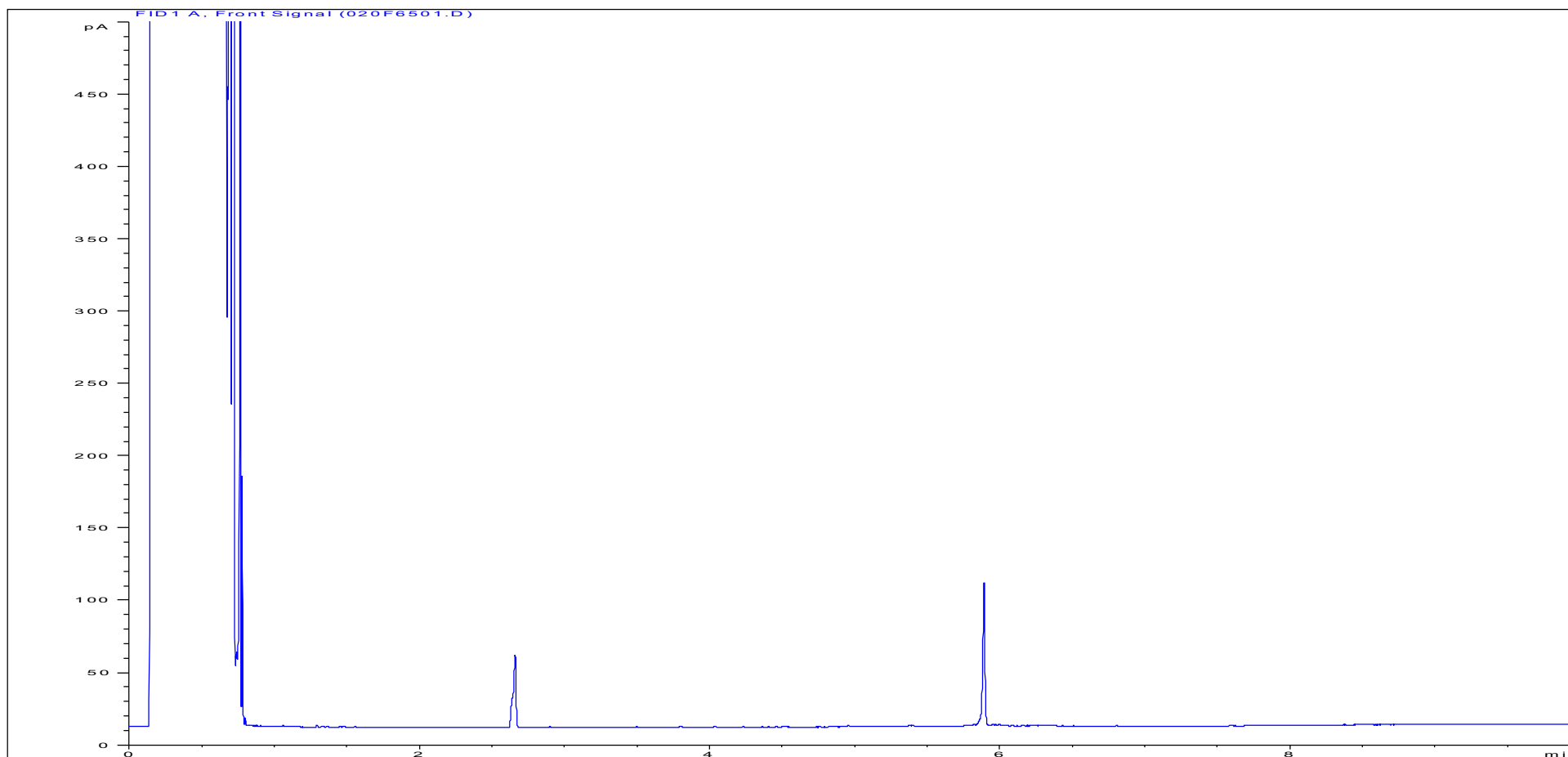
ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details:	ESG Wokingham : UTC Global		
Job Number:	W19_3783	Separation:	Silica gel
QC Batch Number:	10111	Eluents:	Hexane, DCM
Directory:	D:\TES\DATA\Y2015\022315TPH_GC17\022315 2015-02-23 09-22-48\071F8501.D		
Method:	Bottle		

Matrix: Water
Date Booked in: 11-Feb-15
Date Extracted: 20-Feb-15
Date Analysed: 24-Feb-15, 11:14:45

[illegible]

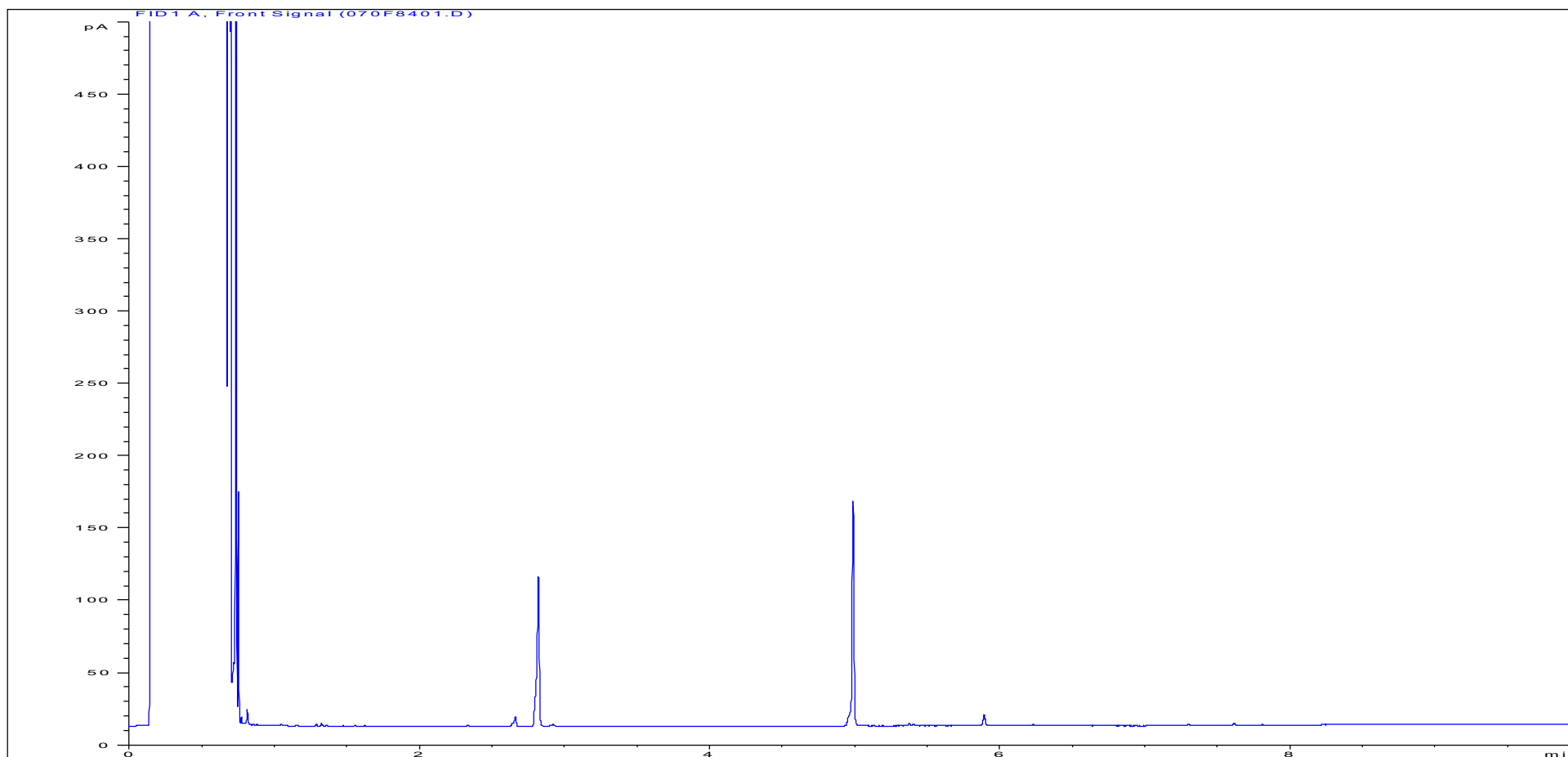
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1567863ALI	Job Number:	W19_3783
Multiplier:	0.0212	Client:	ESG Wokingham
Dilution:	1	Site:	UTC Global
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	BH01 EW 100215
Acquisition Date/Time:	24-Feb-15, 05:06:14		
Datafile:	D:\TES\DATA\Y2015\022315TPH_GC17\022315 2015-02-23 09-22-48\020F6501.D		

Where individual results are flagged see report notes for status.

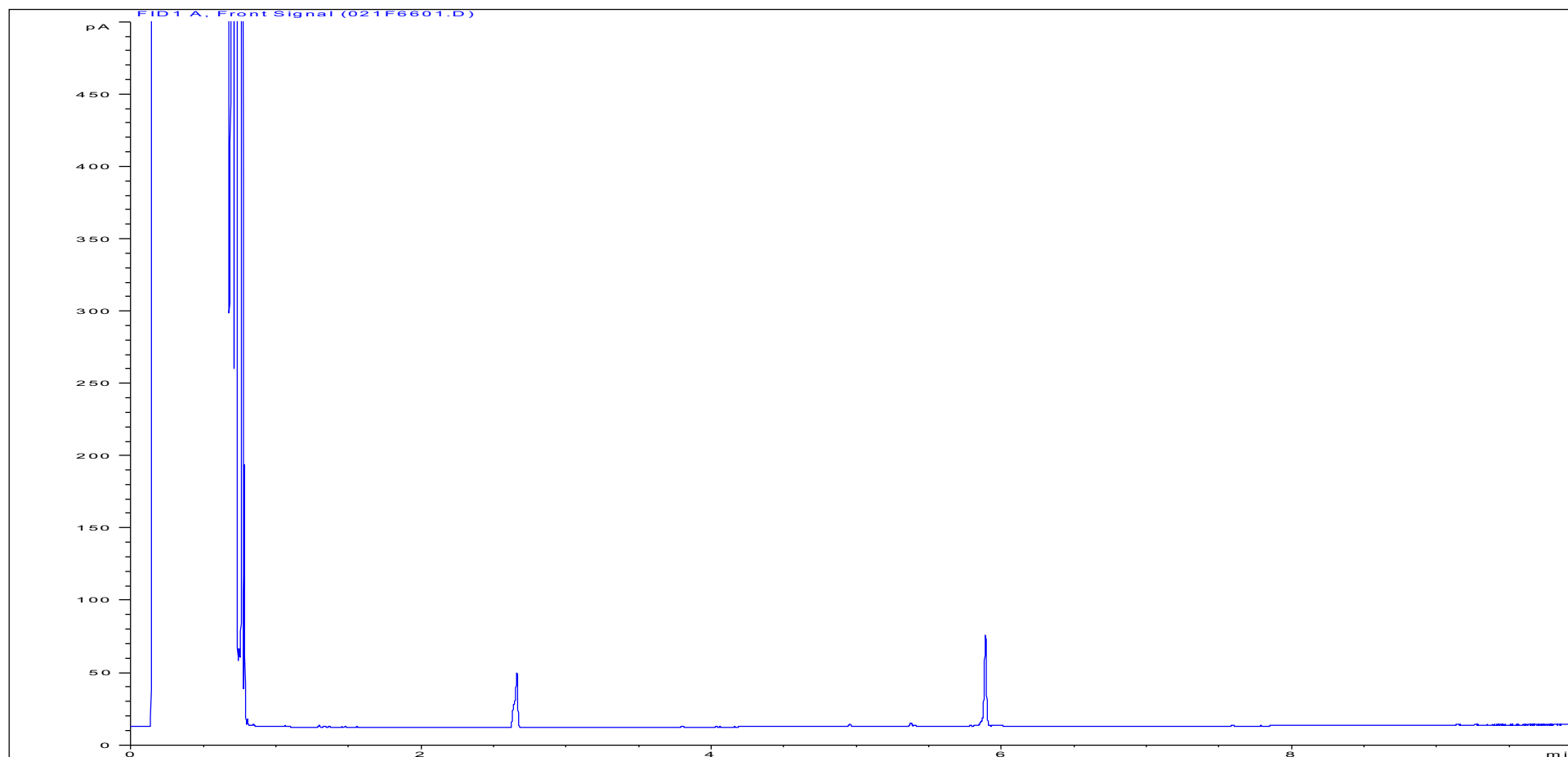
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1567863ARO	Job Number:	W19_3783
Multiplier:	0.0175	Client:	ESG Wokingham
Dilution:	1	Site:	UTC Global
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	BH01 EW 100215
Acquisition Date/Time:	24-Feb-15, 10:56:03		
Datafile:	D:\TES\DATA\Y2015\022315TPH_GC17\022315 2015-02-23 09-22-48\070F8401.D		

Where individual results are flagged see report notes for status.

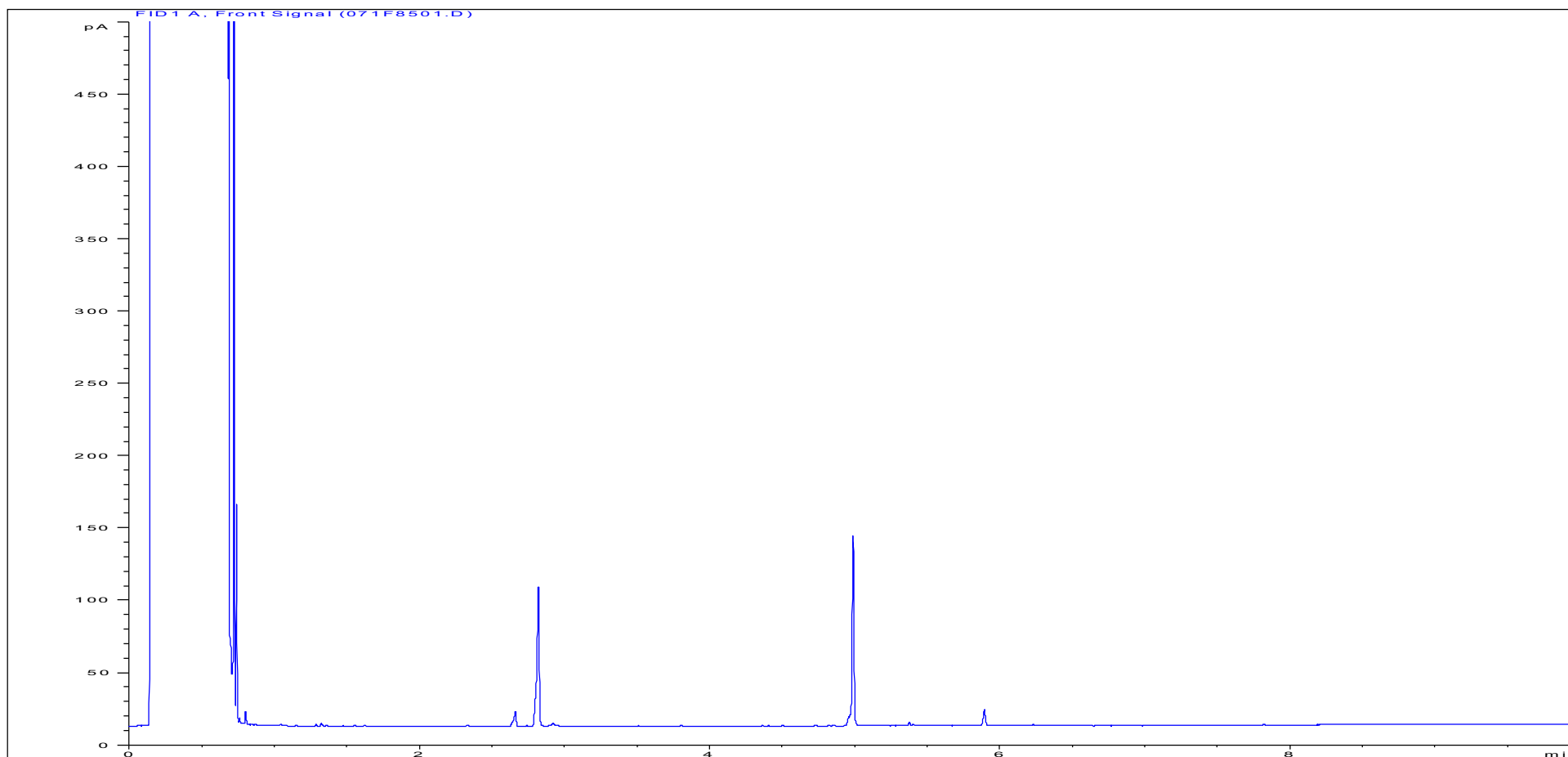
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1567864ALI	Job Number:	W19_3783
Multiplier:	0.0191	Client:	ESG Wokingham
Dilution:	1	Site:	UTC Global
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	BH02 EW 100215
Acquisition Date/Time:	24-Feb-15, 05:24:03		
Datafile:	D:\TES\DATA\Y2015\022315TPH_GC17\022315 2015-02-23 09-22-48\021F6601.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1567864ARO	Job Number:	W19_3783
Multiplier:	0.0159	Client:	ESG Wokingham
Dilution:	1	Site:	UTC Global
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	BH02 EW 100215
Acquisition Date/Time:	24-Feb-15, 11:14:45		
Datafile:	D:\TES\DATA\Y2015\022315TPH_GC17\022315 2015-02-23 09-22-48\071F8501.D		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: No

Customer and Site Details: ESG Wokingham: UTC Global
Sample Details: BH01 EW 100215
LIMS ID Number: EX1567863
Job Number: W19_3783

Directory/Quant file: 220VOC.MS11\ Initial Calibration
Date Booked in: 11-Feb-15
Date Analysed: 21-Feb-15
Operator: PR
Matrix: Water
Method: Headspace
Multiplier: 1
Position: 4

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.65	101	Dibromofluoromethane	113
1,4-Difluorobenzene	4.00	102	Toluene-d8	97
Chlorobenzene-d5	5.14	101	Bromofluorobenzene	94
1,4-Dichlorobenzene-d4	5.94	83		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

UKAS accredited?: No

Customer and Site Details: ESG Wokingham: UTC Global
Sample Details: BH02 EW 100215
LIMS ID Number: EX1567864
Job Number: W19_3783

Directory/Quant file: 220VOC.MS11\ Initial Calibration
Date Booked in: 11-Feb-15
Date Analysed: 21-Feb-15
Operator: PR
Matrix: Water
Method: Headspace
Multiplier: 1
Position: 5

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.65	101	Dibromofluoromethane	114
1,4-Difluorobenzene	4.01	104	Toluene-d8	97
Chlorobenzene-d5	5.14	104	Bromofluorobenzene	89
1,4-Dichlorobenzene-d4	5.94	87		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Where individual results are flagged see report notes for status.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W193783

Customer ESG Wokingham
Site UTC Global
Report No W193783

Consignment No W83822
Date Logged 11-Feb-2015

Report Due 02-Mar-2015

ID Number	Description	Matrix Type	Sampled	MethodID	K79A-TI0AR										PAH-MSW						
					PAH GC-MS (16)																
					Report B																
						Nickel as Ni MS (Dissolved)															
						Chromium as Cr MS (Dissolved)															
						Cadmium as Cd MS (Dissolved)															
						Copper as Cu MS (Dissolved)															
						Zinc as Zn MS (Dissolved)															
						Arsenic as As MS (Dissolved)															
						Mercury as Hg MS (Dissolved)															
						Selenium as Se MS (Dissolved)															
						Vanadium as V MS (Dissolved)															
Total Sulphur as SO4 (Diss) VAR																					
Barium as Ba (Dissolved) VAR																					
Lead as Pb (Dissolved) VAR																					
Iron as Fe (Dissolved) VAR																					
Boron as B (Dissolved) VAR																					
Beryllium as Be (Dissolved) VAR																					
PAH-MSW																					

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A The sample was received in an inappropriate container for this analysis

B The sample was received without the correct preservation for this analysis

C Headspace present in the sample container

D The sampling date was not supplied so holding time may be compromised - applicable to all analysis

E Sample processing did not commence within the appropriate holding time

F Sample processing did not commence within the appropriate handling time

Requested Analysis Key

Analysis Required

Analysis dependant upon trigger result - Note: due date may be affected if triggered

No analysis scheduled

^ Analysis Subcontracted - Note: due date may vary

Sample Analysis

ESG Environmental Chemistry Analytical and Deviating Sample Overview

W193783

Customer ESG Wokingham
Site UTC Global
Report No W193783

Consignment No W83822

Date Logged 11-Feb-2015

Report Due 02-Mar-2015

ID Number	Description	MethodID		PHENOL	SCAL CD	Sub002	TPH ID-SI	VOC HSAW	WSLM3
		Matrix Type	Sampled	Phenols by HPLC (Low Level)	Total Sulphur as S (Dis) VAR	Asbestos ID	TPH by GC(SI)	VOC HSA-GCMS	pH units
EX/1567863	BH01	Unclassified	10/02/15						
EX/1567864	BH02	Unclassified	10/02/15						

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time
Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - Note: due date may be affected if triggered
	No analysis scheduled
^	Analysis Subcontracted - Note: due date may vary

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace FID
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	PAHMSW	As Received	Determination of PolyAromatic Hydrocarbons in water by pentane extraction GCMS quantitation
Water	PHEHPLCVL	As Received	Determination of Phenols by HPLC
Water	SCALCD	As Received	Calculation of Sulphur as S from diirect determination of dissolved Sulphate in water samples using ICPOES
Water	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Water	TPHFID-Si	As Received	Determination of speciated pentane extractable hydrocarbons in water by GCFID
Water	VOCHSAW	As Received	Determination of Volatile Organics Compounds by Headspace GCMS
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,

- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
All results on MCERTS reports are reported on a 105°C dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,

- Results are expressed as mg/kg
- SG is expressed as g/cm³@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile

TR Denotes Tremolite

CR Denotes Crocidolite

AC Denotes Actinolite

AM Denotes Amosite

AN Denotes Anthophyllite

NAIIS No Asbestos Identified in Sample

NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.

\$\$ Unable to analyse due to the nature of the sample

¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols.

This may have resulted in deterioration of the sample(s) during transit to the laboratory.

Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling

¥ Results for guidance only due to possible interference

& Blank corrected result

I.S Insufficient sample to complete requested analysis

I.S(g) Insufficient sample to re-analyse, results for guidance only

Intf Unable to analyse due to interferences

N.D Not determined

N.Det Not detected

N.F No Flow

NS Information Not Supplied

Req Analysis requested, see attached sheets for results

▮ Raised detection limit due to nature of the sample

* All accreditation has been removed by the laboratory for this result

‡ MCERTS accreditation has been removed for this result

§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : ESG Wokingham

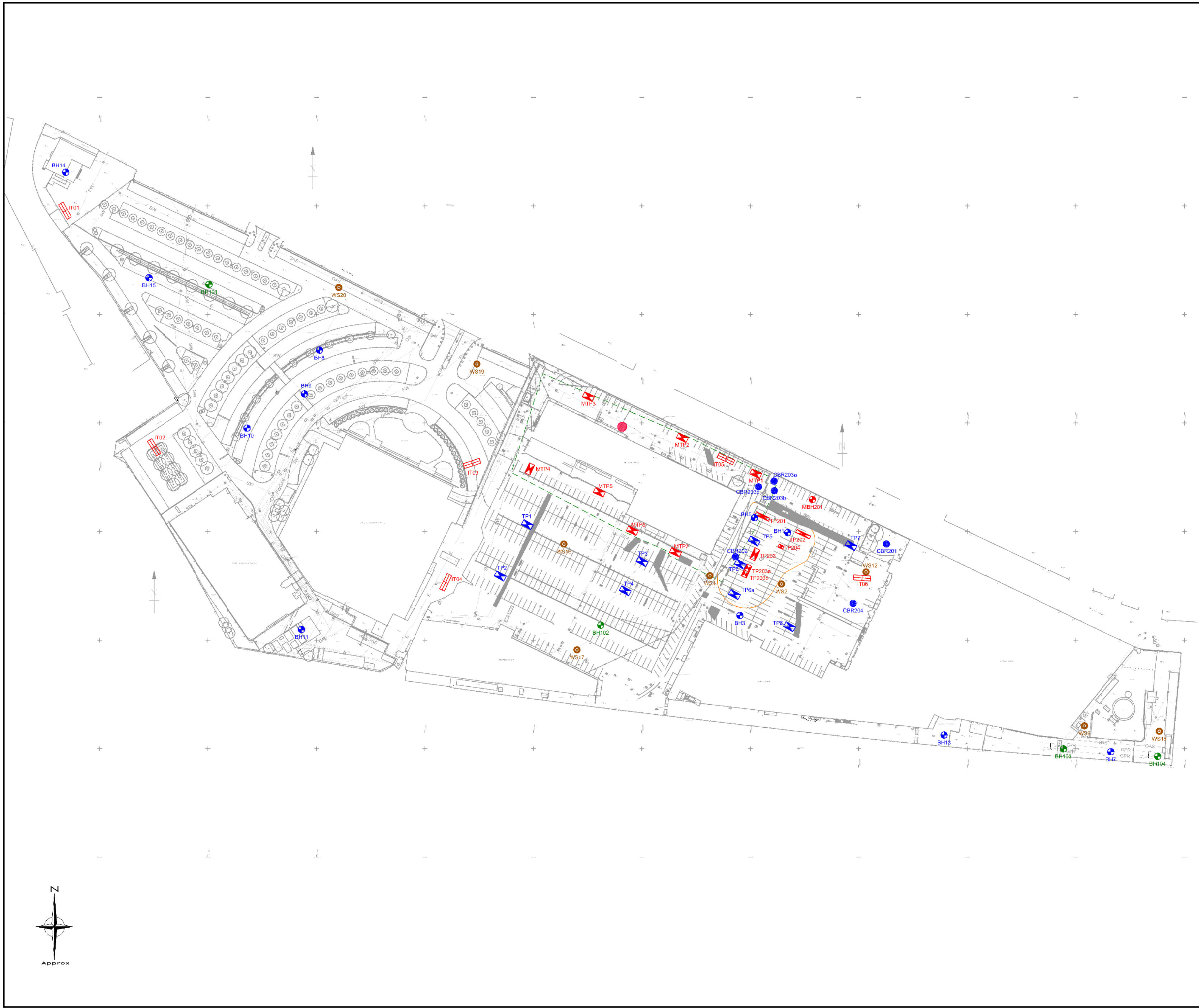
Site : UTC Global

Report Number : W19_3783

[illegible]



APPENDIX 2 ▪ Drawings



- MSHref Merebrook borehole with location reference
- MTPref Merebrook trial pit with location reference
- CBRref Merebrook CBR test location with reference
- ITref Merebrook trial pit (soakage testing)
- ref RPS trial pit
- ref RPS window sample
- ref RPS borehole 2010
- ref RPS borehole 2011
- Approximate area of obstruction
- Planning boundary
- Approximate location of chamber/duct impacted by hydrocarbon contamination

Location added to drawing	21/03/14		Rev B
	RH	ND	ND
IT01, IT02 and IT04 added	18/09/13		Rev A
	RM	ND	ND
First issue.	28/08/13		-
	RM	ND	ND
Revision Details	Dwn		App'd
	Chd		

Client

Cathedral Group

Project

The Old Vinyl Factory, Hayes

Dwg Title

Site Investigation Location Plan

Job No. MER00566	Dwg No. 304/001	Revision Rev B
Scale 1:1250	Date August 2013	Frame Dimensions mm (A2) 544 x 370
Drawn RM	Checked ND	Approved ND

London

Kent

Derby

Cardiff

AN idom GROUP COMPANY

East Mill, Bridgefoot, Belper, Derbyshire, England. DE56 2UA
tel +44(0)1773 829888 fax +44(0)1773 829393 email consulting@merebrook.co.uk



APPENDIX 3 ▪ Soilfix Report Including GPR Survey



Completion Report for

August 2013 Investigation and Survey Works at

Former EMI Site, south of Blyth Road, Hayes, West London, UB3



**Soilfix Limited
10, St Martins Ind. Park
Avonmouth
Bristol, BS11 0RS**

**Tel. 01179 820025
Fax. 01179 820026**

Completion Report

Former EMI Site
South of Blyth Road
Hayes
West London
UB3

On behalf of
Purplexed LLP

Distribution

Report Status:		Date of Issue: 2 nd September 2013	
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Author	Signed	Date
Paul Hazlehurst Remediation Engineer		02/09/2013
Checked	Signed	Date
Lee Parker Director		02/09/2013

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1 Introduction

Soilfix Limited was appointed by Purplexed LLP (Client) to undertake subsurface survey and investigation works at a site adjacent to The Old Vinyl Factory, south of Blyth Road, Hayes, West London, UB3.

A drawing showing the site boundaries for the purposes of these works is included in Appendix A (red line boundary).

Site works were undertaken between Monday 12th and Friday 16th August 2013.

Works were undertaken in accordance with Soilfix's 'Method Statement for Subsurface Surveys' dated 7th August 2013, which should be read in conjunction with this report.

General photographs of the works undertaken are included in Appendix F.

2 Investigation and Survey Works

2.1 Site Set up

A self-contained decontamination unit (DCU) was mobilised to site and set up. The DCU was for emergency use only (refer Soilfix Method Statement) and was not required during the works.

2.2 Access to Ducts

2.2.1 Removal of Surface Covers

Both cast iron and concrete covers were present across the site. A JCB backhoe excavator was mobilised to site with a breaker attachment to aid removal of access covers. Prior to breaking any ground available information on buried utilities was consulted and the area CAT scanned. Suitable warning tape, cones or fencing was placed around each access cover when opened.

2.2.2 Confined Space Working

The confined space entry and working procedures detailed in Soilfix's Method Statement were followed. Entry permits were completed and signed prior to entering each confined space. No elevated gas concentrations or gas monitor alarms were encountered during Soilfix's works, with readings in all the ducts entered similar to atmospheric levels.

2.2.3 Risk from Suspect Asbestos Containing Materials

Procedures for managing risks from potential ACMs were detailed in Soilfix's Method Statement and were followed during the works.

Airborne fibre monitoring in accordance with HSG248 was carried out by a specialist subcontractor during initial entries to the service ducts. All fibre counts were below the HSE Control Limit and within 'typical' levels, providing reassurance that excessive asbestos fibres were not being disturbed and released to air during Soilfix's works within the ducts.

Surfactant spray was applied to all materials suspected to contain asbestos prior to works in the vicinity. No emergencies with respect to asbestos occurred during Soilfix's works.

2.3 Survey and Investigation Works

2.3.1 Buried Utilities Surveying

Soilfix's appointed subcontractor Solum (SW) Ltd. undertook a buried utilities survey of drainage, CCTV, gas, electric and other utilities as far as practically possible using standard cable tracing and ground penetrating radar techniques.

2.3.2 Duct Surveying

Soilfix surveyed the network of ducts underlying the site recording the following information where safe and practical;

- Depth, height, width and construction;
- Layout, diameter, invert and extent of pipes and cables; and
- Presence of any suspected ACMs.

A drawing showing the information recorded during the survey works is included in Appendix B (an electronic CAD version of this drawing is supplied separately to this report).

Inspection logs were completed at each surface entry point to the ducts (referenced as SD1-31, 'SD' referring to service duct). These inspection logs are included in Appendix C. The location of each 'SD' access point is shown on the survey drawing in Appendix B. Photographs from within each duct access point are included separately to this report (Appendix G).

Access through a number of sections of the ducts was not possible due to safety and practicality issues, as such the survey drawing (Appendix B) and duct inspection logs (Appendix C) are a record only of the features identified during Soilfix's works. It is likely that

additional ducts and buried services are present across the site which were not found during Soilfix's works.

In addition to man entry, a remote-controlled 'rover' buggy with an attached video camera was deployed in selected service ducts (where the floor conditions were suitable). A photograph of the rover used is included in Appendix F. Videos from the rover surveys are included as Appendix J which is supplied separately to this report.

2.3.3 Sampling of Suspected Asbestos

Sampling of suspected ACMs was undertaken by a P402-qualified asbestos surveyor from specialist subcontractor REC. Bulk samples were taken in accordance with HSG264 for later laboratory identification. The location of each bulk sample (and laboratory ID result whether positive or negative) is included on the duct inspection logs in Appendix C. The REC laboratory report which contains information on the nature of the sample and type of asbestos is included in Appendix E. Photographs of the location of each sample is included separately to this report (Appendix I).

The asbestos sampling was undertaken to take representative samples of suspect materials, and should not be assumed to show the full distribution of ACMs within the ducts. As an example if the same lagged pipe is continuous in a duct between two access points, a sample at only one access point (SD) is likely to have been taken. Sampling of gaskets between pipe sections was limited due to the practical issue of sampling; all gaskets within the ducts should be assumed to contain asbestos until proven otherwise.

The results of the asbestos sampling show that ACMs are present in most of the ducts underlying the site. The ACMs inspected were generally all in poor condition due to damage and/or degradation.

2.3.4 Trial Pits

Information on the external construction of the ducts was gained by excavating trial pits with a 13T 360° tracked excavator. Prior to breaking any ground available information on buried utilities was consulted and the area CAT scanned. Trial pit logs are included in Appendix D. Trial pit photographs are included separately to this report (Appendix H).

2.4 Reinstatement

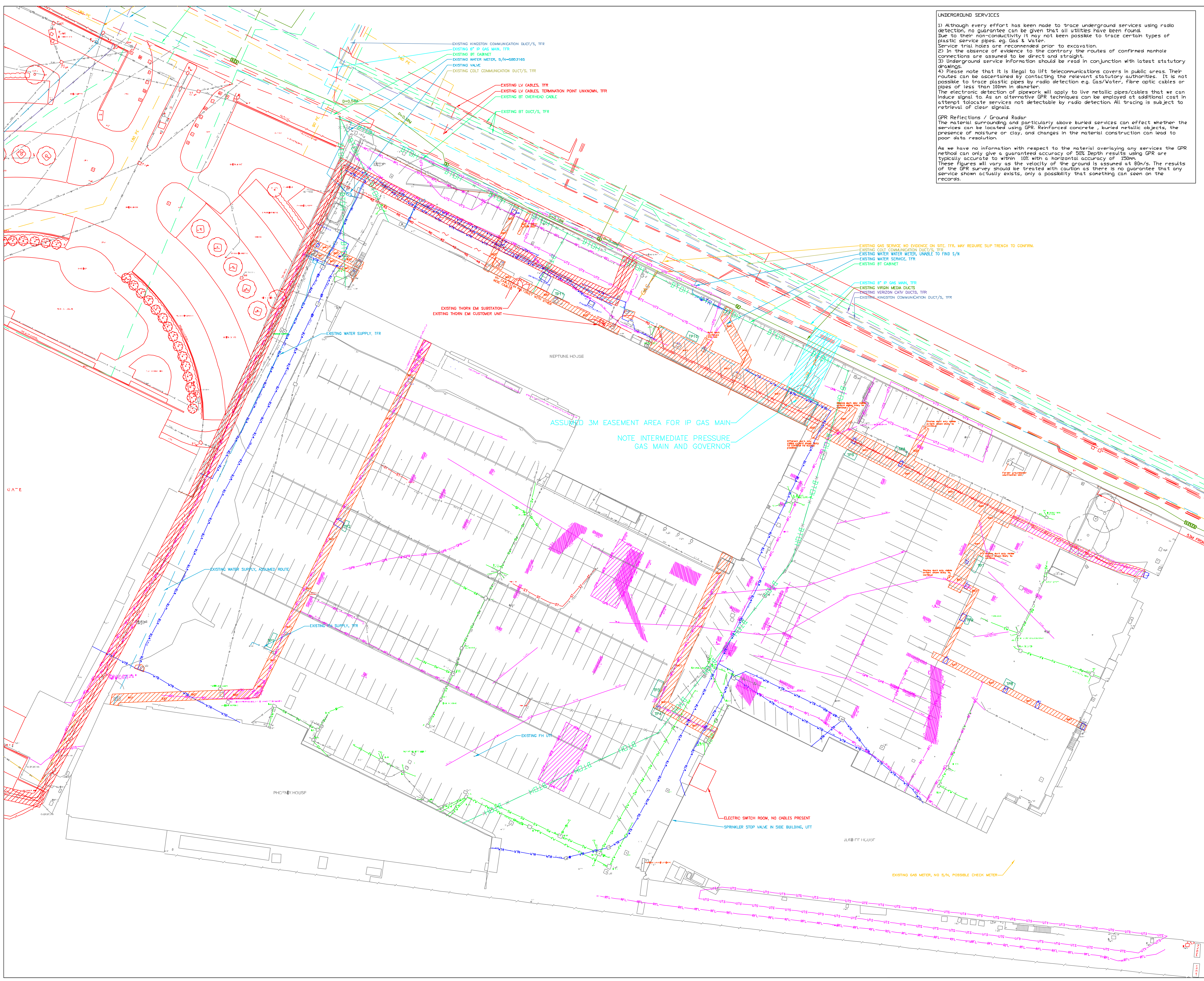
On completion of a trial pit the excavated spoil was used to backfill the excavation. Several access covers could not be replaced either due to damage during removal or by the cover falling into the hole. In these locations the hole was covered at ground level with plywood boards and clear warning messages and cones placed around the hole.

Appendix A

Site Boundary on Aerial Photograph



Appendix B
August 2013 Buried Services Survey Drawing
(CAD dwg supplied separately)



UNDERGROUND SERVICES

1) Although every effort has been made to trace underground services using radio detection, no guarantee can be given that all utilities have been found. Due to their non-conductivity it may not been possible to trace certain types of plastic service pipes, eg. Gas & Water.

Service trial holes are recommended prior to excavation.

2) In the absence of evidence to the contrary the routes of confirmed manhole connections are assumed to be direct and straight.

3) Underground service information should be read in conjunction with latest statutory drawings.

4) Please note that it is illegal to lift telecommunications covers in public areas. Their routes can be ascertained by contacting the relevant statutory authorities. It is not possible to trace plastic pipes by radio detection eg. Gas/Water, fibre optic cables or pipes of less than 100mm in diameter.

The electronic detection of pipework will apply to live metallic pipes/cables that we can induce signal to. As an alternative GPR techniques can be employed at additional cost in attempt to locate services not detectable by radio detection. All tracing is subject to retrieval of clear signals.

GPR Reflections / Ground Radar

The material surrounding and particularly above buried services can effect whether the services can be located using GPR. Reinforced concrete, buried metallic objects, the presence of moisture or clay, and changes in the material construction can lead to poor data resolution.

As we have no information with respect to the material overlaying any services the GPR method can only give a guaranteed accuracy of 50%. Depth results using GPR are typically accurate to within 10% with a horizontal accuracy of 150mm. These figures will vary as the velocity of the ground is assumed at 50m/s. The results of the GPR survey should be treated with caution as there is no guarantee that any service shown actually exists, only a possibility that something can be seen on the records.

1. A number of technologies were used to obtain the information shown on this drawing. Varying ground conditions can affect the performance of these systems, therefore 100% detection is not guaranteed. Always Exercise Caution When Excavating.
2. Where electric & metallic services are illustrated on this drawing as a single utility line, these may represent multiple pipes/cables.
3. Possible radar targets show the position of suspected underground linear features, these features have produced an inconsistent response to the radar.
4. It is not always possible to differentiate between construction features and pipes, it is therefore possible that some of the features shown are not pipes or cables.
5. A number of ducts were found to be connected to subfloor voids/ basements/chambers inside buildings. Subfloor voids within buildings as well as utilities within buildings are not shown on this drawing.
6. Pipe diameters and levels are measured where possible or best estimates due to access restrictions and these should be verified before any works commence.
7. Depths shown have been measured using radio frequency locators and are to the center of pipes/cables.
8. All depths are shown in millimeters.
9. Layout of ducts is based on survey works. Access was constrained in several areas by safety issues. Likely that additional ducts are present which are not shown on this drawing.
10. Scale indicated is only applicable when plotted at sheet size.

ABBREVIATIONS

AR	Assumed Route	NB	Notice Board
B	Ballord	PB	Post Box
BB	Balishia Beacon	RWP	Rain Water Pipe
BB	Litter Bin	RE	Rodding Eye
CL	Cover Level	RFL	Radio Frequency Locate
D	Depth	RS	Rod Stopped
DK	Drop Kerb	SA	Soakaway
DP	Down Pipe	SP	Sign Post
EP	Electricity Pole	TL	Traffic Light
EOT	End Of Trace	TP	Telegraph Pole
ER	Earth Rod	UTL	Unable To Lift
FH	Fire Hydrant	UTR	Unable To Rod
GV	Gas Valve	UTS	Unable To Survey
G	Gully	UTTF	Unable To Trace Further
IL	Invert Level	WV	Water Valve
K	Kerb	⊙	Sounded
LP	Lamp Post		

KEY

FW	FW	FW	FW	GENERAL POWER
LN	LN	LN	LN	HIGH VOLTAGE
LV	LV	LV	LV	LOW VOLTAGE
SL	SL	SL	SL	STREET LIGHT
MD	MD	MD	MD	MULTI DUCT
MPWR	MPWR	MPWR	MPWR	MULTI POWER
ST	ST	ST	ST	STREETLIGHT
CCIV	CCIV	CCIV	CCIV	CLOSED CIRCUIT TV
CATV	CATV	CATV	CATV	CABLE TELEVISION
BT	BT	BT	BT	BRITISH TELECOMS
COMMS	COMMS	COMMS	COMMS	DATA COMMUNICATIONS
OW	OW	OW	OW	STORM WATER
W	W	W	W	FOUL WATER
DR	DR	DR	DR	GENERAL DRAINAGE
PUMP	PUMP	PUMP	PUMP	PUMPING MAIN
HP	HP	HP	HP	HEATING PIPES
GA	GA	GA	GA	GAS
ALAN	ALAN	ALAN	ALAN	ASSUMED GAS
WH	WH	WH	WH	WATER
AVTY	AVTY	AVTY	AVTY	ASSUMED WATER
EL	EL	EL	EL	
TH	TH	TH	TH	I TAKEN FROM RECORDS
RF	RF	RF	RF	ROAD FRICTION/CFY / C OFAT
GR	GR	GR	GR	RADAR LOCATE
UK	UK	UK	UK	UNKNOWN
UTS	UTS	UTS	UTS	UNABLE TO SURVEY
				DUCT

Appendix C

Service Duct (SD) Inspection Logs

Duct Inspection Log

SD1

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 13/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 1.8 mbgl

Height of duct (floor to ceiling): 1.05 m

Width of duct: various see plan (chamber not duct)

Construction materials: Brick walls

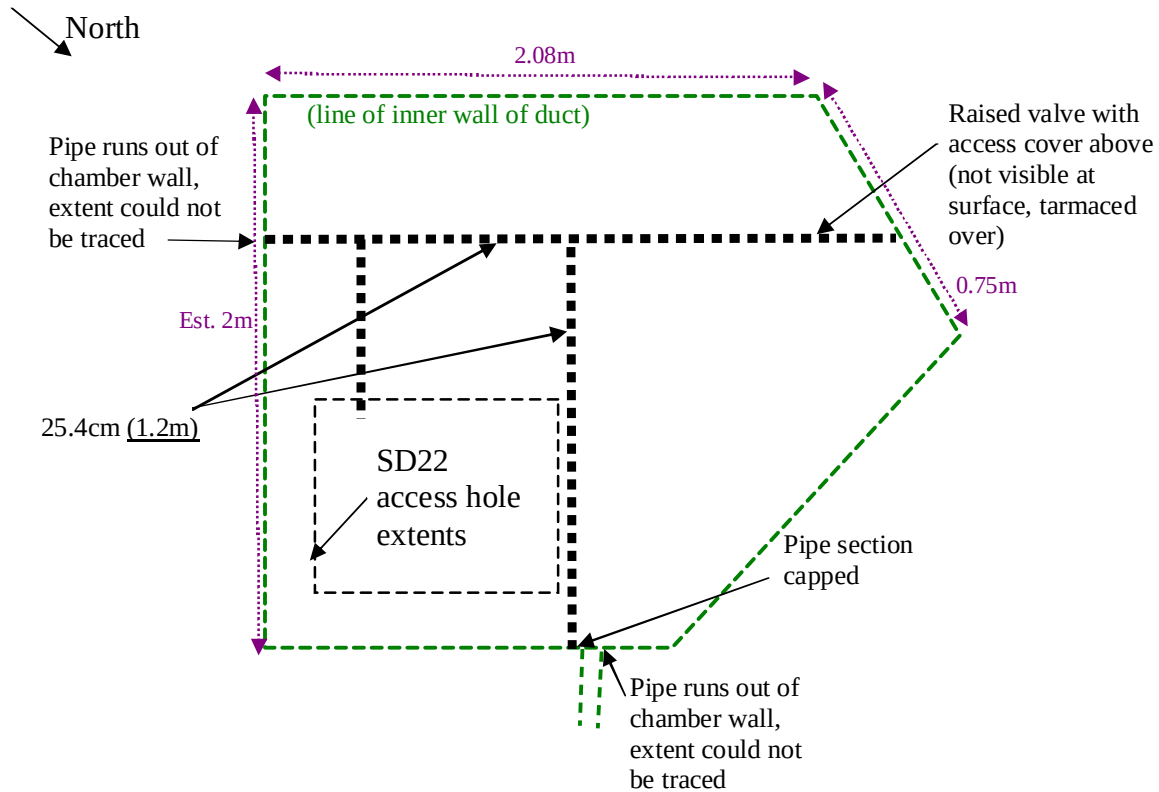
Amount of debris on floor: Occ. Brick and concrete

Suspected asbestos containing materials: None recorded

Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD2

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 13/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 1.48 mbgl

Height of duct (floor to ceiling): 1.37 m

Width of duct: 1.22 m

Construction materials: Brick walls

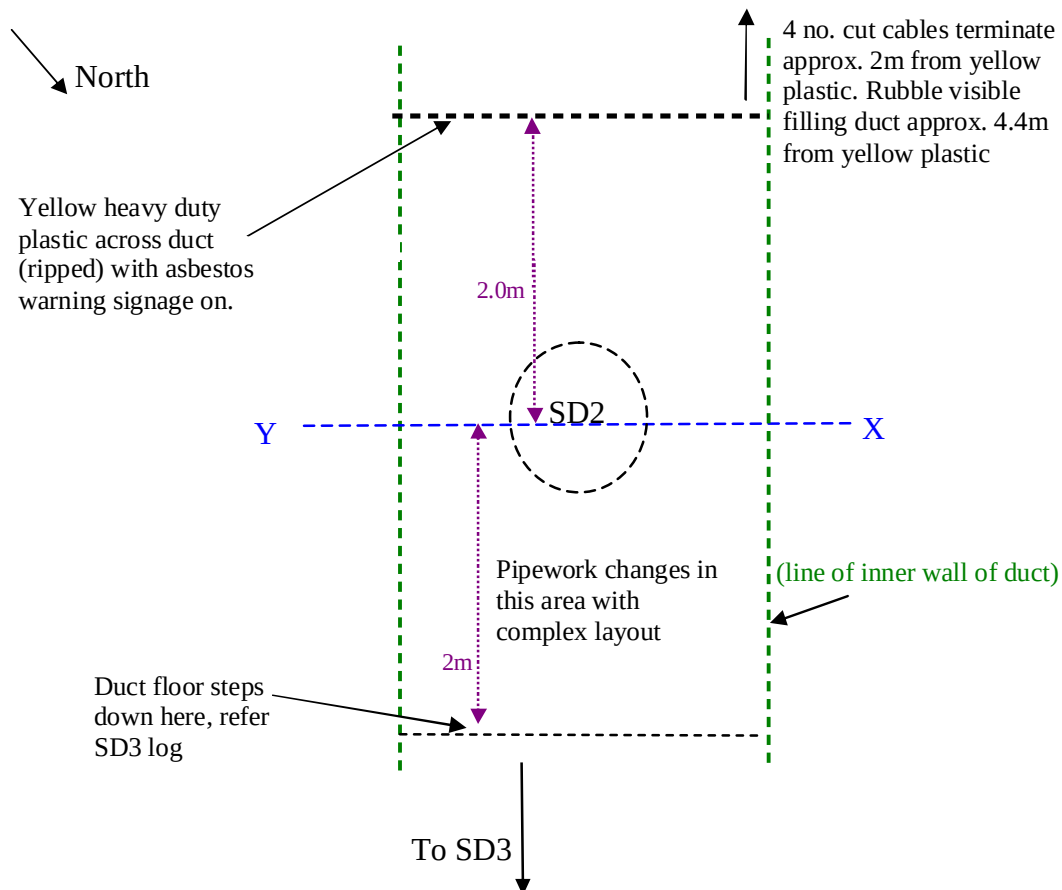
Amount of debris on floor: Occasional lagging on floor

Suspected asbestos containing materials: Pipe lagging

Other notes from inspection:

***Notes:** Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.*

Plan (NTS)



Duct Inspection Log

SD2

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 12/08/2013

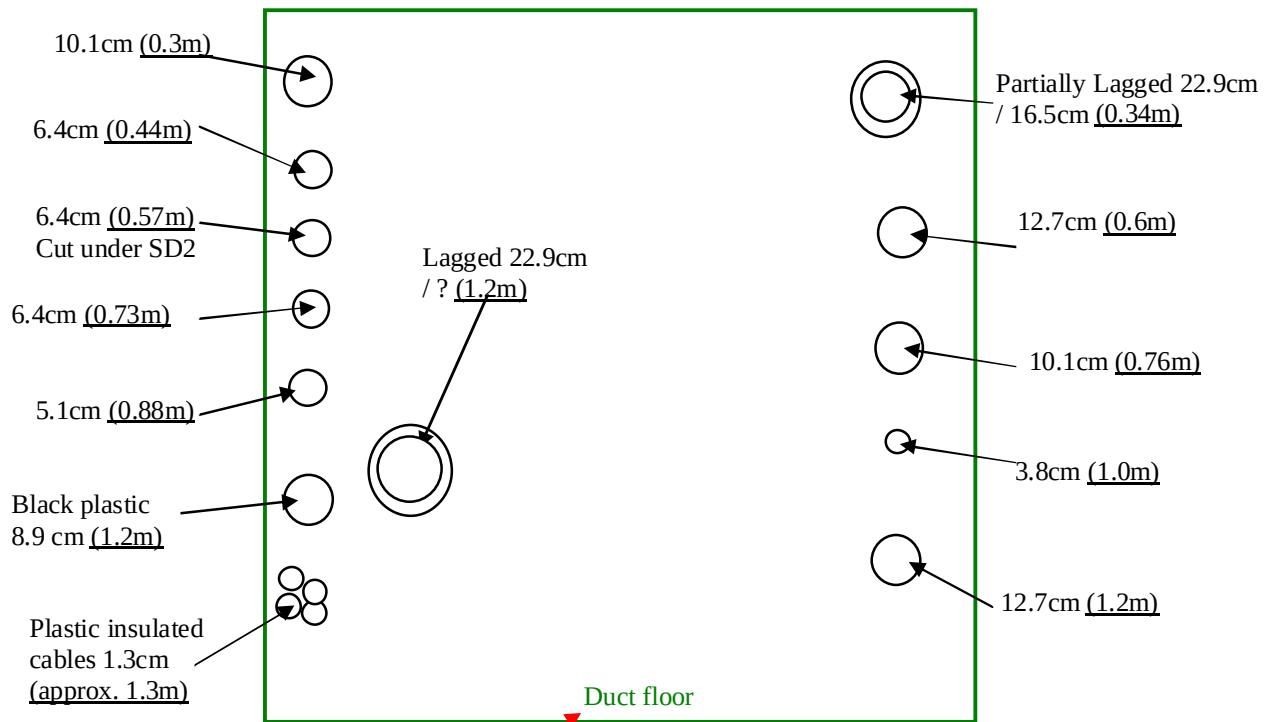
Logged by: PH

Weather: Cloudy

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Section (NTS)

X ————— Y



BULK S9
(NOT ASBESTOS)

Duct Inspection Log

SD3

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 13/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 2.4 mbgl

Height of duct (floor to ceiling): 2.07 m

Width of duct: 1.53 m

Construction materials: Brick walls

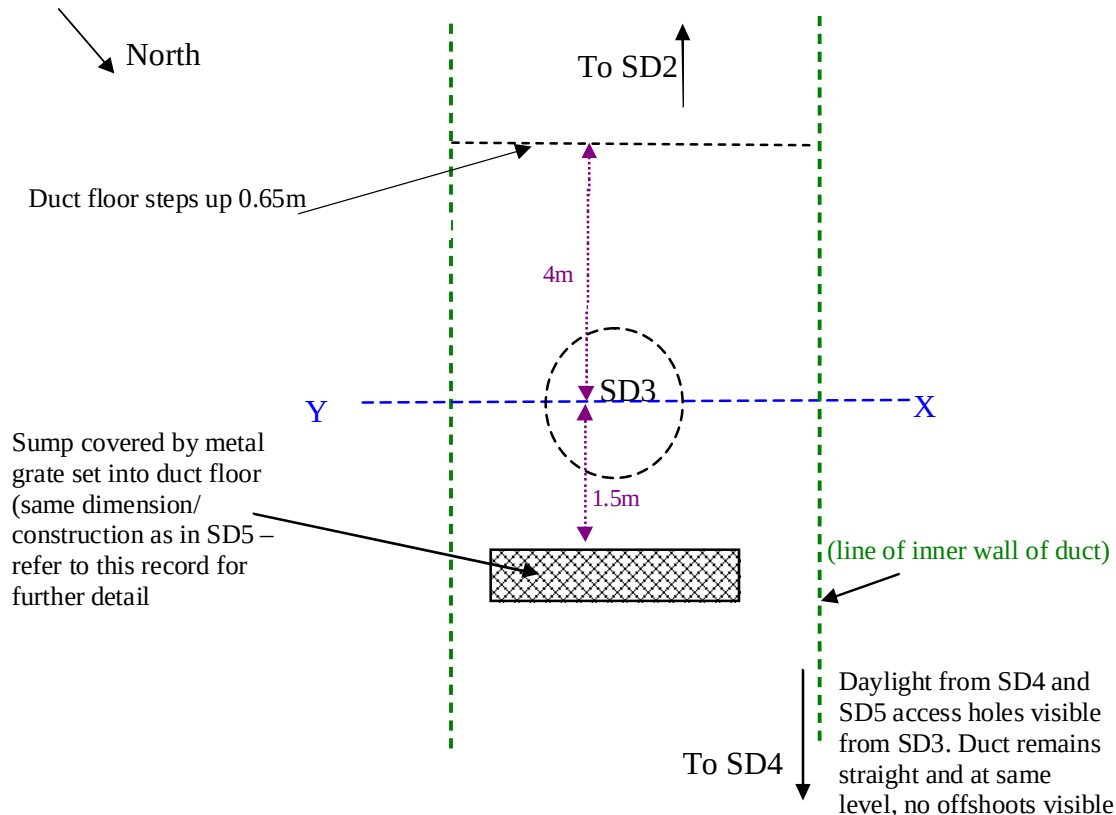
Amount of debris on floor: Occasional brick and concrete, some lagging. One large slab.

Suspected asbestos containing materials: Pipe lagging

Other notes from inspection: Large slab in base of duct, origin unknown.

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD3

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 12/08/2013

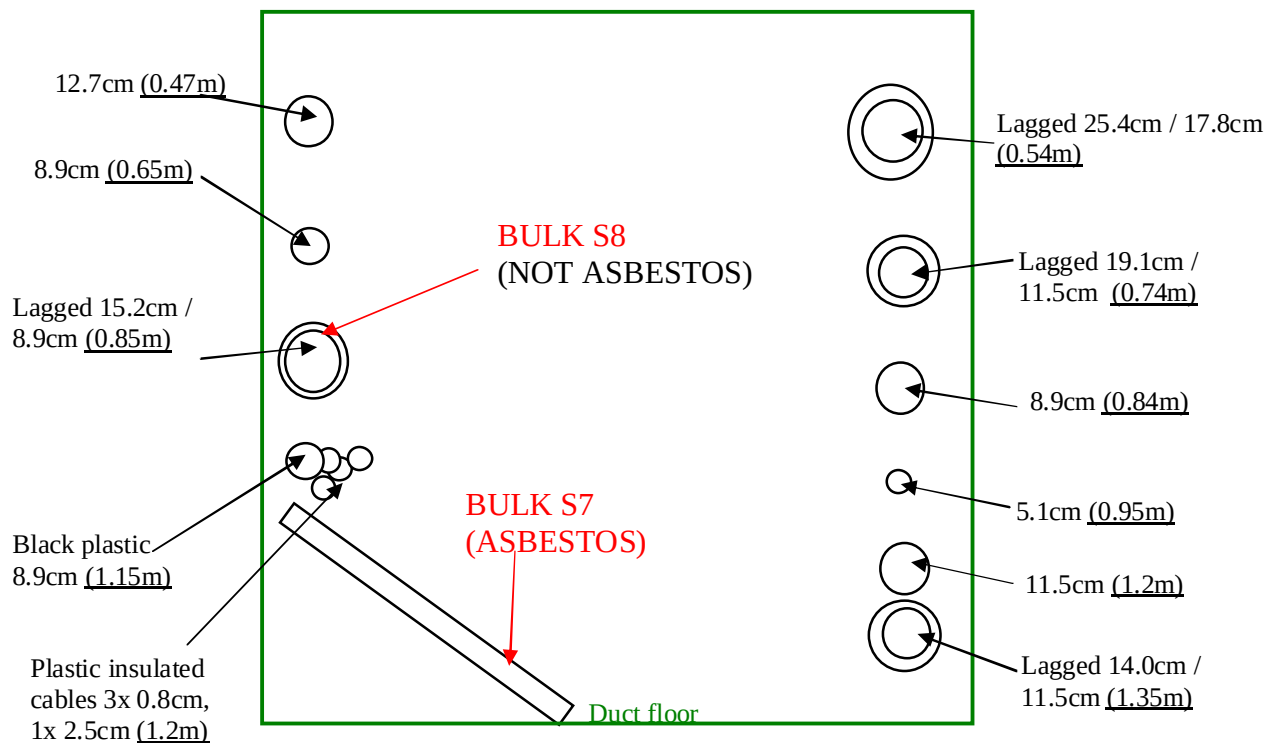
Logged by: PH

Weather: Cloudy

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Section (NTS)

X ————— Y



Duct Inspection Log

SD4



Project: C258.PUR Blyth Road, Hayes
Weather: Cloudy

Date: 13/08/2013

Logged by: PH

General Details

Depth to floor from ground level: 2.4 mbgl

Height of duct (floor to ceiling): No access possible to measure, opening not large enough

Width of duct: No access possible to measure, assume same as SD3 from rover survey

Construction materials: Brick walls

Amount of debris on floor: Occ. Brick and concrete visible, floor largely clear

Suspected asbestos containing materials: None visible

Other notes from inspection: Depth to floor measured to be same as SD3

Opening not large
enough to access,
see notes above

Duct Inspection Log

SD5

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 13/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 2.45 mbgl

Height of duct (floor to ceiling): 2.14 m

Width of duct: 1.55 m

Construction materials: Brick walls

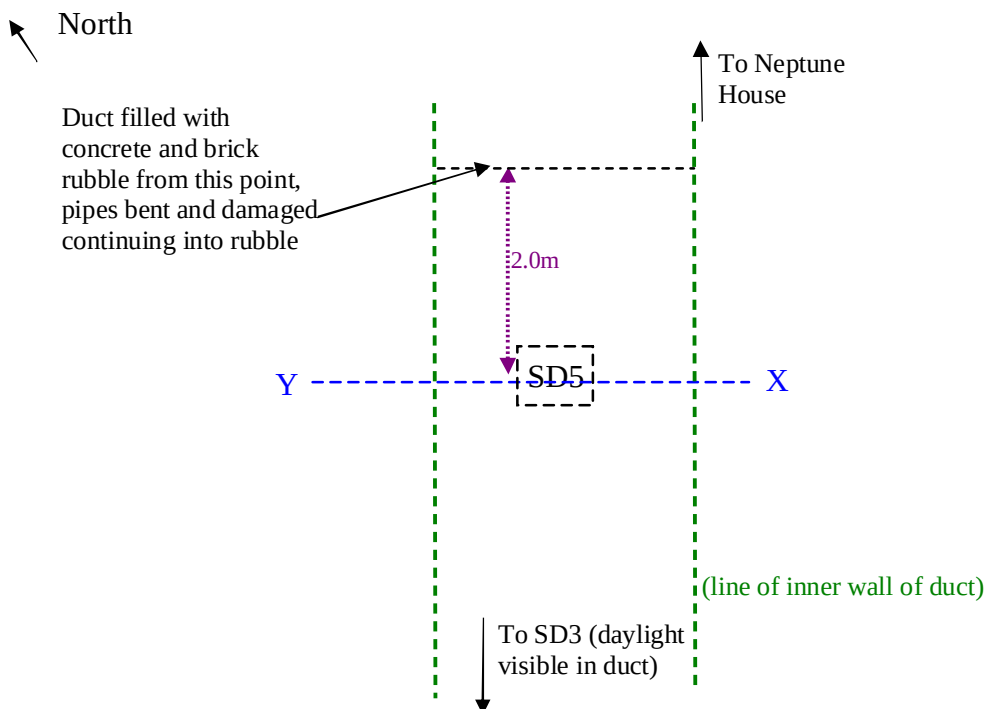
Amount of debris on floor: Occ. brick and concrete plus pipe lagging. Floor largely clear.

Suspected asbestos containing materials: Pipe lagging appears to be MMMF, refer SD3.

Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD5

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 12/08/2013

Logged by: PH

Weather: Cloudy

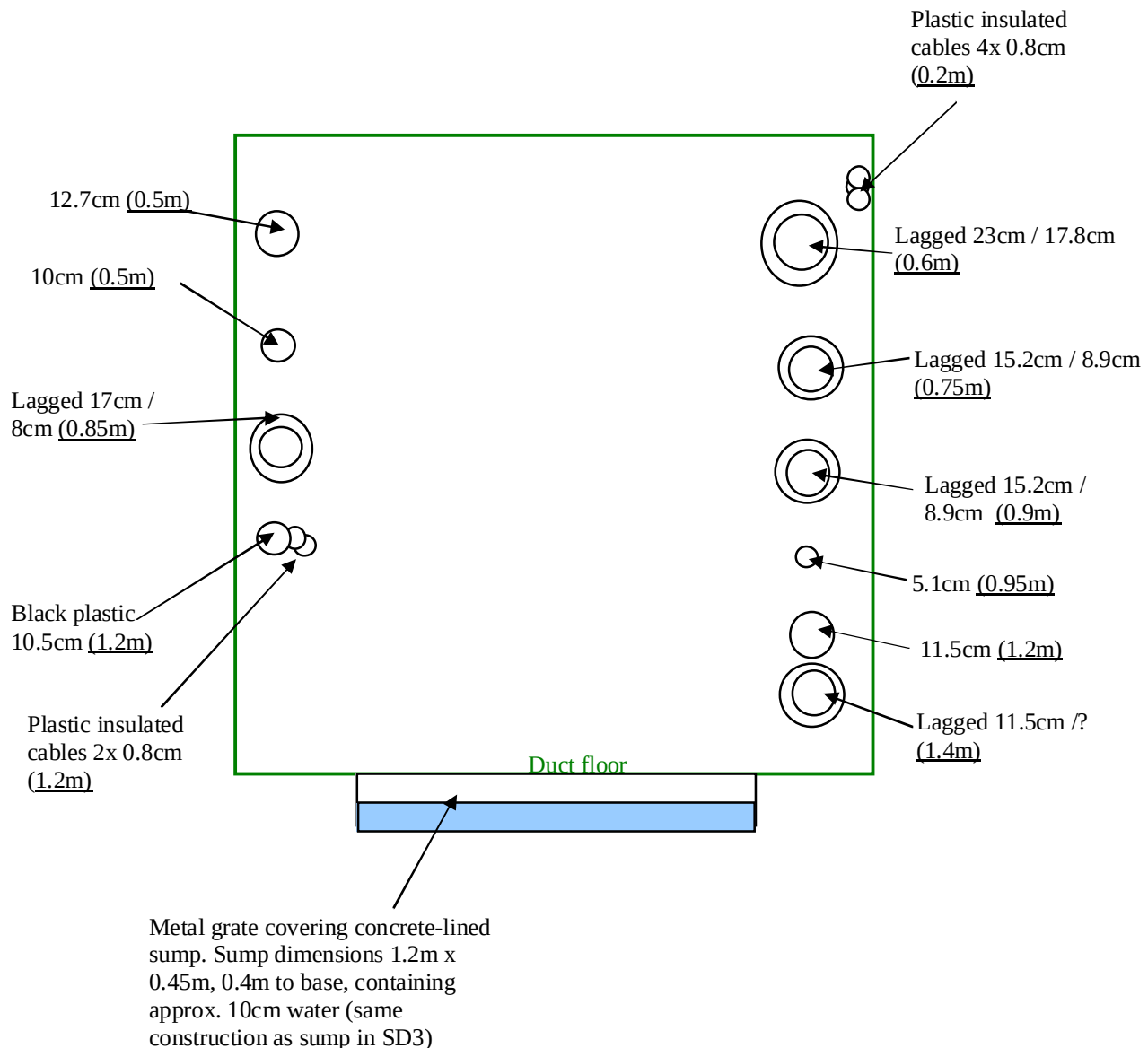
Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m).

All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Section (NTS)

X

Y



Duct Inspection Log

SD6

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 13/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 1.7 mbgl

Height of duct (floor to ceiling): 1.5 m

Width of duct: 1.22 m

Construction materials: See drawings

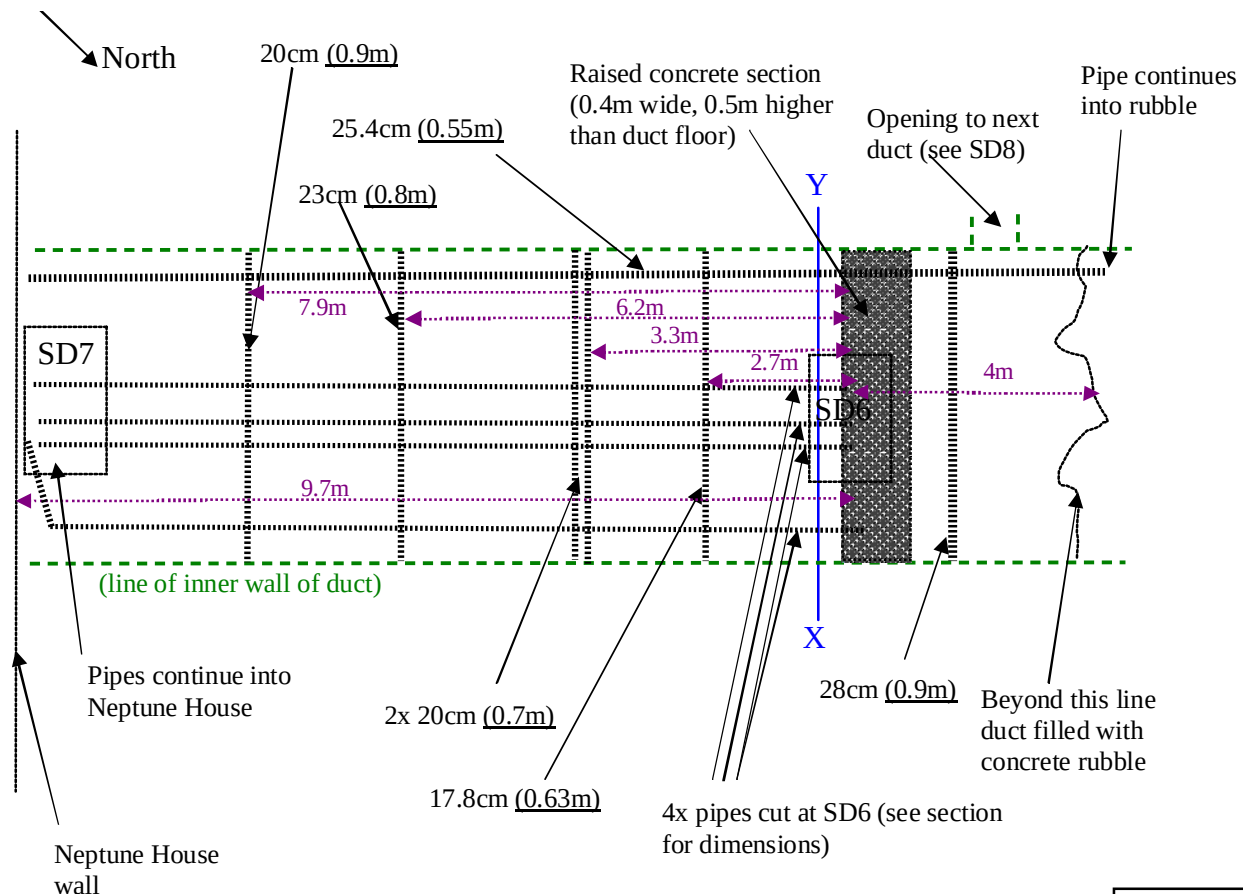
Amount of debris on floor: Frequent concrete, wood, road cones, plastic

Suspected asbestos containing materials: Fibrous material on concrete and floor

Other notes from inspection: See also SD7 log

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD6

Soilfix

Project: C258.PUR Blyth Road, Hayes

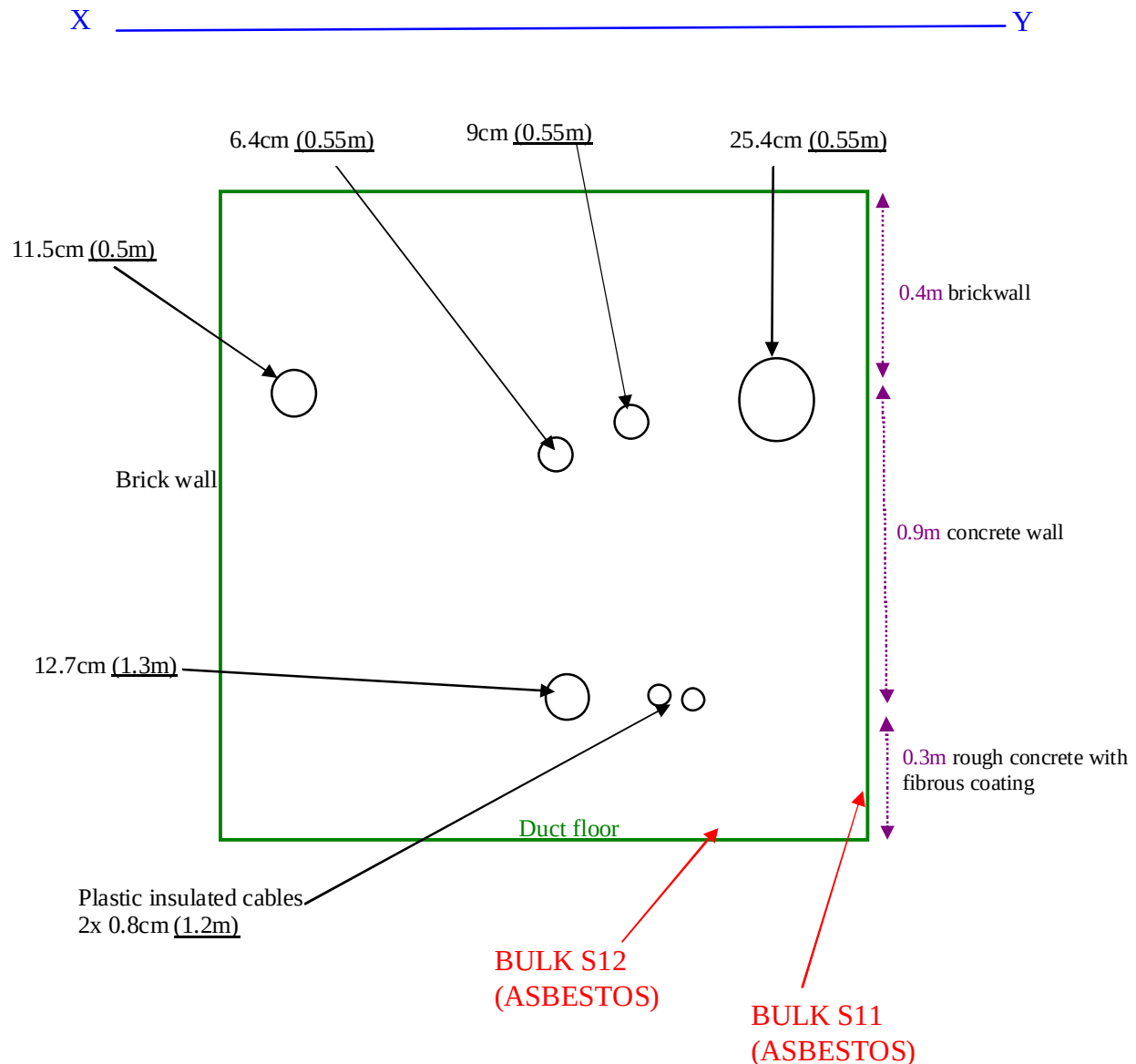
Date: 12/08/2013

Logged by: PH

Weather: Cloudy

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Section (NTS)



Duct Inspection Log

SD7



Project: C258.PUR Blyth Road, Hayes
Weather: Cloudy

Date: 13/08/2013

Logged by: PH

General Details

Depth to floor from ground level: refer SD6

Height of duct (floor to ceiling): refer SD6

Width of duct: various

Construction materials: Brick walls

Amount of debris on floor: Occ. brick and concrete

Suspected asbestos containing materials: See notes below and SD6 log

Other notes from inspection:

***Notes:** Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.*

Notes:

Duct continuous from SD6.

5x pipes shown on SD6 plan enter SD7 and are visible continuing into Neptune House building.

Starting in SD7 and continuing into Neptune House, the 25.4cm dia. pipe is now lagged – **BULK S10 (ASBESTOS)** taken of this lagging

Duct Inspection Log

SD8

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 13/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 1.2 mbgl

Height of duct (floor to ceiling): 1.0 m

Width of duct: 1.1 m

Construction materials: Brick walls

Amount of debris on floor: Frequent concrete and metal

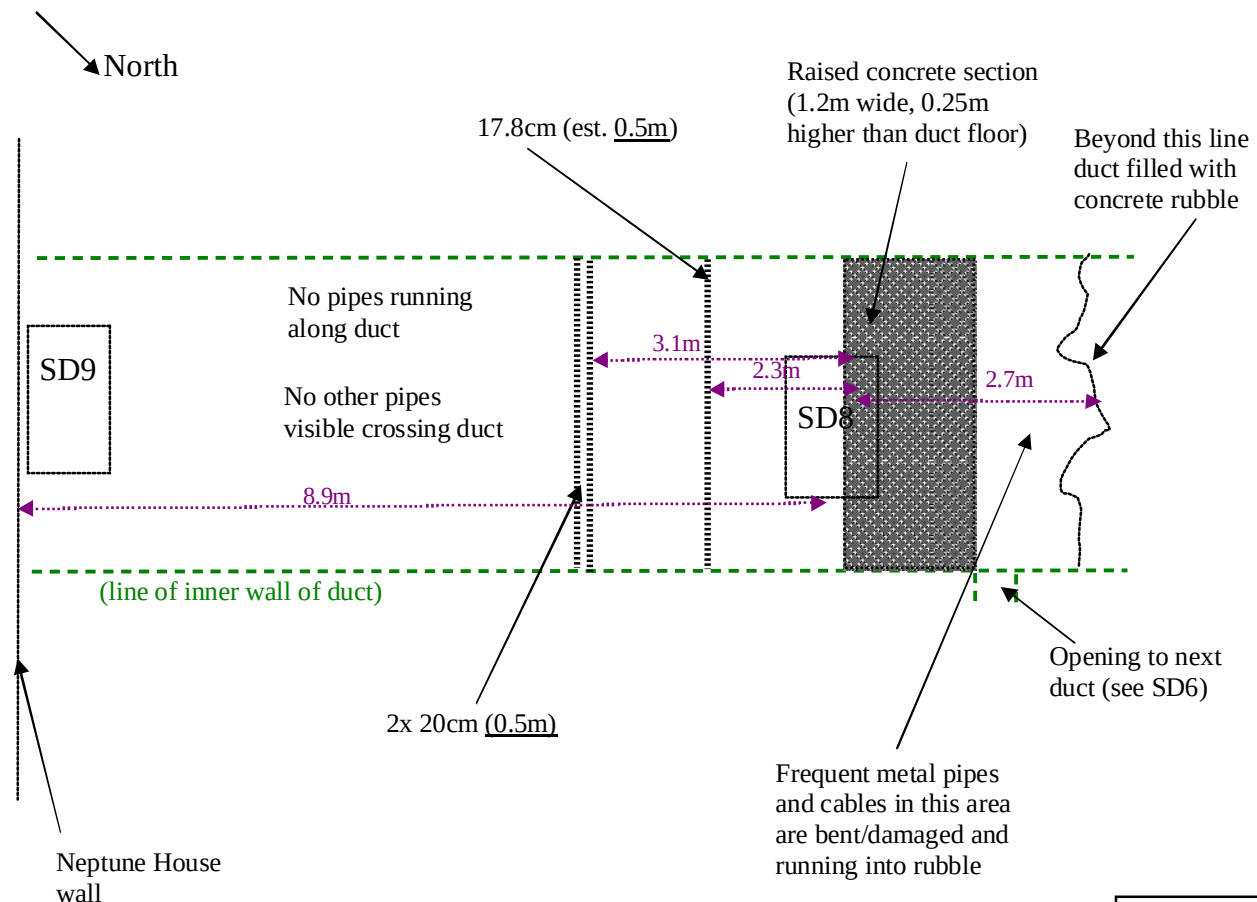
Suspected asbestos containing materials: None visible

Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m).

All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD9

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 13/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 1.4 mbgl

Height of duct (floor to ceiling): 0.85 m

Width of duct: see plan

Construction materials: Brick walls

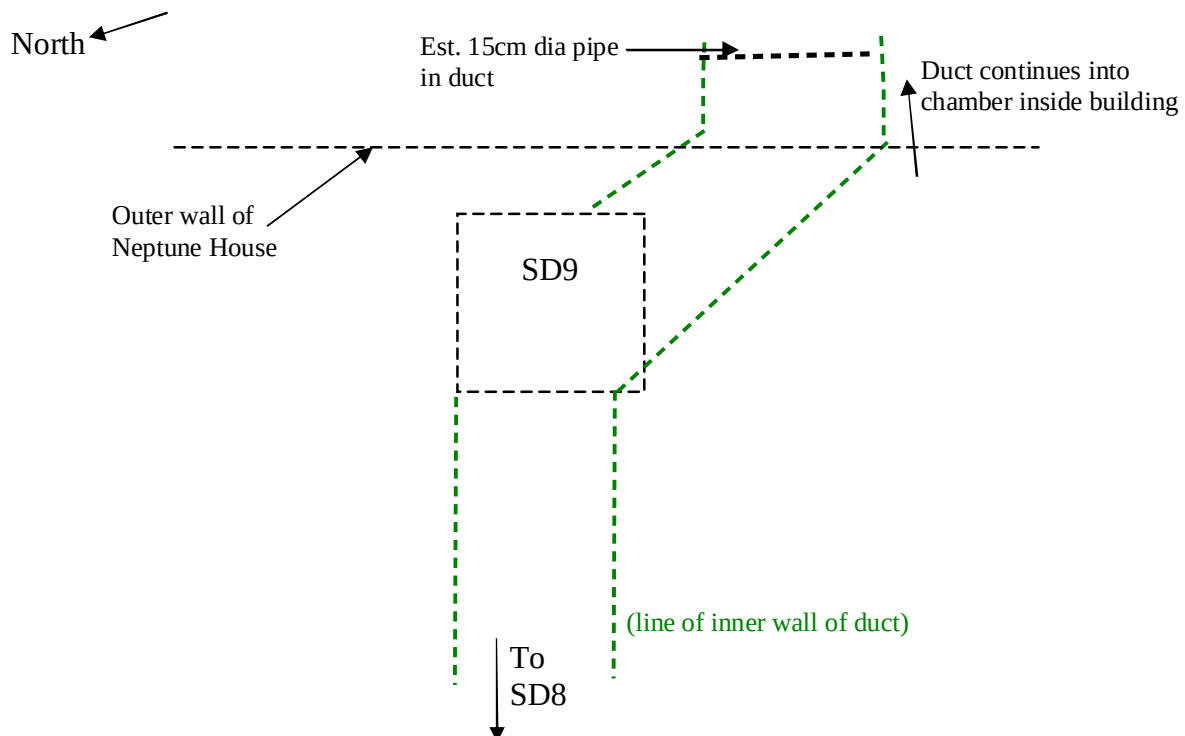
Amount of debris on floor: General rubbish, plastic etc

Suspected asbestos containing materials: None visible

Other notes from inspection:

***Notes:** Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.*

Plan (NTS)



Duct Inspection Log

SD10

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 13/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 2.2 mbgl

Height of duct (floor to ceiling): 2.0 m

Width of duct: see plan (chamber not duct)

Construction materials: Brick walls

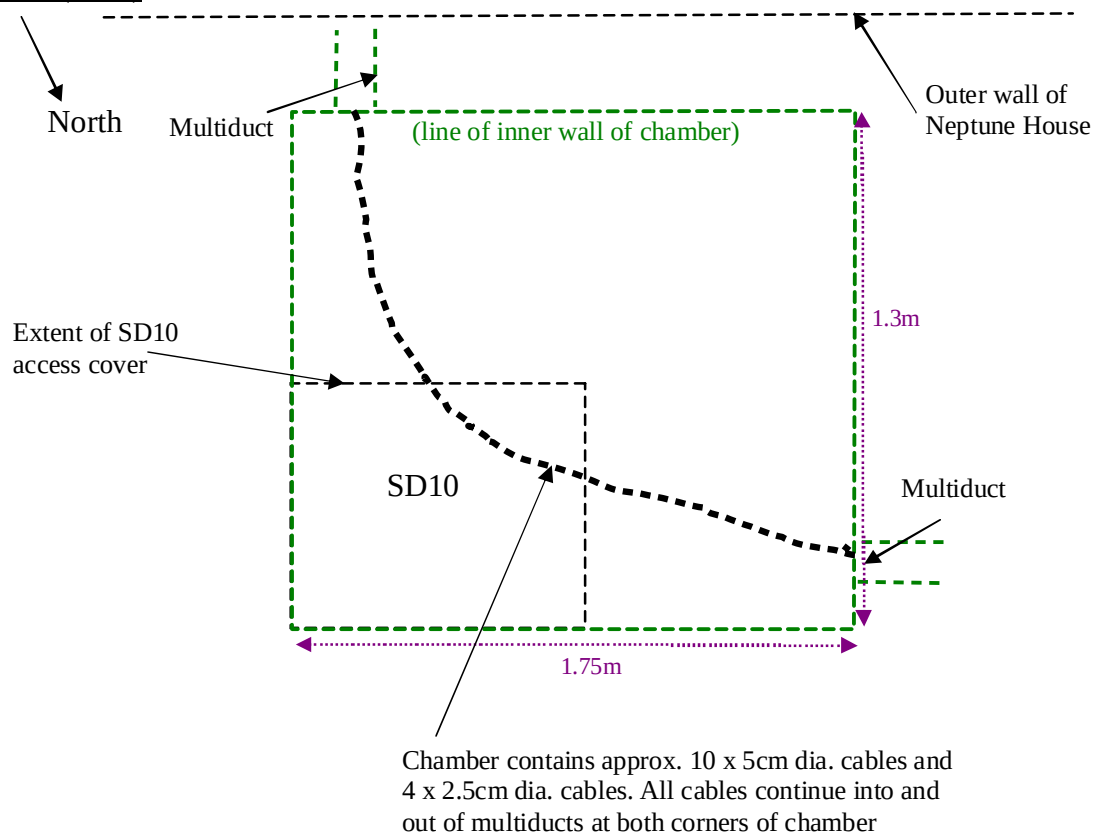
Amount of debris on floor: Some metal, brick and concrete fines

Suspected asbestos containing materials: None visible

Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD11



Project: C258.PUR Blyth Road, Hayes

Date: 13/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 2.7 mbgl

Height of duct (floor to ceiling): 2.3 m

Width of duct: 5.2 m

Construction materials: See drawings

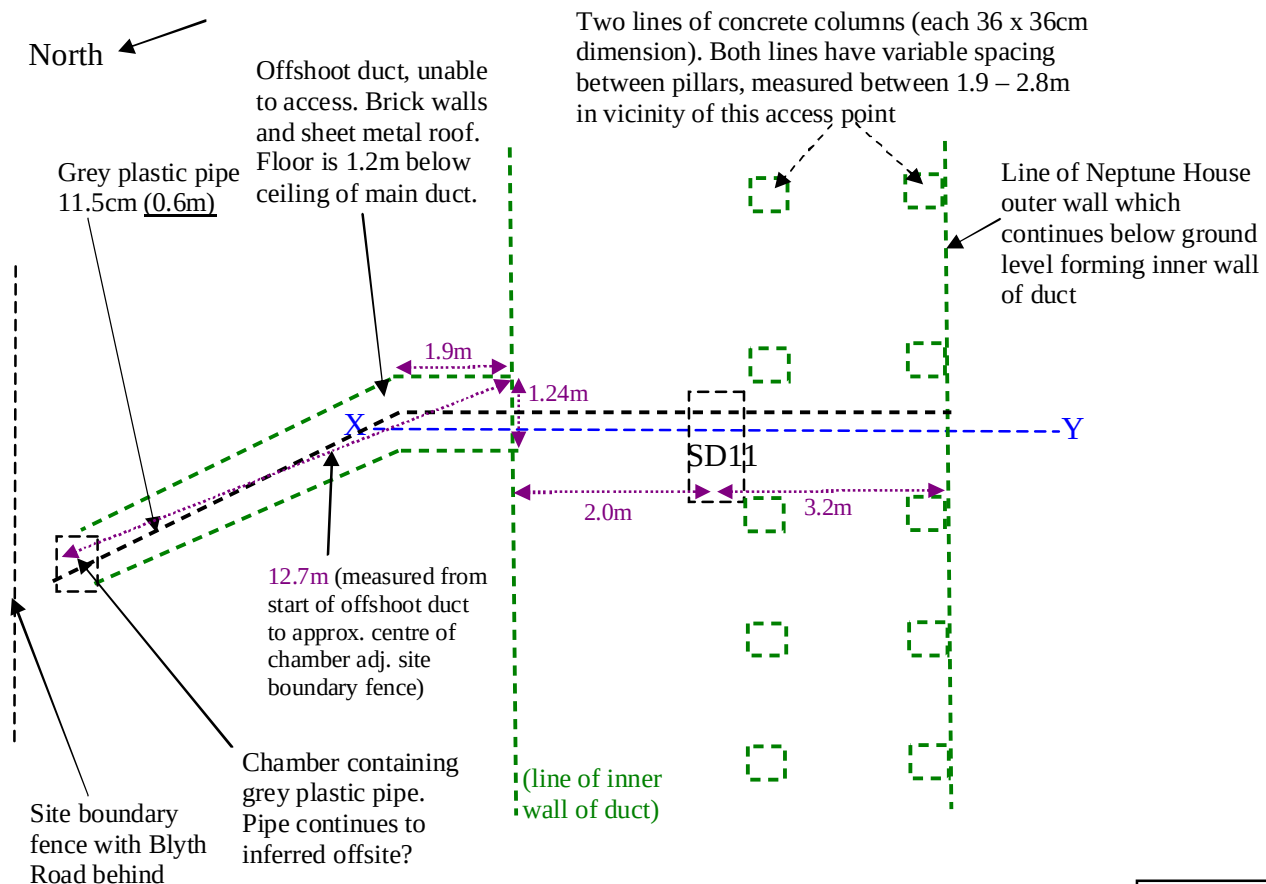
Amount of debris on floor: Soil/fine rubble with brick, lagging and broken pipe sections

Suspected asbestos containing materials: Pipe lagging. Poor condition

Other notes from inspection: Floor uneven

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (L2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD11

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 12/08/2013

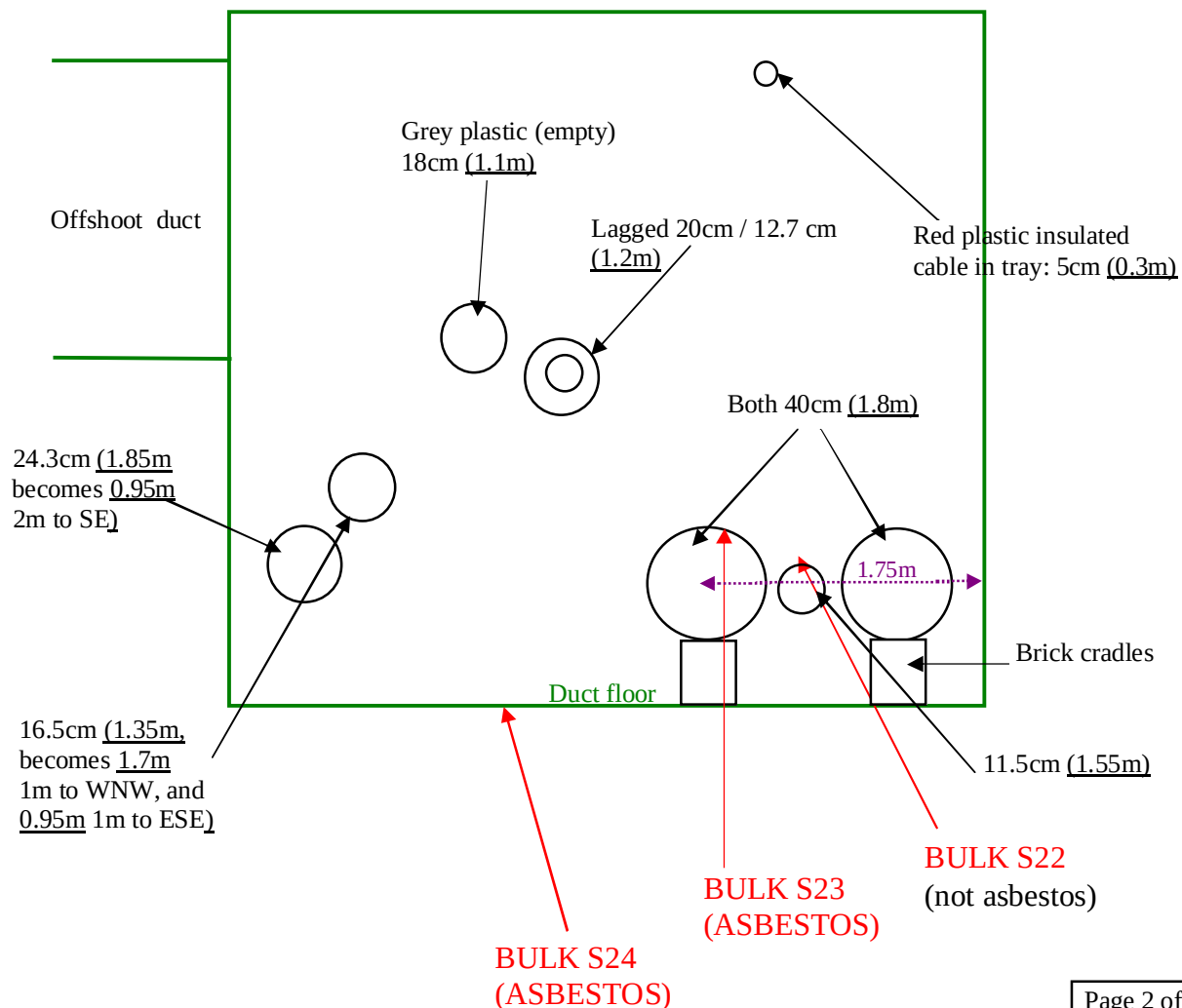
Logged by: PH

Weather: Cloudy

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Section (NTS)

X ————— Y



Duct Inspection Log

SD12



Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Sun/cloud

General Details

Depth to floor from ground level: see section page

Height of duct (floor to ceiling): see section page

Width of duct: see section page

Construction materials: Brick walls

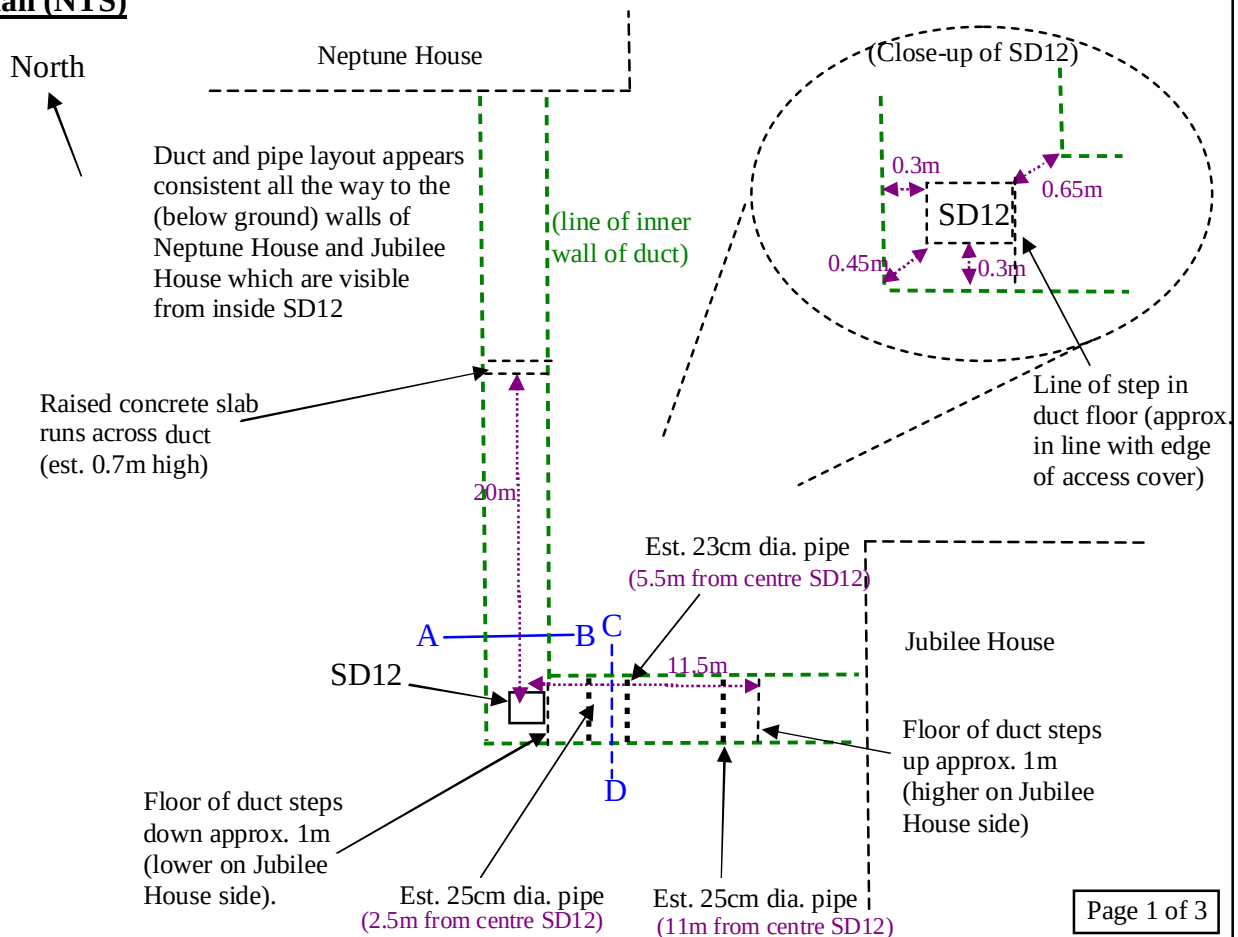
Amount of debris on floor: Occasional wood, metal, brick and lagging

Suspected asbestos containing materials: Pipe lagging.

Other notes from inspection: Access cover on corner of duct.

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD12

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Section (NTS)

A Section line drawn approx. 2m from centre of SD12 access cover B

General Details

Depth to floor from ground level: 2.0 mbgl

Height of duct (floor to ceiling): 1.57 m

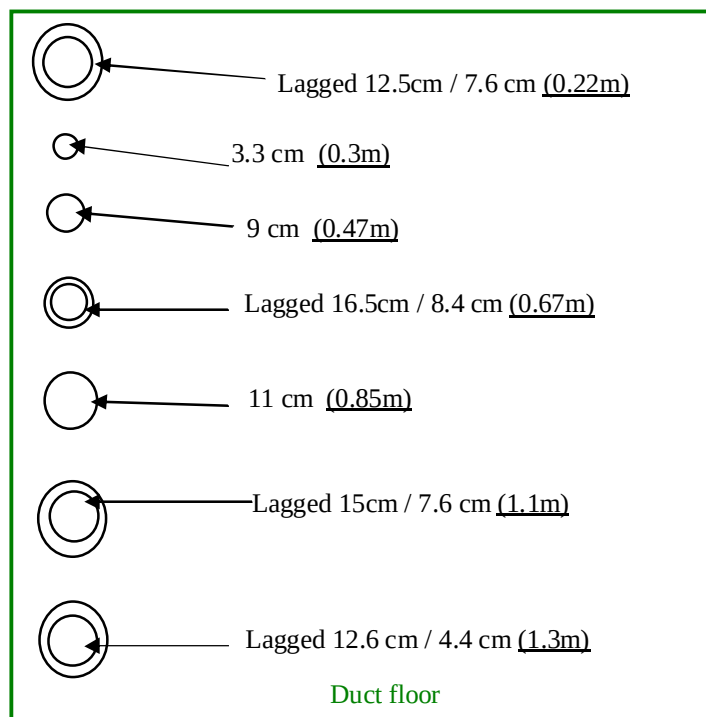
Width of duct: 1.38 m

Construction materials: Brick walls

Amount of debris on floor: Occasional wood, metal, brick and lagging

Suspected asbestos containing materials: Pipe lagging?

Other notes from inspection: Sump covered by metal grate in floor of duct. Depth to base of sump from duct floor 0.6m (empty). Centre of SD12 to centre of sump is 3m to NE



Duct Inspection Log

SD12

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Section (NTS)

C ————— D
Section line drawn approx. 2m from centre of SD12 access cover

General Details

Depth to floor from ground level: 2.90 mbgl

Height of duct (floor to ceiling): 1.97 m

Width of duct: 1.46 m

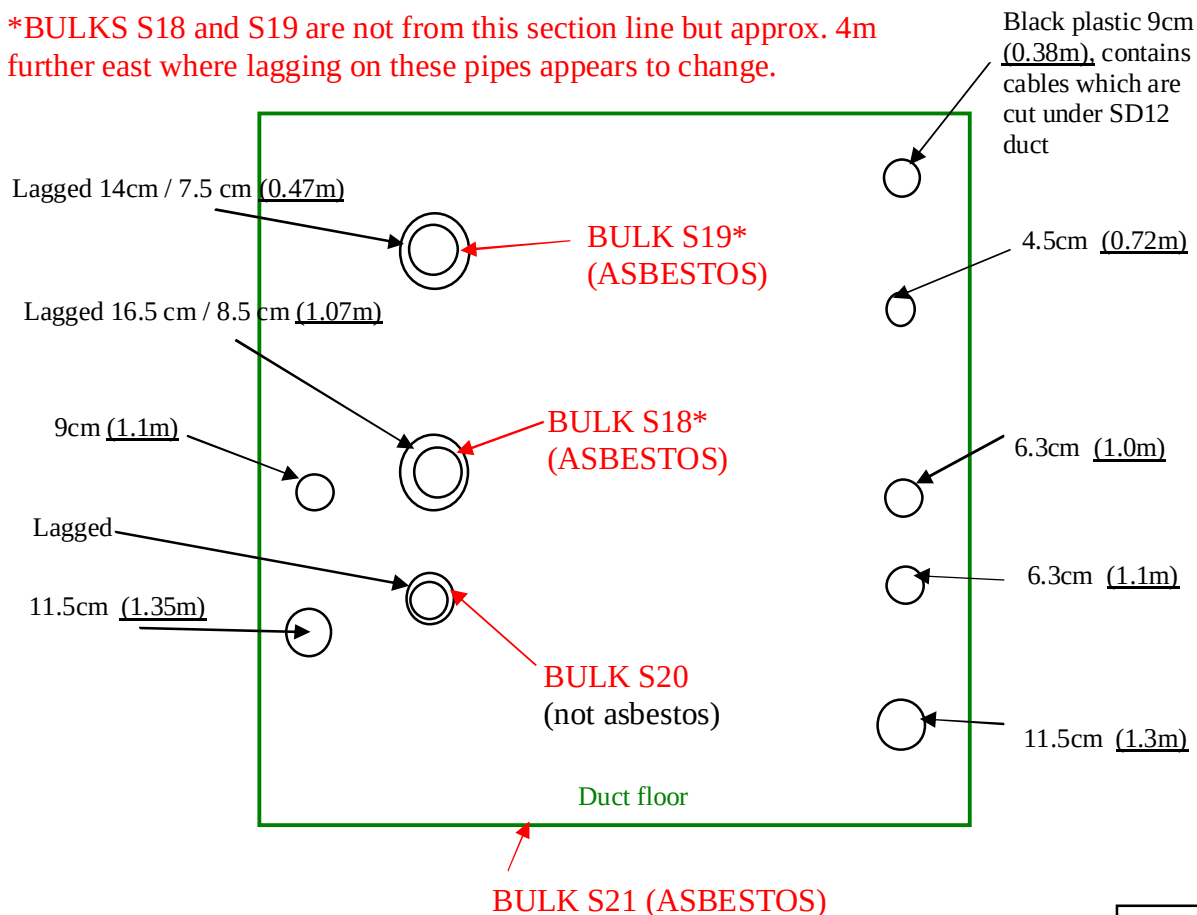
Construction materials: Brick walls

Amount of debris on floor: Occasional wood, metal, brick and lagging

Suspected asbestos containing materials: Pipe lagging.

Other notes from inspection:

*BULKS S18 and S19 are not from this section line but approx. 4m further east where lagging on these pipes appears to change.



Duct Inspection Log

SD13

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 0.8 mbgl

Height of duct (floor to ceiling): 0.65 m

Width of duct: 0.78 m, or 1.25 m including the concrete cover slabs

Construction materials: Concrete walls

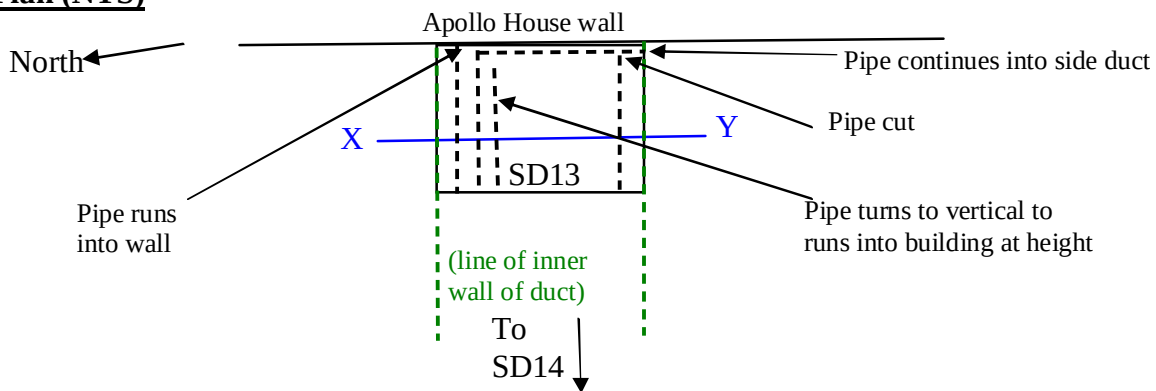
Amount of debris on floor: Sediment and water in base of duct

Suspected asbestos containing materials: None visible

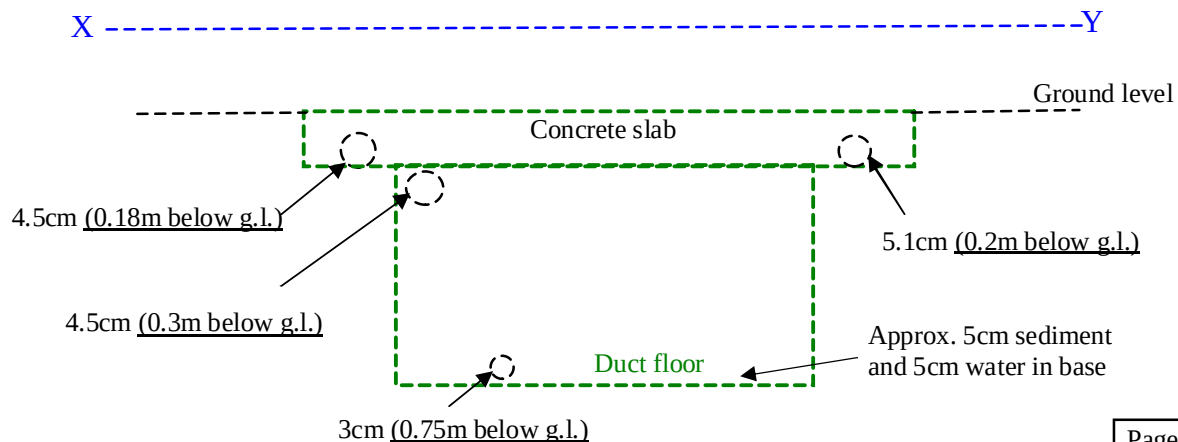
Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Section (NTS)



Duct Inspection Log

SD14

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 0.8 mbgl

Height of duct (floor to ceiling): 0.65 m

Width of duct: 0.78 m, or 1.25 m including the concrete cover slabs

Construction materials: Concrete walls

Amount of debris on floor: Sediment and water in base of duct

Suspected asbestos containing materials: Pipe lagging present

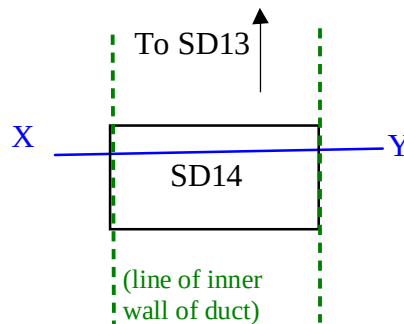
Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m).

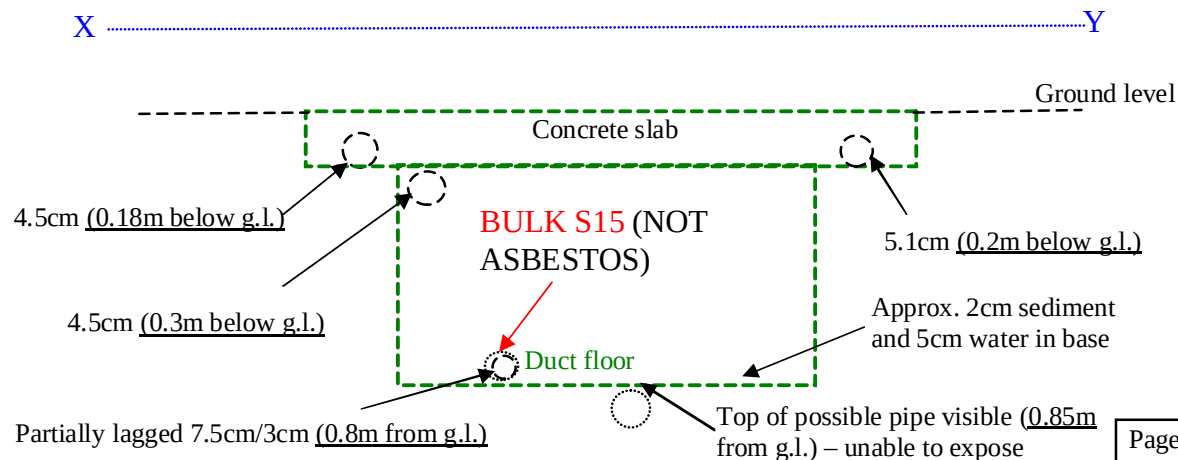
All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)

North



Section (NTS)



Duct Inspection Log

SD15

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 1.6 mbgl

Height of duct (floor to ceiling): 1.45 m on section line, back to 0.8 m either side of SD15

Width of duct: 0.78 m, or 1.25 m including the concrete cover slabs

Construction materials: Concrete walls

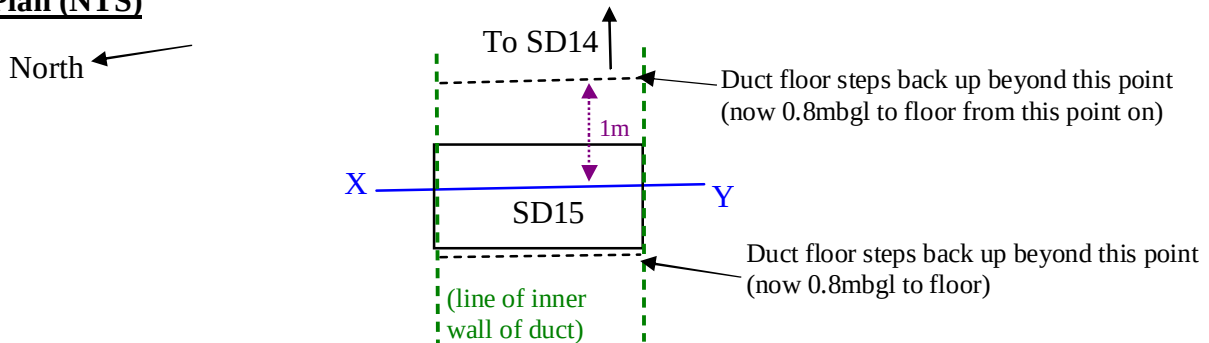
Amount of debris on floor: Contains water

Suspected asbestos containing materials: None visible (pipes underwater)

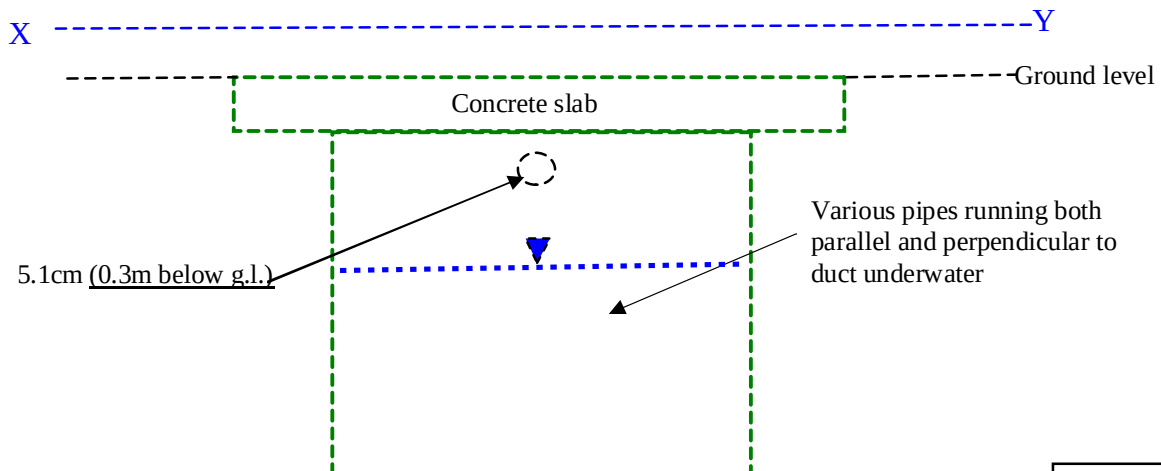
Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Section (NTS)



Duct Inspection Log

SD16

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 2.47 mbgl

Height of duct (floor to ceiling): 2.17 m

Width of duct: 5.18 m

Construction materials: As per SD17

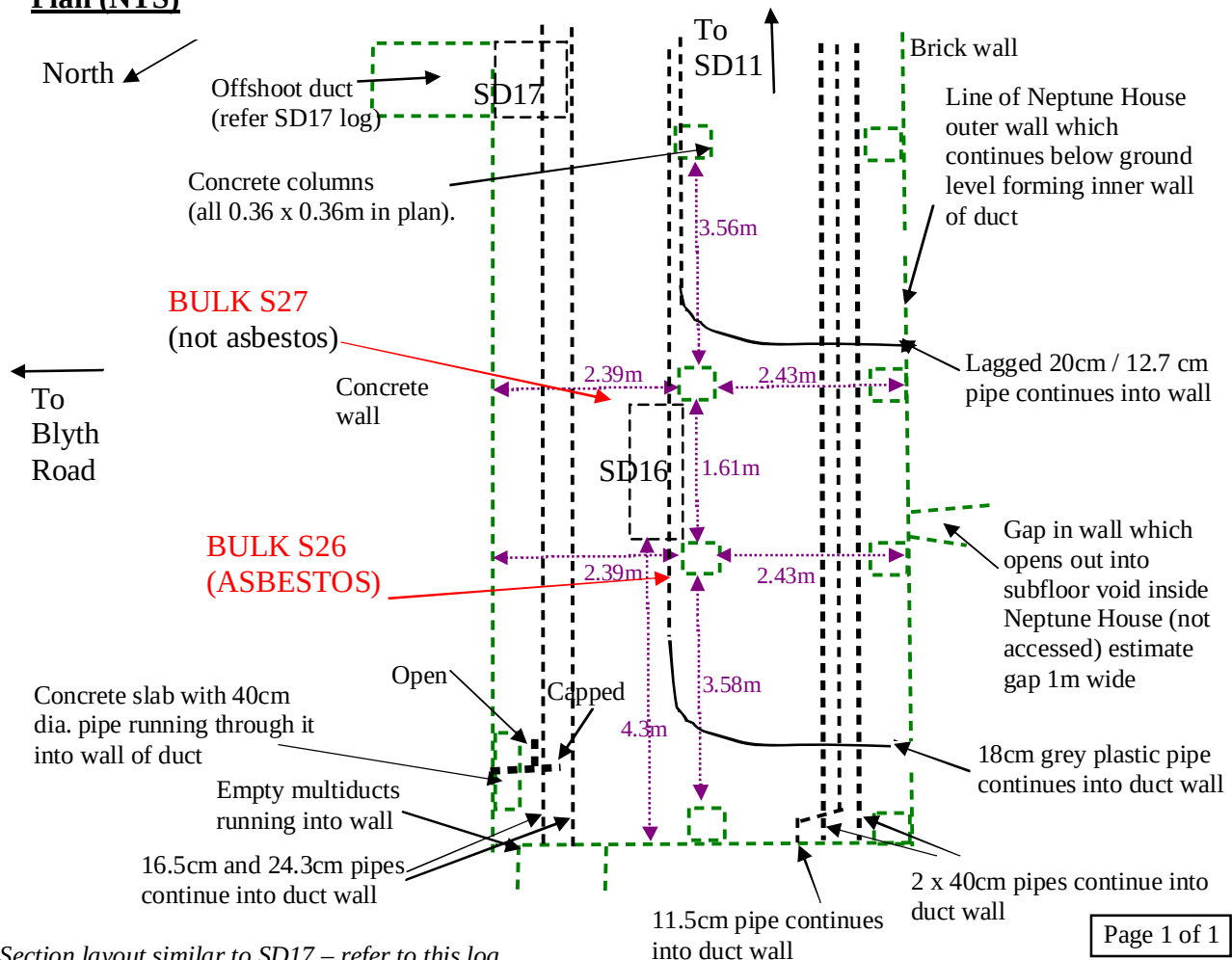
Amount of debris on floor: Soil/fine rubble with concrete, lagging and metal

Suspected asbestos containing materials: Pipe lagging.

Other notes from inspection: Floor uneven. See SD17 log also as close together

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Section layout similar to SD17 – refer to this log.

Duct Inspection Log

SD17

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 2.47 mbgl

Height of duct (floor to ceiling): 2.22 m

Width of duct: 5.17 m

Construction materials: See drawings

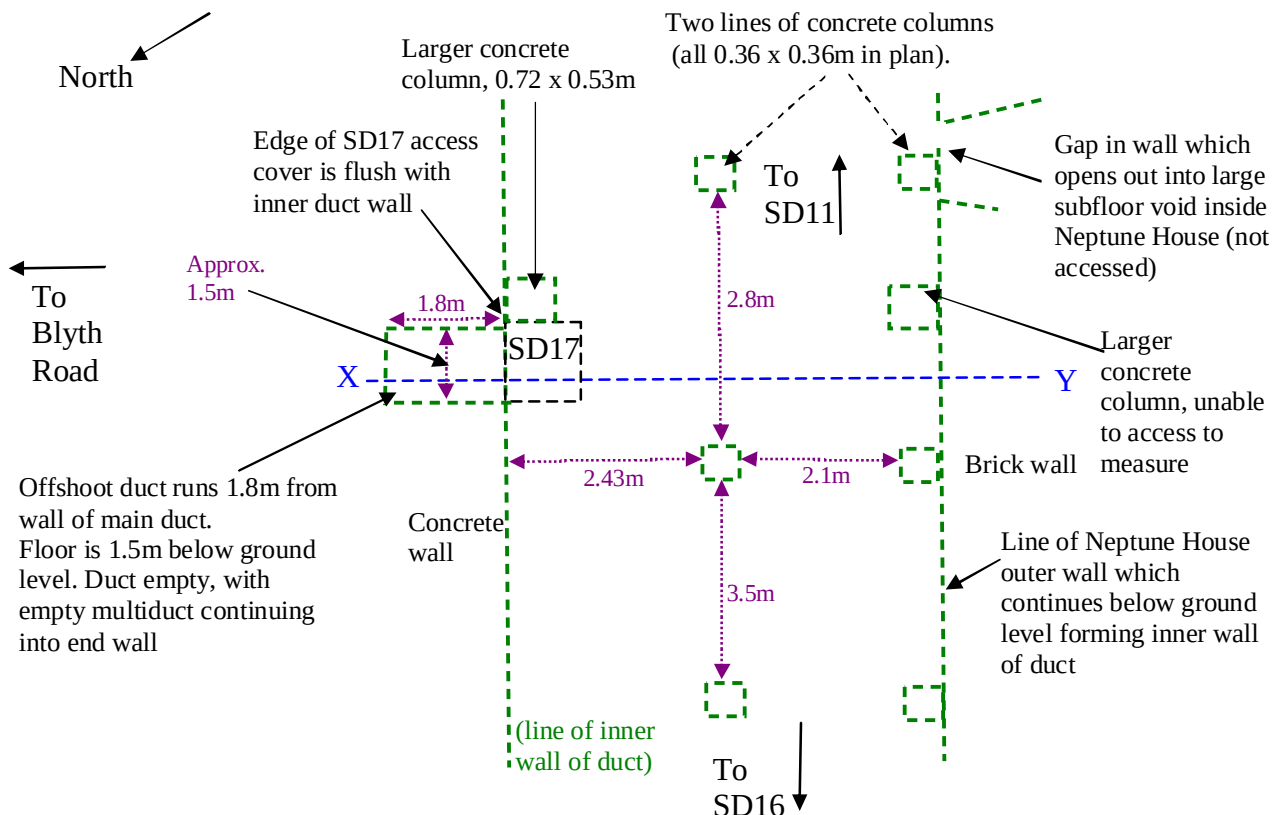
Amount of debris on floor: Soil/fine rubble with brick, lagging and broken pipe sections

Suspected asbestos containing materials: Pipe lagging.

Other notes from inspection: Floor uneven. Also see SD16 log as near to SD17

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD17

Soilfix

Project: C258.PUR Blyth Road, Hayes

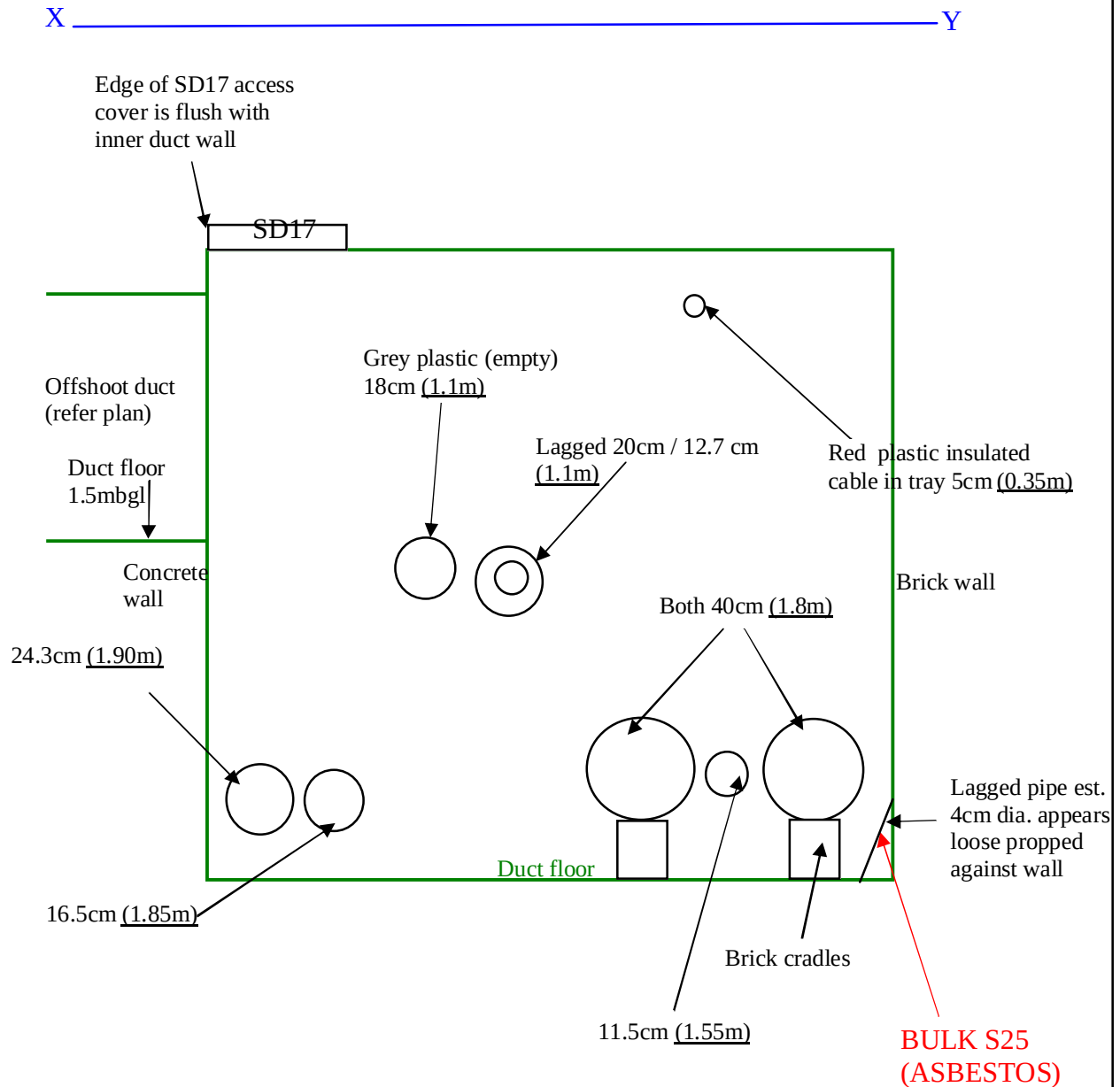
Date: 14/08/2013

Logged by: PH

Weather: Cloudy

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Section (NTS)



Duct Inspection Log

SD18

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 3.0 mbgl

Height of duct (floor to ceiling): 2.71 m

Width of duct: 2.31 m

Construction materials: Concrete walls

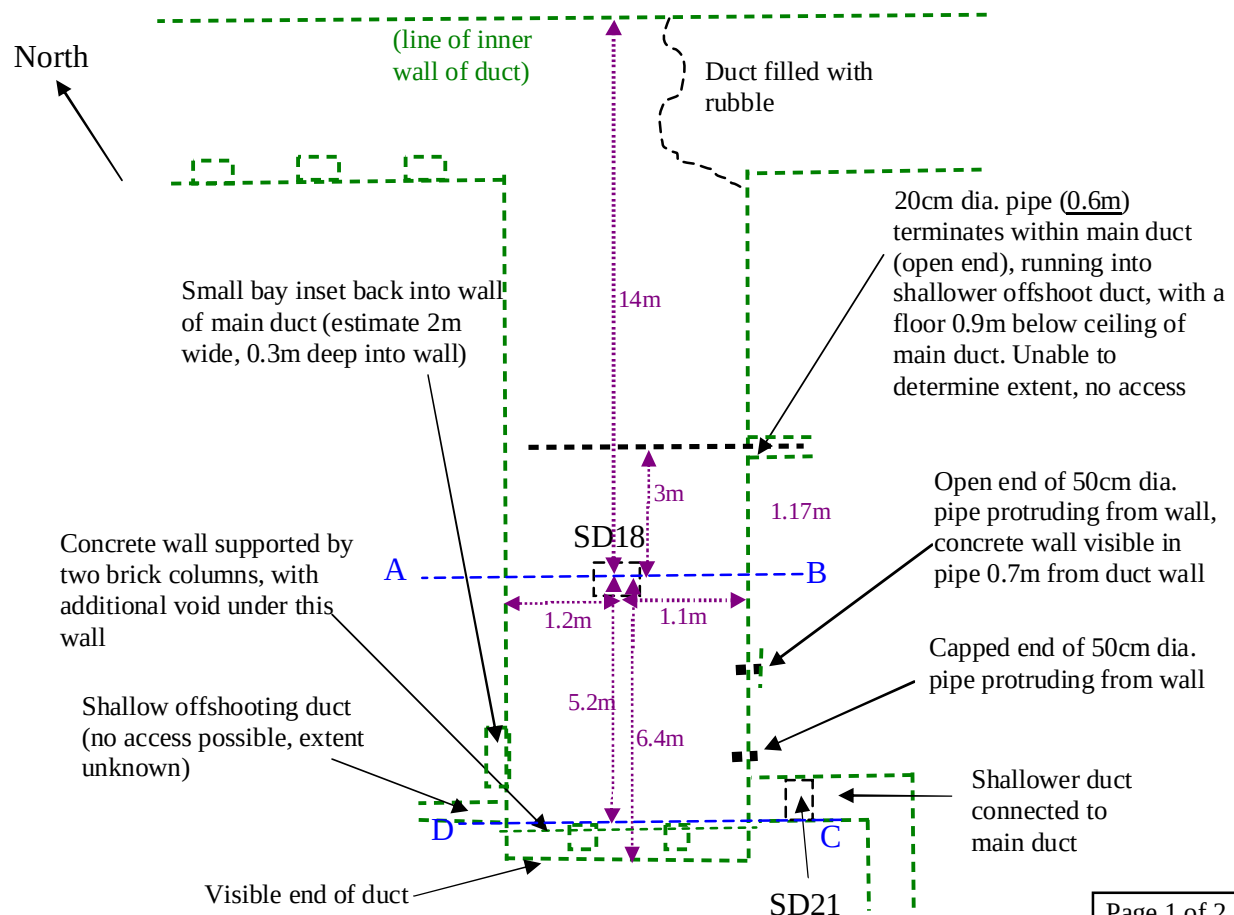
Amount of debris on floor: Largely clear, occasional lagging and wood

Suspected asbestos containing materials: Pipe lagging

Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD18

Soilfix

Project: C258.PUR Blyth Road, Hayes

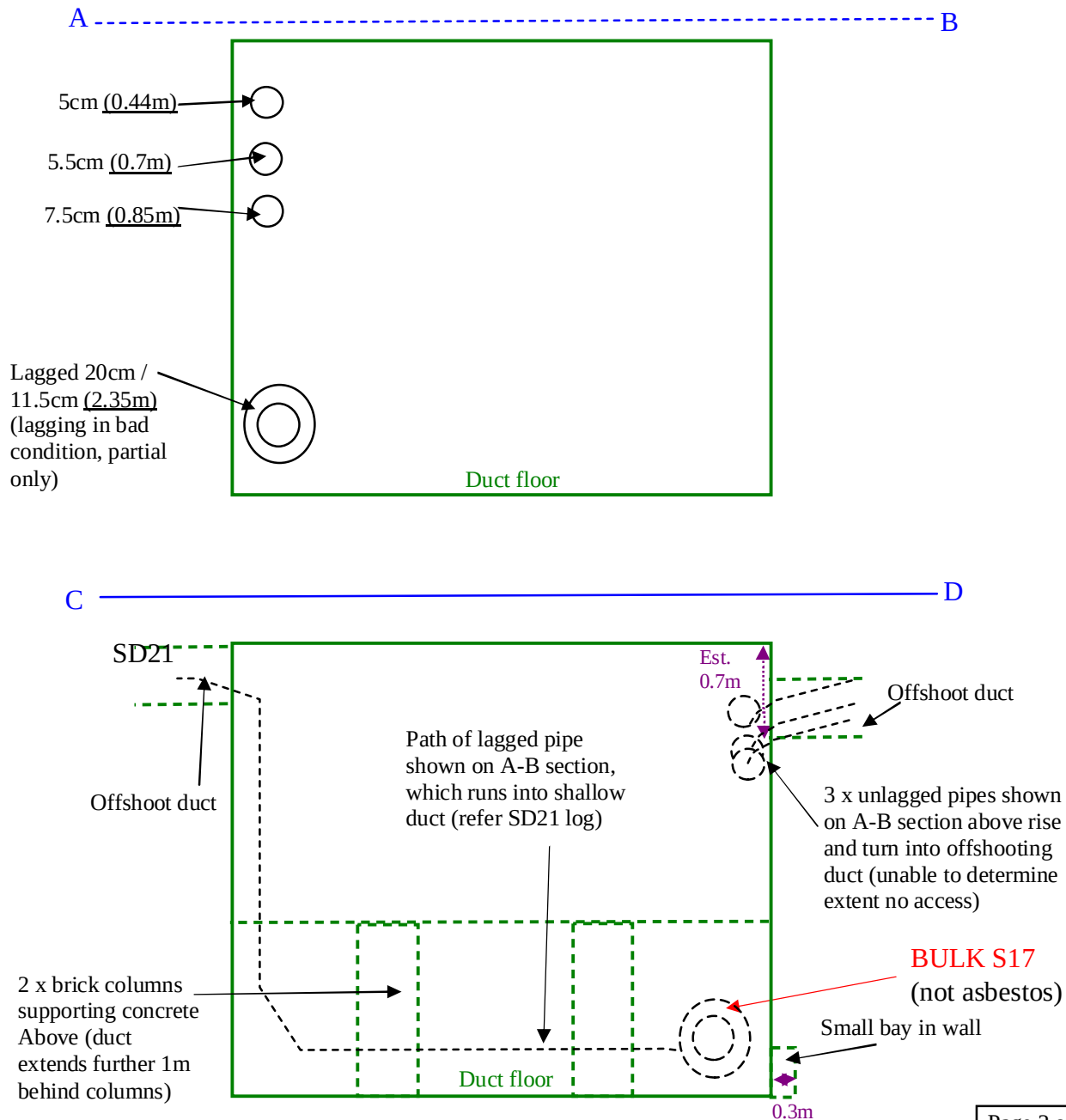
Date: 14/08/2013

Logged by: PH

Weather: Cloudy

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Section (NTS)



Duct Inspection Log

SD19

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 0.8 mbgl

Height of duct (floor to ceiling): 0.65 m

Width of duct: 0.78 m, or 1.25 m including the concrete cover slabs

Construction materials: Concrete walls

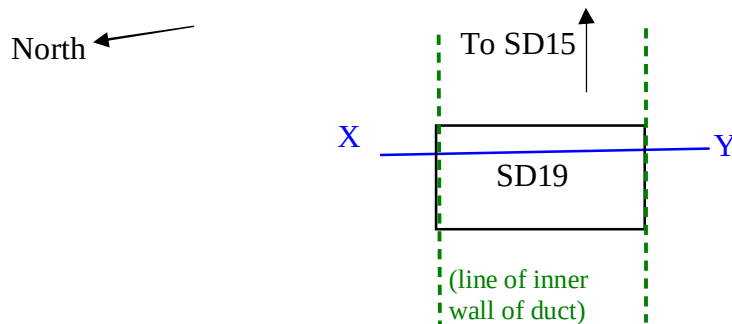
Amount of debris on floor: Water in duct, general rubbish including plastic visible

Suspected asbestos containing materials: None visible above water

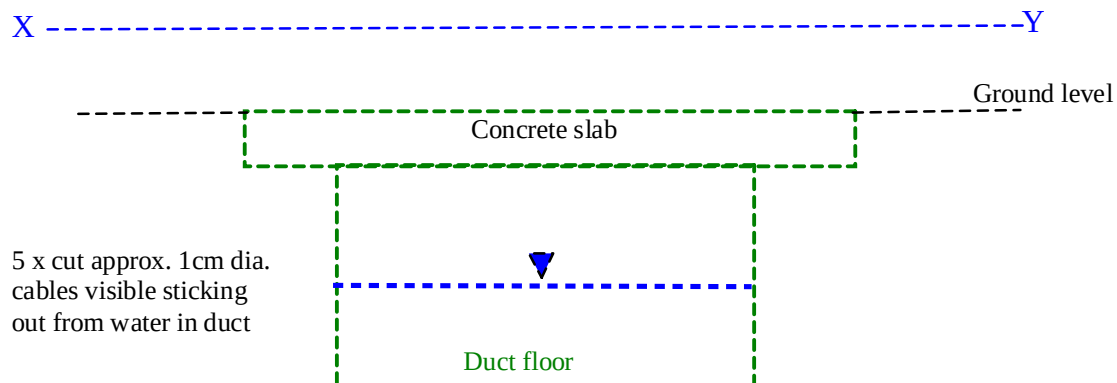
Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Sections (NTS)



Duct Inspection Log

SD20

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 0.55 mbgl

Height of duct (floor to ceiling): 0.4 m

Width of duct: 0.8 m, or 1.25 m including the concrete cover slabs

Construction materials: Concrete walls

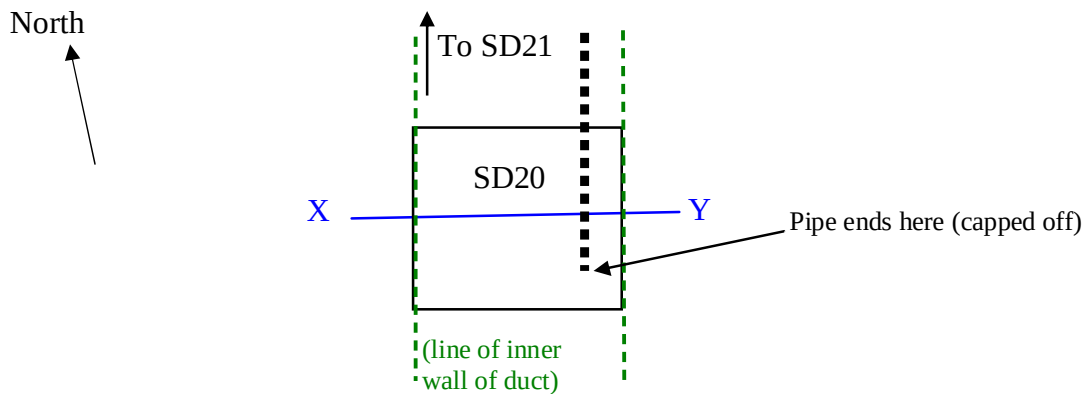
Amount of debris on floor: Duct filled with rubbish, soil and leaves

Suspected asbestos containing materials: Pipe lagging (bulk sample from same pipe taken in SD21)

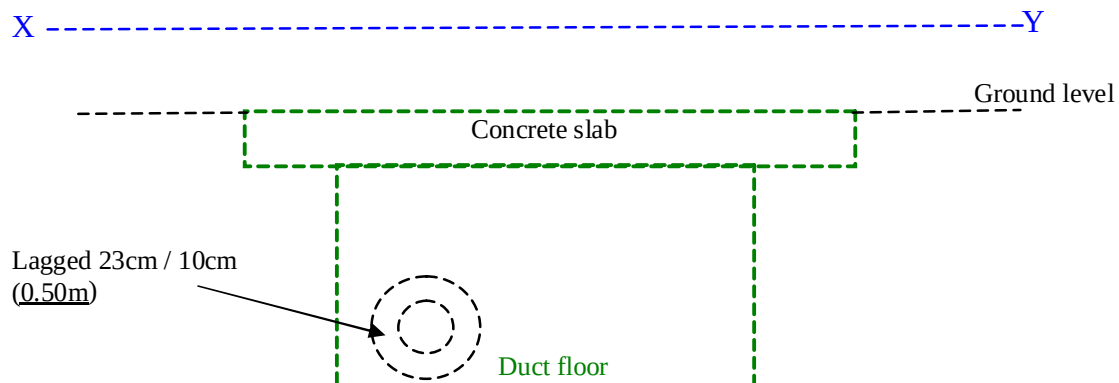
Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m).

All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Sections (NTS)



Duct Inspection Log

SD21

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 0.6 mbgl

Height of duct (floor to ceiling): 0.4 m

Width of duct: 0.8 m, or 1.25 m including the concrete cover slabs

Construction materials: Concrete walls

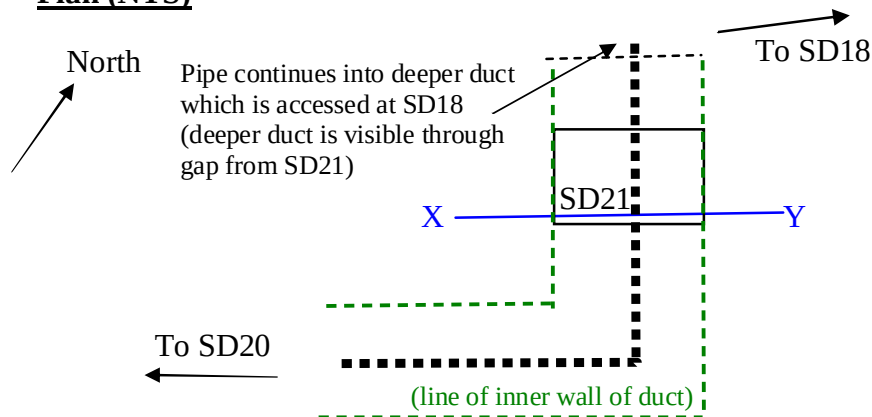
Amount of debris on floor: Duct filled with rubble and concrete

Suspected asbestos containing materials: Pipe lagging

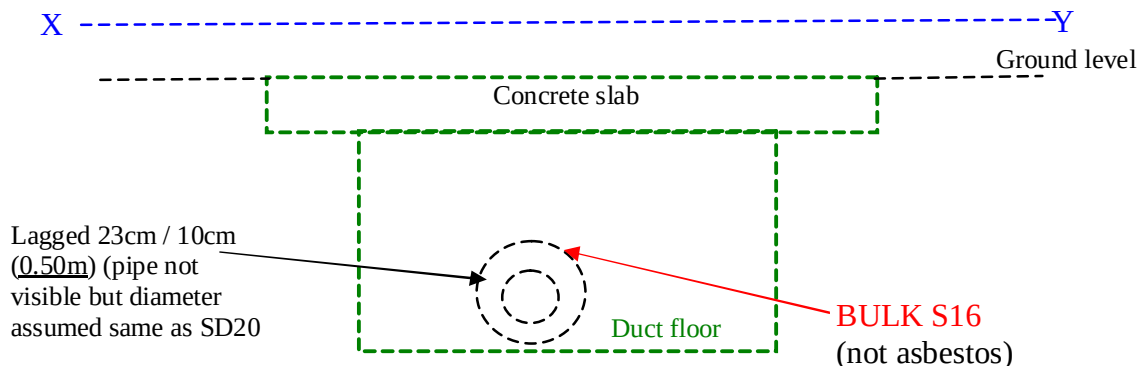
Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Section (NTS)



Duct Inspection Log

SD22

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 3.2 mbgl

Height of duct (floor to ceiling): 2.78 m

Width of duct: 3.74 m at widest points, including bays along southern wall

Construction materials: Concrete

Amount of debris on floor: Occasional concrete, wood and pipe lagging

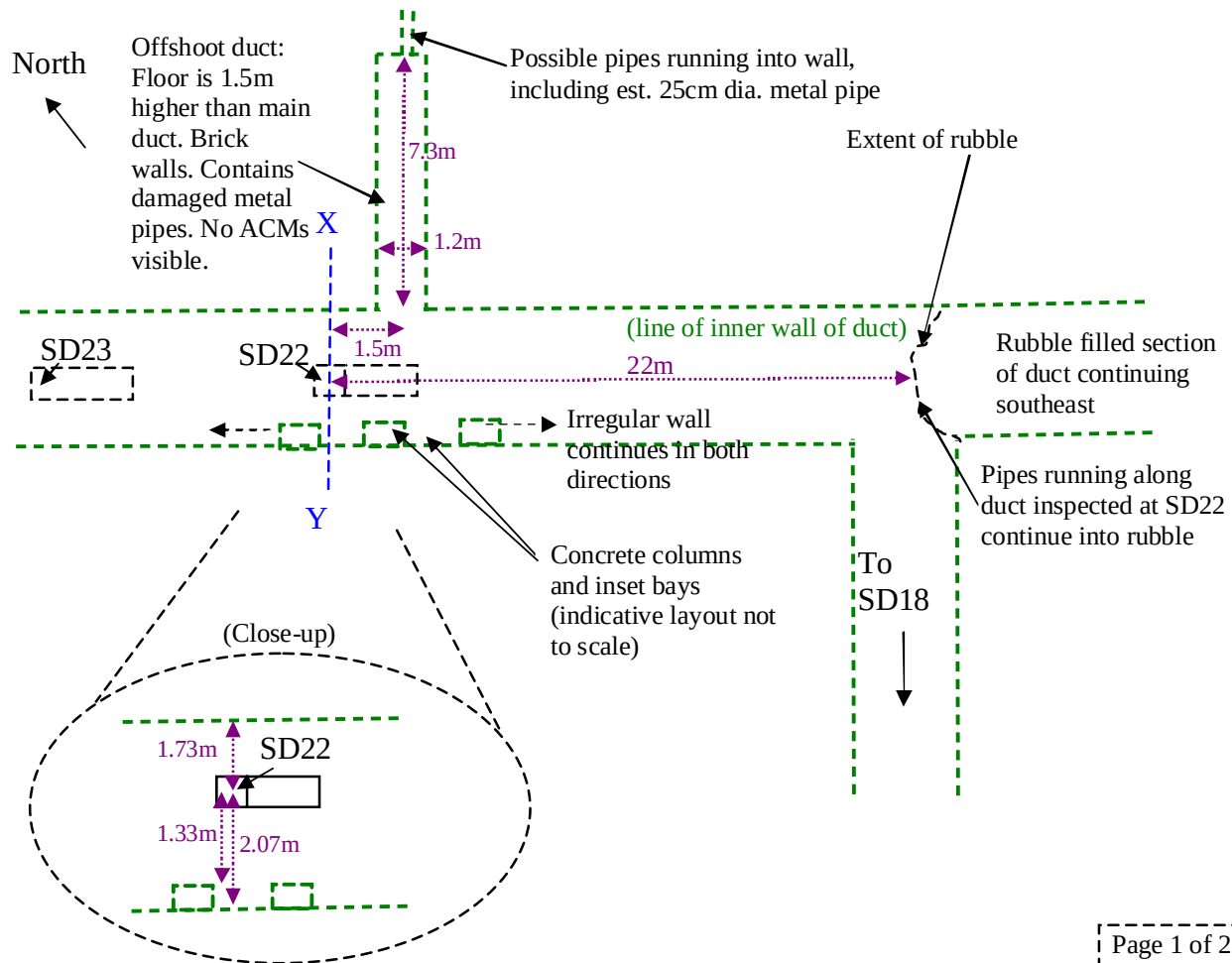
Suspected asbestos containing materials: Pipe lagging, poor condition

Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m).

All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD22

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

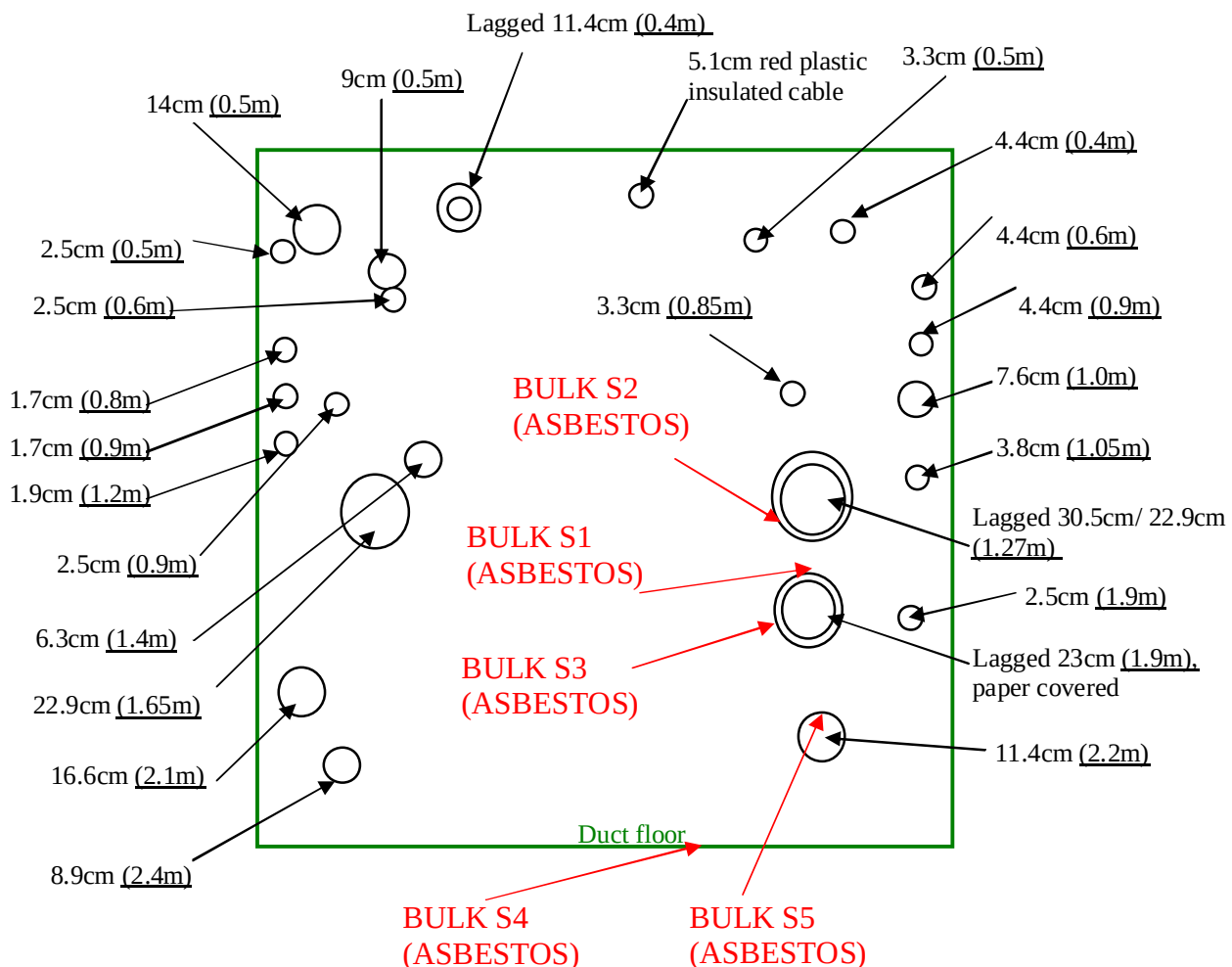
Logged by: PH

Weather: Cloudy

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Section (NTS)

X _____ Y



Duct Inspection Log

SD23



Scilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 3.1 mbgl

Height of duct (floor to ceiling): 2.7 m

Width of duct: 3.76 m at widest points, including bays along southern wall

Construction materials: Concrete walls

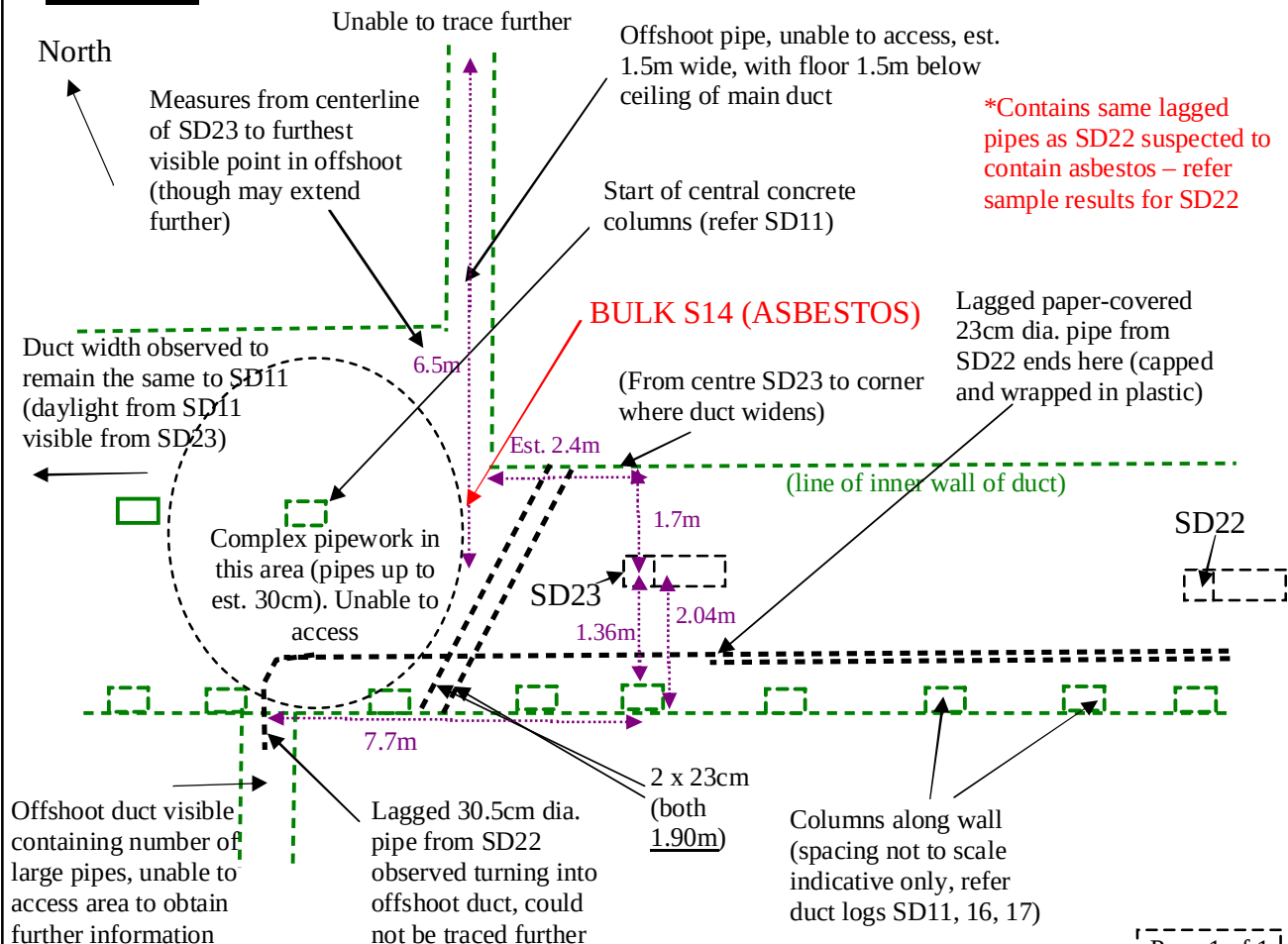
Amount of debris on floor: Occasional concrete, metal and pipe lagging

Suspected asbestos containing materials: Pipe lagging, poor condition.

Other notes from inspection: Pipe layout similar to SD22, main changes shown below.

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD24

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 1.7 mbgl

Height of duct (floor to ceiling): not recorded

Width of duct: see plan (chamber not duct)

Construction materials: Brick walls

Amount of debris on floor: Floor covered with water (1.43 mbgl to water)

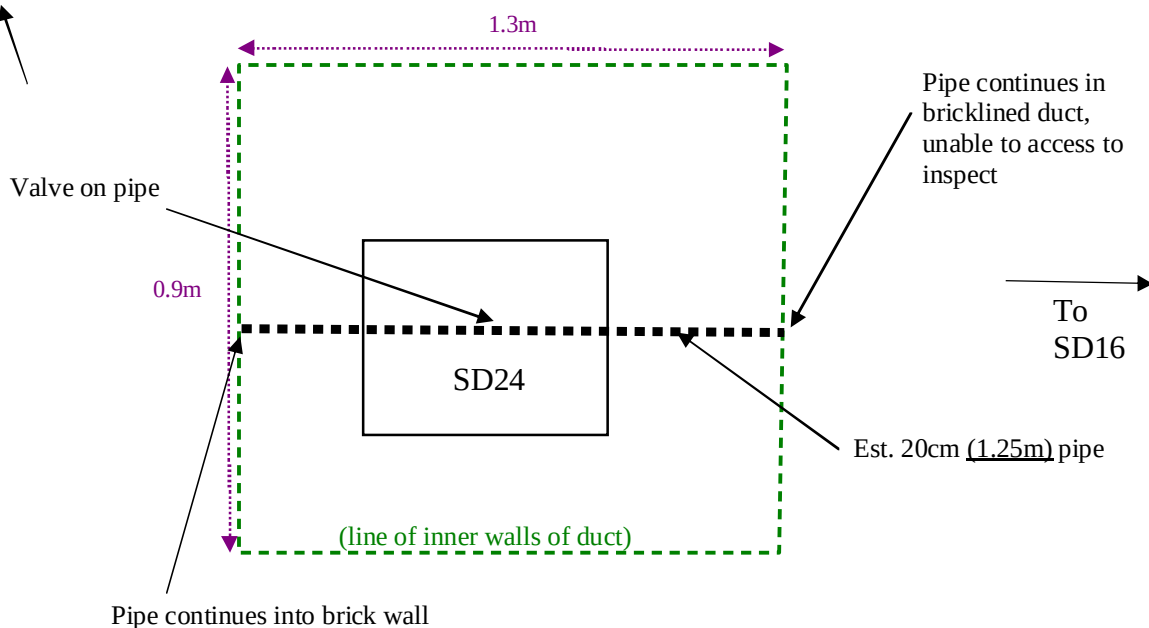
Suspected asbestos containing materials: None visible

Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)

North



Line of outer wall of Neptune House

Duct Inspection Log

SD25

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 1.5 mbgl

Height of duct (floor to ceiling): 1.25 m

Width of duct: see plan (chamber not duct)

Construction materials: Brick walls

Amount of debris on floor: Chamber contains water (1.35 mbgl to water)

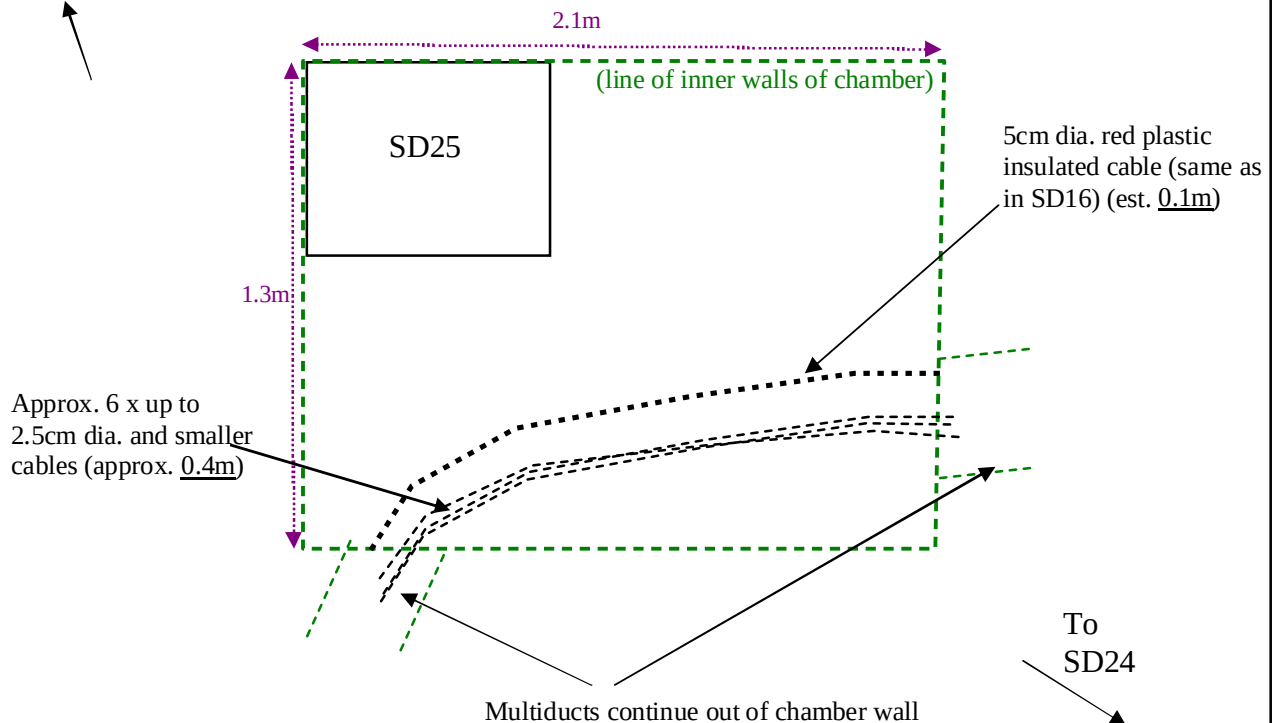
Suspected asbestos containing materials: None visible

Other notes from inspection: Water black with oily sheen

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)

North



Duct Inspection Log

SD26



Scilfix

Project: C258.PUR Blyth Road, Hayes

Date: 14/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 1.7 mbgl, see drawing

Height of duct (floor to ceiling): 1.36 m

Width of duct: see plan

Construction materials: Brick walls

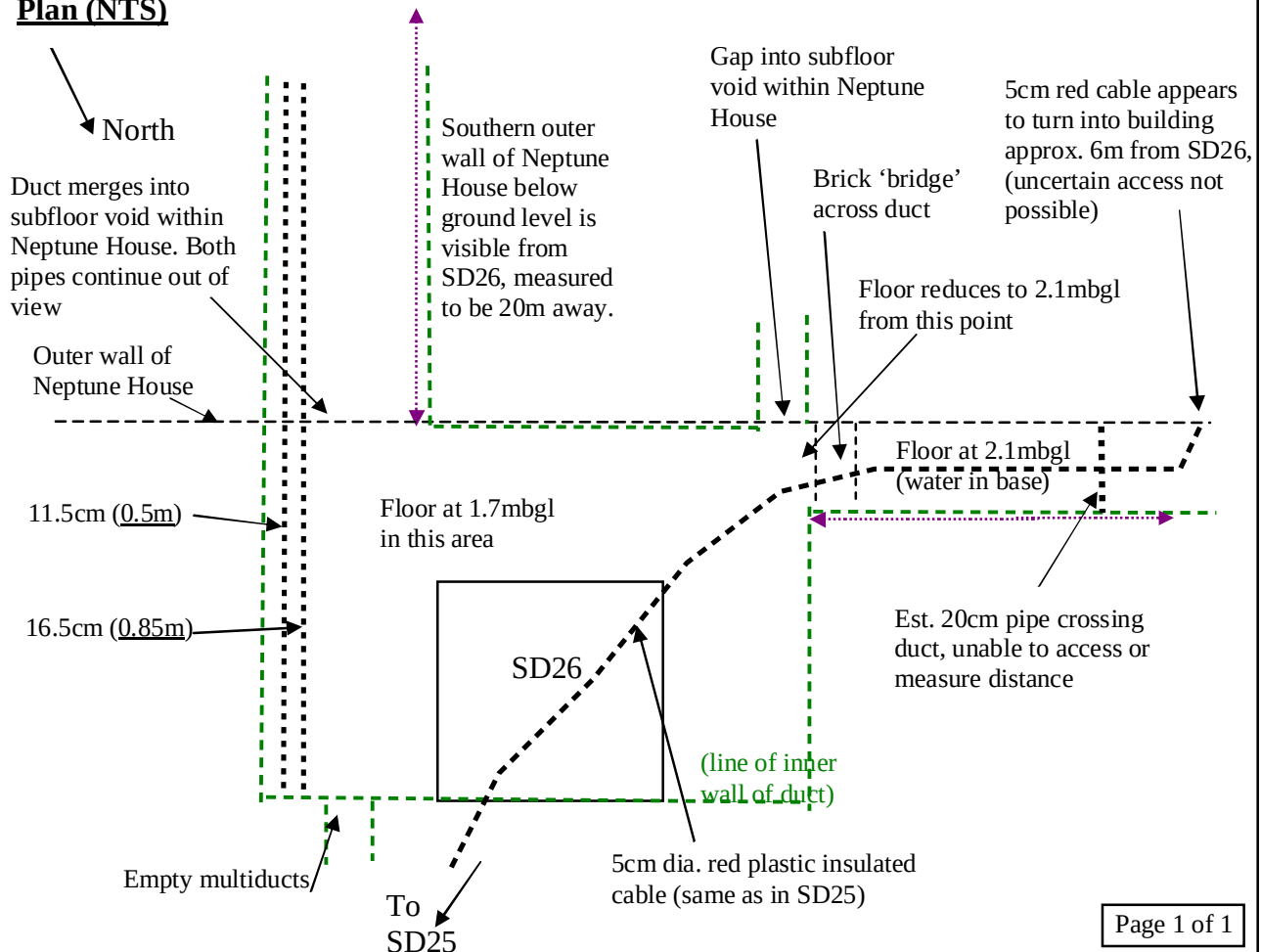
Amount of debris on floor: Occasional rubble, metal and concrete

Suspected asbestos containing materials: None visible

Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD27

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 15/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 2.0 mbgl

Height of duct (floor to ceiling): 1.7 m

Width of duct: 0.9 m

Construction materials: Brick walls

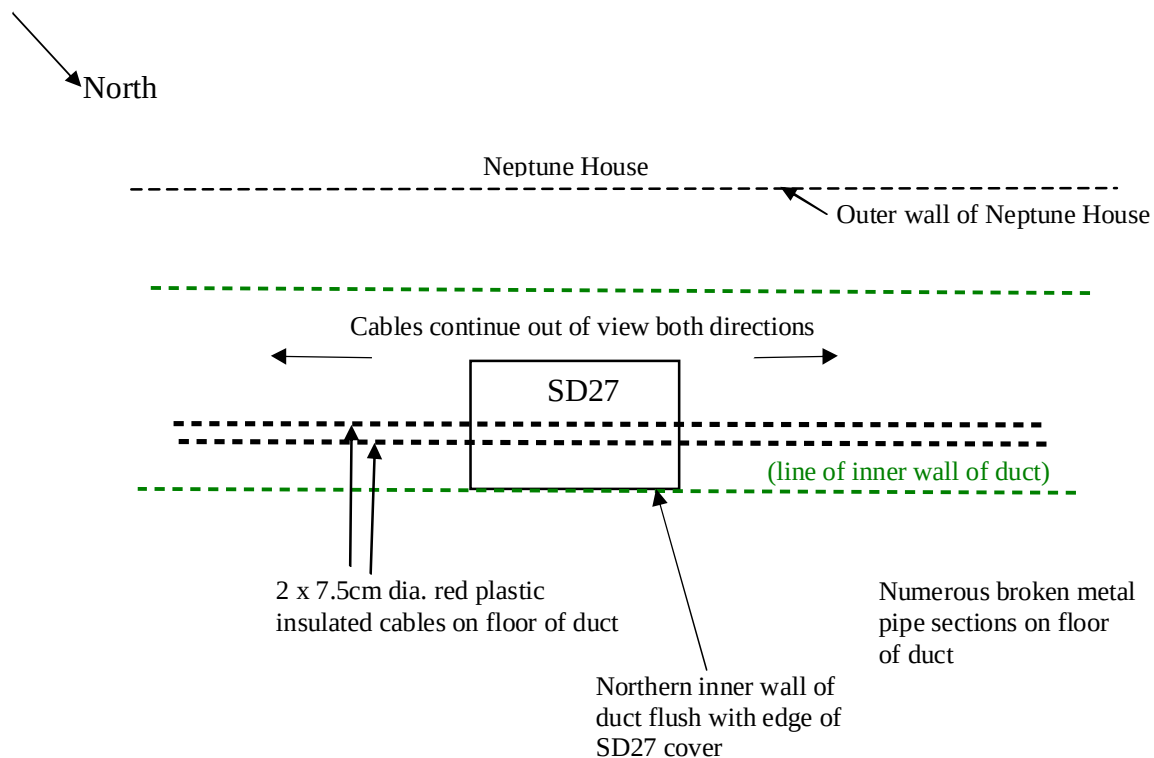
Amount of debris on floor: approx. 1cm water and minor sediment/rubble, metal pipe

Suspected asbestos containing materials: None visible

Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Duct Inspection Log

SD28

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 15/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 1.1 mbgl (best estimate as duct partially rubble-filled)

Height of duct (floor to ceiling): 0.9 m (best estimate as duct partially rubble-filled)

Width of duct: 0.8 m

Construction materials: Brick walls

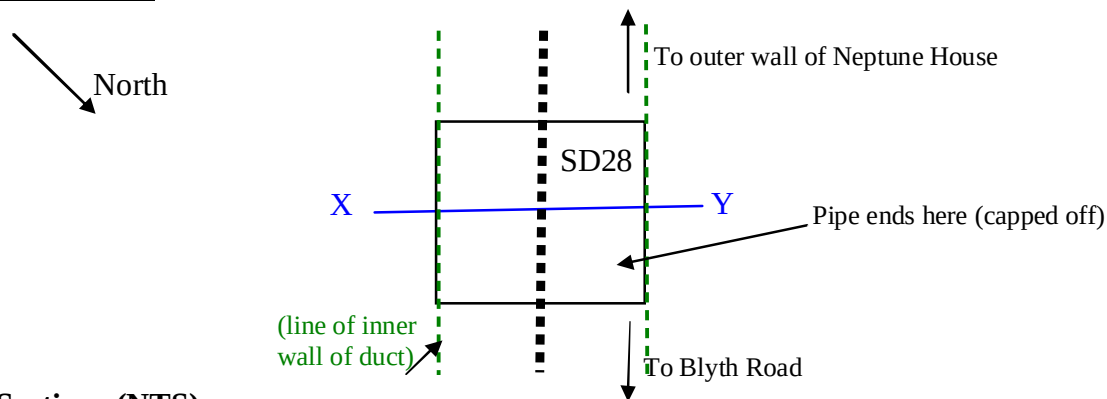
Amount of debris on floor: Partially blocked with soil rubble and concrete

Suspected asbestos containing materials: Pipe lagging

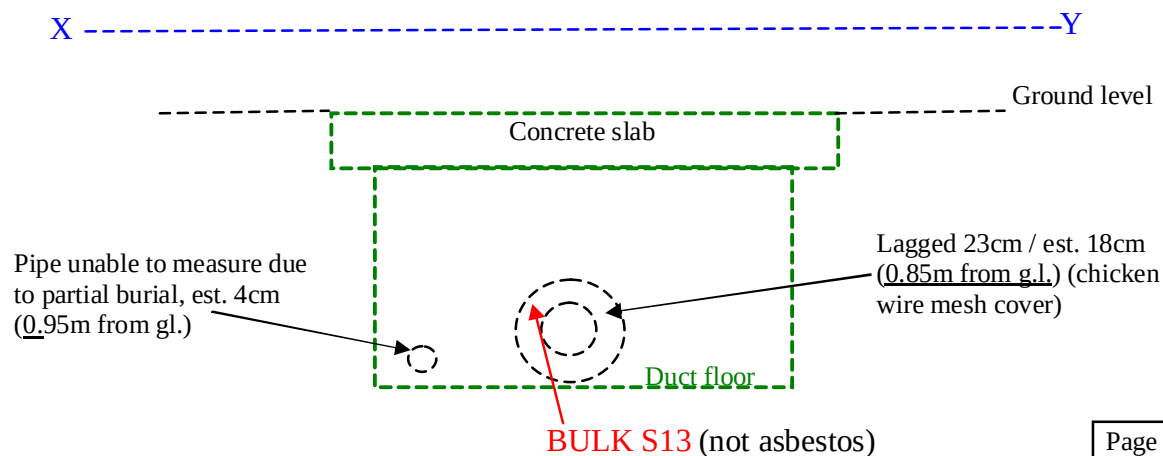
Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Sections (NTS)



Duct Inspection Log

SD29

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 15/08/2013

Logged by: PH

Weather: Cloudy

General Details

Depth to floor from ground level: 2.06 mbgl

Height of duct (floor to ceiling): 0.7 m (estimate limited access)

Width of duct: 1.22 m

Construction materials: Concrete 0-0.7mbgl, brick below

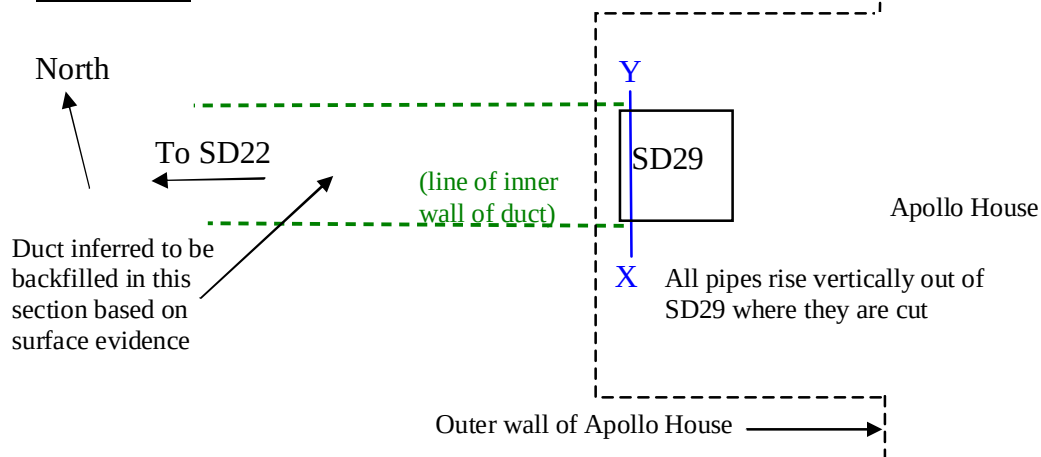
Amount of debris on floor: Poor visibility no access

Suspected asbestos containing materials: Non visible

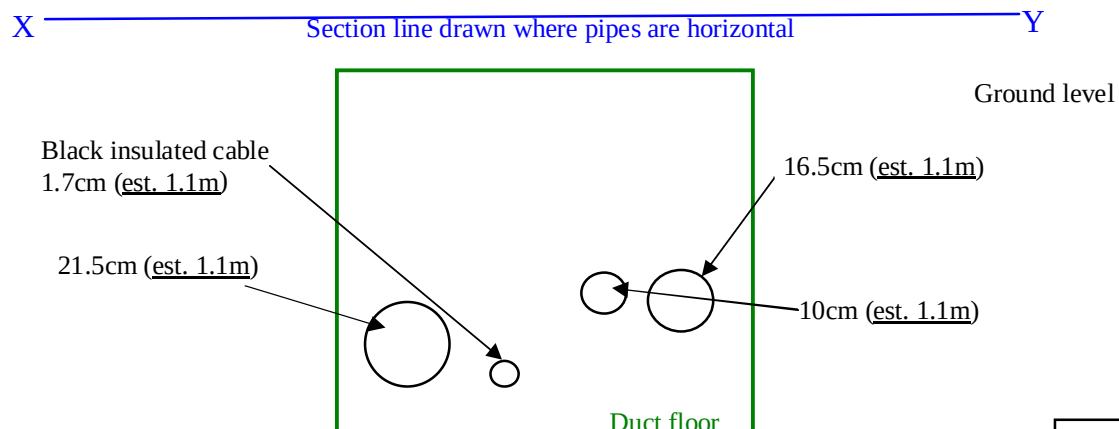
Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Section (NTS)



Duct Inspection Log

SD30

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 16/08/2013

Logged by: PH

Weather: Rain

General Details

Depth to floor from ground level: 1.35 mbgl

Height of duct (floor to ceiling): 1.2 m

Width of duct: 0.8 m

Construction materials: Brick walls

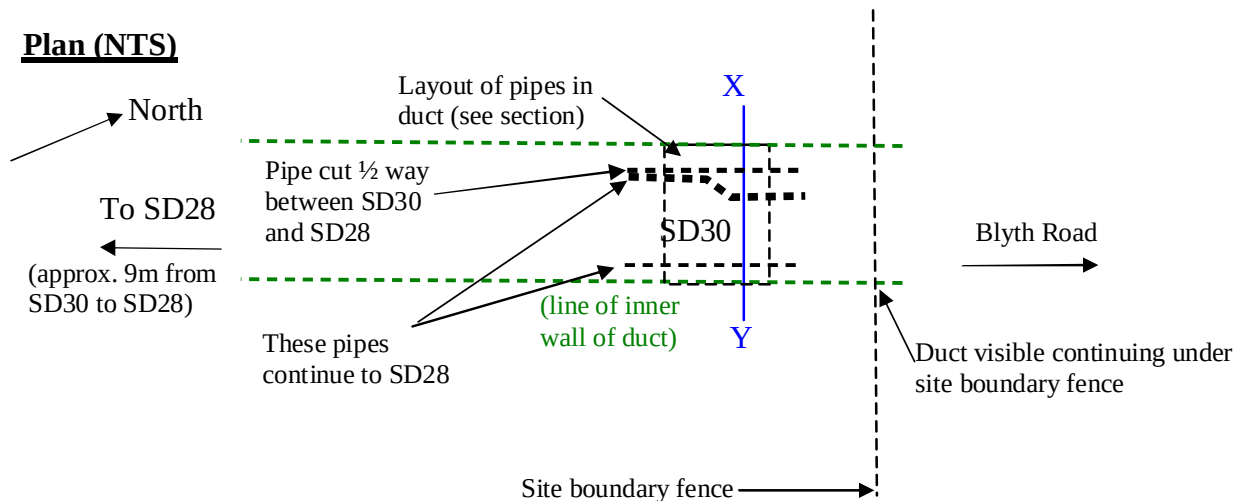
Amount of debris on floor: Soil and leaves

Suspected asbestos containing materials: Pipe lagging

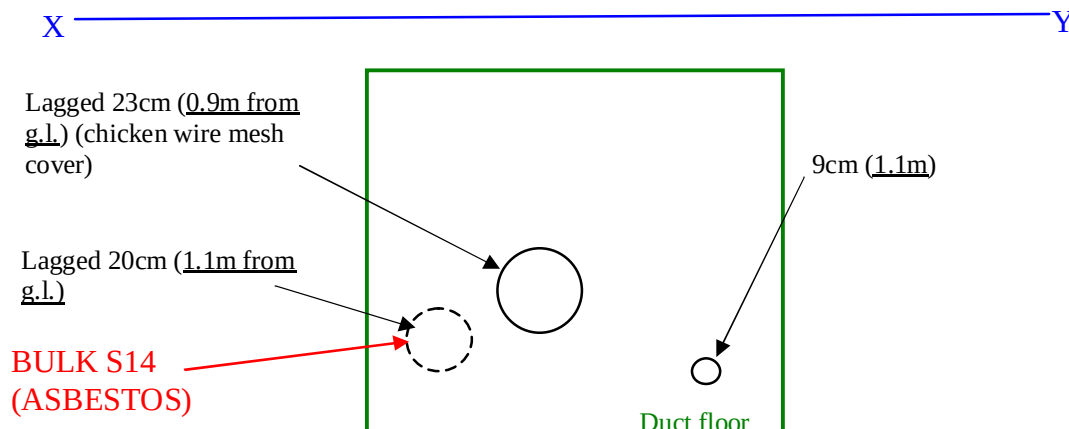
Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Section (NTS)



Duct Inspection Log

SD31

Soilfix

Project: C258.PUR Blyth Road, Hayes

Date: 16/08/2013

Logged by: PH

Weather: Rain

General Details

Depth to floor from ground level: 1.5 mbgl

Height of duct (floor to ceiling): 1.2 m

Width of duct: 1.2 m

Construction materials: Brick walls

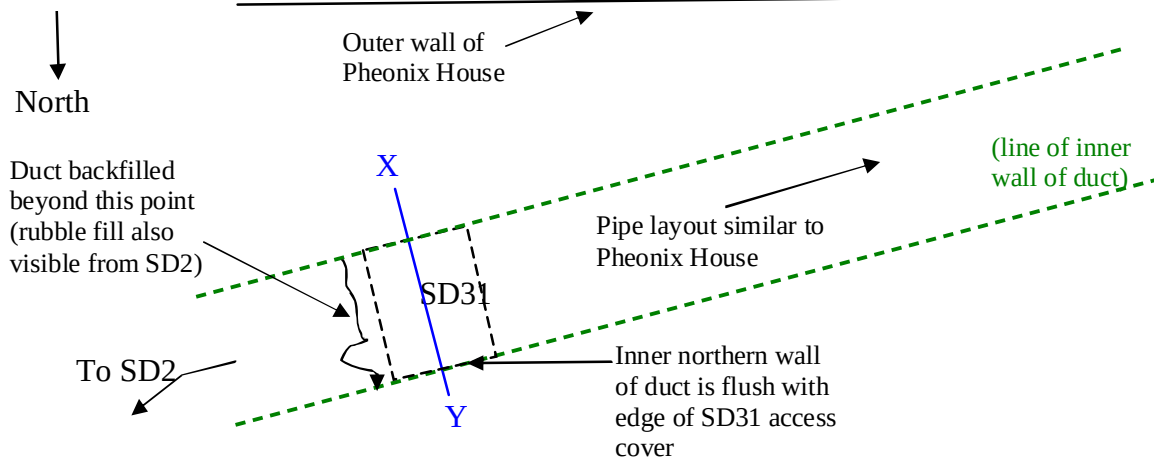
Amount of debris on floor: Largely clear minor rubble

Suspected asbestos containing materials: None visible

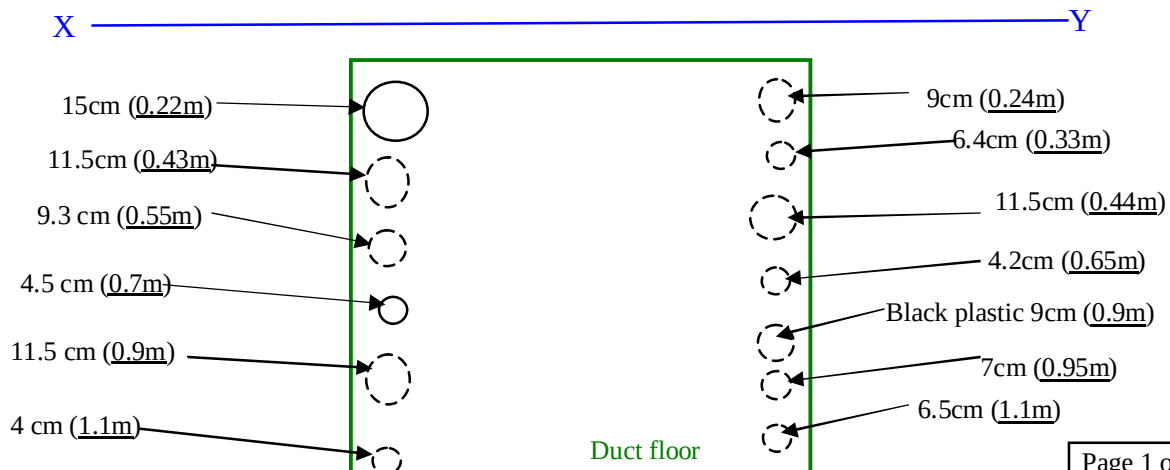
Other notes from inspection:

Notes: Where distances are shown from the SD to a feature, these are from the central point of the SD access hole. Annotation for each pipe gives approx. diameter in cm, followed by approx. invert level below duct ceiling e.g. 25.4cm (1.2m). All pipes are metal and unlagged unless stated otherwise. Where two diameters are shown for a pipe (e.g. 18cm / 7cm) the first is the diameter of the lagging and the second is the diameter of the pipe (if visible). Any samples of suspected ACMs are labeled by 'BULK' followed by the sample number, and the result of the laboratory analysis.

Plan (NTS)



Section (NTS)



Appendix D

Trial Pit (TP) Logs

Trial Pit Log

TP1

Soilfix

Project: C258.PUR Blyth Road, Hayes

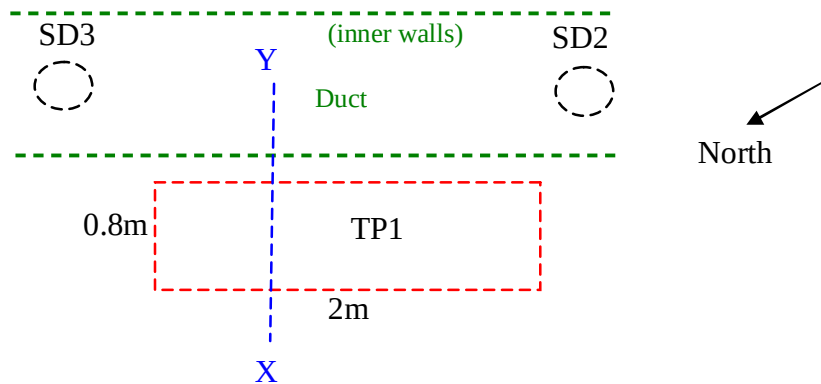
Date: 15/08/2013

Logged by: PH

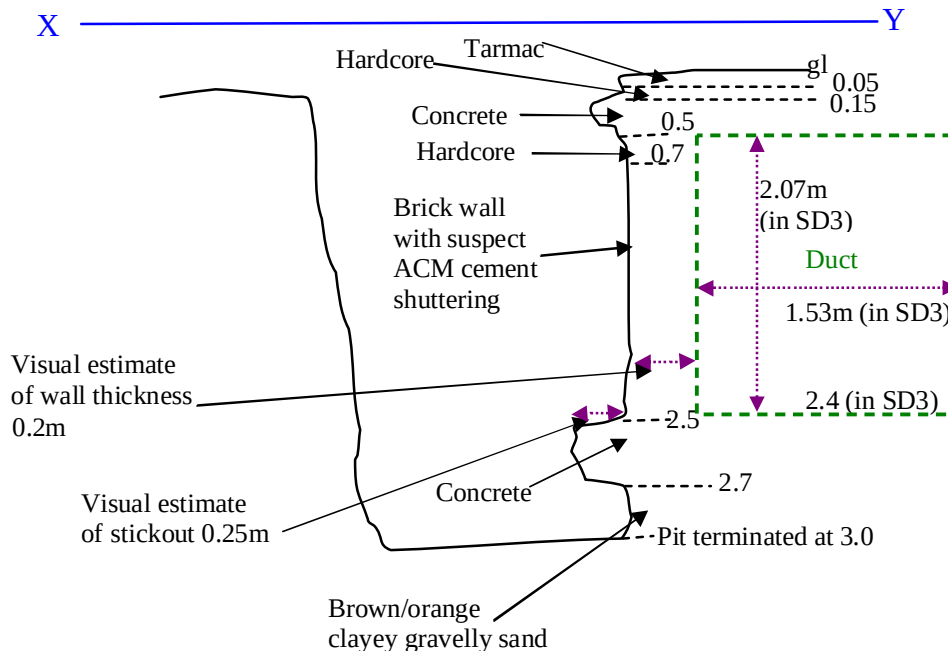
Weather: Overcast

Excavation method: 13T 360 excavator

Plan (NTS)



Sections (NTS) (all depths are metres below existing ground level unless stated)



Original surface condition: Tarmac

Reinstatement: Backfilled with arisings and compacted with excavator

Stability: Granular fill has poor stability

Groundwater: None encountered

Trial Pit Log

TP2

Soilfix

Project: C258.PUR Blyth Road, Hayes

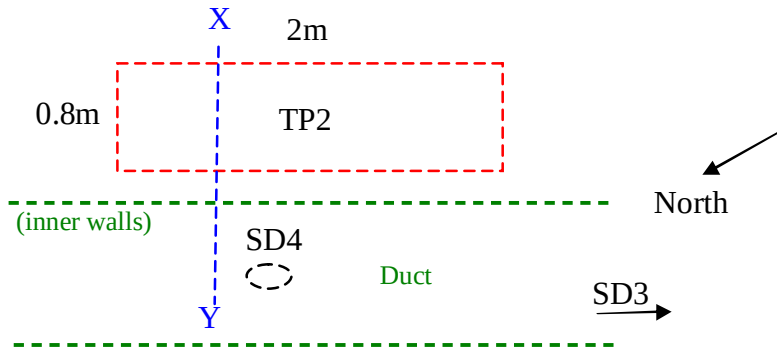
Date: 15/08/2013

Logged by: PH

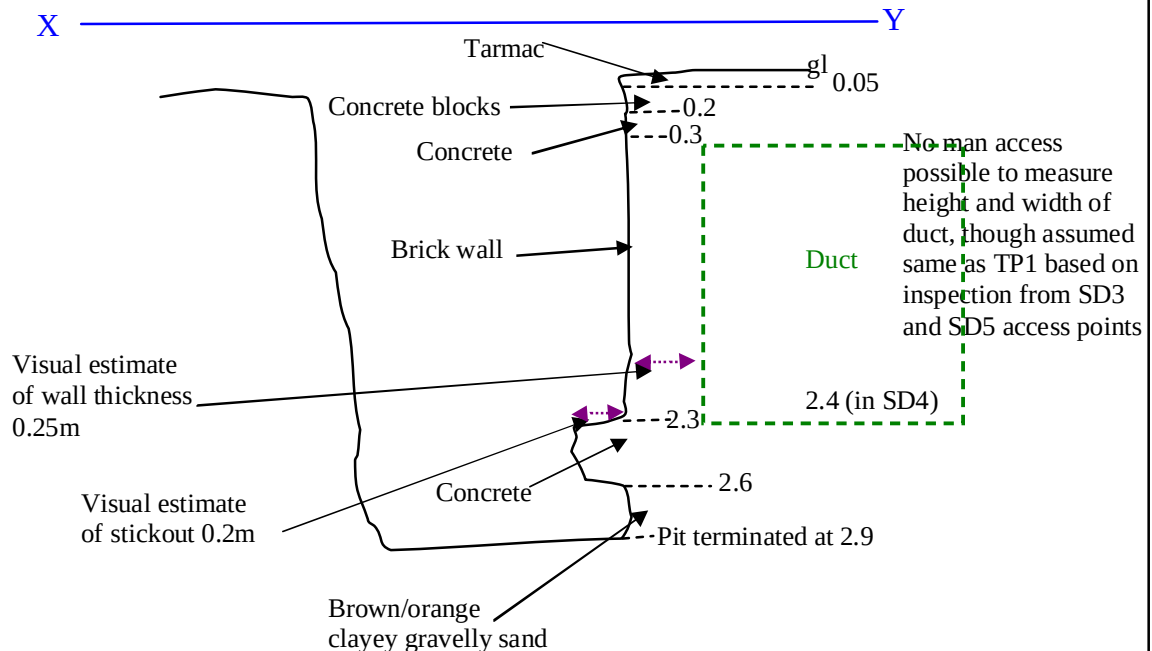
Weather: Overcast

Excavation method: 13T 360 excavator

Plan (NTS)



Sections (NTS) (all depths are metres below existing ground level unless stated)



Original surface condition: Tarmac

Reinstatement: Backfilled with arisings and compacted with excavator

Stability: Granular fill has poor stability

Groundwater: None encountered

Trial Pit Log

TP3

Soilfix

Project: C258.PUR Blyth Road, Hayes

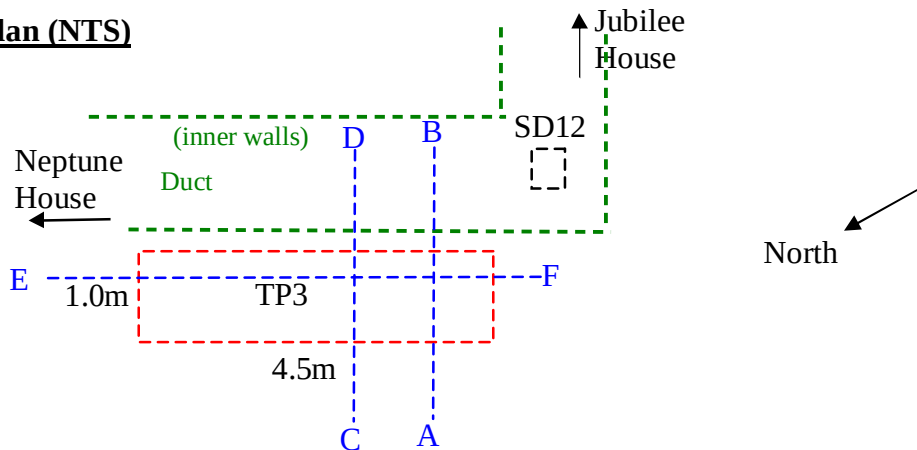
Date: 15/08/2013

Logged by: PH

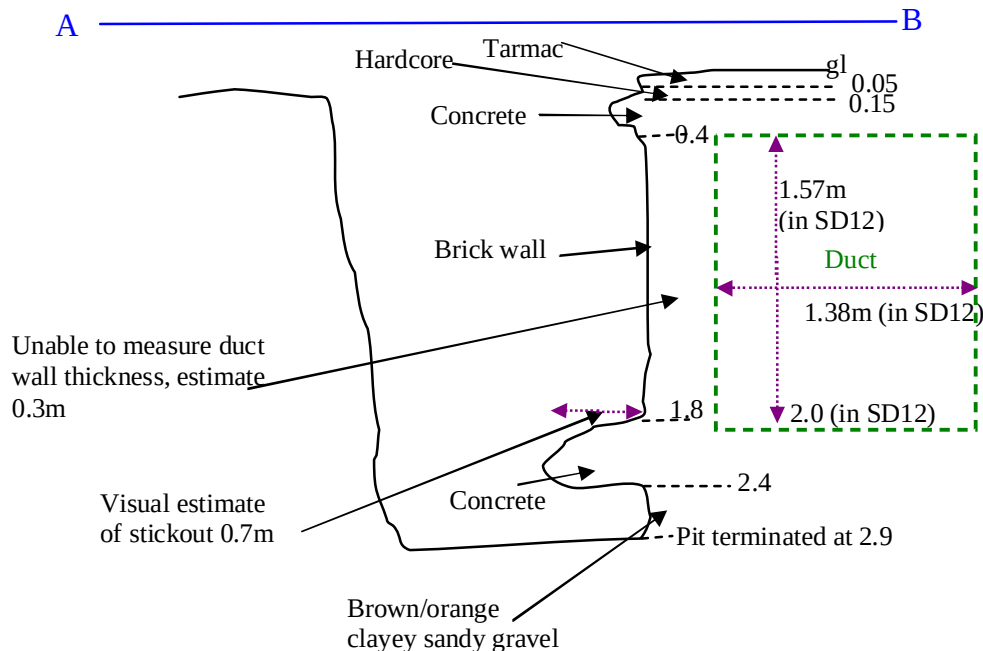
Weather: Overcast

Excavation method: 13T 360 excavator

Plan (NTS)



Sections (NTS) (all depths are metres below existing ground level unless stated)



Original surface condition: Tarmac

Reinstatement: Backfilled with arisings and compacted with excavator

Stability: Granular fill has poor stability

Groundwater: None encountered

Trial Pit Log

TP3

Soilfix

Project: C258.PUR Blyth Road, Hayes

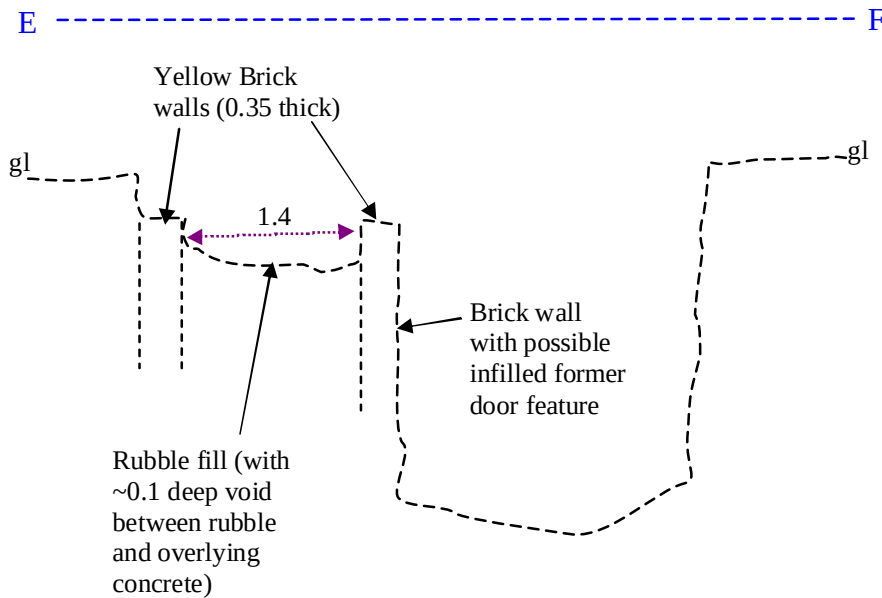
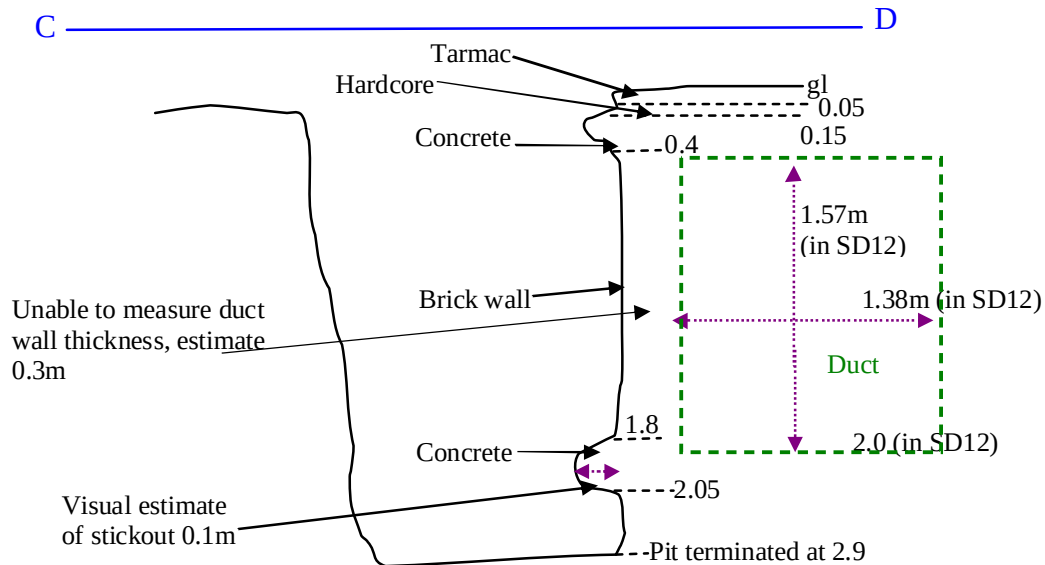
Date: 15/08/2013

Logged by: PH

Weather: Overcast

Excavation method: 13T 360 excavator

Sections continued (NTS) (all depths are metres below existing ground level unless stated)



Trial Pit Log

TP4

Soilfix

Project: C258.PUR Blyth Road, Hayes

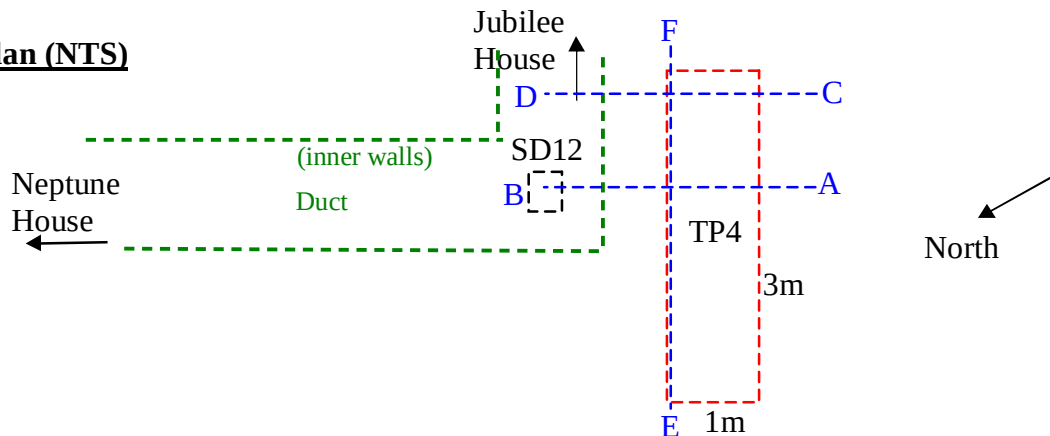
Date: 15/08/2013

Logged by: PH

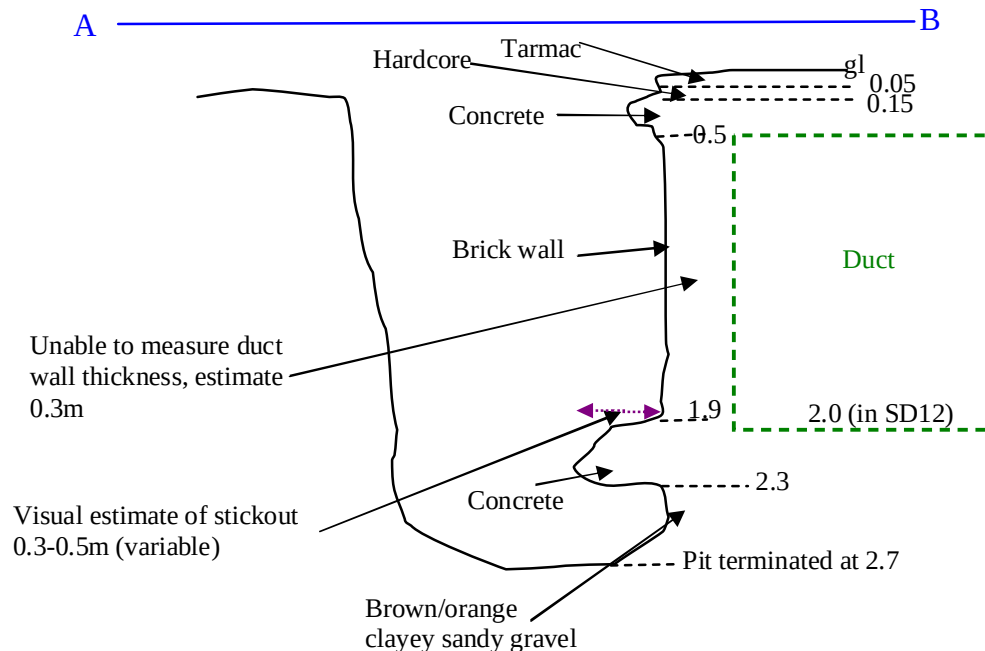
Weather: Overcast

Excavation method: 13T 360 excavator

Plan (NTS)



Sections (NTS) (all depths are metres below existing ground level unless stated)



Original surface condition: Tarmac

Reinstatement: Backfilled with arisings and compacted with excavator

Stability: Granular fill has poor stability

Groundwater: Encountered - See sections

Trial Pit Log

TP4

Soilfix

Project: C258.PUR Blyth Road, Hayes

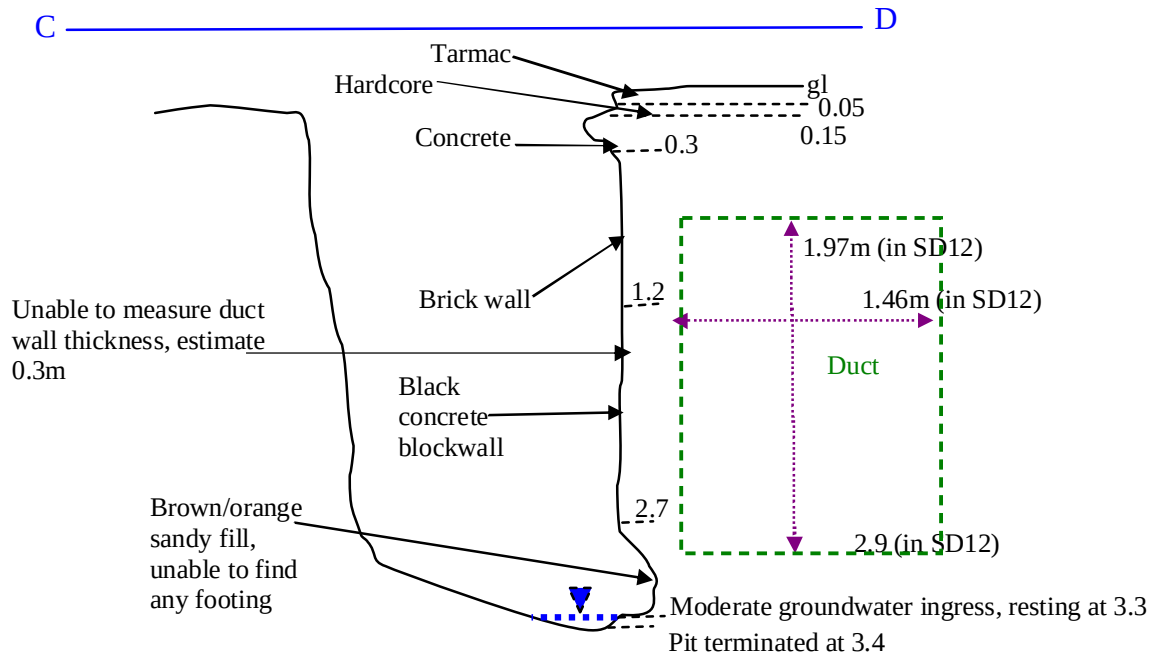
Date: 15/08/2013

Logged by: PH

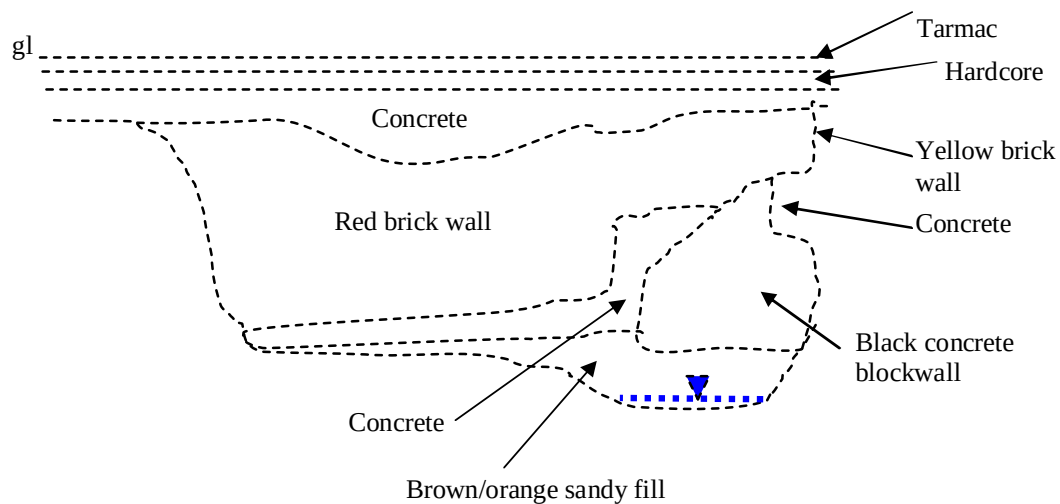
Weather: Overcast

Excavation method: 13T 360 excavator

Sections continued (NTS) (all depths are metres below existing ground level unless stated)



E ----- F
(view of face of trial pit)



Trial Pit Log

TP5

Soilfix

Project: C258.PUR Blyth Road, Hayes

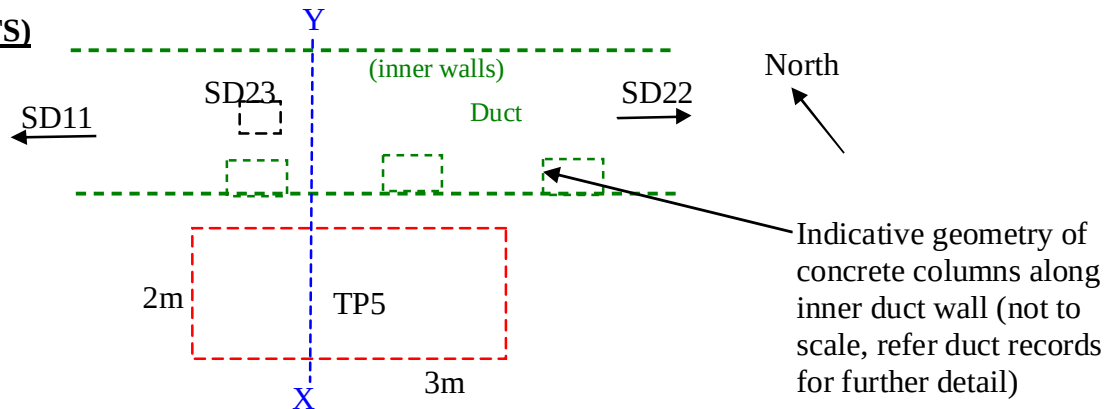
Date: 15/08/2013

Logged by: PH

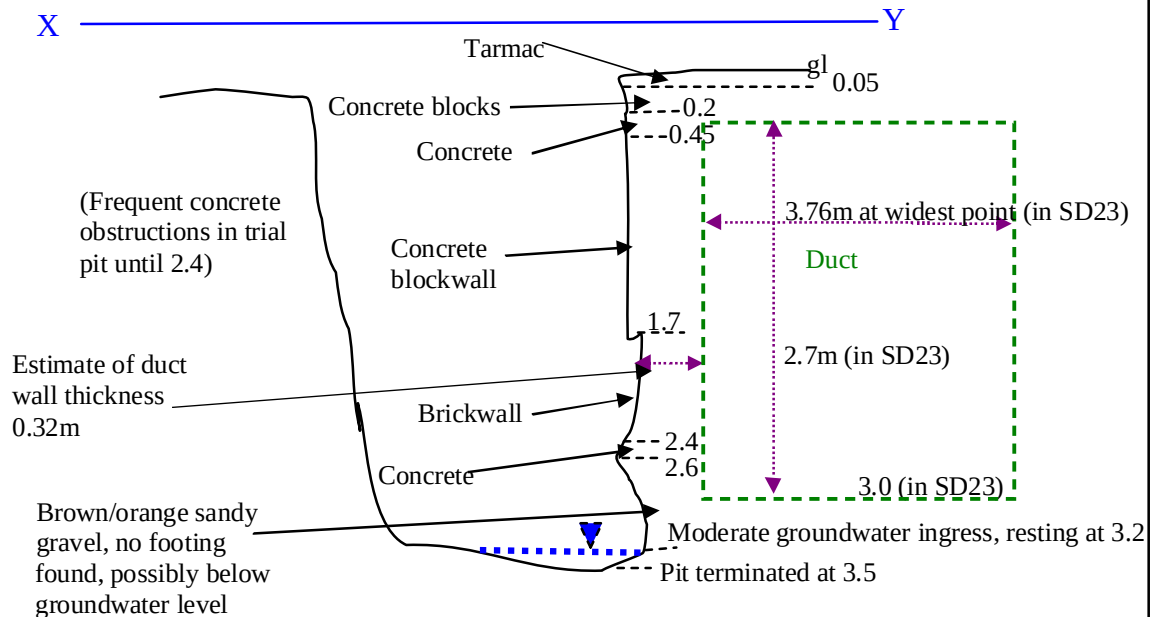
Weather: Overcast

Excavation method: 13T 360 excavator

Plan (NTS)



Sections (NTS) (all depths are metres below existing ground level unless stated)



Original surface condition: Tarmac

Reinstatement: Backfilled with arisings and compacted with excavator

Stability: Granular fill has poor stability

Groundwater: See section

Trial Pit Log

TP6

Soilfix

Project: C258.PUR Blyth Road, Hayes

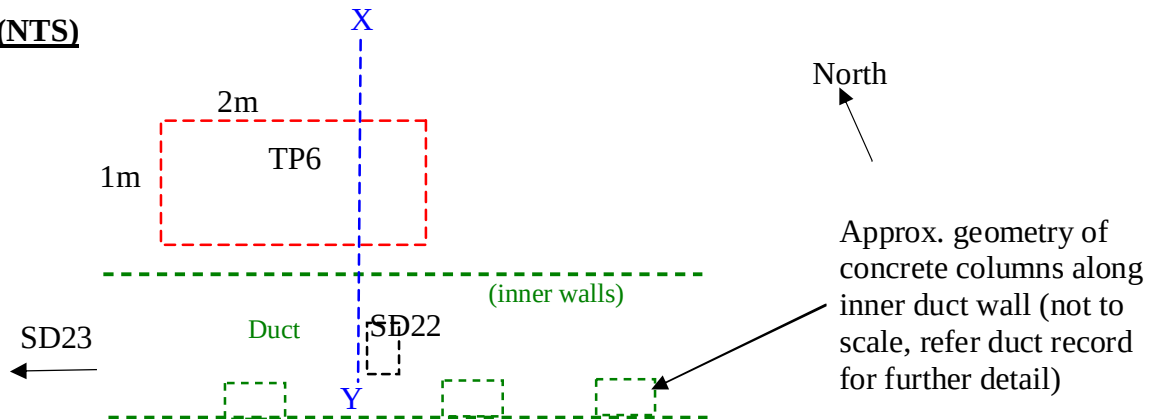
Date: 15/08/2013

Logged by: PH

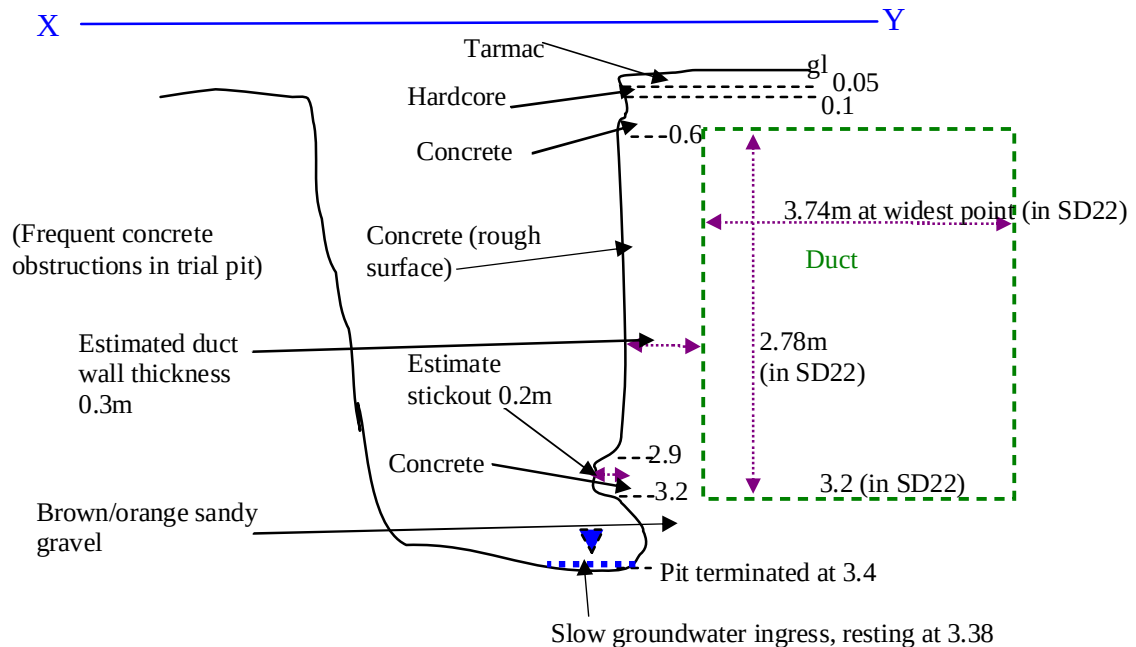
Weather: Overcast

Excavation method: 13T 360 excavator

Plan (NTS)



Sections (NTS) (all depths are metres below existing ground level unless stated)



Original surface condition: Tarmac

Reinstatement: Backfilled with arisings and compacted with excavator

Stability: Granular fill has poor stability

Groundwater: See section

Trial Pit Log

TP7

Soilfix

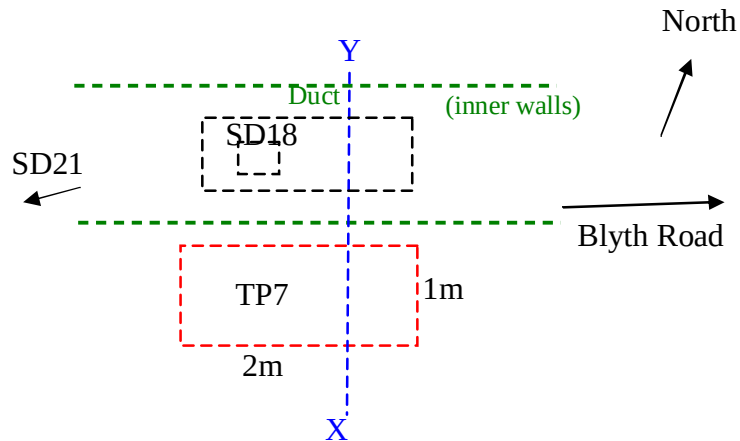
Project: C258.PUR Blyth Road, Hayes

Date: 16/08/2013

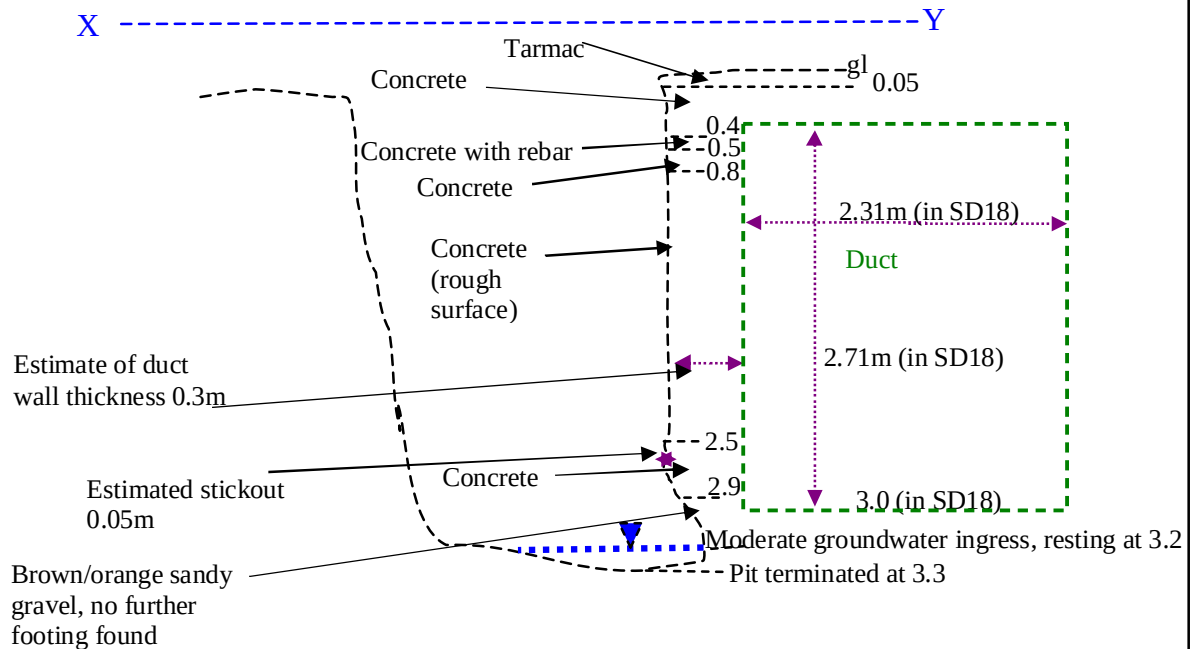
Logged by: PH

Weather: Rain Excavation method: 13T 360 excavator

Plan (NTS)



Sections (NTS) (all depths are metres below existing ground level unless stated)



Original surface condition: Tarmac

Reinstatement: Backfilled with arisings and compacted with excavator

Stability: Granular fill has poor stability

Groundwater: See section

Trial Pit Log

TP8

Soilfix

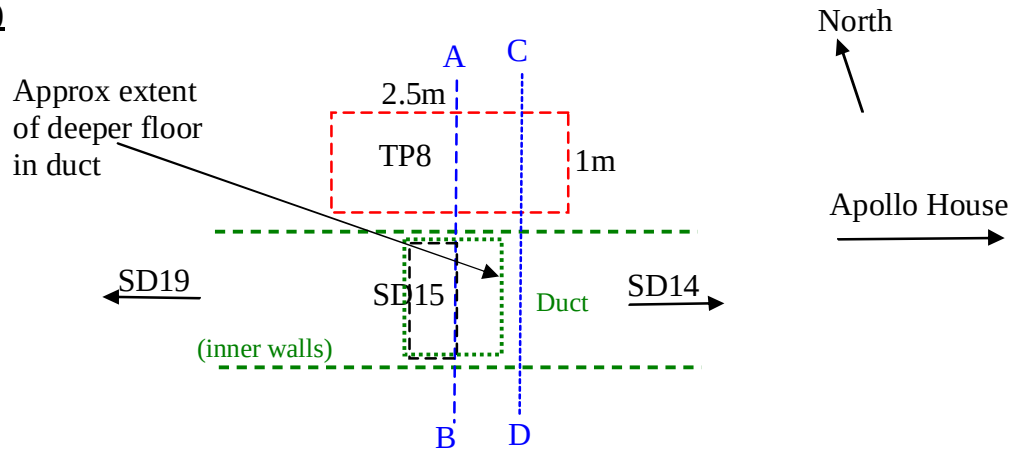
Project: C258.PUR Blyth Road, Hayes

Date: 16/08/2013

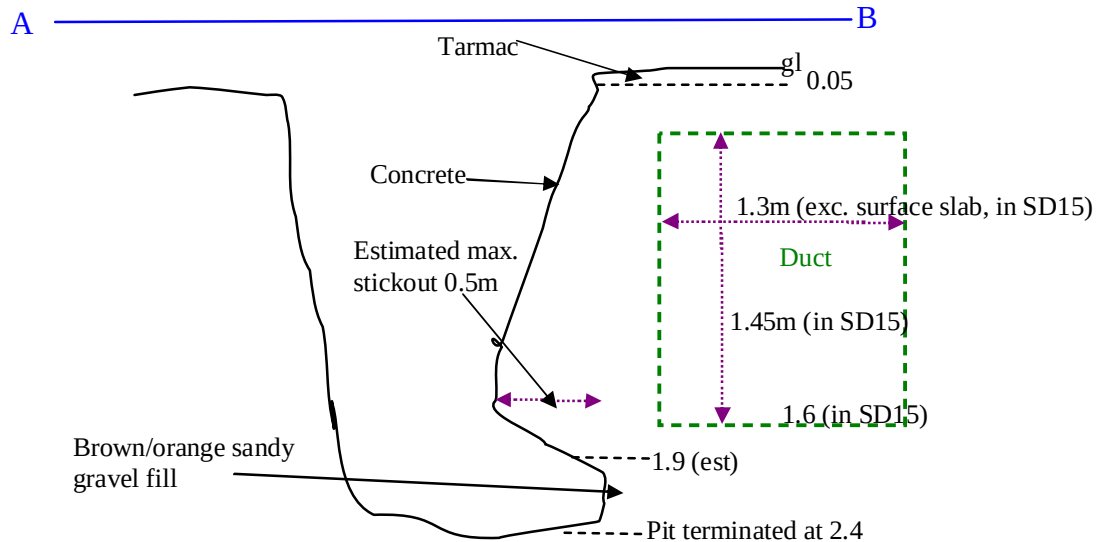
Logged by: PH

Weather: Rain Excavation method: 13T 360 excavator

Plan (NTS)



Sections (NTS) (all depths are metres below existing ground level unless stated)



Section C-D: Duct wall not exposed in pit, no stickout visible (depth to duct floor is only ~0.8mbgl on Section line C-D)

Original surface condition: Tarmac

Reinstatement: Backfilled with arisings and compacted with excavator

Stability: Granular fill has poor stability

Groundwater: None encountered

Trial Pit Log

TP9

Soilfix

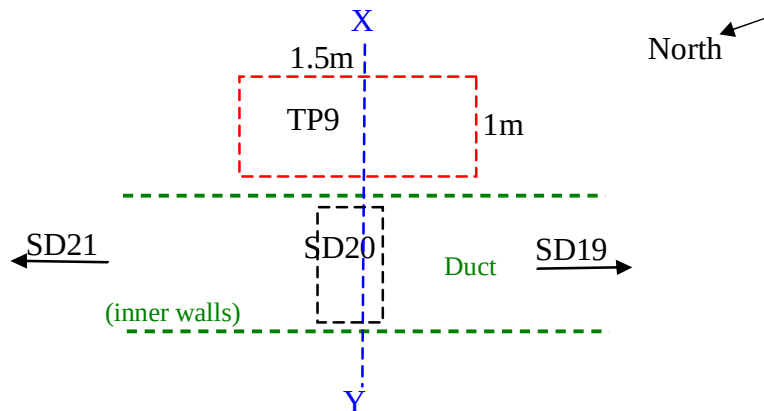
Project: C258.PUR Blyth Road, Hayes

Date: 16/08/2013

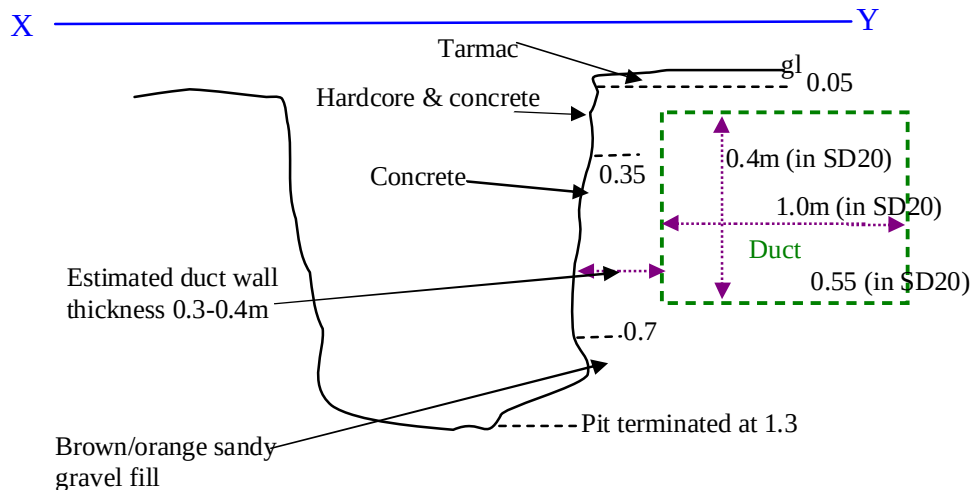
Logged by: PH

Weather: Rain Excavation method: 13T 360 excavator

Plan (NTS)



Sections (NTS) (all depths are metres below existing ground level unless stated)



Original surface condition: Tarmac

Reinstatement: Backfilled with arisings and compacted with excavator

Stability: Granular fill has poor stability

Groundwater: None encountered

Trial Pit Log

TP10

Soilfix

Project: C258.PUR Blyth Road, Hayes

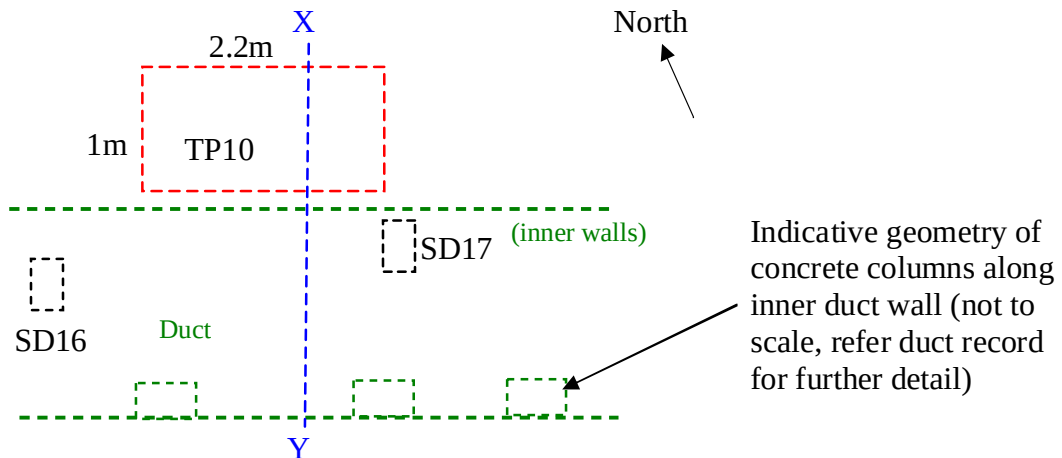
Date: 16/08/2013

Logged by: PH

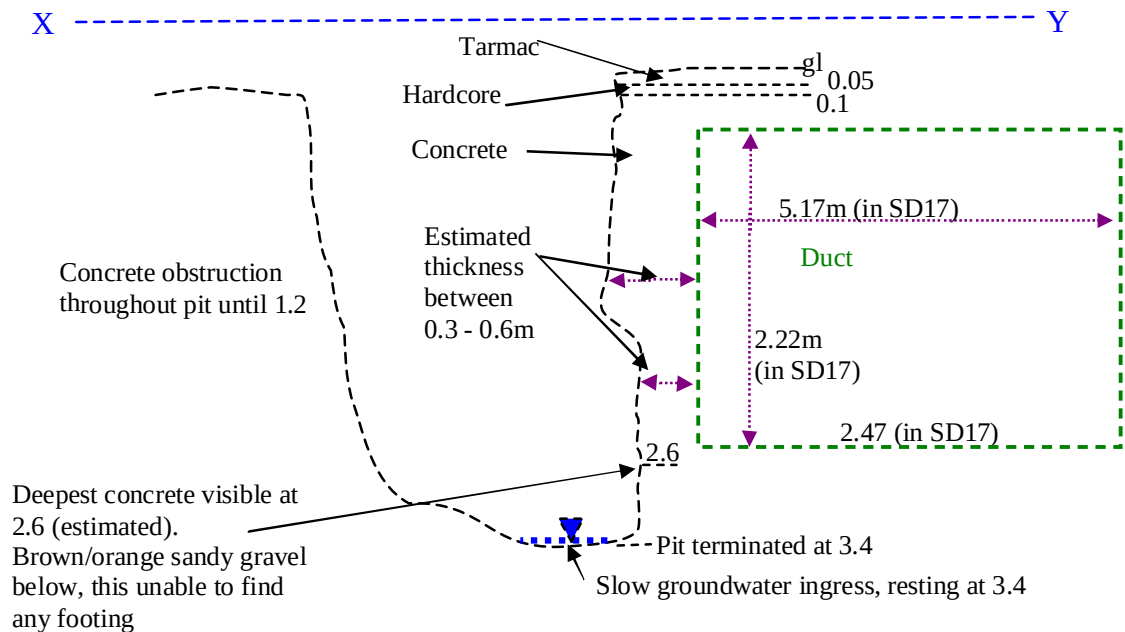
Weather: Drizzle

Excavation method: 13T 360 excavator

Plan (NTS)



Sections (NTS) (all depths are metres below existing ground level unless stated)



Original surface condition: Tarmac

Reinstatement: Backfilled with arisings and compacted with excavator

Stability: Granular fill has poor stability

Groundwater: See section

Trial Pit Log

TP11

Soilfix

Project: C258.PUR Blyth Road, Hayes

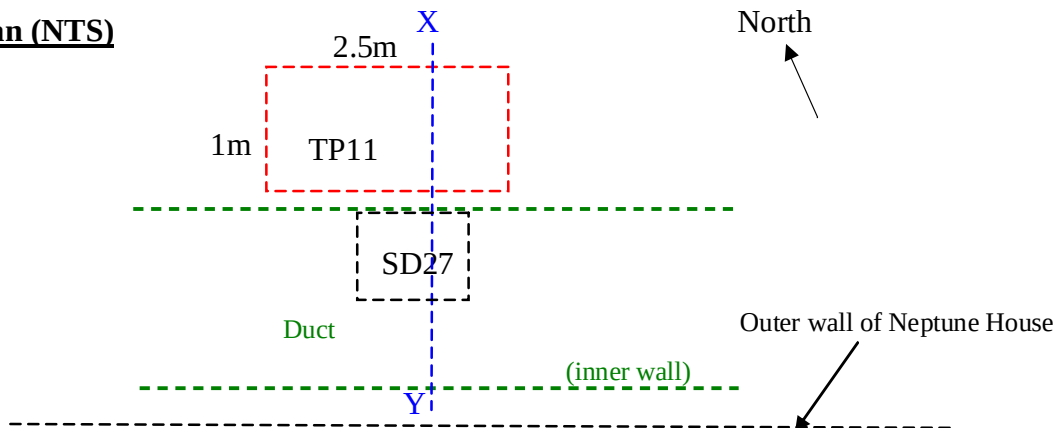
Date: 16/08/2013

Logged by: PH

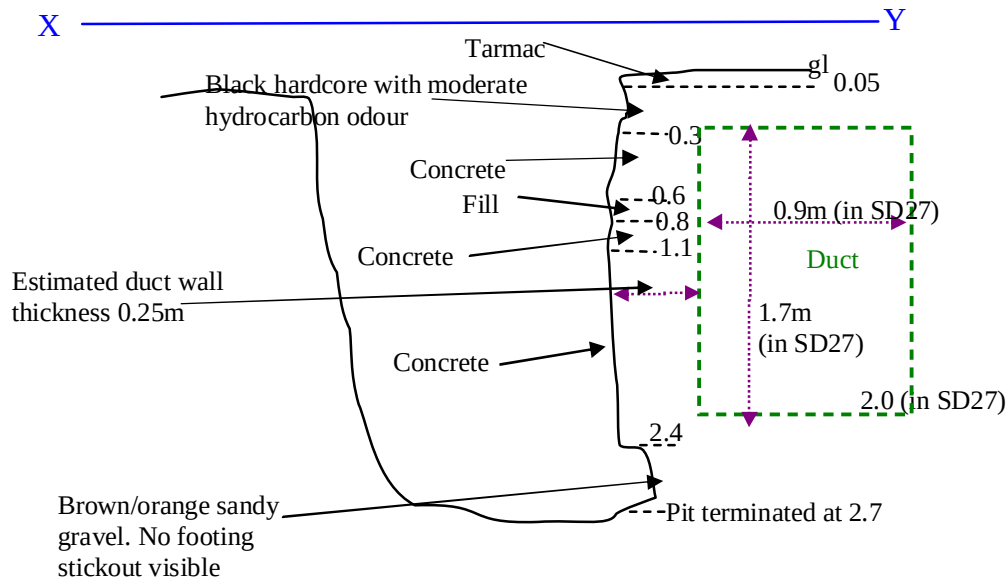
Weather: Drizzle

Excavation method: 13T 360 excavator

Plan (NTS)



Sections (NTS) (all depths are metres below existing ground level unless stated)



Original surface condition: Tarmac

Reinstatement: Backfilled with arisings and compacted with excavator

Stability: Granular fill has poor stability

Groundwater: See section

Appendix E

REC Asbestos Laboratory Report for Bulk Samples

Certificate of Analysis for Bulk Identification

Job No. 13MANB 3276

Customer Address

Soilfix, 10 St Martins Industrial Park,
Avonmouth, Bristol, BS11 0RS

Site Address

Blyth Road, Hayes, UB3

Customer Order No	MAN/13/S/3238
Samples Submitted By	EC
Sampled By	EC
No. of Samples Submitted	27
Date Samples Submitted	19/08/2013
Date Samples Analysed	20/08/2013
Samples Analysed In	Manchester
Samples Analysed By	Simon Haines
Analyst / Authorised Signature	

REC (Asbestos) Ltd. accepts no responsibility for sampling activities undertaken by the client. Analysis is conducted in accordance with HSG 248 / RECASB01. Where soil analysis requires the taking of representative sub samples, the cone and quarter technique is used as described in RECASB01. The material description shall be regarded as tentative and is not included in the UKAS Accreditation for this laboratory. Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation. Where this document has been digitally signed, printed copies are uncontrolled.

Samp No	Origin / Location of Material	Material Type	Asbestos Type(s)	Comments
1	Insulation debris on 2nd large pipe in duct SD22	Insulation	Amosite	
2	Paper covering 1st large pipe in duct SD22	Paper	Amosite	
3	Insulation to 2nd large pipe in duct SD22	Insulation	Amosite	
4	Insulation debris on floor in duct SD22	Insulation	Amosite	
5	Insulation debris on lower pipe near floor duct SD22	Insulation	Amosite	
6	Gaskets to pipe duct SD23 + throughout all ducts	Gasket	Chrysotile	
7	Cement debris to floor in duct SD3	Asbestos Cement	Chrysotile Crocidolite	
8	Insulation to pipes in duct SD3	Insulation	No Asbestos Detected	
9	Insulation debris on floor of duct SD2	Insulation	No Asbestos Detected	
10	Insulation to large pipe in duct SD7	Insulation	Crocidolite Chrysotile	

11	Insulation debris to wall of duct SD6	Asbestos Insulation Board	Amosite Chrysotile	
12	Insulation debris to floor of duct SD6	Insulation	Amosite Crocidolite	
13	Insulation to pipe in duct SD28	Insulation	No Asbestos Detected	
14	Insulation to lower left hand pipe in duct SD30	Insulation	Amosite	
15	Insulation to pipe in duct SD14	Insulation	No Asbestos Detected	
16	Insulation to pipe in duct SD20	Insulation	No Asbestos Detected	
17	Insulation to low level pipe in duct SD18	Insulation	No Asbestos Detected	
18	Insulation to middle pipe in duct SD12	Insulation	Amosite	
19	Insulation to Large top pipe in duct SD12	Insulation	Chrysotile Crocidolite	
20	Insulation to pipes in duct SD12	Insulation	No Asbestos Detected	
21	Insulation debris to floor in duct SD12	Debris	Amosite	
22	Insulation on top of middle pipe between 2 duct SD11	Insulation	No Asbestos Detected	
23	Insulation debris on top of 1st large pipe duct SD11	Insulation	Amosite Crocidolite	
24	Insulation debris on floor in duct SD11	Insulation	Chrysotile	
25	Insulation to loose small pipe against wall duct SD17	Insulation	Amosite Chrysotile	
26	Insulation debris on floor duct SD16	Insulation	Amosite	
27	Insulation debris on floor of duct SD16	Insulation	No Asbestos Detected	

Appendix F

Photographs: General Site Works



View towards Old Vinyl Factory, with Neptune House to right, on commencing works



Removing access covers with aid of JCB



Decontamination unit setup for emergency use



Fencing off open ducts during works



View towards Apollo House



Confined space entry setup



Spraying asbestos surfactant onto potential ACMs in duct prior to entry



View into duct during surveying and sampling works



Topman during confined space entry



Ground Penetrating Radar surveying



Lagged pipe housed in chicken wire in duct



Pipework in duct



View towards Blyth Road site entrance on completion Soilfix works



View towards Apollo House on completion Soilfix works



Typical trial pit reinstatement condition



Warning and covers placed over access holes where original covers not be replaced



Warning and covers placed over access holes where original covers not be replaced



View along northern edge of Neptune House on completion Soilfix works

Appendix G
Photographs: Service Ducts
(Supplied Separately)

Appendix H
Photographs: Trial Pits
(Supplied Separately)

Appendix I
Photographs: Bulk Samples
(Supplied Separately)

Appendix J
Videos from Rover Surveys in Service Ducts
(Supplied Separately)



APPENDIX 4 ▪ Field Monitoring Records

FIELD MONITORING RECORD

Site: Old Vinyl Factory, Hayes					Time on: 12:30			Officer: Nathan Dellow			
Job No: MER00566					Time off: 13:00			Date: 19-Aug-13			
Monitoring point	Flow / l.hr ⁻¹	Borehole pressure / mb	Methane / % v/v	Carbon dioxide / % v/v	Oxygen / % v/v	Carbon monoxide / ppm	Hydrogen sulphide / ppm	Atmos. pressure / mb	Depth to water / m	Depth to base / m	Comments
BH201	0.0	0.00	0.0	0.7	19.1	0	0	1019	3.41	7.63	—
WS2	0.0	0.00	0.0	0.0	20.8	0	0	1018	nr	nr	Bung stuck in borehole
W16	0.0	0.00	0.0	0.2	20.5	0	0	1020	3.28	5.55	Tap replaced in borehole, gas monitored after 15 minutes.
W17	0.0	0.00	0.0	0.0	20.8	0	0	1018	2.89	4.82	Probably WS17 - located not as drawing. Tap replaced in borehole, gas monitored after 15 minutes.
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Notes: Weather: Warm, with patchy cloud and sunny spells.					Instrument: GFM435			Continuation: 1 of 1		Checked: RG	
					Serial No: 11839			Signature: 			
					DOLC: 13-Mar-13						

na = not applicable

nd = none detected

nr = not recorded

MPL004.2.5

Forward hand-written original to Head Office and retain copy.

GAS MONITORING RECORD

Location Reference	Time	Flow and Pressure Measurements				Gas Measurements							Dip Measurements		Comments
		Flow		Atmospheric Pressure	Differential Pressure	Methane	Methane LEL	Carbon Dioxide	Oxygen	Carbon Monoxide	Hydrogen Sulphide	PID	Depth to Water	Depth to Base	
		max	steady												
		l hr ⁻¹													
MBH201	11:06	0.4	0.3	1028	-	0	0	0.7	19.7	2	0	0	2.79	7.43	Groundwater sample retrieved also - No olfactory or visual evidence of contamination
BH3	12:00	-	-	1028	-	nr	nr	nr	nr	nr	nr	nr	nr	nr	Unable to locate - presumed covered by demolition stockpile
WS2	12:30	-	-	1028	-	nr	nr	nr	nr	nr	nr	nr	nr	nr	No cover / gas bung - monitoring well silted up completely
WS17	13:00	-	-	1028	-	nr	nr	nr	nr	nr	nr	nr	nr	nr	Unable to locate - presumed covered by demolition stockpile
WS16	13:30	-	-	1028	-	nr	nr	nr	nr	nr	nr	0	2.65	4.01	No cover / gas bung on monitoring well
BH102	13:45	-	-	1028	-	nr	nr	nr	nr	nr	nr	0	2.58	7.70	RPS borehole - white tubing in well - groundwater sample retrieved
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather:		Sunny				nr = not recorded			Gas Analyser		PID	Site:			Boiler House - Old Vinyl Factory
						Model:			GA5000		MiniRae 2000	Project Number:			MER00566
						Serial Number:			G501571		110-009770	Monitored By:			GOB
						Date of Last Calibration:			18/02/2014		30/04/2013	Date:			12/03/2014



APPENDIX 5 ▪ Additional Groundwater and Vapour Risk Assessment

21st March 2014

Nayani Chandran
Contaminated Land and Air Quality
Planning Specialists
Residents Service
London Borough of Hillingdon
High Street
Uxbridge
Middlesex
UB8 1BW

By e-mail: nchandran@hillingdon.gov.uk

Dear Nayani

RE: ADDITIONAL GROUNDWATER AND VAPOUR RISK ASSESSMENT – BOILER HOUSE, OLD VINYL FACTORY, HAYES

Merebrook Consulting Limited (Merebrook) was requested by Purpleplexed LLP to undertake additional groundwater and vapour risk assessment at the Boiler House, Old Vinyl Factory, Hayes. The site is currently disused. The site is proposed to be redeveloped for residential end use.

The additional groundwater and soil gas / vapour assessment has been undertaken to meet the contaminated land conditions in accordance with the Supplementary Planning Guidance Document on Land Contamination and approved by the Local Planning Authority (LPA). This involves undertaking additional site works with regards to VOCs and chlorinated solvents in groundwater and hazardous soil gas (methane and carbon dioxide) and vapours (VOCs).

Review of Groundwater and vapour data from Previous Assessments

There have been several phases of assessment undertaken on the site. Several investigations were undertaken in the wider Old Vinyl Factory site between 1999 and 2010. No elevated concentrations of potential contaminants were identified in the groundwater samples. Merebrook has previously undertaken Phase 2 Geo-Environmental Assessment (GEA-MER00566-13-175) with no significant contamination identified in the groundwater samples. The laboratory results retrieved from BH201 returned concentrations below the laboratory detection limit for all total petroleum hydrocarbons (TPH) and speciated polycyclic aromatic hydrocarbons (PAHs). No soil source of contamination was identified. Given the granular nature of the made ground and gravels any source would be reflected in groundwater contamination.

Scope of works for additional groundwater and vapour monitoring

The scope of works for the additional groundwater, vapour and gas monitoring is outlined below:

1. Screening of the boreholes in the vicinity of the Boiler House (MBH201, WS2, WS16, WS17) using a photoionization detector (PID) to assess for VOCs;
2. Undertake additional an round of gas monitoring of the above boreholes using a gas analyser;
3. Collection of groundwater samples from BH201 and BH3 / BH102 with analysis for chlorinated solvents and VOCs. This will give us an up gradient and down gradient indication of contamination concentrations in groundwater and the resultant VOC risk; and
4. Collation of the laboratory and site specific data to produce a risk assessment assessing the results of the additional groundwater and gas vapour results.



Site works

An engineer from Merebrook attended site on Wednesday 12th March 2013 to undertake the additional monitoring. On arrival, it was noted that demolition works were being undertaken, with stockpiles of materials located in the areas of BH3 and WS17. Additionally, the flush cover and gas bung were missing from WS2 and WS16 and therefore were unable to undertake any additional gas monitoring.

Screening of monitoring wells for VOCs

MBH201 and BH102 were screened for VOCs using a PID prior to and after gas / groundwater monitoring. Despite not having covers and gas bungs, MWS2 and MWS16 were also screened using the PID. All four monitoring locations returned VOC concentrations of 0.0 ppm indicating that VOCs were not present.

Gas monitoring

As outlined above, gas monitoring was only undertaken at one monitoring location (MBH201) due to the demolition stockpiles and missing gas bungs. Levels of methane, carbon dioxide and oxygen were recorded in MBH201, together with associated parameters including borehole flow and ambient air pressure. The results of the gas monitoring are included in the appendices.

Methane was not detected at MBH201, with very low concentrations of carbon dioxide (0.7% v/v) detected. A positive flow of 0.3 l/hr was recorded. The findings are consistent with previous rounds (a total of six have been carried out to date).

Groundwater monitoring

Resting groundwater level was gauged at three monitoring locations during the site works. Groundwater was recorded at 2.785 m bgl at MBH201, 2.645 m bgl at WS16 and 2.580 m bgl at BH201.

Groundwater monitoring and sampling was undertaken at MBH201 in the northern portion of the site and BH102 in the southern portion of the site.

Sampling was undertaken at MBH201 and BH102 using a Waterra 12v Submersible Pump. Prior to sampling, three times the volume of the water in the monitoring well was purged. No visual or olfactory evidence of contamination was identified during the groundwater monitoring. Samples were retrieved in appropriated containers and submitted to the laboratory for analysis of chlorinated solvents, VOCs and a hydrocarbon suite of analysis.

VOCs in groundwater – risk assessment

The majority of the VOCs analysed returned concentrations below the screening the laboratory detection limit. However, Cis-1,2-dichlorethene was detected in the samples retrieved from MBH201 (5.9 µg/l) and BH102 (3.0 µg/l), while 1.5 µg/l of Trichloroethane was detected in the sample retrieved from MBH201.

Both of the concentrations of Cis-1,2-dichlorethene retrieved from MBH201 and BH102 did not exceed the WHO standards on drinking water of 50 µg/l, while the concentration of Trichloroethane retrieved from MBH201 was not in exceedance of the water quality regulation standard of 10 µg/l. It is therefore considered that the risk from VOCs to controlled waters is low and no onsite source was identified.

Due to the presence of low concentrations of Cis-1,2-dichlorethene and Trichloroethane a possible risk to human health of volatilisation of the VOCs into indoor air space has been identified due to the proposed mechanical air conditioning units. However, given the very low concentrations and depth to groundwater the risk is considered to be low. Furthermore, atmospheric dispersion means that the concentrations in outdoor air, even if drawn into an air vent will not be sufficient to represent a potential risk to site users.

No VOCs were recorded on the PID, therefore, the volatilisation potential to air from groundwater is considered to be low. No flow was recorded on the gas analyser; this indicates that there is no active pathway by which VOCs could reach the surface.

The groundwater gradient has been found to be predominantly flat across the site therefore groundwater flow is unlikely to be effected by ponding. Furthermore the hydraulic gradient of the gravels will be high therefore groundwater will readily flow around any obstruction. In addition the thickness of the gravel (approximately 7m) would again mean that groundwater would flow around any obstructions therefore no ponds of contamination.

Soil gas risk assessment

Following the additional round of gas monitoring, gas risk has been reassessed. In order to give an initial assessment for gas risk the findings have been compared to the Wilson and Card (1999) guidelines applicable for buildings other than low rise residential. Gas monitoring results presented in the RPS report (2010 and

2011) for BH03 have been included in the assessment. Gas Screening Values (GSVs) for carbon dioxide and methane concentrations were calculated using the maximum recorded values throughout the monitoring period in association with the highest recorded flow rate. Based on the ground gas monitoring data, the GSV for carbon dioxide was calculated as 0.0021 l/hr and the GSV for methane was calculated as 0.0008 l/hr. These GSVs have been assessed in accordance with NHBC – Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present as well as the CIRIA C665 guidance – Assessing risks posed by hazardous ground gases to buildings. Based on the modified Wilson and Card classification the site would be classified as Characteristic Situation 1. This would suggest that ground gas protection measures are not required.

Conclusion

To meet the planning conditions for the Old Vinyl Factory site in Hayes, Merebrook undertook an additional round of soil gas, vapour analysis and groundwater monitoring was on site. All of the monitoring wells that were screened with a PID returned concentrations of 0.0 ppm. Additionally, the groundwater samples retrieved from MBH201 and BH102 returned concentrations below the screening level for TPH and PAHs and the majority of VOCs compounds. Cis-1,2-dichlorethene was detected in the samples retrieved from MBH201 and BH102 while Trichloroethane was detected in the sample retrieved from BH102. Both contaminants were below the screening level for controlled waters. It would be therefore considered that the risk from VOCs vapours in groundwater is low. Based on the updated ground gas data the site would be classified as a Character Situation 1, suggestion ground gas protection measures would not be required.

An ongoing gross contaminant source was not encountered during the various phases of site investigations. Trace contaminant concentrations were encountered but are unlikely to present a risk to controlled waters or human health.

Please do not hesitate to contact me should you have any queries regarding this letter or require additional information.

Yours sincerely



Gareth O'Brien
For Merebrook Consulting Ltd

Incl: I2 Laboratory analytical report number: 14-52046

**Gareth O'Brien**

Merebrook
First Floor
1 Leonard Place
Westerham Road
Keston
BR2 6HQ

t: 01689 889980
f: 01689 889981
e: gobrien@merebrook.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 14-52046

Project / Site name: Old Vinyl Factory, Hayes

Samples received on: 17/03/2014

Your job number: MER00566

Samples instructed on: 17/03/2014

Your order number: 14-S2-FDO-LABS

Analysis completed by: 21/03/2014

Report Issue Number: 1

Report issued on: 21/03/2014

Samples Analysed: 2 water samples

Signed:

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Rexona Rahman
Customer Services Manager
For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 - 711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 14-52046

Project / Site name: Old Vinyl Factory, Hayes

Your Order No: 14-S2-FDO-LABS

Lab Sample Number				323346	323347			
Sample Reference				MBH201	BH102			
Sample Number				None Supplied	None Supplied			
Depth (m)				None Supplied	None Supplied			
Date Sampled				12/03/2014	12/03/2014			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.0	6.1			
Total Cyanide	ug/l	10	ISO 17025	< 10	< 10			
Sulphate as SO ₄	ug/l	45	ISO 17025	132000	111000			
Sulphide	ug/l	5	NONE	< 5.0	< 5.0			
Total Organic Carbon (TOC)	mg/l	0.1	ISO 17025	3.5	1.3			

Total Phenols

Total Phenols (monohydric)	ug/l	10	ISO 17025	< 10	< 10			
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Speciated PAHs

Naphthalene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthylene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Fluorene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Phenanthrene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Anthracene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Fluoranthene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Pyrene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)anthracene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Chrysene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(b)fluoranthene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(k)fluoranthene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)pyrene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Dibenz(a,h)anthracene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(ghi)perylene	ug/l	0.01	ISO 17025	< 0.01	< 0.01			

Total PAH

Total EPA-16 PAHs	ug/l	0.2	ISO 17025	< 0.20	< 0.20			
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Heavy Metals / Metalloids

Arsenic (dissolved)	ug/l	1	ISO 17025	9.9	16			
Cadmium (dissolved)	ug/l	0.08	ISO 17025	2.1	5.6			
Chromium (hexavalent)	ug/l	5	ISO 17025	< 5.0	< 5.0			
Chromium (dissolved)	ug/l	0.4	ISO 17025	0.4	4.2			
Copper (dissolved)	ug/l	0.7	ISO 17025	4.3	280			
Lead (dissolved)	ug/l	1	ISO 17025	4.8	16			
Mercury (dissolved)	ug/l	0.5	ISO 17025	< 0.5	< 0.5			
Nickel (dissolved)	ug/l	0.3	ISO 17025	22	180			
Selenium (dissolved)	ug/l	4	ISO 17025	< 4.0	< 4.0			
Zinc (dissolved)	ug/l	0.4	ISO 17025	23	110			



Analytical Report Number: 14-52046

Project / Site name: Old Vinyl Factory, Hayes

Your Order No: 14-S2-FDO-LABS

Lab Sample Number				323346	323347			
Sample Reference				MBH201	BH102			
Sample Number				None Supplied	None Supplied			
Depth (m)				None Supplied	None Supplied			
Date Sampled				12/03/2014	12/03/2014			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0			

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			



Analytical Report Number: 14-52046

Project / Site name: Old Vinyl Factory, Hayes

Your Order No: 14-S2-FDO-LABS

Lab Sample Number				323346	323347			
Sample Reference				MBH201	BH102			
Sample Number				None Supplied	None Supplied			
Depth (m)				None Supplied	None Supplied			
Date Sampled				12/03/2014	12/03/2014			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status		

VOCs

Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Vinyl Chloride	µg/l	10	NONE	< 10.0	< 10.0			
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0			
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	5.9	3.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trichloroethene	µg/l	1	ISO 17025	1.5	< 1.0			
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			

U/S = Unsuitable Sample I/S = Insufficient Sample

Iss No 14-52046-1.XLS

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Page 4 of 5



Analytical Report Number : 14-52046

Project / Site name: Old Vinyl Factory, Hayes

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in water	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073W-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH in water	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L070-UK	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode.	In-house method	L010-PL	W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total organic carbon in water	Determination of total organic carbon in water by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification. Determination of nitrite in water by addition of	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-UK	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073W-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



AN **idom** GROUP COMPANY

Idom Merebrook Ltd East Mill, Bridgetfoot, Belper, Derbyshire, DE56 2UA
t +44 (0)1773 829 988 f +44 (0)1773 829 393 e consulting@merebrook.co.uk merebrook.co.uk idom.com

Registered in England No. 02740216 Registered office: Belper

offices London Kent Derby Cardiff Manchester Moray